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**VISEGRAD GROUP:
a form of establishment and development of
European integration**

Collective monograph

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V64 Visegrad Group: a form of establishment and development of European integration:
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The monograph is devoted to the problems of European economic integration. The research is based on two approaches. One of them is the analysis of the effectiveness of the creation of an association for the purpose of accelerating the processes of European integration and accession to the EU. The second is the separation of development experience, which provides the basis for applying to the membership in the European Union. At the same time, proposals aimed at developing a kind of alliance between Ukraine and V4 in adapting the experience of its members in the transformation efforts are substantiated.

For researchers, economists, civil servants, graduate students and students

The content of the chapters is the responsibility of the authors. The authors of the chapters express their own position, which may not comply with the editors' opinion.

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CONTENTS

FOREWORD	5
CHAPTER 1. Adaptation of the Visegrad Four countries to membership in the European Union	9
1. The Visegrad Four Countries on the Eve of Membership in the European Union.....	9
2. Maastricht Criteria and their Observance by V4 Countries	11
3. Convergence Trends of the Visegrad Group Countries with the Acquisition of Membership in the European Union	12
4. Stabilization policy in the context of the COVID-19 pandemic.....	21
CHAPTER 2. The economy of the Visegrad Four as an integrated association of states ...	29
1. Macroeconomic processes in the Visegrad Four countries	29
2. Development of the real economy	32
3. National features of economic development	39
4. Global challenges for the economy of the Visegrad Group	45
CHAPTER 3. Centuries-old traditions of coexistence and good neighborliness of the peoples of V4 and Ukraine as a prerequisite for deepening integration processes ...	47
1. A historical factor in the formation of the European Union.....	47
2. Methodological and informational specifics of the interstate relations research	48
3. Relations between V4 and Ukraine as a centuries-old civilized coexistence and overcoming contradictions	52
4. Strategy of targeting integration processes in the real economy sector of V4 + UA.....	56
CHAPTER 4. Geoeconomic priorities in the development of relations between the Visegrad Group and Ukraine within the system of European integration.....	65
1. Overall political preconditions for priority development of the Eurointegration processes in alliance with the Visegrad Group	65
2. The territorial factor of Ukraine's European integration in alliance with the Visegrad Four	68
3. Integrated demographic policy: Population and the movement of labour	70
4. Integration of Ukraine into the European Union as a convergence process	76
CHAPTER 5. Eastern Partnership policy as an integration factor in the development of cooperation between Ukraine and V4.....	81
1. Eastern Partnership as a modern policy of the European Union	81
2. Development of cooperation between Ukraine and V4 in the real economy.....	85
3. Integrated demographic policy: population and labor movement	90
4. Development of electronic payment systems in the structure of e-commerce in the Visegrad group and Ukraine.....	96
CHAPTER 6. Regional monetary integration: the experience of the Visegrad Four countries and guidelines for Ukraine.....	113
1. Theoretical approaches to understanding monetary integration.....	113

2. Genesis of European monetary integration.....	122
3. Monetary integration of the Visegrad Four countries	128
4. Strategic directions of Ukraine's integration into the European monetary space.....	135
CHAPTER 7. Territorial development policy in the Visegrad Group countries.....	145
1. Territorial transformation in Visegrad Group countries.....	145
2. Poles and axes of development in Visegrad countries	149
3. Territorial cohesion: case of V4 countries.....	158
CHAPTER 8. Transformation of Ukrainian automotive industry in the context of electromobility: applying the experience of Visegrad States.....	169
1. Strategic visions of a successful start of Ukraine in the global automotive market.....	169
2. Development of the automotive industry in the years of Ukraine's independence.....	172
3. Revival of the automotive industry of Ukraine: priority conceptual components	177
CHAPTER 9. Visegrad Countries in the current conditions of the migration crisis in the EU.....	181
1. Economic theories of migration	181
2. Migration purposes.....	188
3. Migration problems of the Visegrad countries	192
4. Socio-economic reasons for migration processes	199
CHAPTER 10. V4 countries in the context of the development of the process of fiscal decentralization in the EU	207
1. Role of taxes and transfers in the fiscal policy	207
2. Tax policy and local development.....	214
3. The impact of fiscal decentralization on the formation of budgets at different levels in the V4 countries	222
4. The taxes and transfers dependence on the different government level on the example of Visegrad countries.....	233
CHAPTER 11. Cross-border transport and logistics cluster as an effective form of cooperation between the regions of Ukraine and Visegrad Four	265
1. Analytical assessment of the current state of development transport and logistics systems of the Visegrad Four.....	266
2. Functioning of transport and logistics systems in the border regions of Ukraine: features, trends, barriers and challenges	272
3. The concept of creating a cross-border transport and logistics cluster in context partnership between Ukraine and the Visegrad Four countries.....	277
4. Mechanisms to ensure the development of cross-border transport and logistics cluster	283
REFERENCES.....	289

FOREWORD

The common goal of the countries of the European Union is to transform the union into the most competitive region of the world by means of inclusive, stable and smart economic growth. Since 2005, the countries of the Visegrad Group which became members of the EU have undergone successful convergence based on macroeconomic stability. The decisive factor for economic triumph of these countries was their accession to the European Union and NATO.

Georgia, Moldova and Ukraine are the countries currently aspiring to join the EU. For them, the Visegrad Group is an unprecedented source of experience in what concerns economic growth based on inclusion into the processes of European and Euroatlantic integration, creation of the system of regional international cooperation and implementation of radical reforms in all economic spheres.

The subject of research for the authors of this monograph is the Visegrad Group as a form of establishing and deepening of the European integration. The authors do not pursue the aim of developing a framework for reproducing the experience of the Visegrad Group, which is impossible anyways, as the latter reflects different historical conditions, different states of societies and a different stage in the development of European integration. At the same time, such a precondition does not mean that it is absolutely impossible to adapt the experience of overcoming the distinctions in European development by providing mutual support. The condition for building a new united and prosperous Europe is that the efforts of European countries should be consolidated for further fast integration.

The experience of the Visegrad Group as a regional inter-state alliance, which functioned both outside of the EU and inside the EU, is multidimensional. In order to preserve the Visegrad regional profile in the sphere of foreign policy, the countries of the V4 undertook consultations when it was necessary,

presentations on issues of mutual interest, regular meetings and consultations with experts, as well as information exchange. Good performance was shown by the developed cultural programs, including trans-border festivals, stage shows and joint exhibitions of young painters; communications about national events open for other member countries of the V4; and cooperation in the sphere of education. Significant importance is assigned to cooperation in the field of science and technology, which takes the form of joint projects on sustainable development. Under the conditions of an alliance, the effectiveness of developments in infrastructure, telecommunications, transport, and electricity supply systems has grown.

This monographic study is relevant in the context of the Visegrad countries' pursuit for cooperation with their closest neighbors. There is an objective basis for this, as there always are many areas in which neighbors can cooperate for mutual benefit. In the modern times, our affinity shows itself in the common interest of being included into the system of pan-European integration.

Thus, the Visegrad Four is not an isolationist grouping, neither it is an alternative to pan-European integration. On the contrary, the group is committed to promoting optimal cooperation with all countries, including its neighbors, its ultimate interest being the democratic development in all parts of Europe. The cooperation with the Visegrad Four is especially important for the countries of Eastern partnership because it supports and develops the architecture of European unity and security. This mission has particularly grown in importance after the V4 countries became members of the European Union.

Today, the EU policy of Eastern Partnership, which aims to strengthen the relationships of the EU with its Eastern neighbors and which is an extension of the eastern direction of the European Neighborhood Policy, requires an urgent strategic renovation. It should take into consideration to a larger extent the European aspirations and ambitions of its members. Ukraine, Georgia and Moldova, the three associated partners of the EU, express their mutual aspirations for significant strengthening of their interactions with the EU within the framework of Eastern Partnership based on the principle of differentiation. At that, the political and economic integration of the Eastern partners with the EU remains to be the main goal of the partnership, which should develop based on the common values formalized in the Joint Declaration of the Prague Constitutive Eastern Partnership Summit of 2009. The authors hope this monograph will contribute to these developments.

Given the role of the Visegrad Four in the integration of Eastern European countries into the system of European and Euro-Atlantic integration, researchers

from West Ukrainian National University and Ivane Javakhishvili Tbilisi State University have been conducting fundamental research in this area for many years. This monograph was prepared based on the results of the national project *“Formation of the alliance of Poland, the Czech Republic, Slovakia, Hungary and Ukraine as the Visegrad Five: the context of regional economic integration”* (state registration number – *0119U100528*). The researchers from the V4 and Eastern Partnership countries are involved in the research. Besides in 2016 the national project “Benchmarking of regional development processes in Poland, Slovakia, Bulgaria and Ukraine” was completed (state registration number 0115U002336). In the last years, the authors had published a number of monographs: “Global challenges of regional monetary integration” (2017), “Economic problems of Visegrad Group countries and Ukraine” (2018), “Benchmarking of regional development of Eastern Europe: Bulgaria, Poland, Slovakia, Ukraine” (2018), “Sustainable Development of Ukraine in the Context of Forming a New World Economic and Financial Order” (2019), “Poles and Axes of Development in the Context of Glocalization Processes” (2019), “Development of Ukraine’s Economic Cooperation with V4 Countries” (2020).

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CHAPTER 1

Adaptation of the Visegrad Four countries to membership in the European Union

1. The Visegrad Four Countries on the Eve of Membership in the European Union

The Visegrad Group was officially established in 1991, when a declaration was signed on the establishment of the Visegrad Group, a regional union of Hungary, Czechoslovakia and Poland. An for intraregional cooperation got additional support when a free trade area was created – in December 1992, these countries signed the Central European Free Trade Agreement (CEFTA), which entered into force on March 1, 1993. Two independent states – the Czech Republic and Slovakia – appeared on January 1, 1993.

In 1989-2007, the EU consistently implemented a policy aimed at expanding the integrated group taking into account geopolitical and socioeconomic factors. These are the main stages of this policy ¹:

– support for the process of economic and democratic reforms of potential candidate countries in preparation for EU accession. Conclusion of Interim Agreements (Poland, Hungary, Czech Republic, Slovakia, Romania, and Bulgaria)

¹ Development of EU Financial Institutions and Challenges for Financial Policy of Ukraine: monograph / [Borzenko O.O., Bogdan T.P., Sharov O.M., etc.] ; NAS of Ukraine, SI "Inst. of Economics and Forecasting, NAS of Ukraine". – Electron. resource. – K., 2019. - 372 p.

and Free Trade Agreements (Estonia, Latvia, Lithuania, and Slovenia), which expired upon the entry into force of the European Agreements;

- conclusion of European agreements of the 1990s (Association Agreements) with the countries of Central and Eastern Europe;

- submission of applications by candidate countries for accession to the EU. Signing with each of the thirteen countries negotiating EU accession, the Accession Partnership Programme and the National Acquis Programmes (NPAA), which contained the Copenhagen criteria (Eastern European and Baltic countries preparation programmes for EU accession) included a strategy for the short and medium term and concerned all aspects of the life of states. Hungary joined the process in June 1997, the Czech Republic – in November 1999, Poland and Slovakia – in February 2000;

- negotiations on accession to the EU during 1998-2002. Monitoring the implementation of National Programmes. Deciding on the date of entry.

Financial support for the economic and democratic reform process of the candidate countries in preparation for EU accession began when the European Union established the PHARE Programme in 1989, originally intended for Poland and Hungary, but then rapidly spreading to all countries.

Since its inception, the PHARE Programme has focused on projects that guarantee the ability of administrative bodies to assume the rights and responsibilities of EU membership, in particular to ensure the ability of these bodies to effectively manage EU financial assistance to ensure economic growth and job creation, as well as to create the conditions for them to apply EU rules in full and properly. These projects account for about 30% of the Programme budget. In addition, the PHARE Programme has also provided support for investment activities in implementation of infrastructure development projects. Thousands of such projects have been implemented in Central and Eastern Europe, some of them on a large scale: some of them are projects involving several countries, others involve small-scale activities carried out at the local level. These projects cover a wide range of areas: from improving the infrastructure of road, rail and urban transport in almost every country to creating distance learning networks in Poland and more.

In 1998, projects were identified and supported to enable administrative and government agencies to manage key European Union policies (agriculture, environment, regional development, justice and home affairs). As part of this process, one expert was sent from the current EU Member State for each project, who has been an advisor and mentor to local authorities for at least 12 months. During the period 1998-2002, a total of 683 projects were implemented.

During the EU accession negotiations, each new member state adopted the current EU legislation ("acquis communautaire"). At the same time, the European Commission has monitored and is closely monitoring the implementation of these rules.

2. Maastricht Criteria and their Observance by V4 Countries

The main principle in providing assistance to candidate countries to prepare them for the EU 'accession' was to ensure that each candidate country meets the criteria for membership in the European Union. The main of these criteria were: establishment of stable institutions for guaranteeing democracy, the rule of law, human rights and respect for and protection of minority rights; existence of a functioning market economy capable of withstanding competition and pressure from market forces within the Union, as well as the ability to fulfill the responsibilities of an EU member, including actions to meet the objectives of the political, economic and monetary Union.

Especially important in this regard are the Maastricht convergence criteria for the euro area – a set of rules for member states and EU countries that intend to join the euro area in the future. Candidate countries must control inflation (inflation rates should not exceed by 1.5 percentage points the average in the three countries with the lowest price increases), public debt (public debt should not exceed 60% of GDP), the state budget deficit (the state budget deficit should not exceed 3% of GDP), as well as adhere to exchange rate stability and convergence of interest rates: interest rates on long-term loans should not exceed more than 2 percentage points of the average for the three countries with the lowest price increases; the currency should not devalue within two years, and its exchange rate must not exceed the fluctuations of exchange rates set within the European Monetary System.

Let us analyze the state of compliance by the member countries of the Visegrad Group (V4) of the Maastricht criteria in the period 2000-2008.

Data on the dynamics of the state budget deficit of the central government for the EU-27 and the euro area were in the range of -3% from the GDP of these groups of countries (Table 1.1). In the pre-accession period, Slovakia reduced its budget deficit from -13.4% (in 2000) to -4.0 (in 2003), and on the eve of joining the euro area, the budget deficit was -2.0%. In 2001-2003, Hungary and Poland significantly decreased their budget deficits with a maximum of 10.0% and 5.4%, respectively. The Czech Republic managed to reach the criterion of a budget deficit of up to 3% in 2004.

Table 1.1

**Dynamics of budget deficit / surplus of EU member states and the Euro area
in GDP during 2000-2008, %**

Region / year	2000	2001	2002	2003	2004	2005	2006	2007	2008
<i>EU-27 countries</i>	-1.3	-1.5	-2.2	-2.5	-2.3	-2.0	-1.4	-1.0	-2.1
<i>EU-15 countries (1995-2004)</i>	-0.6	-0.9	-2.0	-2.4	-2.3	-2.1	-1.5	-1.2	-2.5
<i>Euro area-15 countries (2008)</i>	-1.5	-1.6	-2.1	-2.4	-2.4	-2.2	-1.5	-1.1	-2.2
Slovakia	-13.4	-8.0	-9.0	-4.0	-3.2	-2.6	-3.6	-2.2	-2.9
Hungary	-2.7	-4.6	-7.6	-5.8	-6.0	-7.1	-10.0	-5.7	-3.6
Poland	-1.7	-4.4	-4.2	-5.4	-4.9	-4.1	-4.0	-2.9	-3.8
Czechia	-3.2	-4.9	-5.8	-6.3	-2.3	-2.9	-2.2	-1.4	-2.0

Source: compiled according to Eurostat: Government revenue, expenditure and main aggregates gov_10a_main

Regarding the public debt (gross debt of the general government) since 2005, among the V4 countries, only Hungary exceeded the limit of 60% in 2005-2008 (Table 1.2).

Table 1.2

**Dynamics of gross debt of the general government of the EU-27 member
states in GDP during 2000-2008, %**

Region / year	2000	2001	2002	2003	2004	2005	2006	2007	2008
<i>EU-27 countries</i>	66.3	65.5	65.3	66.6	66.9	67.1	64.9	62.2	64.9
Slovakia	50.5	51.1	45.3	43.2	41.7	34.7	31.4	30.3	28.6
Hungary	55.7	52.3	55.6	58.1	58.9	60.6	64.5	65.7	71.8
Poland	36.5	37.3	41.8	46.6	45.1	46.6	47.3	44.5	46.7
Czech Republic	17.0	22.8	25.9	28.3	28.5	27.9	27.7	27.5	28.3

Source: compiled according to Eurostat: General government gross debt SDG_17_40 http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sdg_17_40&lang=en

3. Convergence Trends of the Visegrad Group Countries with the Acquisition of Membership in the European Union

The global financial and economic crisis of 2007-2008 posed serious challenges to many European governments, including the V4 countries. The main

concerns were the ability of national administrations to service the public debt, to take the necessary measures to keep government spending under control, and to promote economic growth. However, ‘weaknesses’ in economic and fiscal surveillance provoked the eurozone debt crisis of 2011-2012. Accordingly, a wide range of measures were taken to strengthen the sustainability of supranational and national budget finances. In particular, closer coordination of economic policy has been introduced by strengthening budgetary surveillance under the Stability and Growth Pact, a new management procedure for macroeconomic imbalances and integrated surveillance in the form of the European Semester. Brand new financial institutions were set up, including the European Stability Mechanism (ESM).

EU Member States annually provide the European Commission with detailed information on their economic policies and the state of their public finances. Under the terms of the EU Stability and Growth Pact, Member States have committed themselves to keeping deficits and debt below certain limits: a Member State’s government deficit cannot exceed 3% of its GDP, while debt cannot exceed 60% of GDP. If a Member State does not comply with these limits, a so-called excessive deficit procedure is launched. This entails several steps (including the possibility of sanctions) to encourage the Member State to take appropriate measures to remedy the situation².

Under the excessive deficit procedure, EU member states are required to provide the European Commission with government deficit and debt statistics by 1 April and 1 October each year. Eurozone countries provide this information in the context of stability programmes, while other Member States do so in the form of convergence programmes. The European Commission assesses whether a policy is in line with agreed economic, social and environmental objectives and may issue a warning if it considers that the deficit is becoming abnormally high. In the event of an excessive deficit, a deadline may be set for its correction.

As for the experience of stabilizing public finances, it is important to consider the Excessive Budget Deficit Procedure (EBDP) conducted by the Visegrad Group countries. The EU Commission initiated the EBDP against Hungary in 2004, and in 2009 – against all Visegrad countries. This was caused by excessive government spending during the global financial and economic crisis of 2008-2009. It should be noted that the fiscal systems of the Visegrad Group countries differ from the EU-15 (before 2004). Despite the fact that the expenditure part of the budget in these countries is quite large, the share of government

² Panfilova T. Convergence and Divergence of the Sphere of Public Finances of EU Member States and Ukraine. *Ekonomika Ukrainy*. 2020. № 7. pp. 108–120.

spending in GDP is slightly lower than in more developed countries³. In the income part, the share of indirect taxation is much larger. In general, the key indicators of the Visegrad Group countries in the fiscal sphere (the ratio of government expenditure to GDP, tax burden, etc.) are not higher than the European average, which indicates the potential for freedom of maneuver in terms of budget consolidation (there is an opportunity to increase the tax burden) and to expand public investment.

It should be noted that the level of budget deficits in the Visegrad Group countries was quite high indeed in 2009 (see Table 1.3). The deficits of Poland and Slovakia were slightly higher than the European average (6.6%). In addition, the permissible limit on public debt of 60% was violated only by Hungary (see Table 1.4).

Table 1.3

Dynamics of the budget deficit/surplus of the EU member states and the euro area in 2008-2019

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>EU - 27 countries (2020)</i>	-2.0	-6.0	-6.0	-4.1	-3.6	-2.9	-2.4	-1.9	-1.3	-0.8	-0.4	-0.6
<i>Eurozone - 19 (2015)</i>	-2.2	-6.2	-6.3	-4.2	-3.7	-3	-2.5	-2	-1.5	-1.0	-0.5	-0.6
Hungary	-3.8	-4.8	-4.5	-5.2	-2.3	-2.6	-2.8	-2	-1.8	-2.5	-2.1	-2.0
Slovakia	-2.5	-8.1	-7.5	-4.5	-4.4	-2.9	-3.1	-2.7	-2.5	-1.0	-1.0	-1.3
Poland	-3.6	-7.3	-7.4	-4.9	-3.7	-4.2	-3.6	-2.6	-2.4	-1.5	-0.2	-0.7
Czech Republic	-2.0	-5.5	-4.2	-2.7	-3.9	-1.2	-2.1	-0.6	0.7	1.5	0.9	0.3

Source: compiled according to Eurostat: General government deficit/surplus TEC00127. Eurostat. URL: <http://appsso.eurostat.ec.europa.eu/nui/show.do?wai=true&dataset=tec00127>

Reducing budget deficits in the Visegrad Group countries was not an urgent need. But, like most other EU states, due to the tough stance of supranational authorities, they were forced to consolidate national budgets⁴. Countries in the region have consolidated their budgets in various ways, indicating the existing differences in their fiscal systems. Consolidation in Hungary (the biggest of all in the group) was largely based on reducing budget expenditures caused by rather high initial levels of expenditure and tax burden. Poland and Slovakia opted for mixed consolidation (reduction of costs and increase of revenues). However, Slovakia relied more on tax increases. Consolidation in the Czech Republic was

³ Komissarova Zh.N., Sergeev E.A. Excessive Budget Deficit Procedure in the Visegrad Countries. *RUDN Newsletter. Series: Economics*. 2018. V. 26. № 2. p. 246 – 257.

⁴ *ibid*

mainly based on indirect taxes and reductions in public investment, while the size of the consolidation package was larger than in Poland and Slovakia⁵.

Table 1.4

Dynamics of gross debt of the general government of the EU-27 member states and the Visegrad Group in GDP during 2008-2019, %

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>EU - 27</i>	<i>64.9</i>	<i>75.7</i>	<i>80.5</i>	<i>81.8</i>	<i>84.7</i>	<i>86.4</i>	<i>86.6</i>	<i>84.7</i>	<i>84</i>	<i>81.6</i>	<i>79.6</i>	<i>77.8</i>
Euro area	69.6	80.2	85.8	87.7	90.7	92.6	92.8	90.9	90	87.8	85.8	84.1
Hungary	71.8	78.2	80.6	80.8	78.6	77.4	76.8	76.2	75.5	72.9	70.2	66.3
Slovakia	28.6	36.4	41.0	43.5	51.8	54.7	53.5	51.9	52	51.3	49.4	48.0
Poland	46.7	49.8	53.5	54.5	54.1	56.0	50.8	51.3	54.3	50.6	48.8	46.0
Czechia	28.3	33.6	37.4	39.8	44.5	44.9	42.2	40.0	36.8	34.7	32.6	30.8

Source: compiled according to Eurostat: General government gross debt SDG_17_40.
URL: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sdg_17_40&lang=en

All consolidation packages had a common feature – a significant reliance on indirect taxes. Revenues from them increased in all countries of the Visegrad Group. The income from contributions to the social insurance system generally increased: due to higher rates, expansion of the tax base or almost complete (as happened in Hungary) or partial (Poland) nationalization of the pension system. The latter indicates the inadequacy and ineffectiveness of the announced consolidation measures in both countries.

In 2013-2015, the EBDP against all Visegrad Group countries was terminated because they met a number of key conditions: reducing the budget deficit and halting public debt growth. Other fiscal indicators have practically returned to pre-crisis levels.

Implemented measures in the EU-27 countries reduced the general government deficit (General government deficit/surplus) from -6% of GDP in 2010 to -0.6% in 2019. The dynamics of the V4 countries is characterized by a significant variance (Table 1.3). The biggest values of the indicator were recorded in the post-crisis years of 2009-2010. However, all 4 countries managed to reduce the budget deficit to less than 3% since 2015, and in the Czech Republic has enjoyed a budget surplus since 2016.

The adoption of the Stability Pact and introduction of the European Semester contributed to a consistent reduction in the public debt/GDP ratio: if in 2008-2014 the total debt of the EU-27 increased from 64.9% to 86.5% of GDP, in 2019 the value indicator was already 77.8% (Table 1.4). In the euro area, this figure increased from 69.6% to 84.1%. However, among the V4 countries, only

⁵ ibid

Hungary had a rate higher than 60% but lower than the EU-27 average throughout the analyzed period.

Among the V4 countries, only Slovakia joined the eurozone (2009). Regarding the exchange rate of national currencies of non-euro area countries, Eurostat experts cite the following trends. Between 2009 and 2019, the euro rose sharply against the Hungarian forint (by 13.8%) and depreciated against the Polish zloty (by 0.7%) and the Czech koruna (by 2.9%). For comparison, in the period from 2009 to 2019, the euro depreciated by 1.5% against the pound sterling, by 19.7% against the US dollar and by 18.8% against the Chinese yuan.

These data suggest that among the Visegrad countries, only Hungary does not meet the Maastricht convergence criteria.

The important indicator which reflects the real socio-economic situation in the country is GDP per capita in current prices. The data in Table 5 allow us to establish that for V4 member states the dynamics of GDP per capita reflects the global crisis of 2008-2009 and slightly – the debt crisis of 2011-2012 with a slight decrease. All the V4 countries showed higher growth rates than the EU-27 as a whole and the euro area. Slovakia was a leader (more than 2.6 times), and Hungary was an outsider (1.8 times).

Table 1.5

Dynamics of GDP per capita in EU countries at current prices, euros

	2004	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Growth rates 2019/2004, %
<i>EU - 27</i>	21 180	25 260	24 050	24 900	25 640	25 740	26 000	26 550	27 460	28 160	29 280	30 230	31 160	147.1%
<i>Euro area</i>	24 980	28 880	27 750	28 460	29 170	29 210	29 440	30 070	31 020	31 790	32 900	33 900	34 820	139.4
Czechia	9 460	15 540	14 260	15 020	15 740	15 470	15 170	15 000	16 080	16 790	18 330	19 850	20 990	221.9
Slovakia	6 460	12 230	11 830	12 560	13 210	13 610	13 750	14 080	14 710	14 920	15 540	16 440	17 210	266.4
Poland	5 400	9 600	8 240	9 400	9 860	10 070	10 190	10 630	11 190	11 110	12 170	12 960	13 870	256.8
Hungary	8 290	10 780	9 420	9 960	10 230	10 080	10 310	10 750	11 450	11 830	12 960	13 910	14 950	180.3

Source: compiled according to Main GDP aggregates per capita NAMA_10_PC

The growth of the share of GDP per capita in a particular country to the average value of GDP per capita of the EU-27 is indicative (Table 6). The leader of the V4 in this indicator is the Czech Republic, which reached 67.4% in 2019 against 44.7 in 2004. However, Slovakia showed a higher dynamics – 55.2% against 30.5%. The figure for Hungary and Poland did not exceed 50% of the European average.

The financial and economic crisis of 2008-2009 and the subsequent slow pace of recovery have changed much of the progress made in European labour

markets. In response to rising unemployment, the European Commission began implementing measures in April 2012 to increase jobs by adopting the so-called Employment Package. In the context of the European Employment Strategy (EES), there are a number of measures to encourage people to stay in work or find a new job, including: promoting a lifecycle approach to work, promoting lifelong learning, improving support for jobseekers, and providing equal opportunities ⁶.

Table 1.6

Dynamics of the share of GDP per capita in the V4 countries from the average European level of the EU-27, % during 2004-2009

	2004	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>EU - 27</i>	100	100	100	100	100	100	100	100	100	100	100	100	100
<i>Euro area</i>	117.9	114.3	115.4	114.3	113.8	113.5	113.2	113.2	113	112.9	112.4	112.2	111.7
Czechia	44.7	61.5	59.3	60.3	61.4	60.1	58.4	56.5	58.6	59.6	62.6	65.6	67.4
Slovakia	30.5	48.4	49.2	50.4	51.5	52.9	52.9	53	53.6	53	53.1	54.4	55.2
Hungary	39.1	42.7	39.1	40	39.9	39.1	39.7	40.5	41.7	42	44.3	46.0	48.0
Poland	25.5	38	34.3	37.8	38.5	39.1	39.2	40	40.8	39.5	41.6	42.9	44.5

Source: compiled according to Main GDP aggregates per capita NAMA_10_PC

Unemployment is an important indicator in both social and economic dimensions. After all, rising unemployment leads to a loss of income for individuals, increased pressure on government spending on social benefits and reduced tax revenues. From an economic point of view, unemployment can be considered as unused labour.

The highest unemployment rate for almost all EU countries was observed in 2013 (Table 1.7).

Table 1.7

Dynamics of the share of unemployed in the EU, % of the working population

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>EU - 27 countries</i>	7.3	9.2	9.9	9.9	10.9	11.4	10.9	10.1	9.1	8.2	7.3	6.7
<i>Euro area</i>	7.6	9.6	10.2	10.2	11.4	12	11.6	10.9	10.0	9.1	8.2	7.6
Slovakia	9.6	12.1	14.5	13.7	14.0	14.2	13.2	11.5	9.7	8.1	6.5	5.8
Hungary	7.8	10.0	11.2	11.0	11.0	10.2	7.7	6.8	5.1	4.2	3.7	3.4
Poland	7.1	8.1	9.7	9.7	10.1	10.3	9.0	7.5	6.2	4.9	3.9	3.3
Czechia	4.4	6.7	7.3	6.7	7.0	7.0	6.1	5.1	4.0	2.9	2.2	2.0

Source: compiled according to Total unemployment rate. Percentage of active population. Eurostat. URL: <http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tps00203>.

⁶ Unemployment statistics and beyond. Eurostat. URL: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Unemployment_statistics_and_beyond

The unemployment rate of V4 countries did not exceed the European average in 2019. The lowest figure was recorded in the Czech Republic - its value was 3.3 times less than for the EU-27. The highest unemployment rate in V4 was in Slovakia during 2008-2019.

According to experts, youth (aged 15 to 24) unemployment is particularly dangerous for national economies of the EU member countries. In fact, the youth unemployment rate has been much higher (twice or more than twice) than the unemployment rate for all age groups (15-74) for all countries since 2005. In addition to focusing on youth unemployment in the major initiatives Europe 2020 Strategy, EU countries have agreed on a number of initiatives aimed at reducing youth unemployment.

The youth unemployment rate (Table 1.8) in the V4 countries exceeded the European average only for Slovakia during 2017-2019. In other countries, it tended to decline. The dynamics of the ratio of unemployed youth to the population as a whole shows that the youth unemployment rate in the EU-27 was much lower than the youth unemployment rate in the euro area: 5.9% of people aged 15-24 were unemployed in 2019 against 7.0% in 2017. The highest unemployment rate in this indicator was observed in Slovakia (4.8% in 2019), but it was lower than the European level. At the same time, the growth of the indicator in 2017-2019 was recorded only for Hungary.

Table 1.8

Unemployment rate among young people (15-24) as a percentage of the working population (15-74) and the population as a whole, %

	Percentage of the working population			Percentage of the population as a whole		
	2017	2018	2019	2017	2018	2019
<i>EU - 27</i>	<i>17.9</i>	<i>16.0</i>	<i>15.0</i>	<i>7.0</i>	<i>6.3</i>	<i>5.9</i>
<i>eurozone</i>	<i>18.6</i>	<i>16.8</i>	<i>15.6</i>	<i>7.4</i>	<i>6.7</i>	<i>6.3</i>
Slovakia	18.9	14.9	16.1	6.3	4.8	4.8
Hungary	10.7	10.2	11.4	3.5	3.3	3.7
Poland	14.8	11.7	9.9	5.2	4.1	3.5
Czechia	7.9	6.7	5.6	2.5	2.0	1.7

Source: compiled according to Eurostat: (une_rt_a).

The specific characteristics of national taxation and benefit systems reveal some differences in the levels of social protection payments between EU and in V4 Member States. Thus, the dynamics of the share of social contributions (as a tax) in the GDP of EU countries (Table 1.9) in the euro area is higher by more than 2% than for the EU as a whole. Despite the general upward trend in the value of the indicator, there is a decrease compared to 2008 in some countries in 2019, in

particular in Hungary. It should be noted that the value of the indicator was higher than for the EU-27, for the Czech Republic – during 2008-2019, and for Slovakia – during 2013-2019. The value of the indicator for Poland in this period was lower than for the EU-27 countries.

Table 1.9

Social contributions – total amount (mandatory actual contributions) of EU countries, % of GDP

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>EU-19</i>	<i>13.5</i>	<i>14.0</i>	<i>13.9</i>	<i>13.9</i>	<i>14.1</i>	<i>14.2</i>	<i>14.2</i>	<i>14.0</i>	<i>14.1</i>	<i>14.0</i>	<i>14.0</i>	<i>13.9</i>
<i>EU-27</i>	<i>12.7</i>	<i>13.2</i>	<i>13.0</i>	<i>13.0</i>	<i>13.2</i>	<i>13.3</i>	<i>13.3</i>	<i>13.1</i>	<i>13.2</i>	<i>13.2</i>	<i>13.2</i>	<i>13.1</i>
Czechia	14.8	14.1	14.4	14.6	14.7	14.6	14.3	14.6	16.0	14.8	15.4	15.5
Slovakia	11.7	12.4	12.0	12.0	12.2	13.3	13.4	13.7	14.2	14.7	14.8	15.0
Poland	11.2	11.1	10.8	11.1	12.0	12.3	12.2	12.4	12.7	12.8	13.1	13.2
Hungary	13.4	12.8	11.7	12.8	13.6	13.3	13.2	13.2	13.7	12.7	12.1	11.7

Source: compiled according to Taxation Trends in the European Union 2021 edition, Annex A: Tables Table 21: Social contributions as % of GDP - Total (compulsory actual contributions). p. 188.

National systems responsible for providing social protection are financed in various ways. Income for social protection includes: social insurance contributions paid by employers and protected persons; government contributions and other income from various sources (e.g., interest, dividends, rents and claims on third parties). Employers' social contributions are all costs incurred by employers to ensure the right to social benefits for their employees, former employees and dependents; they can be paid by resident or non-resident employers. They include all employer payments to social security institutions (actual contributions) and social benefits paid directly by employers to employees (assigned contributions). Social contributions paid by protected persons include contributions paid by employees, the self-employed and pensioners and others ⁷.

In 2017, social protection expenditure relative to GDP was 28.1% in the EU-27 and 28.9% in the euro area (Table 1.10). In V4 countries, this ratio was the highest in Poland (20.3), and for other countries it was slightly higher than 18%. At the same time, only in Hungary the declining dynamics during 2008-2017 was recorded.

Expenditures on pensions by all types (by age, early, partial, etc.) in the EU-27 in 2017 amounted to 12.8% of GDP (Table 1.11). Among the V4 countries, the highest level of pension expenditures relative to GDP in 2017 was recorded in Poland (10.9%), the lowest was in Hungary (8.1%).

⁷ Social protection statistics – overview. Data extracted in September 2020. Eurostat. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Social_protection_statistics_-_overview.

Table 1.10.

Expenditures on social protection relative to GDP in 2008-2017, %

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
EU - 27	26.1	28.8	28.7	28.3	28.7	29.1	28.9	28.6	28.5	28.1
Euro area (EU-19)	26.6	29.4	29.3	29.0	29.4	29.8	29.7	29.3	29.2	28.9
Poland	19.3	20.3	19.7	18.7	18.9	19.6	19.3	19.4	21.0	20.3
Czechia	17.9	20.1	20.0	20.1	20.4	20.2	19.7	19.0	18.9	18.6
Hungary	22.3	22.7	22.5	21.6	21.2	20.7	19.8	19.1	18.9	18.3
Slovakia	15.7	18.4	18.1	17.7	17.8	18.3	18.4	18.0	18.4	18.2

Source: compiled according to Eurostat: (spr_exp_sum)

In 2017, pension costs per old-age pension recipient (the most common type of pension) ranged from €1,900 in Bulgaria to €27,700 in Luxembourg in the EU-27, with an average of €13,983. Such expenses for V4 countries are 2-3 times lower than for the EU-27 (Table 1.12).

Table 1.11

Pension expenditures, 2017, % of GDP

Region/Country	% of GDP
<i>EU - 27 countries</i>	12.8
<i>Euro area -19</i>	13.2
Poland	10.9
Slovakia	8.5
Czechia	8.3
Hungary	8.1

Source: compiled according to Eurostat: (spr_pns_ben) ta (spr_exp_pens).

Comparing data in terms of purchasing power standards (PPS) tends to reduce the gap between Member States (as it adjusts for different price levels). The average cost per beneficiary reached a maximum of 10,422 PPS in Poland, while the lowest level of pension costs per beneficiary was recorded in Hungary (7,402 PPS).

Table 1.12

Pension costs per one old-age pension recipient

	EUR	PPP
<i>EU - 27 countries</i>	13 983	14 420
<i>Euro area</i>	15 965	15 545
Poland	5 582	10 442
Czechia	5 322	8 525
Slovakia	4 893	7 484
Hungary	4 396	7 402

Source: compiled according to Eurostat: (spr_pns_ben) and (spr_exp_pens)

4. Stabilization policy in the context of the COVID-19 pandemic

On April 9, 2020, eurozone finance ministers decided on a comprehensive economic policy response to the COVID-19 crisis. Three important groups of protective instruments for workers, businesses and government agencies worth €540 billion were introduced.

Key measures from the EU budget in 2020 (about 37 billion euros, 0.3 percent of EU-27 GDP in 2019) included⁸:

(i) creation of the Coronavirus Response Investment Initiative (CRII) and the Coronavirus Plus Investment Initiative Plus (CRII +) in the EU budget to support public investment in hospitals, SMEs, labour markets and crisis-affected regions;

(ii) expanding the scope of the EU Solidarity Fund, including the health care crisis, in order to mobilize it, if necessary for the most affected EU member states (up to €800 million was available in 2020);

(iii) redirecting €1 billion from the EU budget as a guarantee to the European Investment Fund to stimulate banks to provide liquidity to SMEs and medium-sized investments;

(iv) announcement of credit vacations to debtors affected by the crisis; and

(v) adopting a proposal for a €3 billion macro-financial assistance package for ten enlargement and neighborhood partners to help them limit the economic impact of the coronavirus pandemic.

The European Commission proposed changes to its 2020 budget to allocate 11.5 billion euros to counter the crisis and economic recovery. The European Commission also decided to temporarily suspend the fiscal adjustment requirement for countries below the MTO, allowing them to have deficits in excess of 3% of GDP. Following the announcement of a flexible interpretation of EU state aid rules for national measures to support critical sectors, the European Commission further instructed Member States to apply Article 107 (2) (b), which allows them to compensate companies for direct damage in exceptional cases such as COVID- 19, including activities in areas such as aviation and tourism. National liquidity measures, including schemes approved by the European Commission under the EU's temporary flexible state aid rules, amounted to \$3 trillion. euro.

On April 6, 2020, the European Commission issued guidelines on streamlining the format and content of National Stability and Convergence

⁸ Policy Tracker. IMF. URL: <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>.

Programmes (SCPs) in the light of the exceptional circumstances surrounding the COVID-19 pandemic. These guidelines meet the requirements of Regulation 1466/97⁹. During March-April 2020, EU countries adopted a number of corrective documents, including updated Stability Program, National Reform Program, and Konvergens Program 2020.

In addition to the scenario forecast of key macroeconomic indicators, stability or convergence programs include: a medium-term budget forecast for the general government, including description and quantification of the fiscal strategy; structural balance of the budget, in particular the cyclical component, one-time and temporary measures; cyclically-adjusted budget balance; cyclically-adjusted primary balance; general government expenditures by functional classification; projected debt dynamics of the general government sector; indicators of the sustainability of public finances in the long run, including a forecast of budget expenditures related to the aging population.

In this regard, the experience of Poland in ensuring the stability of financial systems is noteworthy. To protect the country's economy and mitigate the effects of the COVID-19 pandemic, the Polish Government, in collaboration with the Polish Financial Supervision Authority (UKNF) and the National Bank of Poland (NBP), developed a package of measures known as the *Anti-crisis Shield*. The purpose of these decisions was to stabilize the economy and stimulate investment. The *Shield* is based on five 'pillars', or areas of anti-crisis measures¹⁰: I. Worker safety; II. Providing business financing; III. Health system support; IV. Strengthening the financial system; V. Support for public investment.

The first three areas were mainly regulated in the legislative field. The fourth area covers autonomous regulatory activities carried out by the Polish Financial Supervision Authority and the Ministry of Finance, as well as liquidity management carried out by the National Bank of Poland. The fifth direction concerns future events and appears in the substantiation of the investment strategy.

The Anti-crisis Shield was supplemented by the "Financial Shield of the Polish Development Fund for Companies and Employees". The legal basis for this Shield was created by amending the Law on the System of Development Institutions, which allowed the Council of Ministers to establish two programmes to support entrepreneurs regarding the consequences of COVID-19 and entrust their implementation to the Polish Development Fund.

⁹ 2020 European Semester: National Reform Programmes and Stability/Convergence Programmes. URL: https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/european-semester/european-semester-timeline/national-reform-programmes-and-stability-convergence-programmes/2020-european-semester_en

¹⁰ Krajowy Program Reform. Europe 2020. [National Reform Programme | Europe 2020]. Republic of Poland, Update of 2020/2021. Approved by the Council of Ministers on 28 April 2020

In order to improve the situation of entrepreneurs, especially those affected by the COVID-19 pandemic, the government has prepared a number of solutions to ensure their financial liquidity, support daily business activities, preserve employment, compensate for losses and minimize other negative consequences of the pandemic. These measures are based on adapting the legal environment to the conditions in which the economy operates during a pandemic, and ensuring that entrepreneurs have access to finance during this period. Adjustments to the legal environment include, but are not limited to, postponing or waiving certain obligations of entrepreneurs that are difficult to meet during a pandemic. Measures aimed at ensuring the financial liquidity of entrepreneurs include, inter alia, credit guarantees and loans, including non-repayable loans. Special support is provided to micro-enterprises and SMEs that have suffered the most from sudden downtimes in the economy. The decisions also allow for temporary financing of jobs in order to maintain employment. They take into account research and development of new technologies that should have a positive impact on the competitiveness of enterprises after the pandemic. For the purposes of these decisions, the necessary changes were also made to the competence of the institutions through which the state policy to combat the consequences of the epidemic will be implemented.

Health infrastructure support. To combat the pandemic and prevent its consequences, the state budget funds are directed mainly to diagnostic laboratories and medical institutions. Taking into account the key importance of laboratories, the Coordination Group of the COVID Laboratory Network was established. Its activities focus on coordinating, streamlining and accelerating procedures in laboratories designated to carry out the measures needed to combat the SARS-COVID-19 virus epidemic. In addition, the development of health infrastructure was supported by the EU Cohesion Policy. Necessary changes were made to the operational programmes. Given the distribution of EU support to the most essential medical equipment, a list of equipment to be purchased as a priority for health facilities to combat COVID-19 has been compiled.

On March 18, 2020, the Polish Financial Supervisory Authority (PFSA) published the “Supervisory Incentive Package for Security and Development” as an unprecedented set of measures to strengthen the resilience of the banking sector and options for financing the economy. The measures are aimed at achieving a balance between ensuring appropriate indicators of stability of the financial system (in particular, the banking sector) and maintaining and supporting economic activity (in particular, maintaining loans to enterprises).

These measures yielded positive results – the Polish economy suffered less losses than the EU and V4 countries (Table 1.13).

In the summer of 2021, the European Economic Forecast was published, stating that the European economy will recover faster than previously expected, as activity in the first quarter of the year exceeded expectations, and improved health led to faster easing of restrictions to combat the pandemic in the second quarter.

According to this forecast, the economy of the EU and the euro area should grow by 4.8% in 2021 and 4.5% in 2022. Real GDP is projected to return to its pre-crisis level in the last quarter of 2021 in both the EU and the euro area.

Table 1.13 data show that GDP in V4 countries declined less than in the EU-27 and euro area countries. The recovery of economic growth is also quite high, only for Slovakia it is projected to grow in 2021 by 3.9%, which will not allow the country to reach the level of 2019 by the end of 2021.

Table 1.13

Percentage changes in real GDP of the EU-27, the euro area and the Visegrad Four countries, %

	Average for 5 years	2017	2018	2019	2020	Summer forecast 2021	
	2012-16					2021	2022
<i>EU - 27</i>	<i>1.0</i>	<i>2.8</i>	<i>2.1</i>	<i>1.6</i>	<i>-6.0</i>	<i>4.8</i>	<i>4.5</i>
<i>Euro area</i>	<i>0.8</i>	<i>2.6</i>	<i>1.9</i>	<i>1.4</i>	<i>-6.5</i>	<i>4.8</i>	<i>4.5</i>
Slovakia	2.4	3.0	3.7	2.5	-4.8	4.9	5.3
Czechia	1.9	5.2	3.2	2.3	-5.6	3.9	4.5
Hungary	2.1	4.3	5.4	4.6	-5.0	6.3	5.0
Poland	2.6	4.8	5.4	4.7	-2.7	4.8	5.2

Source: European Economic Forecast. Summer 2021. European Commission's. Institutional Paper 156. July 2021.

The COVID-19 pandemic forced EU countries to violate fiscal rules regarding the state budget deficit and the ratio of gross public sector debt to GDP, as shown in Table 1.14. Thus, the budget deficits of the EU-27 and the Eurozone increased from 0.5 and 0.6 % in 2019 to 6.9 and 7.2%, respectively, or more than 10 times. The Czech Republic and Slovakia increased their deficits to 6.2%, and Poland and Hungary – to 7.0 and 8.1%, respectively. If until 2020 only Hungary had a gross public sector debt of more than 60%, in 2020 this figure was exceeded for Slovakia, was approached by Poland, and only for Slovakia did not reach a critical value.

This deterioration reflects the performance of automatic stabilizers and the significant discretionary fiscal measures used to mitigate households and firms from the negative effects of the COVID-19 pandemic.

Regarding the forecast situation in the Visegrad Group countries, the following should be noted ¹¹.

Table 1.14

Dynamics of the state budget deficit and the ratio of gross debt of the public sector and GDP in 2017-2020, %

	2017	2018	2019	2020
Deficit (-) and surplus (+) of the state budget of the EU-27, euro area and V4, % of GDP				
<i>EU - 27</i>	<i>-0.8</i>	<i>-0.4</i>	<i>-0.5</i>	<i>-6.9</i>
<i>Euro area</i>	<i>-0.9</i>	<i>-0.5</i>	<i>-0.6</i>	<i>-7.2</i>
Slovakia	-1.0	-1.0	-1.3	-6.2
Czechia	1.5	0.9	0.3	-6.2
Hungary	-2.4	-2.1	-2.1	-8.1
Poland	-1.5	-0.2	-0.7	-7.0
Gross debt of the public sector of the EU-27, euro area and V4, % of GDP				
<i>EU - 27</i>	<i>81.5</i>	<i>79.5</i>	<i>77.5</i>	<i>90.7</i>
<i>Euro area</i>	<i>87.7</i>	<i>85.7</i>	<i>83.9</i>	<i>98.0</i>
Slovakia	51.5	49.6	48.2	60.6
Czechia	34.2	32.1	30.3	38.1
Hungary	72.2	69.1	65.5	80.4
Poland	50.6	48.8	45.6	57.5

Source: Euro Area Government Deficit at 7.2% and EU at 6.9% of GDP. Eurostat Press Office. 48/2021 - 22 April 2021.

Slovakia. After declining by 2% in the first quarter of this year compared to the same quarter of 2020 due to long-term constraints related to the pandemic, real GDP in Slovakia is expected to recover by 2.0% in the second quarter and by 3.3% in the third. Year-on-year, economic activity is projected to grow by 4.9% in 2021, slightly higher than forecast in the spring. The Slovak economy is expected to reach its pre-pandemic level in the third quarter of 2021 and continue to grow at an annual rate of 5.3% in 2022.

The improvement in the economy allowed for a significant easing of containment measures in the second quarter, which should help restore domestic spending. Continuous improvements in services, retail and construction indicate that domestic demand has entered a steady recovery in the second quarter and should continue to grow in the coming months. Further implementation of the Recovery and Sustainability Plan aims to strengthen private and public investment, which will further contribute to recovery. After growing in the second half of the year, annual inflation is expected to be 2.1% in 2021. Despite the projected

¹¹ European Economic Forecast. Summer 2021. European Commission's. Institutional Paper 156. July 2021

slowdown in quarterly dynamics from the beginning of 2022, annual inflation in 2022 is projected to remain at 2.2%.

The Czech Republic. The strong second wave of the pandemic and related containment measures caused further economic downturns in the first months of 2021, leading to a 0.3% decline in GDP in the first quarter. Household consumption declined somewhat and, together with the decline in government consumption, became the most important negative factor in the decline in economic activity. On the contrary, investment expenditures unexpectedly gave a positive result due to growth of 1.6% compared to the previous quarter. The development of external demand remained favourable, but the total contribution of net exports was lower compared to the previous quarter mainly due to increased imports.

The Czech economy has been recovering since the second half of April. The positive development of the health care situation and the growth of external demand are reflected in the sentiment indicators for both households and enterprises. Private consumption is expected to remain the main driver of the Czech economy's recovery over the forecast horizon, reflecting a stable labour market situation.

The country's recovery and resilience plan also aims to strengthen private and public investment and thus accelerate economic recovery. In 2022, GDP growth will be supported by a new cycle of EU funding. Overall, GDP growth is projected at 3.9% in 2021 and 4.5% in 2022. By the end of the forecast horizon, the Czech Republic's economic growth is expected to reach its potential level.

Hungary. Hungary's economy continued to recover from the economic turmoil in early 2021. Real GDP in the first quarter of 2021 grew by 2% compared to the previous quarter. Recent economic indicators suggest that the recovery may have stalled in the second quarter, in part due to persistent supply chain disruptions affecting the automotive industry. Recovery is expected in the second half of the year as the pandemic declines. Growth should occur due to the gradual recovery of consumer demand for services, high investment activity supported by EU funds and adaptive tax policy. Exports should also make a significant contribution due to the favourable external environment and the expected revival of tourism within the EU.

Annual GDP growth is projected at 6.3% in 2021 and 5.0% in 2022. This is a more positive profile of economic recovery than forecast in the spring. The revision shows data for the first quarter, which show a milder impact of health restrictions on economic activity. The positive risks to the forecast stem from the

potential introduction of additional incentives, including the proposed personal income tax refund for families with children before the 2022 elections.

Labour market signals are more ambiguous. In the first quarter of 2021, seasonally adjusted employment remained 1.1% below its level before the pandemic (in the last quarter of 2019). Vacancy statistics do not yet show a strong recovery in aggregate demand for labour. Monthly data also point to a slight slowdown in private sector wage growth in the first quarter of 2021.

The inflation rate increased by 5.3% in May 2021 due to rising fuel prices and the recent increase in excise duty. Overall, inflation is projected at 4.4% in 2021 and 3.3% in 2022.

Poland. After a moderate decline in economic activity at the end of 2020, Poland started 2021 on a positive note. Real GDP in the first quarter of 2021 grew by 1.1% compared to the previous quarter due to support for the recovery of Poland's main trading partners and increased confidence in business and households. The sudden jump in investment in equipment in the manufacturing sector increased investment activity by more than 18% in the quarter. Private consumption has benefited from increased cost opportunities and the stable labour market.

The recovery is expected to pick up in the second and third quarters as economic restrictions are being gradually lifted. Private consumption should be supported by growing consumer confidence and the cost of accumulated household savings, which should stimulate consumption growth over the forecast horizon. Private investment is expected to remain dynamic amid improved business sentiment, investment in the context of the Recovery and Sustainability Fund, and low borrowing costs, which are also likely to support recovery in the construction sector. As for foreign trade, both exports and imports are expected to recover significantly in 2021 and 2022. However, after a sharp decline in 2020, imports will grow faster than exports, leading to a negative contribution of net trade to GDP growth in 2021 and, to a lesser extent, in 2022.

Overall, real GDP growth is expected to reach 4.8% in 2021 and 5.2% in 2022. Inflation rose substantially in the first half of 2021, driven by rising energy prices, supply disruptions and rising production costs for both industrial goods and services. Further inflationary pressure is expected to emerge in the coming months as accumulated demand and investment develop in the context of the recovery and resilience mechanism, which will give additional impetus to the economy. As a result, inflation is expected to reach 4% in 2021 and remain at 3.1% in 2022.

Conclusions

The Visegrad Four countries have been quite successful in adapting to the conditions of membership in the European Union both during the period of candidate status and since 2004. This is evidenced by the dynamics of GDP growth, the achievement of the Maastricht criteria on the public finance, and so on. The main feature of ensuring the stability of financial systems of V4 countries is available in the European Union: a well-established system of decision-making to prevent financial crises, an effective system of institutions for supervising the stability of supranational and national financial systems (banking systems, financial markets, budgets, etc.), transparent mechanisms for formation and distribution of financial resources of the Joint Budget, and credit support of national budgets by the ECB.

In addition, special institutions and supervisory bodies have been established in each country, which are subordinated to supranational structures responsible for ensuring financial stability.

This contributed to the rapid transition of national economies to the stage of restoring the positive dynamics of economic growth after the acute phase of the financial and economic crisis caused by the COVID-19 pandemic.

References

- Development of EU Financial Institutions and Challenges for Financial Policy of Ukraine: monograph / [Borzenko O.O., Bogdan T.P., Sharov O.M., etc.] ; NAS of Ukraine, SI "Inst. of Economics and Forecasting. NAS of Ukraine". – Electron. resource. – K., 2019. - 372 p.
- Panfilova T. Convergence and Divergence of the Sphere of Public Finances of EU Member States and Ukraine. *Ekon. Ukr.*2020. № 7. pp. 108–120.
- Komissarova Zh.N., Sergeev E.A. Excessive Budget Deficit Procedure in the Visegrad Countries. *RUDN Newsletter. Series: Economics.* 2018. V. 26. № 2. p. 246 – 257.
- Unemployment statistics and beyond. Eurostat. URL: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Unemployment_statistics_and_beyond
- Social protection statistics – overview. Data extracted in September 2020. Eurostat. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Social_protection_statistics_-_overview
- Policy Tracker. IMF. URL: <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>.
- 2020 European Semester: National Reform Programmes and Stability/Convergence Programmes. URL: https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/european-semester/european-semester-timeline/national-reform-programmes-and-stability-convergence-programmes/2020-european-semester_en
- Krajowy Program Reform. Europe 2020. [National Reform Programme | Europe 2020]. Republic of Poland, Update of 2020/2021. Approved by the Council of Ministers on 28 April 2020
- European Economic Forecast. Summer 2021. European Commission's. Institutional Paper 156. July 2021

CHAPTER 2

The economy of the Visegrad Four as an integrated association of states

1. Macroeconomic processes in the Visegrad Four countries

The economy of the Visegrad Four is the common economy of all the member states. In the course of its assessment, it can be considered this association as a single nation-state. From this point of view, the group's GDP will rank 4th in the EU, 5th in Europe and 15th in the world (Visegrad Group). At the same time, unlike the nation-states, the national economies of the V4 are not a common subsystem like the economies of the autonomous republics of the Russian Federation or the union republics in the former Soviet Union. In other words, the economy of each V4 member state is a completely open system that functions in the international division of labour within the group, in the European Union and in the world as an independent and a self-sufficient mechanism.

Table 2.1

GDP (PPP) of the Visegrad Four and Ukraine

Country/Economy	GDP (PPP) (billion USD)				Share, %
	2019	Rank	2020	Rank	
Czech Republic	454.406	47	434.364	47	0.330
Hungary	335.482	54	322.698	54	0.245
Poland	1,314.780	20	1,294.480	20	0.983
Slovak Republic	186.063	72	178.526	71	0.136
Ukraine	560.976	40	543.828	40	0.413

Source: IMF. List of Countries by GDP (PPP). <http://statisticstimes.com/economy/countries-by-gdp-ppp.php>

Taken separately, V4 member states also occupy relatively high positions in the world ranking in terms of total GDP. Among them, the highest volume of GDP is produced by Poland, which ranks 20th in the world by this indicator, slightly lower are the Czech Republic (47) and Hungary (54), with the lowest ranking belonging to the Slovak Republic (72) (Table 2.1).

Table 2.2

Country/Economy	Nominal GDP per capita (\$)				
	2020		2021 forecast		
	2020	Rank	2021	Rank	Share of global GDP, %
Czech Republic	22579	38	25732	38	212
Hungary	15820	48	18079	48	149
Slovakia	19071	45	21529	45	177
Poland	15654	50	16250	49	139

This trend generally persists in the case of conversion of nominal GDP on the basis of purchasing power parity into international dollars (Table 2.2, Table 2.3). However, in this assessment, the rating positions of countries do not differ much. For example, in 2020, the Czech Republic, Poland, Hungary and Slovakia had the ranking of 34, 41, 45, 46, respectively. This indicates that the V4 member states are at about the same level of development, which is the economic basis for equal cooperation in the integrational context.

Table 2.3

Country/Economy	GDP (PPP) per capita (USD)				
	2020		2021 forecast		
	2020	Rank	2021	Rank	Share of global GDP, %
Czech Republic	40618	34	42956	33	234
Hungary	33030	45	35088	44	191
Slovakia	32710	46	34815	45	189
Poland	34103	41	35957	42	196

Source: List of Countries by Projector GDP per capita. <https://statisticstimes.com/economy/countries-by-projected-gdp-capita.php>

A characteristic feature of V4 GDP development is that its countries significantly exceed the average level of GDP per capita in the world economy. In terms of nominal GDP per capita, this excess ranged from 139% to 212%; in terms of GDP (PPP) per capita – from 189% to 234% (Table 2.2 and Table 2.3). This can be seen as a form of economic leadership which is inherent to each V4 country.

The place occupied by V4 and its member countries in the world economy forms the motivation for expanding and deepening international economic relations through joint coordination. Within the EU, V4 countries are supporters of nuclear energy. Contrary to the position of Germany and other Western European countries that are developing nuclear coagulation programs, V4 sees such a transformation as a prejudice against nuclear energy in the EU. V4 countries hold the view that they will benefit from nuclear energy.

Table 2.4

International trade of V4 goods in 2020 in million euros

	Export	Import	Trade balance
Czech Republic	167,635.5	149,230.3	18,403.2
Hungary	105,136.7	100,860.3	4,276.3
Poland	236,841.7	224,813.8	12,028.0
Slovakia	75,748.8	73,871.8	1,877.2
V4	585,362.7	548,776.2	36,584.7

Source: Eurostat. International trade of EU, the euro area and the Member States by SITC product group. <https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do>

The economy of V4 countries is export-oriented. In 2020, exports of V4 countries amounted to 585.4 billion euros, imports – 548.8 billion euros with a positive trade balance of 36.6 billion euros (Table 4).

As for the whole of Europe, 2020 was unusual due to the epidemiological situation provoked by the coronavirus. This prompted budget restructuring and the development of plans to prevent a sharp economic downturn. At the same time, it has become an important stage in the economic transformation associated with the completion of the EU's Europe 2020 strategic program. For V4, this has resulted in an increase in competitiveness and development of an inclusive, stable and smart economy.

Over the last decade, V4 has successfully addressed economic convergence, building on macroeconomic stability. However, in order to overcome crises and maintain the pace of convergence, it is necessary to strengthen enterprises, maintain the level of investment and continue to accumulate capital in both physical infrastructure and human resources. In addition, the group has developed a policy that strengthens the resilience of enterprises, enhances their productivity and international competitiveness, and supports the introduction of new technologies and the development of existing ones.

After the financial crisis of 2008, the V4 countries tried to stabilize the basic fundamentals of the economy, which allowed them to return to dynamic economic growth as early as 2013. This placed them among the countries of the European

Union with the highest rates of economic growth. Compared to the post-socialist years of the transformation, economic recovery was supported by healthy and balanced mechanisms. Industry, construction and services developed dynamically under the conditions of creating a competitive business environment, favourable taxation and investment climate. We should also note the increase in wages, which coincided with an increase in business profits, which led to record high levels of employment that did not undermine the competitiveness of enterprises.

V4 countries have relatively diverse economies. According to the Economic Complexity Index (product and country) in 2018, the Czech Republic ranked 6th, Hungary – 10th, Slovakia – 14th, and Poland – 27th (Economic complexity legacy, 2018). This testifies to the accumulation of productive knowledge and its use in complex industries and sectors.

The Visegrad Four countries have a tendency to develop similarities both in the general historical context and in the economic dimension. This is largely evident in the manufacturing sector. First of all, all members of the group are able to maximize the competitive advantages of the territorial factor associated with the Central European location. Having developed European countries as neighbours, they have created a favourable business environment to attract investment from these countries. Due to the delay in reforms in the Eastern European neighbouring countries, their free resources were also engaged (primarily in the labour market).

2. Development of the real economy

A comparison of the development of V4 production sector suggests that each member of the group has chosen national resources and traditions as the basis of the transition to market conditions. However, at the same time they focused significant resources on new sectors that make up the knowledge economy in the globalized world. This strategy, bringing together all V4 countries, forms their model of development as a group model, through which the group can obtain a significant synergistic effect.

To analyse the industrial development of V4, we have identified industries that provide production of more than 10.0 billion euros. According to this criterion, Poland and the Czech Republic stand out with 12 and 8 such industries, respectively. Slovakia and Hungary are developing 2 and 1 industries worth tens of billions, respectively. In both the Czech Republic and Slovakia, production of motor vehicles, trailers and semi-trailers is the top industry, with volumes of 50092.9 and 14377.9 million euro respectively. In Poland, the contribution of this industry is 36652.1 million euro and it ranks second in the structure of national

production sector. At the same time, the top industry of Poland is the manufacture of food products, the volume of which reached 53425.5 million euro, exceeding the achievements of any other V4 member country. In Hungary, only one industry managed to exceed the ten billion mark - the production of computer, electronic and optical products with a volume of 11995.9 million euro. The Czech Republic is also actively developing this industry. Although it ranks 5th in the structure the Czech economy, the production volume amounts to 14,114.1 million euro, which is more than Hungary's indicator.

In most manufacturing industries, the competition (in terms of figures) in the V4 is mainly between the Czech Republic and Poland. For instance, electricity, gas, steam and air conditioning supply ranks 2nd with 40535.7 million euro in the structure of the Czech production sector, while in Poland it is 3rd with 28895.6 million euro; production of fabricated metal products, except machinery and equipment is in the 3rd position with a volume of 15331.4 million euro in the Czech Republic, while in Poland it is ranked 4th, but is worth almost twice as much (27789.4 million euro). Meanwhile, production of machinery and equipment is the 4th biggest manufacturing industry in the Czech Republic and amounts to 14547.1 million euro, which exceeds the indicator of Poland by 9.5% (13282.5 million euro), where the corresponding industry is ranked 11th.

Table 2.5

**Czech manufacturing industries,
whose production exceeded 10.0 billion euro in 2018**

Production sector rank	Types of economic activity according to the EU classification (NACE)	Production volume, million euro
1	Manufacture of motor vehicles, trailers and semi-trailers	50092,9
2	Electricity, gas, steam and air conditioning supply	40535,7
3	Manufacture of fabricated metal products, except machinery and equipment	15331,4
4	Manufacture of machinery and equipment n.e.c.	14547,1
5	Manufacture of computer, electronic and optical products	14114,1
6	Manufacture of electrical equipment	12205,1
7	Manufacture of rubber and plastic products	11422,2
8	Manufacture of chemicals and chemical products	10909,4
9	Manufacture of food products	10198,1
Total		179356,0

In general, the Czech Republic and Poland are developing mostly in step in terms of the manufacturing sector. The most important industries in the structure of manufacturing have similar positions, although there is a difference between the

countries in terms of production volumes, which can be largely explained by the resource endowment of countries, especially in terms of territory and human capital. In our sample, the production of Poland is 271199.2 million euro, the Czech Republic - 179356.6 million euro; Polish leading industries produce 51.2% more than their Czech counterparts. Poland has four more industries that produce more than 10.0 billion euro than its neighbours, namely the production of coke and refined petroleum products; production of chemicals and chemical products; production of basic metals; production of other non-metallic mineral products; and furniture production. Notably, the Czech Republic and Slovakia have no production of coke and oil products at all. Other industries that Poland has in smaller volumes are also present in the Czech Republic (Table 2.5, Table 2.6, Table 2.7, Table 2.8).

Table 2.6

**Hungarian manufacturing industries,
whose production exceeded 10.0 billion euro in 2018**

Production sector rank	Types of economic activity according to the EU classification (NACE)	Production volume, million euro
1.	Manufacture of computer, electronic and optical products	11995,9

Table 2.7

**Polish manufacturing industries,
whose production exceeded 10.0 billion euro in 2018**

Production sector rank	Types of economic activity according to the EU classification (NACE)	Production volume, million euro
1	Manufacture of food products	53425,5
2	Manufacture of motor vehicles, trailers and semi-trailers	36652,1
3	Electricity, gas, steam and air conditioning supply	28895,6
4	Manufacture of fabricated metal products, except machinery and equipment	27789,4
5	Manufacture of rubber and plastic products	22790,0
6	Manufacture of coke and refined petroleum products	17591,7
7	Manufacture of chemicals and chemical products	15407,6
8	Manufacture of basic metals	14519,9
9	Manufacture of electrical equipment	14916,6
10	Manufacture of other non-metallic mineral products	14377,9
11	Manufacture of machinery and equipment n.e.c.	13282,5
12	Manufacture of furniture	11550,4
Total		271199,2

Table 2.8

**Slovakian manufacturing industries,
whose production exceeded 10.0 billion euro in 2018**

Production sector rank	Types of economic activity according to the EU classification (NACE)	Production volume, million euro
1	Manufacture of motor vehicles, trailers and semi-trailers	29892,1
2	Electricity, gas, steam and air conditioning supply	10450,7
	Total	40342,8

The automotive industry plays an important role in the economic development of V4, despite the fact that CEE has historically begun the process of industrialization. In the first half of the twentieth century, the Czech Republic and Poland had significant production capacity, but Hungary and Slovakia had low industrial output and low employment. At that same time, the pace of industrialization was high throughout Europe, which pushed agriculture to the background and prompted the recognition of manufacturing as the priority sector. In Western Europe, the automotive industry was one of the key sectors of industrialization, the development of which became a priority in individual national economies. The First and Second World Wars became a factor in the development of this industry, as it was geared toward satisfying the needs of military. However, after World War II, motor vehicle manufacturing began to focus mainly on the needs of the population and the private sector.

The peculiarity of industrialization at the turn of the century in the CEE region was that industrial centres specialized in heavy industry, textiles, mining, and the demand for vehicles was met mainly through imports (Lefilleur 2008). Instead, in the second half of the twentieth century, in the automotive industries of the socialist countries initially gave priority to the production of cars based on Western licenses, which was later improved. In addition, sales were aimed at meeting domestic demand, and exports were periodical and small in volume. This led to a growing lag in the development of the automotive industry (Lung 2004).

After the change of the communist regime and due to the transition to market conditions, the development of the motor vehicle industry of Central European countries lost its market, and its development at the expense of domestic sources without foreign investment became impossible. Gradually, foreign capital began to enter their markets, including from companies that were present on the market before, which allowed them to use existing industrial structures capable of adapting production technologies to new conditions; this became the basis for the revival of automotive regions and their development (Lux 2010). Table 2.9

presents the century of CEE motor vehicle manufacturers and their brands. They have played an important role in reviving the automotive industry of V4 and acted as the foundation for the modernized production sector and the use of human capital in the context of knowledge and industrial traditions.

Table 2.9

Socialist motor vehicle companies in the CEE region

The Czech Republic	Mlada Boleslav	Skoda
	Kvasiny	Skoda
	Liberec	Liaz
	Koprivnicka	Tatra
	Prága	Gottwaldov
Slovakia	Povazska Bystrica	Povazske Strojarne
Poland	Varsó	FSO
	Sanok	Autosan
	Bielsko Biala	FSM
	Jelcz-Laskowice	Jelcz
	Lublin	FSC
Hungary	Tychy	Polski Fiat
	Győr	Rába
	Szentgotthárd	Rába
	Székesfehérvár	Ikarusz

Source: Rechnitzer J., Hausmann R., Tóth T. (2017). A magyar autóipar helyzete nemzetközi tükrökben. Hitelintézeteti Szemle, 16. évf. 1. szám, 2017. március, 119–142. URL: <https://hitelintezetiszemle.mnb.hu/letoltes/rechnitzer-janos-hausmann-robert-toth-tamas.pdf>

Thus, the revival of the automobile industry in Central and Eastern Europe, which democratic governments inherited as a declining communist legacy, made it possible to create a kind of specialized production centre of the world car production network. The transition to a market economy, democratic social infrastructure, cheap labour, long national experience in the motor vehicle industry are the factors that led to successful change. Subsequently, subsidiaries of Western European car manufacturers were established in the region. Finally, the Visegrad Four is now represented by 30 automobile manufacturers: 15 in Poland, 8 in the Czech Republic, 4 in Hungary and 3 in Slovakia (Table 2.10). Their network can be considered as a territorial concentration of the industry due to the proximity of markets and networks of producers and suppliers.

The automotive industry in V4 is developing in times of a global transformation of the sector market. Shifts have occurred in the direction from Europe and North America to developing regions, China and the BRICS countries foremost (Table 2.11).

Table 2.10

Automotive centres of the Visegrad Four

	Location	Producer	Brand
The Czech Republic	Jablonec	Tedom	Tedom
	Kolin	TPCA	Toyota, Peugeot, Citroën
	Koprivnice	Tatra	Tatra
	Kvasiny	Volkswagen	Skoda
	Libchavy	SOR	SOR
	Mlada Boleslav	Volkswagen	Skoda
	Nosovice	Hyundai	Hyundai
	Vysoké Myto	Iveco	Iveco
Hungary	Esztergom	Suzuki	Suzuki
	Győr	Volkswagen	Audi
	Kecskemét	Daimler	Mercedes-Benz
	Szentgotthárd	Opel	Opel
Poland	Bielsko-Biala	FCA	Fiat, Lancia, Alfa Romeo
	Bolechow (Poznan)	Solaris	Solaris
	Gliwice	Opel	Opel/Vauxhall
	Gliwice	Toyota	Toyota
	Niepolomice (Krakow)	Volkswagen	MAN
	Polkowice	Volkswagen	Volkswagen
	Poznan	Volkswagen	MAN
	Poznan	Volkswagen	Volkswagen
	Slupsk	Volkswagen	Scania
	Starachowice	Volkswagen	MAN, Neoplan
	Tychy	FCA	Fiat, Lancia, Ford
	Tychy	Opel	Opel/Vauxhall
	Walbrzych	Toyota	Toyota
	Wroclaw	Volvo	Volvo
Wroclaw	Jelcz	Jelcz	
Slovakia	Bratislava	Volkswagen	Volkswagen, Audi, Porsche, Skoda, Seat
	Trnava	PSA	Peugeot, Citroën
	Zilina	Hyundai	Kia

Source: Rechnitzer J., Hausmann R., Tóth T. (2017). A magyar autópár helyzete nemzetközi tükörben. Hítelintézeti Szemle, 16. évf. 1. szám, 2017. március, 119–142. URL: <https://hitelintezetiszemle.mnb.hu/letoltes/rechnitzer-janos-hausmann-robot-toth-tamas.pdf>

This is accompanied by outsourcing, cost optimization through globalization and deepening the international division of labour, as well as acquisitions.

Table 2.11

Comparison of V4 manufacturing of final products in the geoeconomic space
(as of 2005)

	Volume	
	In thousand	In % of the EU
The Czech Republic	1303	7,2
Poland	660	3,6
Hungary	495	2,7
Slovakia	1000	5,5
V4	3458	19,0
Germany	6033	33,2
EU	18177	100
World	90780	

Source: Rechnitzer J., Hausmann R., Tóth T. (2017). A magyar autóipar helyzete nemzetközi tükörben. Hitelintézetési Szemle, 16. évf. 1. szám, 2017. március, 119–142. URL: <https://hitelintezetiszemle.mnb.hu/letoltes/rechnitzer-janos-hausmann-robot-toth-tamas.pdf>

The share of V4 in the production of EU cars is 19.0%, of which the Czech Republic accounts for 7.2%, Poland - 3.6%, Hungary - 2.7% and Slovakia - 5.5%. The European leader is Germany. Its share in the EU automotive industry is 14.2% more than that of V4. Despite the fact that all V4 countries have progressed in the production of vehicles in recent decades, each member of the group has its own peculiarities of development. In particular, Hungary is a leader in innovation, Poland managed to better emerge from the crisis of 2008-2009, and the Czech Republic remained the most important player in the industry. Austria is an important competitor to V4 in the region, as it is more successful in creating added value. In general, the economic policy of V4 automakers can be divided into four types depending on national conditions and business environment (Table 2.12).

Table 2.12

Classification of automotive locations

	Level 1	Level 2	Level 3	Level 4
Strategy direction	Proximity to markets, corporate competitive advantages	Proximity to markets, corporate competitive advantages	Cost reduction, rationalization, efficiency	Market coverage
Volume	High	High	High	Low
Salary	High	High	Low	Low
Development	Active	Intermittent	Lacking	Lacking
Integration	High	High	Moderate	Low
Industry foundation	High	Moderately high	Moderate	Low
Exports	Low (excepting Japan)	Low	High	Low

In general, the V4 automotive sector lags behind the EU as a whole in terms of labour productivity, with the exception of Hungary. This fact indicates the need for new investment and reinvestment. At the same time, Hungary's advantage indicates that its industrial structure is too concentrated and should be diversified so that in the event of a possible shock in the automotive industry, the economy will remain competitive without large losses. According to the statistics of 2018, this is how the subordination of economic activities can be represented by sampling volumes in the amount of more than 10 billion euro.

3. National features of economic development

Polish economy is the largest among the V4 countries. It is characterized as an industrial economy with a developed market. The Polish economy is the only one in the EU that has managed to avoid a recession due to the economic downturn of 2007-2008 and as of 2020 it has been growing steadily for 29 years. This is estimated as a record achievement, which only Australia has surpassed. Poland has a relatively diverse economy. Poland's most popular products in high demand on the world market are machinery, electronic equipment, vehicles, furniture and plastics, food, metal products, chemicals, beverages, tobacco, textiles and clothing.

Poland is relatively well endowed with natural resources. The main mineral asset is bituminous coal, although brown coal is also mined. Upper Silesia mainly specializes in bituminous coal mining. Among other fuel resources, Poland has small oil reserves and moderate amounts of natural gas.

The second most important mineral in Poland is sulphur, the volume of which places the country among the world leaders. Other non-metallic minerals whose mining affects the economic development of Poland are barite, salt, kaolin, limestone, chalk, gypsum and marble, metal ores (zinc, copper and silver). Thermal installations operating mainly on bituminous and lignite supply almost nine tenths of Poland's energy sector.

In the field of agriculture, Poland is one of the world's leading producers of rye and potatoes (specialized regions: Lower Silesia, Kuyavia, the Vistula Delta and the Lublin region). Cattle, dairy cows and pigs are common in all regions of Poland.

The second largest economy in the Visegrad Four is the Czech Republic. Its GDP in 2020 was 434.4 billion USD. Structurally, it breaks down to 37.5% product sector, 60% services and 2.5% agriculture.

In the manufacturing sector of the Czech Republic, the main industries are high-tech engineering, electronics, steel production, transport equipment

(automotive, railway and aerospace), chemical industry, modern materials and pharmaceuticals. The main types of services include research and development, development of information and computer technologies and software, nanotechnology and life sciences. The country's agriculture is represented by grain crops, oil and hops.

Among the “special achievements” of the Czech Republic is being ranked second after Denmark among OECD countries with low poverty. In addition, the Czech healthcare system is 13th best as per the Euro Healthcare Consumer Index. Several priority areas for structural reforms have been developed in view of the peculiarities of economic development in the country. These include deepening the flexibility and inclusiveness of the labour market, increasing investment in R&D and improving the business environment in the field of digitalization, ensuring continued green growth, reforming the pension system and promoting the continuation of working life; improving the efficiency of the public sector by consolidating local government services (Czech Republic economic snapshot, 2021).

The competitive advantages of the Czech Republic include the geographical location in the centre of the developed European industry, which is viewed as the basis for the developing integration into international production chains, especially German ones. At the same time, it has historically had significant industrial potential, creating a favourable climate for FDI. The attractiveness of the Czech Republic among the countries of Central Europe is also enhanced by the reliability of government accounts and the banking system.

Despite successful economic development based on the use of competitive advantages, the Czech Republic has certain weaknesses. First of all, it is worth focusing on the country's export orientation. With 80% share of exports in GDP, the Czech Republic depends mainly on European demand. Today, 64% of its exports are to the Eurozone and a third to Germany. The country's production is organized in such a way that a high share of the final export product belongs to foreign industrial products, which causes a low level of local value added. In addition, there is a one-sided specialization in the automotive industry, which in the face of rapid growth in demand for electric cars creates threats of crisis and even bankruptcy. In addition to these considerations, the prospects of economic development also have a negative factor in the aging population and shortage of skilled labour.

Hungary, the third largest economy in the Visegrad Four, has developed successfully thanks to a successful FDI policy. Their volume since 1989 has reached about 18 billion dollars. This accounts for more than a third of all foreign

investment in Central and Eastern Europe, including the former Soviet Union. About \$6 billion of the attracted FDI come from investors from the United States. Today, Hungary is developing as an industrial and agricultural country, whose main industries are mechanical engineering (including the production of cars and buses), chemical, electrical, textile and food industries. At the same time, the largest share of GDP is generated by the services sector (64% according to 2007 statistics), and its share is steadily growing.

The structure of Hungarian manufacturing sector is quite diverse. It is comprised of the food industry, pharmaceuticals, automotive, information technology, chemical industries, metallurgy, electrical goods, food industries and tourism. Hungary is the largest producer of electronics in Central and Eastern Europe. Over the last twenty years, Hungary has developed into a major centre for mobile technology and information security. The country's main trading partners are Germany, Austria, Romania, Slovakia, France, Italy, Poland and the Czech Republic.

A significant role in the Hungarian economy is played by the economy of the political capital Budapest, which in recent decades has also turned into a financial and business capital. It is now classified as an Alpha-world city. In Europe, Budapest is the second fastest growing city, producing 39% of the country's GDP. In the EIU's global competitiveness ranking, it ranks higher than Tel Aviv, Lisbon, Moscow and Johannesburg.

In general, the Hungarian economy can be considered post-industrial, as evidenced by the structure of employment. Currently, 63.1% of population are employed in the service sector, 29.7% - in manufacturing, and 7.1% - in agriculture (Economy of Hungary).

Hungary's geographical location is an important factor in the development of the automotive industry. Large investments in automotive industry came to Hungary in part due to the Central European headquarters of General Motors (Szentgotthárd), Magyar Suzuki (Esztergom), Mercedes-Benz (Kecskemét) and Audi (Győr plant). The country's automotive sector has 350 component companies, which have created more than 90,000 jobs. Audi has invested 3.3 billion USD in building an engine plant in Győr, which is the largest of its kind in Europe and the third largest in the world.

In Hungary, it is traditionally believed that the country has sufficient prerequisites to become an agricultural state. The country's international competitiveness is determined by the high share of arable land, which is 46% of territory and is the second in Europe only to Denmark. In addition, arable land in many places is high-quality field soils, which is considered the most important

natural treasure of Hungary. However, in the 21st century, the soil alone is not enough for successful production in the agricultural sector. Therefore, the country's policy takes into account the expediency of broad participation in international distribution and cooperation in order to solve the range of problems related to the provision of food to the population.

Well-known Hungarian brand chocolate factories (Boci, Balaton) were sold to foreign companies, which transferred the production of some products to their factories. Meanwhile, other Hungarian products, such as Cherry Queen, have become market leaders in the Benelux countries. Today, the food industry plays an important role in Hungary's foreign trade, employment and rural development. At the same time, preference is given not to self-sufficiency, but to competitiveness and quality of production.

The development of Hungary's food economy has intensified since the mid-20th century. The country began to expand the use of mechanization and fertilizers, which prompted an increase in crop yields and the creation of new enterprises. One third of the products were exported. In the 1960s, technological development slowed down, costs increased, and the role of the sector began to decline. The transition to a market economy was complicated by the insolvency of Eastern European markets. At the same time, in the context of privatization, most farmers did not receive enough land to make a living, they did not have enough income to use modern machinery and technology.

The situation has changed for the Hungarian agricultural economy since the country joined the EU in 2005. With entry into the European market, farmers were given the opportunity to apply for subsidies for agriculture. On the other hand, the requirements for strict quality standards and competitive prices increased, taking into account the needs of healthy eating (for example, producing organic food that is not genetically modified). At the same time, adaptation to the Western European market required the development of a strategy for competing with capital-intensive foreign companies offering cheap products on the Hungarian market.

Table 2.13

The main cultivated plants of the agricultural sector of Hungary

Cereals	wheat, corn, barley, rye, rice
Industrial plants	sunflower, sugar beet, soybean, rapeseed, tobacco
Fodder plants	alfalfa, oats, red clover, corn for silage
Fruits	peaches, apricots, apples, grapes, currants, plums
Vegetables	potatoes, green and hot peppers, tomatoes, onions, beans

Source: Gazdasági élet Magyarországon. URL: https://www.nkp.hu/tankonyv/foldrajz_8/lecke_03_003

The main cultivated plants of the Hungarian land are cereals. About half of them are wheat and corn, which are important exports. Hungarian vegetables have the reputation of unique taste. The most famous are Kalocsa and Szeged paprika regions and onions of the Makó region. Historical wine-growing regions have developed on the southern sunny slopes of the central mountains and hills. About one-fifth of the wine is exported (Gazdasági élet, 2020).

Cattle feed and grain for pigs and livestock are cultivated near their farms. In animal husbandry, the transition to productive breeds with higher milk and meat yields happened gradually in the 20th century. Hungary managed to restore the competitiveness of its brands thanks to meat better for health and fat content (Table 2.13, Fig. 2.1; Fig. 2.2; Fig. 2.3).



Fig. 2.1. Production areas and the most important characteristics of Hungarian cereals

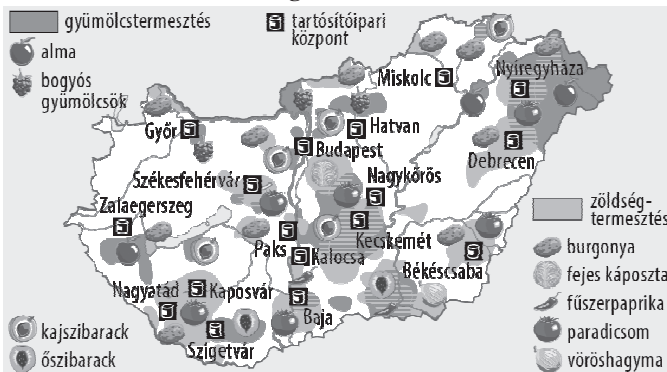
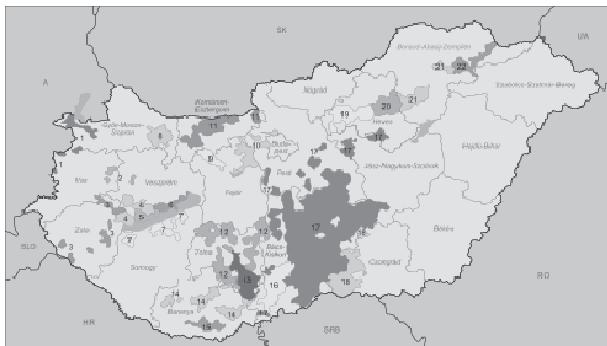


Fig. 2.2. Products and main characteristics of areas of Hungary typical for growing fruits and vegetables



- | | |
|--|---|
| 1 Sopron (<i>Soproni borvidék</i>) | 12 Tolna (<i>Tolnai borvidék</i>) |
| 2 Nagy-Somlő (<i>Nagy-Somlói borvidék</i>) | 13 Szekszárd (<i>Szekszárdi borvidék</i>) |
| 3 Zala (<i>Zalai borvidék</i>) | 14 Pécs (<i>Pécsi borvidék</i>) |
| 4 Balaton-felvidék (<i>Balaton-felvidéki borvidék</i>) | 15 Villány (<i>Villányi borvidék</i>) |
| 5 Badacsony (<i>Badacsonyi borvidék</i>) | 16 Hajós-Baja (<i>Hajós-Bajai borvidék</i>) |
| 6 Balatonfüred-Csopak (<i>Balatonfüred-Csopaki borvidék</i>) | 17 Kunság (<i>Kunsági borvidék</i>) |
| 7 Balatonboglár (<i>Balatonboglári borvidék</i>) | 18 Csongrád (<i>Csongrádi borvidék</i>) |
| 8 Pannónhalm (Pannónhalmi borvidék) | 19 Mátra (<i>Mátrai borvidék</i>) |
| 9 Mór (<i>Móri borvidék</i>) | 20 Eger (<i>Egri borvidék</i>) |
| 10 Etyek-Buda (<i>Etyek-Budai borvidék</i>) | 21 Bükk (<i>Bükkői borvidék</i>) |
| 11 Neszmély (<i>Neszmélyi borvidék</i>) | 22 Tokaj (<i>Tokaji borvidék</i>) |

Fig. 2.3. Wine regions of Hungary

Hungary's economic growth over the past decade is linked to the FIDESZ-KDNP coalition, the right-wing national conservative alliance of two political parties: the Hungarian Civil Alliance (FIDESZ) and the Christian Democratic People's Party (KDNP). They participated in national elections in 2010, 2014 and 2018, winning a two-thirds majority in each. The coalition's rise to power coincided with the end of the global financial crisis of 2008-2009, which identified tasks that aimed to control public finances by supporting recovery and competitiveness.

Post-crisis economic reforms in Hungary began with the tax system, aiming to make it competitive and the most accessible option in the international context. To this end, there was a significant reduction in the corporate tax rate and the number of types of taxes. At the same time, a system of proportional, single personal income tax was introduced in the amount of 16, and then 15%. Further improvement in tax relations has resulted in labour tax reductions to mitigate the impact of wage increases on labour costs; however, they remained high by EU standards, especially for some low-income groups.

Market services, manufacturing and construction have always been the driving force of the Hungarian economy, while agricultural indicators have restrained GDP growth. The increase in productivity was facilitated by the

improvement of the external environment and the growth of real wages with stagnant loans. The financial situation of Hungary has been characterized by the ratio of the budget deficit to GDP below the level of the Maastricht Treaty on European Union (3%) since 2012. At the same time, it managed to reverse the trend of decreasing funding for education: where between 2007 and 2013 the share of spending on education decreased, since 2014 there has been an increase. In particular, Hungary spent 4.34% of GDP on education in 2017 (Magyarország: Politikai és gazdasági háttér).

4. Global challenges for the economy of the Visegrad Group

Successes of V4 economic development are put at risk by challenges of global development that require timely and appropriate responses. Threats to modern development should be expected primarily in the institutional dimension of the socio-economic system, such as product markets, innovation system, financial system, labour market and industrial relations, social welfare and education system. J. Fagerberg, M. Srholec, and M. Knell (2007) determined the answer to practical questions that arise from the fact that some countries "work" much better than others. It lies in countries ignoring certain elements of competitiveness. This is especially true of underestimating the relationship between technology, demand potential, and demand competitiveness for growth and development. The key element of a market economy, to which the Czech Republic, Hungary, Poland and Slovakia have switched, is the use of comparative advantages in the production of complex and durable consumer goods. These comparative advantages are based on the institutional complementarity between skilled but cheap labour, transfer of technological innovation through transnational enterprises and the use of foreign direct investment in an open environment to participate in large-scale privatization programmes.

Studies, especially comparisons of development indices, show different results of V4 countries both in terms of the volume of attracted investments and the level of competitiveness. In particular, the Czech Republic has the strongest position among V4 countries. However, it is weakening from year to year due to slow growth post global economic crisis in 2008 (Kowalska A., Kovarnik J., Hamplova E., Prazak P., 2018).

The results of foreign trade of the Visegrad countries can be assessed differently. The strongest economy is the Czech Republic, which has the largest net per capita balance. However, in terms of growth, it is somewhat inferior to

Slovakia. However, Slovakia's challenge in foreign trade is that it ranks third in terms of net balance per capita within the group.

The GII and SII Innovation Reports either gather all Visegrad countries into one group – the so-called moderate innovators (SII report), or divide them into two different groups: the Czech Republic and Hungary are seen as innovation leaders, Poland and Slovakia – the so-called innovation achievers (GII report). The highest GII values were recorded in the Czech Republic and Hungary. The GII indicator shows that all V4 countries had values below the European Union average in 2016. On the other hand, the SII values of the V4 countries have been in the range of 50-90% of the EU average in recent years.

The results of the Global Innovation Index and the European Innovation Scoreboard report for 2011-2016 show a growing gap in the level of innovation between V4 countries. According to SII, the Czech Republic is beginning gain on other V4 countries in terms of innovation. Poland has one of the lowest results in the innovation rankings (as evidenced by the values of GII and SII) among the V4 countries as a whole, as well as individual thematic groups.

In addition, the analysis of the competitiveness of V4 economies showed a significant difference between countries. The Czech Republic, which is increasing its GCI index every year, is more competitive than other V4 countries. In 2016, Hungary was the weakest state in terms of competitiveness. The value of the competitiveness indices for this country has deteriorated further over the period covered by the study, while Slovakia is trying to keep the index unchanged.

References

- Czech Republic economic snapshot (2021). Economic forecast summary. URL: <https://www.oecd.org/economy/czech-republic-economic-snapshot/>
- Economic complexity legacy Rankings. URL: <https://atlas.cid.harvard.edu/rankings>
- Eurostat. Annual detailed enterprise statistics for industry. URL: https://ec.europa.eu/eurostat/databrowser/view/SBS_NA_IND_R2__custom_1207611/default/table?lang=en.
- Eurostat. International trade of EU, the euro area and the Member States by SITC product group. <https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do>
- Fagerberg, J., Srholec M., and Knell M. 2007. The competitiveness of nations: Why some countries prosper while others fall behind? *World Development* 35: 1595–620.
- Gazdasági élet Madyarországban. URL: https://www.nkp.hu/tankonyv/foldrajz_8/lecke_03_003.
- Kowalska A., Kovarnik J., Hamplova E., Prazak P. 2018. The Selected Topics for Comparison in Visegrad Four Countries. URL: <https://www.mdpi.com/2227-7099/6/3/50/htm>
- List of Countries by Projector GDS per capita. <https://statisticstimes.com/economy/countries-by-projected-gdp-capita.php>
- Magyarország: Politikai és gazdasági háttér. (2021) URL: https://eacea.ec.europa.eu/national-policies/eurydice/content/political-and-economic-situation-35_hu.
- Rechnitzer J., Hausmann R., Tóth T. (2017). A magyar autóipar helyzete nemzetközi tükörben. URL: <https://hitelintezeteszemle.mnb.hu/letoltes/rechnitzer-janos-hausmann-robert-toth-tamas.pdf>.
- This is the golden age: Eastern Europe's extraordinary 30-year revival. *theguardian.com*. 27.10.2019.

CHAPTER 3

Centuries-old traditions of coexistence and good neighborliness of the peoples of V4 and Ukraine as a prerequisite for deepening integration processes

1. A historical factor in the formation of the European Union

The Constitution of Ukraine proclaims the European identity of the Ukrainian people and the irreversibility of the European and Euro-Atlantic direction of Ukraine (Konstytutsiia Ukrainy, 1996). These provisions necessitate the development and implementation of a mechanism for the introduction of Western values in Ukraine, which is the ultimate goal of the European integration strategy. In the view of the ‘Copenhagen criteria’ and Ukrainian realities, Ukraine's Euro-oriented strategic programme should be designed for the long term (probably several decades). After all, the task to be achieved is threefold: political (stability of institutions guaranteeing democracy, rule of law, respect for human rights and protection of minority rights); economic (competitive market economy); and ‘membership’ (commitments arising from accession to the EU, including recognition of its political, economic and monetary objectives).

For Ukraine, European integration is the direction of public policy that has received the greatest public support in recent years. According to a DW-Trend poll conducted by IFAK at the request of Deutsche Welle, 73 per cent of citizens (excluding territories annexed and occupied by Russia) support Ukraine's

accession to the European Union, and 53 per cent believe that European integration should take place within the next 10 years. At the same time, in the east of the country, the outlook on Ukrainian-Russian relations has changed dramatically, as 81 per cent of the population now view them negatively (LB.ua, 2014).

Historical factors detailing how the countries have coexisted in the European territorial space play an important role in formation of the European Union. Although it is not something directly spelled out in the Statute, the context of the documents and the actual practice of accession to the EU implies that this is taken into account. For instance, in 60 years, Turkey has missed five stages of admission to the European Union due to historical contradictions, primarily in internal relations with the Kurdish minority and the unresolved Cyprus issue and other disputes with Greece. The accession process of Northern Macedonia has been extended for many years due to Greece not recognising the name 'Macedonia'.

The enlargement that the European Union has experienced to date shows that dialogue with neighbouring countries is of particular importance for the admission of new countries. In paving the way to a Greater Europe, Ukraine's priority is to maintain good and mutually beneficial neighbourly relations with Central and Eastern European countries, as Ukrainians and their peoples shared a common destiny being part of various states over the centuries. Good neighbourly relations were maintained with them in those historical times when the Ukrainian territories of old gained sovereignty, namely in the days of Kievan Rus, independent ancient Rus principalities, the Zaporozhian Host and the Hetmanate, the Khan's Ukraine, the Ukrainian People's Republic, the Western Ukrainian People's Republic, and the Ukrainian state. In addition, Ukrainians in these Central and Eastern European countries make up a large proportion of the Ukrainian European diaspora, which is growing. Therefore, there is every reason to believe that the V4 countries are a necessary step in Ukraine's path to the European Union.

The aim of the article is the definition of historical narratives of the centuries-old evolution of good neighbourliness of the CEE peoples that serve as a determinant in creating new forms of integration between Ukraine and the European Union, priority being given to cooperation with the Visegrad Four.

2. Methodological and informational specifics of the interstate relations research

The choice of research methods is determined by the interdisciplinary nature of the investigation, which falls at the junction of history, international relations and economics. Therefore, to achieve this aim, it is hypothesised that the

neighbouring nations of modern Czech Republic, Hungary, Poland, Slovakia and Ukraine had predominantly positive influences on each other's development of state-building processes. Thus, it is advisable to use the process tracing method (Turchenko, & Zavadskaya, 2017), using which by adhering to the set sequence it is possible to study the centuries-long process of mutual neighbourly exchange of experience and mutual assistance, as well as international division of labour. Consequently, we are able to determine the cause-and-effect relationship behind the modern states and their nations. In this way, the study enables recommendation of decisions on establishing strategic partnerships of neighbouring countries that have special common interests on the continent.

Given that the development of cooperation between Ukraine and V4 countries is directed as an integration process during which the interstate relations are deepened and enhanced, the results of the study should take into account the specifics of international relations, which are characterized by a degree of stability and repetition. Nevertheless, practical solutions must resolve the contradictions that arise from different approaches in the interpretation of events, facts, phenomena and processes that affect the relationship in the past, present or future, which can be challenging.

The historical approach to the development of integration processes of Ukraine and V4 should be considered and used as an important, but not the only method of solving new tasks of cooperation. Instead, in combination with economic and statistical methods, it allows us to formulate sound recommendations by deepening the understanding of the relationship between historical memory and the present, ensuring the prevention of past mistakes.

Researchers pay little attention to the long-term development of relationships and interactions within the five states of Central and Eastern Europe as a separate system. Even the version of the Four as a system rarely becomes the subject of scientific investigations. On the other hand, a significant number of publications are devoted to the study of bilateral relations between these countries. Ukrainian-Polish relations are of great interest, which can be explained both by the large resource bases of both countries and the long time together within different states, including the Grand Duchy of Lithuania, the Polish-Lithuanian Commonwealth, the Austro-Hungarian Empire, the Russian Empire. Such closeness of the Ukrainian and Polish peoples in modern conditions manifested in Poland being the first state to recognise the independence of Ukraine in 1991.

The way the peoples of the V4 countries perceive Ukrainians is largely influenced by the historical milestones that defined periods of coexistence and cooperation, on the one hand, and rivalry, especially military, on the other.

‘History generates myths and symbols, creates narratives, and after all impacts identities,’ note V. Filipchuk, I. Ivashko, and M. Kapitonenko (2019). The historical memory of nations, depending on how it is formed, can promote understanding and cooperation, although it can also provoke conflicts and discord. Publications on historical topics relating to Central and Eastern Europe are illustrated by the instances of rapprochement between kings and princes through arranged marriage and territorial claims. This is especially true of the Cherven cities, which were sometimes captured by the Kyivan princes, and sometimes came under the rule of the Polish state. Conflict periods, especially military events, are described in detail.

The main sources of early events in relations between peoples and neighbouring states are chronicles, which are deepened and detailed by scholars on the basis of government documents, letters, memoirs, and similar primary sources. Scientific and educational literature broadly covers the relations between Poland and Kievan Rus.

Relations between Ukraine and the Czech Republic are presented in a small research base. This can be explained by the fact that over more than a millennium of development of relations between the Ukrainian and Czech peoples there have been virtually no conflicts and civilizational contradictions, in contrast to, for example, Polish-Ukrainian relations (Tkachenko, 2013). However, the interest in Ukrainian-Czech relations is gradually growing and the new works reflect dealings from ancient times to the present. If in the first half of XX century they were covered mainly by I. Bryk (1921) and O. Kolessa (1924), now they are studied in scientific institutions of Kyiv, Uzhhorod, Odessa, Kharkiv and other scientific centres of Ukraine. Among them are O. Vahner (2006), R. Korsak (2016), S. Motruk (2006), V. Ryeznikov (2014), I. Tkachenko (2013), P. Chernyk (2009).

The issues of international relations between Ukraine and Hungary are insufficiently covered in the scientific literature. Most sources focus on the 11th – 13th centuries, which can be explained by the generally friendly nature of ties and arranged marriages between the House of Arpad and the Rurik dynasty. Studies of ancient times were carried out mainly in Soviet Ukraine (Ukrainian-Hungarian historical times, 1964).

For researchers of relations between Ukraine and Poland, important sources are stored in the Central Archives of Historical Records in Warsaw, the library of the National Ossolinski Institute (Wroclaw), the library of the Polish Academy of Sciences (Krakow), the Jagiellonian Library (Krakow), the National Library (Warsaw), the library of the Princes Czartoryski Museum (Krakow), the Russian State Archive of Ancient Acts (Moscow), Central State Historical Archives of

Ukraine in Lviv, archive of the Institute of History of Ukraine of the National Academy of Sciences of Ukraine.

Much of the information on Polish-Ukrainian relations during several waves of emigration from the territory controlled by the Polish governments is stored in a scattered form around the world in the archives of the Polish diaspora. It concerns the struggle for independence after the national uprisings of the 19th century, WWI and WWII, as well as the Polish People's Republic (Krochmal, 2005). Institutions such as the Polish Historical and Literary Society and the Polish Library in Paris, the Polish Institute and Sikorski Museum and the Polish Library in London, the Józef Pilsudski Institute of America in New York receive the greatest recognition. Many archival sources of Polish origin outside Poland itself present information about relations with neighbouring states, as well as with national and religious minorities, including Ukrainians, who have left Galicia en masse and settled alongside ethnic Poles, mostly in North America since the end of the 19th century.

Bilateral relations between Ukraine and Slovakia do not have as extensive a historical record as is typical for Ukraine's relations with other V4 countries. Slovakia, like Ukraine, is a new European country and it is no coincidence that Slovakia considers Ukraine a 'forgotten partner' (Kapitonenko, 2018), 'unknown neighbour' (Vorotniuk, 2016). As relations between Slovakia and Ukraine had been studied insufficiently, the International Centre for Policy Studies (ICPS) prepared a brief overview (2018) of their development. The researchers note an important feature in the history of Ukraine and Slovakia, which is that both countries played second fiddle in foreign relations and domestic policy in the past (Hudak, 2000).

There is a growing interest in the history of international relations with Central and Eastern Europe, including Ukraine, in the Russian Federation. M. Yurasov (2018) published a study on the relations of Rus and its western neighbours in the pre-Mongol period and its rise as a great power. H. A. Sanin (2018) studied the place of Russia and Ukraine in the Westphalian system of international relations and the war against the Commonwealth. Ye. I. Maleto (2018) chose the relations between Middle Age Rus and Constantinople, including the Russo-Lithuanian state, as the subject of his research. However, in the publications of Russian scholars, Ukraine and the Ukrainian ethnic lands are considered as part of the interests of the Moscow Empire, and the names 'Rus' and 'Russia' are used as synonyms.

3. Relations between V4 and Ukraine as a centuries-old civilized coexistence and overcoming contradictions

The accession of the V4 countries to the European Union in 2004 meant that the fundamental task this group's creation - rapid integration into Euro-Atlantic associations – was achieved. Since then, the question of the expediency of Visegrad's continued existence has arisen. Be that as it may, the enlargement of the EU at the expense of the V4 did not end the unification of Europe. The analysis shows that it makes sense to preserve the group because it has the potential, firstly, to lobby for common interests in the EU and, secondly, to promote the EU enlargement process using its own experience of the V4 + model (Zub, 2018). This was confirmed by the signing of the Kromeriz Declaration on 12 May 2004. Ye. B. Kish rightly notes that the integration of the Visegrad countries into European and Euro-Atlantic structures opens up new opportunities and sets new challenges for their further cooperation on issues of mutual interest. Visegrad Group cooperation will continue to focus on regional activities and initiatives aimed at strengthening the identity of Central Europe (Kish, 2008).

It is often said that you do not choose your neighbours. The history of Ukrainian state over the last millennium largely echoes that of the Czech, Hungarian, Polish and Slovak peoples. While, admittedly, throughout this time there were conflicts and contradictions, they were overcome and the countries developed as European civilizations. Most importantly, the mentality and values of these peoples changed in such a way that every time there were misunderstandings, there were also methods and political will to solve the problem.

The Czech Republic is the only V4 country that has not had conflicts and disagreements with Ukraine over the past millennium. However, this statement can be questioned, given the campaign of Vladimir Vsevolodich (Monomakh) against the Czechs. However, the prince was obliged to carry out this action under an alliance agreement with the Poles. Thus, the Poles were the once with an argument with the Czechs in this event. Instead, Ukraine's relations with the Czech Republic have long been historically mutually beneficial (Table 3.1), which is a good basis for their further deepening in the future.

The development of Ukrainian-Hungarian relations has been characterized by good neighbourliness and cooperation for centuries. The Ambassador of Ukraine to Hungary D. Tkach (2009) stated that the relations between the two countries in the past have not been burdened by conflicts and problematic issues. Hungary has given great importance to Ukraine as a state and Ukrainians as a

people. This can be interpreted from the fact that it opened official political contracts at the highest level even before the collapse of the USSR, thus showing support for Ukraine's aspirations for independence.

Table 3.1

Certain milestones in the system of Ukrainian-Czech relations

Milestone	Description
history of relations – episodic conflicts in more than a millennium of good dynamics	Prince Volodymyr Vsevolodych (Monomakh) marched against the Czechs, helping the Poles as allies
Christianity	originally modelled on the Byzantine rites
famous Czechs in Ukrainian history	Vladislav Opolsky - Czech prince and ruler of Galician Rus
	Pylyp Orlyk (of Czech descent) – Hetman of the Zaporozhian army in exile and the author of the first Ukrainian constitution
both nations as part of Austria-Hungary dual state	accelerated growth of Ukrainians' awareness of national identity and national consolidation; national consolidation of the Czechs
friendly relations between the Czech and Ukrainians after the First World War	recognition of the Western Ukrainian People's Republic in 1918 and assistance to refugees from Ukraine
	Prague is the centre of Ukrainian political, scientific and literary emigration
the geopolitical system of dominant Soviet influence	Slowdown of economic and social development
post-Soviet period	Ukraine is an important trading partner
	cooperation in the field of energy security

Source: Data from Tkachenko, I. (2013) and Korsak, R. V. (2016).

The history of Ukrainian-Hungarian relations is marked by various expressions of good neighbourliness (Table 2). This includes protection against the military threat; peaceful resolution of disputes; marriages; Ukrainians in Hungary and Hungarians in Ukraine being granted top government positions; sheltering of immigrants from the Rus' principalities during the Mongol-Tatar invasion; creation of a Rus-Hungarian anti-Horde coalition; military-diplomatic cooperation between the kings of Hungary and the Galician-Volyn princes; Galicians being granted special rights in Hungary; five hundred years of joint struggle against the Turkish invaders and against the Austro-Habsburg oppression (Lytyvn, 2004).

However, the 20th-century geopolitical processes affected both states in a way that introduced certain challenges to the development of bilateral relations. Ukraine withdrew from the Russian Empire, but was occupied by its successor, the Soviet Empire – the USSR, the consequences of which affect the country even today. Hungary withdrew from the Austro-Hungarian Empire and was burdened by the effects of the First and Second World Wars. This gives special significance to the new modern relations between countries, which should follow the principles of good neighbourliness and mutually beneficial partnership. This process has already

started with the increase in the number of working meetings between government officials and parliamentarians of both countries after Hungary's accession to NATO and the creation of V4. It was at the summit of the Prime Ministers of V4 and Ukraine in June 2003 that a statement on behalf of the Presidents was released, proclaiming that the Visegrad Four countries were prepared to cooperate with Ukraine using the V4 + 1 formula even after joining the EU (Tkach, 2009). This resulted in the dynamic development of bilateral relations between Ukraine and Hungary.

Table 3.2

Certain milestones in the system of Ukrainian-Hungarian relations

Milestone	Description
assistance in the search for a new homeland by Hungarians in Europe	the passage of Hungarian tribes through the modern territory of Ukraine on the way to Europe
political support for the establishment of the Hungarian state	Kyivan prince Yaroslav the Wise grants protection to the future king of Hungary Andrew I
Arranged marriages between the House of Arpad and the Rurik dynasty	Predslava (daughter of Vladimir I) – married to Grand Prince Ladislav the Bold Anastasia (daughter of Yaroslav the Wise) – married to King of Hungary Andrew I (son of Vazul) Eufemia (daughter of Vladimir Monomakh) – married to King of Hungary Coloman the Learned Euphrosyne (daughter of Mstislav I of Kiev) – married to King of Hungary Géza II
divergence of political interests	Hungarian and Rus princes compete for the Galician throne of the, 13 th century
crisis of the Austro-Hungarian absolute monarchy and the Hungarian Revolution of 1848-1849	development of the national movement of Hungarians and national self-awareness of the Rus (Ukrainians)
Hungary's support of the Ukrainian struggle for state independence after World War I	Extraordinary diplomatic mission of the Ukrainian People's Republic in Budapest, which operated from January 24, 1919 to the end of May 1924; was the last Ukrainian mission closed abroad
The Treaty of Trianon in 1920 as part of the Versailles-Washington system, which recorded the collapse of the Austro-Hungarian Empire	Attempts by Hungary to revise the terms of the Treaty of Trianon, conflicts on the language issue
cooperation during the period of Ukrainian independence	Declaration on the Principles of Cooperation between the Ukrainian SSR and the Republic of Hungary on Ensuring the Rights of National Minorities (signed on 31 May 1991) On the Establishment of the Ukrainian Part of the Joint Ukrainian-Hungarian Commission for Ensuring the Rights of National Minorities (Document 238-92-n, current version of June 8, 1996, grounds - 618-96-n

Source: Data from International Centre for Policy Studies (2018, October, 24) and The Budapest Times (2019, February 11).

Table 3.3

Certain milestones in the system of Ukrainian-Polish relations

(“remember the past, look towards the future”)

<i>Kievan Rus</i>
Independent coexistence with elements of intervention in the struggle for thrones, military conflicts with varying degrees of success, joint struggle against the Tatar-Mongols
<i>Princely era (typical of relations between the courts in Europe)</i>
Grand Prince of Kiev Sviatopolk the Accursed married the daughter of Boleslaw I the Brave Boleslaw I the Brave intervened in the strife in Kievan Rus - supported his son-in-law in the fight against Yaroslav I the Wise, defeated the latter in the battle of Buh, captured Kiev and returned the Cherven cities. However, because of a rebellion of Kyiv residents he had to flee to Poland, capturing Kiev treasury. Casimir III, taking into account the ancient traditions of independent statehood of the Galicia-Volyn principality, called himself not only the King of Poland but also the King of Rus (1350-1358). Separate coins and coats of arms were minted for this territory.
<i>Late Middle Ages</i>
Galicja under the rule of Poland; Polonization and Catholicization of a large part of the Rus nobility; the conclusion of the Brest Union and the formation of the Ruthenian Uniate Church; abolition of the Hetmanate on the Right Bank at the end of the 17 th century; exclusion of the Rus (Ukrainian) language from recordkeeping
<i>Poles and Ukrainians in the Moscow Empire (later the Russian Empire)</i>
Although the Moscow authorities preserved the influential position of the Polish intelligentsia in the social structure of the western provinces, the latter supported the Ukrainophile trends, contributing to the emergence of the Ukrainian national movement.
<i>Lithuanian - Polish era of Ukrainian history</i>
Lviv and Halych recognise Polish supremacy in exchange for confirmation of their privileges
<i>World War I and the struggle of Poland and Ukraine against Bolshevik Russia</i>
Struggle for the independence of Poland and Ukraine; newly created Poland and the Ukrainian People's Republic led by Petliura; Poland's support for Ukraine in the fight against Bolshevik Russia; military union of Poland and Ukraine; collisions in Lviv; Polish-Ukrainian war; Riga Peace 1921
<i>Volyn tragedy; Operation Vistula</i>
Bloody Ukrainian-Polish conflict during World War II in the territory of the Republic of Poland occupied by Nazi troops, where its citizens, who of Polish and Ukrainian ethnic origin had been living together; ethnic cleansing by the decision of the party and state leadership of the USSR, the Republic of Poland and the Czechoslovak Republic
<i>Formation of Ukrainian state independence</i>
Polish parliamentarians participate in the work of the constituent assembly of the Congress of the People's Movement of Ukraine in September 1991 and the establishment of a new model of Polish-Ukrainian relations; Poland recognises the independence of Ukraine on December 2, 1991, first among foreign states; Poland is Ukraine's second largest trading partner
<i>Retrospective look at Ukrainian-Polish relations</i>
Ukrainian-Polish relations - more than a millennium of coexistence of two ethnically and culturally related peoples with good dynamics, periods of joint struggle against external threats, situational alliances and civilizational contradictions traditional for all European countries, conflicts and military confrontations

Source: Printed from Lytvyn, M. (2010-2011).

Ukraine's history of relations with Poland is the longest and richest of all the state-building nations that are currently Ukraine's neighbours in Central and Eastern Europe. As stated in the publication of the International Centre for Policy Studies, prepared with the support of the International Visegrad Foundation (2019), "Over this long period Poles and Ukrainians went through joint fighting against external threats, situational alliances, and wars between each other. They have been united and divided by issues of religion, language, rights, and borders." However, the events of the 20th century became an obstacle in Ukrainian-Polish relations. This is primarily due to the consequences of the Ukrainian-Polish war and the demarcation of borders after World War II.

The milestones selected in Table 3.3 displaying the development of Polish-Ukrainian relations can be supplemented by both positive and negative facts and events. However, the relations between nations that have coexisted for millennia and entered the second millennium with dignity as independent and democratic states, a priori cannot be dominated by negativity, as it leads only to discord. Nevertheless, the history of Polish-Ukrainian relations is the evolution of two civilized nations, which as per objectively valid social laws are designed to ride into the proverbial sunset together with positive assets in historical backseat. And although the story is hardly over yet, the history is crucial for faster progress, and for wins to outnumber the losses. We must agree with T. Snyder (2011), "It is for us as scholars to seek these numbers and to put them into perspective. It is for us as humanists to turn the numbers back into people. If we cannot do that, then Hitler and Stalin have shaped not only our world, but our humanity". Shifting blame is meaningless. The history of Eastern and Central Europe or, according to T. Snyder, 'bloodlands' should motivate a new paradigm of productive cooperation, devoid of the misguided narratives of the past.

4. Strategy of targeting integration processes in the real economy sector of V4 + UA

Given the European integration strategy of Ukraine, the fact that Visegrad Four has become a powerful institutional resource to promote EU enlargement in the process of its development is one of its most important qualitative features. Such power is the result of the association's experience in accelerated implementation of tasks, the solution of which gives grounds to apply for EU membership and be accepted. However, you can take full advantage of this experience only if you gain membership in V4 first. That is why Ukraine should single out the development of cooperation with V4 as an integral part of its

strategy. This does not preclude, on the contrary, it envisages the continuation of cooperation in the implementation of reforms, mainly within the framework of the Association Agreement between Ukraine and the EU.

The task of Ukraine and V4's integration requires a certain capitalization of the parties' assets, the joint use of which would allow them permanent access to added value. The assets of Ukraine that can become a collective source of economic development are human and natural resources, and vast territories, including the land and sea borders as a separate and important factor.

Effective use of the expansion potential of the V4 + UA model requires a strategic approach due to its scale. Currently, the Visegrad Group does not have a common strategy for economic development. Efforts are concentrated mainly on individual projects, in particular energy, road, cross-border, etc. initiatives, which Ukraine is partially involved in. Deeper integration of the neighbouring countries requires the interests of the parties to be balanced in all areas. This would contribute to a significant increase in the capacity of the Five to implement the European Neighbourhood Policy. In these circumstances, Ukraine would be interested in a coordinated partnership to accelerate the process of reforming economic and social life. Regionally for the three, i.e. the EU, V4 and Ukraine, such an integration project would be a way to expand and strengthen the zone of stability, peace and prosperity on the European continent.

Ukraine's economic integration with the V4 countries is developing mainly in the field of trade. Considering that the countries are neighbours, the volume of Ukraine's trade with the V4 countries is relatively small: in 2018, the Group's share in exports was 14.04 per cent and 11.3 per cent in imports. In addition, with Poland and the Czech Republic, i.e. with the largest economies of the group, the trade balance was negative (Table 3.4).

At the same time, it should be noted that despite the importance of international trade, the limited cooperation achieved solely through it is insufficient for the development of integration processes. Any integration model in the economic sector cannot be based only on the international movement of goods and services. European integration develops on the idea of a single economic space based on free movement of four factors: goods, persons, services and capital. The use of these freedoms in Ukraine requires the development of cooperation primarily in the field of manufacturing, financial services, and banking, especially investment, services.

It should be noted that V4's investment activity in the Ukrainian market does not correspond to the economic potential of any of its member countries. FDI from

V4 countries to Ukraine amounts to 1,282.3 million USD or 5.2 per cent of EU equity in Ukraine.

Table 3.4

Ukraine's foreign trade in goods with the EU and V4 countries in 2018

	Export		Import		Balance, thousand USD
	thousand USD	% of Ukraine's foreign trade	thousand USD	% of Ukraine's foreign trade	
Total	47334987,0	-	57187578,0	-	-9852591,0
Visegrad Four					
Poland	3257248,5	6,89	3641921,5	6,37	-384673,0
Slovakia	863926,4	1,83	525879,4	0,92	338047,0
Hungary	1646045,9	3,48	1260239,9	2,20	385806,1
Czechia	878035,7	1,85	1034786,6	1,81	-384673,0
V4 Total	6645256,5	14,04	6462827,4	11,30	-45492,9

Source: Data from State Statistics Service of Ukraine (2018).

In these processes, Poland and Hungary dominate among the members of the group. The share of their equity in foreign direct investment of the Visegrad Four countries in Ukraine is equal to 85.3 per cent (46.3 per cent and 39.0 per cent, respectively). The reverse, namely the foreign direct investment from Ukraine to the V4 countries, are even more meagre: 24.8 million USD or 0.4 per cent of FDI to EU countries (Table 3.5). This indicator shows a lack of balance in the development of international economic relations between the neighbouring countries and the weakness of the diplomatic services of Ukraine in the V4 countries and vice versa.

When developing Ukraine's economic strategy, it is necessary to first direct its integration towards the Polish industrial complex. Features of its intra-industry trade are the basis for this. Machinery, devices and transport equipment have the largest share in Poland's exports and imports. In 2019, it amounted to 38.1 per cent of their imports and 36.3 per cent of their exports (Business Insider Polska, 2020). At the same time, in Ukraine the share of exports of capital goods, transport equipment, and parts and accessories thereof, as well as passenger motor cars according to the statistics of their total volume in 2018 amounted to 3.2 per cent (1.4 billion USD), while imports of the same categories added up to 18.0 per cent (11.5 billion USD) (State Statistics Service of Ukraine, 2019).

This state of affairs is the result of a protracted crisis in the Ukrainian economy due to the slow resolution of transformation problems, the lack of systemic market reforms and political disorder. However, Ukraine began post-socialist changes in its economy when automobile, railway transport, energy,

aircraft, space, production of equipment for heavy industry, military-industrial complex were among the better-developed industries. This is preserved in the historical memory of the population in the form of psychological readiness for the revival of machine-oriented production of modern products.

Table 3.5

V4's FDI (equity) in the economy of Ukraine and Ukraine's FDI in the economy of the EU and V4 as of 31.12.2018

	FDI in Ukraine		FDI from Ukraine	
	Million USD	V4/EU, %	Million USD	V4/EU, %
Total EU	24742,7	--	6075,5	-
Total V4	1282,3	5,2	24,8	0,4
by individual country and share				
	FDI from V4 in Ukraine, million USD	Share of FDI from V4-member to total FDI from V4 in Ukraine, %	FDI from Ukraine in V4, million USD	Share of FDI in V4-member to total FDI in V4 from Ukraine, %
Poland	593,9	46,3	6,7	27,0
Slovakia	74,3	5,8	0,4	1,6
Hungary	500,1	39,0	16,8	67,7
Czech Republic	114,0	8,9	0,9	3,6

Source: Data from State Statistics Service of Ukraine (2019).

It can be predicted that the growing attractiveness of the Ukrainian market among Polish business should provoke a similar reaction from Czech, Slovak and Hungarian entrepreneurs, otherwise this niche will be occupied by companies from other countries. At the same time, Ukraine, firstly, should use the experience of V4 countries in attracting FDI and, secondly, develop levers to increase the interest of their business in the Ukrainian market. According to experts from the German Advisory Group, “The cases of the Czech Republic and Slovakia, which both opened their economies to foreign capital before EU accession, illustrate that openness to international investors can also be a key component of a modernisation strategy” (Saha et al., 2014).

The Czech Republic's interest in integration into the machine industry of Ukraine will grow given that the key products of the Czech Republic's foreign trade are vehicles, especially cars, and it has become the fifth largest producer thereof in Europe. Exports of industrial and electrical equipment are developing equally rapidly.

Strengthening integration processes with the machine industry of Central and Eastern Europe is also promising for Slovakia or, as it is now often called, the ‘Tatra Tiger’. Since the 2000s, it has been actively involved in the processes of international division of labour in this field, and it ranks first in the world for the

production of cars per capita since 2007. At the same time, the economies of the Czech Republic and Slovakia have historically had and continue to maintain effective relations. Today, Slovakia is the Czech Republic's main trading partner aside from Germany, both in terms of exports and imports. With the country's population at 5.4 million, the automotive industry attracts 80 thousand workers.

Finally, Hungary has made a serious move towards mechanical engineering in recent years. The country has created favourable conditions for attracting investment, thanks to which many global holdings including Raba, Suzuki, and Mercedes, are willing to build powerful machine-building plants in the country.

Ukraine has a developed sectoral structure of the machine industry and a large market, but the automotive industry is its weak link. At present, it can be considered as a young sub-sector. The country's car industry has a low level of saturation (219 cars per 1,000 inhabitants in 2018, 71st place in the world (List of countries by vehicles per capita, 2020)). At the same time, a significant part of the population uses used cars. According to the Employers' Federation of Automotive Industry, for every new car bought, four or five used cars are purchased (Biznes, 2020). However, there is a growing trend of demand for new cars. For instance, 88.5 thousand new cars were registered in 2019, which is 8 per cent more than in the previous year (Litvinchuk, 2020).

Thus, in Central and Eastern Europe there are favourable conditions for the creation of a regionally integrated machine industry with fragmented production within a global-scale network and high added value. The development of this area of integration requires the development of a joint strategy for technology transfer in the field of 4.0 industry, the implementation of which should include research and design institutions, quality human capital, large businesses, small and medium-sized businesses, and multinational banks. To this end, geographical consolidation of macro- and micro-integration based on balancing national and local interests must be achieved at the political level from the outset.

Given the scale of the project, its success can be ensured by forming an effective intergovernmental management mechanism. This task should be implemented within the framework of the Visegrad Group, whose decisions on the integrated machine industry should be made with the participation of Ukraine. At the same time, it is advisable to determine the list and principles of legislation that would be submitted for parliaments' consideration. The transformation of relations between Ukraine and the Visegrad Four caused by the integration in this case would take an *ad hoc* format, which can be represented by the model V4+UA. Its framework provides a basis for joint development and implementation of large interstate projects. Such a strategy of cooperation between the Group and Ukraine

would have the potential for further interconnected economic development, which would encourage the search for a corresponding political superstructure. In this context, the transformation of V4+UA into the Visegrad Five (V5) can be considered as one of the options.

The development of integration processes in Central and Eastern Europe will encourage the establishment of other alliances at the regional level. These include the concepts of a partnership bloc of states from the Baltic to the Black and Adriatic Seas, the Intermarium, the Bucharest Nine (B9), Via Carpatia, which have been discussed for decades as viable ideas by both experts and political leaders.

References

- Balvociete, R. (2020). Social Assistance for Poverty Reduction in the EU Countries: An Aspect of Socio-Economic Sustainability. *European Journal of Sustainable Development*, 9(1), 469. <https://doi.org/10.14207/ejsd.2020.v9n1p469>
- Biznes, (2020, January 22). Nekontrolvanyi import avtokhlama faktychno znyshchyv rynek novykh avto – hlava Federatsii avtopromu [Uncontrolled import of used cars actually destroyed the market of new cars - the head of Federation of Automotive Industry]. Retrieved from <https://business.ua/news/8648-nekontrolvaniy-import-avtokhlama-faktichno-znishchiv-rynok-novykh-avto-glava-federatsiji-avtopromu>
- Bryk, I. (1921). Materialy do istorii ukrainsko-cheskykh vzaiemyn [Materials on the history of Ukrainian-Czech relations]. *Ukrainsko-ruskyi arkhiv*, (15), 169.
- The Budapest Times (2019, February 11). 'Important milestone' in history of Ukrainian-Hungarian relations. Retrieved from <https://www.archiv.budapesttimes.hu/2019/02/11/important-milestone-history-ukrainian-hungarian-relations>
- Business Insider Polska (2020, February 11). Mapa polskiego eksportu i impottu. Więcej sprzedajemy za granicę niż sprowadzamy. Retrieved from <https://businessinsider.com.pl/finanse/handel/import-i-eksport-polski-mapa-handlu-zagranicznego-dane-gus-2019/q6phd38>
- Chernyk, P. (2009). Ukraina v Heopolitychnykh Kontseptsiiakh Chekhii ta Slovachyny XX st. [Ukraine in the Geopolitical Concepts of the Czech Republic and Slovakia in the 20th Century]. *Ukrainska natsionalna ideia: realii ta perspektyvy rozvytku*, (21), 172–179.
- Filipchuk, V., Ivashko, I., & Kapitonenko, M. (2019). Ukraine-Poland relations. ICPS. Retrieved from http://icps.com.ua/assets/uploads/images/images/eu/ukr_poland_rozd_a4.pdf
- Hudak, V. (2000). Relations between Ukraine and Slovakia: Recent History and Future Opportunities. Retrieved from https://www.files.ethz.ch/isn/90427/2000-01-01_Relations-Between-Ukraine.pdf
- International Centre for Policy Studies. (2018, October 24). Kyiv vs Budapest: What's going on in Ukrain-Hungarian relations? Retrieved from <http://icps.com.ua/en/studies-icps/foreign-policy/kyiv-vs-budapest-whats-going-on-in-ukrainian-hungarian-relations/>
- International Centre for Policy Studies. (2018). Ukraine-Slovakia relations: developing a true strategic partnership? Retrieved from http://icps.com.ua/assets/uploads/images/images/eu/ukr_slovakia_rozd_a4.pdf
- Ivashkiv I., H. Kupalova, N. Goncharenko, U. Andrusiv, J. Streimikis, O. Lyashenko, V. Yakubiv, M. Lyzun, I. Lishchynskyy, I. Saukh (2020) Environmental responsibility as a prerequisite for sustainable development of agricultural enterprises. *Management Science Letters*, Vol. 10, Issue 13, 2973–2984. Retrieved from DOI: 10.5267/j.msl.2020.5.028

- Kapitonenko, M. (2018, December 26). Slovacchyna-Ukraina: buduiuchy stratehichne partnerstvo? [Slovakia-Ukraine: building a strategic partnership?]. LB.ua. Retrieved from https://ukr.lb.ua/blog/kapitonenko_nikolay/415882_slovachchinaukraina_buduyuchi.html
- Kish, Ye. B. (2008). Tsentralna Yevropa v suchasniy systemi yevrorehionalnoi intehtratsii: monohrafiia [Central Europe in the modern system of Euroregional integration: a monograph]. Lira.
- Kolessa, O. (1924). Pohliad na istoriiu ukrainsko-cheskykh vzaiemyn vid X do XX v. [A look at the history of Ukrainian-Czech relations from the tenth to the twentieth century]. Prague.
- Konstytutsiia Ukrainy [Constitution of Ukraine], pmlb. (1996). Retrieved from <https://zakon.rada.gov.ua/laws/show/254%D0%BA/96-%D0%B2%D1%80#Text>
- Korsak, R. V. (2016). Istoriia ukrainsko-cheskykh mizhderzhavnykh vidnosyn (kinets XX pochatok XXI stolittia) [History of Ukrainian-Czech interstate relations (end of 20th beginning of 21st century)]. Uzhhorod National University. Retrieved from https://dspace.uzhnu.edu.ua/jsptui/bitstream/lib/6548/1/Препринт_посібника_Історія_українсько-чеських_відносин.pdf
- Krochmal, A. (2005). Dokumenty z istorii Ukrainy i polsko-ukrainskykh vidnosyn u zbirkakh polonistychnykh instytutii [The Documents on Ukrainian History and Polish-Ukrainian Relationships in Collections of Polish Institutions Abroad]. Arkhivy Ukrainy, (4), 60-75.
- LB.ua. (2014, December). 73% ukrainsev podderzhivayut kurs na yevrointegratsiyu [73% of Ukrainians support the European integration course]. Retrieved from https://ukr.lb.ua/society/2014/12/25/290516_73_ukraintsv_pidtrimuyut_kurs.html
- Lyzun, M., Lishchynskyy, I., Savelyev, Y., Kuryliak, V., Kurylyak, Y. (2019) Modeling Evaluation of Dollarization Economic Efficiency. 2019 9th International Conference on Advanced Computer Information Technologies (ACIT): Conference Proceedings (Ceske Budejovice, Czech Republic, June 5–7, 2019). Ceske Budejovice, Czech Republic, 366–369. Retrieved from DOI: 10.1109/ACITT.2019.8780024
- Litvinchuk, T. (2020, January 9). U 2019 rotsi v Ukraini zareiestruvaly v 3,5 razu bilshе vzhyvanykh avto, nizh rokom ranishe [In 2019, Ukraine registered 3.5 times more used cars than a year earlier]. NV. Retrieved from <https://nv.ua/ukr/biz/markets/u-2019-roci-kilkist-reyestratsiy-vzhivanih-avto-v-ukrajini-zroslo-v-3-5-razu-novini-ukrajini-50063179.html>
- Lytvyn, M. (2010-2011). Pytannia ukrainsko-polskykh vidnosyn u naukovii spadshchyni ta hromadskii diialnosti Yaroslava Isaievycha [Ukrainian-Polish relations in Jaroslav Isaievych's academic legacy and public activities]. Ukraine Poland: Historical Heritage and Public Consciousness, (3-4), 5-13.
- Lytvyn, V. (2004). Ukrainko-uhorski vidnosyny: istorychni tradytsii ta novi obrii spivrobotnytstva [Ukrainian-Hungarian relations: historical traditions and new horizons of cooperation]. Holos Ukrainy, 97(3347). Retrieved from <http://www.golos.com.ua/article/234300>
- Лизун М. В. Валютна інтернаціоналізація крізь призму детермінуючих факторів та функцій. Науковий вісник Ужгородського національного університету. Серія: Міжнародні економічні відносини та світове господарство. 2017. Вип.13. Частина 2. С. 9-12
- Лизун М. В. Валютні війни в світовому геомонетарному просторі. Бізнес-навігатор. 2017. Вип. 4-1 (43). С. 26–30 (0,6 д. а.).
- Лизун М. В. Валютні союзи: теоретичні підходи до трактування та мотивація створення. Науковий вісник Міжнародного гуманітарного університету. Серія: «Економіка і менеджмент». 2017. Вип.25. Частина 1. С. 25-28
- Лизун М. В. Вплив інтернаціоналізації валюти на розвиток бізнес. Міжнародні відносини. Серія «Економічні науки». 2017. № 10. URL: http://journals.iir.kiev.ua/index.php/ec_n/article/view/3119/2800 (0,45 д. а.).

- Лизун М. В. Економічна ефективність валютних рад у межах монетарної інтеграції. Проблеми системного підходу в економіці. 2017. Випуск 6 (62). Частина 1. С. 44-49
- Лизун М. В. Особливості розвитку процесу інтернаціоналізації валюти в рамках геополітичного підходу. *Science of Europe*. 2017. Vol 1. №17 (17). С. 32-37
- Maletov, Ye. I. (2018). *Srednevekovaya Rus' i Konstantinopol'*. *Diplomaticheskiye otnosheniya v kontse XIV - seredine XV v.* [Medieval Russia and Constantinople. Diplomatic relations at the end of the 14th - the middle of the 15th century]. Tsentrpoligraf.
- Motruk, S. (2006). *Ukrainska Hromada v Chekhii: Istoriia ta Sohoddennia* [Ukrainian Community in the Czech Republic: History and Present]. *Scientific Papers of Kamianets-Podilskiy National Ivan Ohiienko University. History*, (5), 38-48.
- Ryznikov, V. V., & Borodenko, M. M. (2014). *Ekonomiko –Diplomatychnyi Aspekt Ukrainsko-Cheskykh Vidnosyn na Suchasnomu Etapi* [Current Economic and Diplomatic Aspect of Ukrainian-Czech Relations]. *The Journal of V. N. Karazin Kharkiv National University Series: 'International Relations. Economics. Country Studies. Tourism'*, 1(3), 61-64.
- Saha, D., Giucci, R., Naumenko, D., & Kovalchuk, A. (2014). *Ukrainian Machine Building: Strategic options and short term measures in view of trade disruptions with Russia*. German Advisory Group Institute for Economic Research and Policy Consulting. Retrieved from http://www.ier.com.ua/files/publications/Policy_papers/German_advisory_group/PP_02_20_14_en_f.pdf
- Sanin, H.A. (2018). *Rossiya i Ukraina v Vestfal'skoy sisteme mezhdunarodnykh otnosheniy, 1648—1667 gg.* [Russia and Ukraine in the Westphalian system of international relations, 1648-1667]. Institute of Russian History of RAS: Tsentr gumanitarnykh iniitsiativ.
- Snyder, T. (2011). *Bloodlands: Europe between Hitler and Stalin*. Random House.
- Sokołowicz, M. E., & Lishchynskyy, I. (2018). Are Poland and Ukraine gravity centres for each other? Study on the labour migration patterns. *Comparative economic research*, 21(1), 45-65. Retrieved from DOI: 10.2478/cer-2018-0003
- State Statistics Service of Ukraine. (2018). *Ukraine's Foreign Trade in Goods* [Data set]. Retrieved from http://ukrstat.gov.ua/operativ/operativ2018/zd/ztt/ztt_u/ztt1218_u.htm
- State Statistics Service of Ukraine. (2019). *Cooperation between Ukraine and EU countries in 2018. Statistical Yearbook*, 62-65. Retrieved from http://www.ukrstat.gov.ua/druk/publicat/kat_u/2019/zb/06/zb_ES_18.pdf
- State Statistics Service of Ukraine. (2019). *Ukraine's Foreign Trade. Statistical Yearbook*, 100. Retrieved from http://www.ukrstat.gov.ua/druk/publicat/kat_u/2019/zb/06/zb_ztu_2018.pdf
- Tkach, D. I. (2009). *Ukrainsko-Uhorski Vidnosyny Novitnoi Doby* [Ukrainian-Hungarian Relations of Modern Times]. *Annual Journal of the Diplomatic Academy of Ukraine*, (15), 78-89. Retrieved from <https://www.krok.edu.ua/download/publikatsiji/tkach-dmitro-ivanovich/dmitro-tkach-publikatsiya-012.pdf>
- Tkachenko, I. (2013). *Istorychna Retrospektyva Vzaiemyn Ukrainy z Cheskoiu Respublikoiu* [Historical Retrospective Review of Relation between Ukraine and Czech Republic]. *Scientific Notes*, (4), 260-271. Retrieved from http://nbuv.gov.ua/UJRN/Nziptend_2013_4_26
- Turchenko, M. S., & Zavadska, M. A. (2017). *Kauzal'nyy Mekhanizm vs Nagromozhdeniye Faktov? Kriterii Otsenki Prichinno-Sledstvennykh Svyazey v Case Studies* [Casual Mechanism vs Pile of Facts: How to Evaluate Casual Links in Case Study Research]. *Polis. Political Studies*, (2), 134-146. Retrieved from <https://doi.org/10.17976/jpps/2017.02.09>
- Ukrainian-Hungarian historical times. (1964). *Naukova Dumka*. Retrieved from http://history.org.ua/LiberUA/UkrUgIstZv_1964/UkrUgIstZv_1964.pdf
- Vahner, O. (2006, August 18). *Ukrainci v Chekhii: maizhe sto rokiv natsionalnoi istorii* [Ukrainians in the Czech Republic: almost a hundred years of national history]. Retrieved

- from https://zn.ua/ukr/SOCIUM/ukrayintsi_v_chehiyi_mayzhe_sto_rokiv_natsionalnoyi_i_storiyi.html
- Vorotniuk, M. (2016). Foreign Policy Audit: Ukraine-Slovakia. Institute of World Policy. Retrieved from https://glavcom.ua/pub/pdf/10/1037/Aud_Ukr_Slovak_01_40_ukr.pdf
- Yurasov, M. (2018). Na zapadnykh rubezhakh Rusi [On the western borders of Russia]. Nauka.
- Zub, S. (2018). Osnovni Chynnyky Vnutrishnoi ta Zovnishnoi Vzaiemodii Krain Vyshehradskoi Hrupy [The Main Factors of Internal and External Interaction of the Visegrad Countries]. Geopolitics of Ukraine: history and modern times, 1(20), 217-235. Retrieved from DOI:10.24144/2078-1431.2018.1(20).231-249

CHAPTER 4

Geoeconomic priorities in the development of relations between the Visegrad Group and Ukraine within the system of European integration

1. Overall political preconditions for priority development of the Eurointegration processes in alliance with the Visegrad Group

The integration of Ukraine into the European Union requires that a mechanism be found to achieve this aim. However, the implementation of the decisions which were elaborated by national and foreign experts and agreed on with official European institutions with respect to realization of the Association Agreement between Ukraine and the EU involves that the president, the government, the parliament, judicial authorities, general public, international economic and financial organizations and enterprises take part at various stages of this process. All this complicates the achievement of integration goals and often slows the process down. On the other hand, Europe showcases an exemplary experience: Before accession to the EU, its four member countries – Czechia, Hungary, Poland and Slovakia – created the Visegrad Four Group (V4), and their cooperation within this alliance had led them to succeed in meeting the requirements for accession to the integration union. After its founders joined the European Union, this regional alliance, viewed by the EU as being on its periphery, did not self-liquidate, but developed its ability to mobilise in a flexible and efficient manner its integrated resources to exploit the changes in the system of

international relations in order to lobby their own interests in Europe and to facilitate the accession of new members to the EU. This role of the V4 has been increasing significantly in the conditions of enhanced disintegration processes due to crisis in Greece, Brexit, separatism in Catalonia, and strengthening positions of the right-wing parties in European politics.

The potential for the new mission of the V4 cannot be realized in practice without changing the existing European political and economic order, a topic that calls for fundamental and applied research. Such elaborations have started along different dimensions. The Foundation for European Progressive Studies in cooperation with Das Progressive Zentrum is carrying out a joint study of the future of the Visegrad Group in the European Union.¹² The place of Russia in the system of relations with the V4 is studied under the supervision of A. Gromyko at the Institute of Europe of the Russian Academy of Sciences¹³ and by E. Ananieva.¹⁴ In Ukraine, the problematics of cooperation with the V4 draws increased attention connected with the signing and implementation of the Association Agreement with the EU.

The era of globalisation is marked by the rapprochement taking place between neighbouring countries, primarily along the economic dimension. These processes define the new world history, whereby the emergence of economic and humanitarian networks of good neighbourly relations prevails over the entire prior history dominated by wars, victories and failures, gains of the winners and losses of the defeated ones.

In spite of certain political, economic, religious and other controversies, the global system of international relations is developing and modernizing. Among new directions of globalization is the emergence of local integration unions formed as systems of coherent inter-state interactions. The majority of them are viewed by modern science as integration processes, which can take place at the intercontinental, continental and regional levels, as testified by the successful experiences of the European Union, the Asia-Pacific Economic Association (APEC), the Economic Community of West African States (ECOWAS), the union of Latin American countries (MERCOSUR), and others.

Within the framework of the European Union, the Visegrad Four Group functions as a union inside a union. It was initially established in 1991 outside the

¹² Skrzypek, A., Skóra, M. (Eds.) (September-December 2017). *The Future of the Visegrad Group*. Brussels / Berlin.

¹³ Shishelina, L.N. (Eds.) (2017). *Vyshegradskaya chetyorka v Evropejskom soyuze: dilemmy konvergencii* [The Visegrad Four in the European Union: Dilemmas of Convergence]. Moscow, Institute of Europe RAS.

¹⁴ Ananieva, E. V. (2018). *Vyshegradskaya strategiya razvitiya Karpatskogo regiona* [The Visegrad strategy of Carpathian region development]. *Sovremennaya Evropa*, 7, 86-95. Retrieved May 06, 2019, from <http://www.sov-europe.ru/2018/7-2018/8.pdf>.

EU in order to prepare Czechia, Hungary, Poland and Slovakia for accession to the European Union. After accession to the EU in 2004, the group did not disappear, but continues to lobby its interests in the EU and beyond it, as well as cooperates actively with the EU accession candidates.

Over recent decades, Ukraine has been busy solving the problem of the search for its own identity, as did the Visegrad Four countries in the 1980-1990s. Separate political forces in Ukraine tilt towards closer integration with Russia, which had been exercising control over Ukraine as its constituent over recent centuries; and although Ukraine was in different statuses, all of them were de-facto colonial in nature. However, Russia is a state with archaic imperialistic forms of organization and a resource-based economy with minor global weight. According to 2018 statistics, being the world's largest country in terms of area, Russia produces 12.6 times less of the GDP than does the USA¹⁵ and lags behind the leading European states with modern economies. Economically, Russia is a country with systemic chronic underfinancing of all spheres, but the military one, as it was the case in the Soviet Union, whose heir it has become. Moreover, according to experts' estimates, the Russian economy is suffering severely from the Dutch disease.

The preconditions for Ukraine's policy focus on European and Euroatlantic integration, which was made a constitutional norm since 2019, were primarily economic in nature. At the same time, being the largest country on the eastern borders of Central Europe, Ukraine shares many features in common, both in statecraft and in cultural and historical heritage (especially its Right Bank regions), which are worth of being preserved and used as a basis for mutual prosperity for the sake of social and economic development of Ukraine, as well as each and every country of the V4. It has been in the 9th to mid-13th centuries that Kyivan Rus' had become the European state thanks to active inflow of Vikings from Scandinavia to Eastern Europe. In the 12th century, Kyivan Rus' united East Slavic and Finno-Ugric tribes, occupying the territory from the Black Sea to the Baltic Sea and from the upper reaches of the Vistula to the Taman Peninsula (1.3 million sq. km.). Since 1236, the majority of the lands of Kyivan Rus' became part of the monarchical state in Eastern Europe known as the "Grand Duchy of Lithuania, Russia, Samogitia and other lands", which was one of the largest states during late Middle Ages. Starting from 1385, it was in a union with the Kingdom of Poland. At that, within the borders of this united state, the people were widely speaking the *Ruska* language (not to be confused with the 'Russian' language) until the 16th

¹⁵ International Monetary Fund. Retrieved April 24, 2019, from <https://www.imf.org/external/pubs/ft/weo/2019/01/weodata/weoseladv.aspx?a=&c=223%2c924%2c922%2c132%2c926%2c112%2c111&s=NGDPD> .

century. Since 1654, after the Pereyaslav Council, much of Ukraine has come under the Russian rule, whereas Western Ukraine and Bessarabia became part of Austria-Hungary and Poland.

Thus, Ukraine's neighbouring countries – Czechia, Poland, Hungary and Slovakia – do not only share common borders, but also have common historical experiences and linguistic affinity. Numerous diasporas add a sense of unity with the V4 countries, each having large diasporas originating from other countries of the grouping and from Ukraine. This creates a need for development of multisystemic cooperation, primarily in the economic sphere, which in its turn calls for thorough analysis of the preconditions for deepening of the integration processes, as well as elaboration of the new forms of regionalization within the framework of Central Eastern Europe, as well as institutional formalization.

At the current stage, the Group of Visegrad Four is implementing the aim of assisting Ukraine in its European integration. Today, this is realised through participation in the preparation and implementation of reforms, which have already started to produce certain effects. At the same time, the development of cooperation leads to apprehension of the availability of great potential, which can be used in the future should the economies become closer, as demonstrated by the V4 experience.

For Ukraine, which is in the state of war with its northern neighbour, the deepening of economic integration with the Visegrad Four countries gives a chance to exit the crisis by transitioning to a favourable and supportive environment for sustainable development. Thus, the strategy oriented at the priority integration of Ukraine and the V4 can and should become a roadmap for solving the tasks of European and Euroatlantic integration of the country.

2. The territorial factor of Ukraine's European integration in alliance with the Visegrad Four

The territorial factor is Ukraine's most unique feature: A people who have never in their history waged a war of conquest turned out to have the largest territory in Europe. Still, the territorial and spatial aspects are usually excluded from research subject when solving the problems of economic integration. They are believed to be more suitable for geographical and public management contexts. However, the growing centrifugal tendencies in the EU and especially Brexit prove that a territory as a carrier of a certain amount of capital can significantly influence upon the efficiency of integration unions. A change in territory is a relatively

independent socio-economic phenomenon, which confers new goeconomic and geopolitical quality to a grouping.

At the time the Visegrad Four was created, the territorial factor of integration had not been the subject of special analysis in the context of socio-economic development. When studying it after the alliance had been factually created, it should be noted that in terms of territorial size, only Poland, whose share accounts for 58.6% of the entire area of the grouping, has considerable advantages over other members of the V4. If Ukraine were included in the integration union, the territory of Central European states would make 1137237 km², i.e. it would nearly double in size, with Ukraine accounting for 53.1% of the total area (Table 4.1).

Table 4.1

Territory of the V4 countries + Ukraine

CZ	HU	PL	SL	V4	UA	V4+UA
Total area, km ²						
78864	93030	312679	49036	533609	603628	1137237
Weight of the country in V4, %					UA / V4, %	UA / (V4+UA), %
14.8	17.4	58.6	9.2	100.0	113.1	53.1

Source: Calculated by the author based on data of the Eurostat and the State Statistical Service of Ukraine

It can be feasible to consider the significance of the territorial factor in the development of unions of states under conditions of globalisation from the standpoint of the concept of “territorialisation” introduced to economic science on the verge of 1980-1990s. As demonstrated by M. Kuryliak, its dialectical essence consists “on the one hand, in the need to assure the expansion and acceleration of the movement of goods, capital, people and information across geographical spaces. On the other hand, within the territorial spaces, an immovable infrastructure should be created and reproduced to ensure this movement”¹⁶. Thus, the territoriality in integration processes becomes a common capital, which “benefits” every participant. By creating infrastructure that is adapted to interests of the countries united in solving certain common goals, the states increase the bandwidths for capital, goods, services, labour and information, leading to increased value added in their GDPs.

¹⁶ Kuryliak, M. (2018). Terytorializatsiia i terytorialnyi kapital v systemi rehionalnoi polityky Yevropeiskoho Soiuzu [Territorialisation and territorial capital in the system of regional policy of the European Union]. *Mizhmarodni Vidnosyny. Seria “Ekonomichni Nauky”*, 7. Retrieved April 25, 2019, from http://journals.iir.kiev.ua/index.php/ec_n/article/view/3360/3039.

The advantages of territorial nature manifest themselves and are realised if the territorialisation is “viewed as a sectorial territorial economic and legal (but not political) autonomy in the conditions of expanding and deepening globalisation. This can be the internal or intra-regional division of healthcare resources, the territorial division of activity and involvement of civil society in solving the issues of using new behavioural models, etc”.¹⁷ Along all these dimensions, an activity that would be beneficial for each party can be developed. By the way, the Polish and Hungarian healthcare establishments, which have developed private forms of providing medical services, could be included in the processes of implementing Ukrainian reforms and facilitate in practice the development of the market for pharmaceutical and medical services on the territory of Ukraine.

The directions for using the territorial factor in the relations of Ukraine with the V4 countries comply with the territorial priorities of the European Union, which are oriented at the construction of an inclusive, smart and sustainable Europe of Diverse Regions,¹⁸ including such promising components as promoting polycentric and balanced territorial development; territorial integration in cross-border and transnational functional regions; ensuring global competitiveness of regions based on strong local economies; improving territorial connectivity for private individuals, communities and enterprises; managing and connecting ecological, landscape and cultural values of regions.

3. Integrated demographic policy: Population and the movement of labour

An integration grouping’s expansion policy should take into account the role of the demographic factor as its component. Economic growth is directly correlated with changes in the size of population, whereas a decrease in its growth rate gives rise to an increased burden on the young generation with respect to pension providing, thus decreasing the competitiveness of the economy.

Over the thirteen-year period from 2005 until 2018, the overall demographic situation in the territorial space of the Visegrad Four was characterised by a population decrease of 240 thousand persons or 3.7% (Table 2). In a growing economy this shows on the attraction of internal and external investments and scientific and technological development and limits the use of the available

¹⁷ Kuryliak, M. (2018). Terytorializatsiia i terytorialnyi kapital v systemi rehionalnoi polityky Yevropeiskoho Soiuzu [Territorialisation and territorial capital in the system of regional policy of the European Union]. *Mizhnarodni Vidnosyny. Seria “Ekonomichni Nauky”*, 7. Retrievd April 25, 2019, from http://journals.iir.kiev.ua/index.php/ec_n/article/view/3360/3039.

¹⁸ Territorial Agenda of the European Union. Towards an Inclusive, Smart and Sustainable Europe of Diverse Regions (2011). Retrieved April 25, 2019, from http://www.nweurope.eu/media/1216/territorial_agenda_2020.pdf.

development potential in general. At that, the population in Czechia and Slovakia increased by 370.0 thousand (+3.6%) and 50.0 thousand persons (+0.92%) respectively, whereas that of Hungary and Poland decreased by 240.0 thousand (-0.38%) and 260 thousand persons (-0.68%) respectively.

Table 4.2

Population of the V4 countries + Ukraine in 2005-2018¹⁹

Population			Increase (+), decrease (-) 2018 in comparison with 2005	
	2005	2018	thousand persons	%
CZ	10.26	10.63	+0.37	+3.6
HU	10.09	9.69	-0.24	-2.38
PL	38.36	38.10	-0.26	-0.68
SL	5.40	5.45	+0.05	+0.92
V4	64.11	63.87	-0.24	-3.74
UA	46.89	44.01	-2.86	-4.49
UA/V4, %	73.1	68.9	-	-

Source: compiled by the author based on the ILO statistical data.

In the demographic context, Ukraine is a country which has undergone large losses of population over the course of the previous century. According to estimations of the Institute of Demography and Sociological Research of the National Academy of Sciences of Ukraine, the loss of demographic potential in Ukraine made approximately 18 million people as a result of the World War I, the Civil War of 1917-1921, mass epidemics, periods of famine at the beginning of 1920s and 1930s, deportation of 1940s, mass famine in 1947, so-called ‘voluntary organized relocations’ of Ukrainian peasants to works in coal, oil extraction, forestry and fishery industries, agricultural works in Siberia and the Far East, and development of virgin and fallow lands in Kazakhstan.²⁰ Moreover, large losses were incurred by Ukraine during the World War II, which are the least studied periods in the country’s history. It should be mentioned that over the period from January 1941 until January 1, 1945, the population of the republic decreased from 40 967 to 27 383 thousand persons.²¹

¹⁹ The UNO. Population, surface area and density. UNdata. A word of information. Retrieved from http://data.un.org/_Docs/SYB/PDFs/SYB61_T02_Population,%20Surface%20Area%20and%20Density.pdf.

²⁰ Pyrozhkov, S. I. (2004). Demografichniy faktor u hlobalnii stratehii rozvytku Ukrainy [Demographic factor in the global development strategy of Ukraine]. *Demohrafiia ta Protsesty Vidvorennia Naseleennia*, 1-2, 5-7. Retrieved from <http://dspace.nbuv.gov.ua/handle/123456789/11854>

²¹ Lysenko, O.Ye., Perehrest, O. H. (2015). Demografichni vtraty Ukrainy u roky Druhoi svitovoi viiny [Demographic losses of Ukraine during the years of Second World War]. *Arkhivy Ukrainy*, 3. Retrieved from https://www.archives.gov.ua/Publicat/AU/AU_3_2015/02.pdf.

The tendency towards population decrease continued to persist in Ukraine in the 2000s. Over the period from 2005 until 2018, it decreased by 2.86 million persons or 4.49%. Along with that, the population in Ukraine exceeds that of the V4 countries, accounting for almost 70% of total population of the grouping in 2018. This makes it feasible to search for common interests with Central European countries in what concerns the use of the demographic factor. One way to unity is to develop a scenario for generating mutually beneficial economic, social and humanitarian effects from balancing the existing potentials and removing the “bottlenecks” that impede development. For that, it is necessary to dovetail the policies of economic growth in the grouping and those of every member country with the demographic resources.

In terms of employment, the potential of labour resources in the V4 countries in 2018 is used to a higher degree than in the world, Eastern Europe and Europe on average. A higher level of employment is observed in Czechia, Hungary and Poland, where the unemployment indicators are equal to 2.4%, 3.7% and 3.7% respectively. The level of unemployment in Slovakia corresponds to the EU average of 6.8%, but it is significantly higher than that of Poland and Hungary. In Ukraine, the level of unemployment surpassed that of the world, European and East European levels, equalling to 9.4%. Thus, it is significantly higher than the level of unemployment in the V4 countries. As for employment by gender indicator, the countries under study demonstrate a tendency towards higher rate of unemployment among women compared to that of men (Table 4.3).

Table 4.3

Utilization of labour potential in 2018 according to the methodology of the International Labour Organization²²

	Unemployment, %	Unemployment, thousands			Labour force, thousands		
		Total	Men	Women	Total	Men	Women
World	5.0	172480	98819	73661	3477831	21208	1356952
EU	6.8	16943	8828	8145	24521	134493	114128
East. Europe	5.2	7418	4134	3284	143423	75748	67675
CZ	2.4	130	59	71	5407	2995	2411
HU	3.7	171	85	86	4662	2536	2126
PL	3.7	677	372	306	18444	10153	8291
SL	6.8	186	96	90	2752	1494	1258
UA	9.4	1876	1196	771	20003	10532	9471

Source: Calculated by the author based on data of the ILO.

²² ILOSTAT (November 2018). Unemployment rate -- ILO modelled estimates. Retrieved April 24, 2019, from https://www.ilo.org/ilostat/faces/oracle/webcenter/portalapp/pagehierarchy/Page3.jspx?MBL_ID=2&_afzLoop=2166342831393401&_afzWindowMode=0&_afzWindowId=9gstcsmxn_23#!%40%40%3F_afzWindowId%3D9gstcsmxn_23%26_afzLoop%3D2166342831393401%26MBL_ID%3D2%26_afzWindowMode%3D0%26_afz.ctrl-state%3D9gstcsmxn_79.

Thus, while the V4 countries have practically exhausted their human labour potential in terms of quantity, Ukraine does not use almost 10% of its labour resources. In view of this, the cooperation between Ukraine and the neighbouring countries can develop along three scenarios: First, the V4 can carry out foreign investments into Ukraine and attract the free labour force for their assimilation; second, the V4 can encourage immigration and employ labour migrants from Ukraine at newly set up facilities in their host countries; third, a hybrid option can be developed that would include a combination of elements from the previous two scenarios.

Labour migration from Ukraine is rather high. Its share in total migration is 4.5% according to findings of the Modular Selective Survey performed by the State Statistical Service of Ukraine. Thus, the majority of migrants prefer the second scenario. In 2015-2017, 48.5% of labour migrants returned to Ukraine and 48.5% worked abroad over short periods of time. At the same time, 8.3% of labour migrants acquired the status of emigrant workers. Therefore, it is predominantly men residing in urban settlements who return to Ukraine, whereas men residing in rural areas emigrate (Table 4.4).

Table 4.4

Labour migrants by category, gender and country of origin, 2015-2017²³

	Total	Women	Men	Urban settlements	Rural area
Number of labour migrants, overall, thou. persons	1303.3	385.8	917.5	663.5	639.8
of which by category, %					
labour migrants who returned to Ukraine	43.2	37.7	45.5	47.5	38.7
short-term labour migrants	48.5	49.3	48.1	43.3	53.9
emigrant workers	8.3	13.0	6.4	9.2	7.4
Share of labour migrants in total population aged 15-70 years, in %	4.5	2.5	6.7	3.4	6.9

A change in the priorities of labour migrants with respect to choice of the destination country is an important tendency for the development of cooperation between Ukraine and the V4 countries. Today, labour migrants from Ukraine are increasingly reorienting themselves from the Russian direction towards Europe,

²³ State Statistical Service of Ukraine (2017). Zovnishnia trudova mihratsiia naseleння (za rezultatamy modulnoho vybirkovoho obstezhennia) [External labour migration of population (based on the results of Modular Selective Survey)]. Kyiv, p. 4.

although the Russian Federation remains one of the largest destination countries for Ukrainian workers. At the same time, the V4 countries are among the most attractive destinations for labour migrants from Ukraine. Out of all countries of the world, Ukrainian labour migrants prefer to work in Poland, which provides jobs to 38.9% of labour migrants from Ukraine. Czechia attracts 9.4% of labour migrants (4th position after the Russian Federation and Italy), whereas Hungary hosts 1.3% of labour migrants (8th position after Poland, Russia, Italy, Czechia, the USA, Belarus, and Portugal) from Ukraine (Table 4.5).

Table 4.5

Labour migrants by destination country, gender and country of origin, 2015–2017, thousand persons²⁴

	Total	Women	Men	Urban settlements	Rural areas
Overall number of labour migrants, thousand persons	1303.3	385.8	917.5	663.5	639.8
of which by host country, %					
Poland	38.9	42.6	37.3	38.3	39.5
The Russian Federation	26.3	15.1	31.0	33.0	19.3
Italy	11.3	27.0	4.7	7.3	15.4
The Czech Republic	9.4	6.2	10.7	5.2	13.7
Hungary	1.3	0.9	1.5	1.2	1.5

A relatively low language barrier is the V4's competitive advantage in using the labour migrants from Ukraine. Despite the fact that the Russian language is widely used in the system of secondary and higher education and that Russian-speaking media dominate the information space, many citizens of Ukraine have historically preserved some knowledge of the languages spoken in Ukraine's western neighbouring countries or have been learning them on their own. In particular, almost 85.0% of labour migrants, who are citizens of Ukraine, understand or can speak Polish at different levels of proficiency. The absolute majority of labour migrants do not admit having any language barrier in Czechia as well. At the same time, one third of labour migrants in Hungary did not speak and did not understand the Hungarian language, which can explain a smaller number of Ukrainian labour migrants in this country (Table 6). Moreover, Hungary as a destination country is mostly chosen by the Ukrainians of Hungarian ethnic origin.

²⁴ State Statistical Service of Ukraine (2017). Zovnishnia trudova mihratsiia naselennia (za rezul'tatamy modul'nogo vybirkovoho obstezhennia) [External labour migration of population (based on the results of Modular Selective Survey)]. Kyiv, p.5.

Table 2.6

Labour migrants by host country and level of host country's language mastery, 2015–2017²⁵

	Overall, thou. persons	of which by level host country's language mastery, %				
		did not speak and did not understand	understood, but did not speak	understand and could speak a little	were able to communicate	were able to communicate fluently
Number of labour migrants, overall	1303.3	18.0	16.9	24.4	19.3	21.4
of which by host country						
Poland	506.5	14.3	29.1	34.1	17.0	5.5
Russian Federation	342.4	–	1.6	6.0	24.6	67.8
Italy	146.7	51.2	14.5	24.9	7.6	1.8
The Czech Republic	122.5	18.0	24.2	37.4	17.5	2.9
The United States of America	23.5	–	21.3	35.7	43.0	–
Belarus	22.5	–	–	35.6	56.4	8.0
Portugal	20.3	69.5	3.9	21.2	5.4	–
Hungary	17.1	32.7	–	–	30.5	36.8
Israel	13.9	36.7	–	–	63.3	–
Finland	13.3	72.9	27.1	–	–	–
Germany	10.2	37.3	9.8	41.2	3.9	7.8
Other countries	64.4	42.7	9.9	27.0	15.4	5.0

When considering the influence of the language factor on the choice of the destination country by labour migrants, it should be acknowledged that this factor is not the decisive one. In particular, Italy is the third largest destination for labour migrants from Ukraine, even though 51.2% of them do not speak and do not understand the Italian language. This can be explained by the availability of high demand for labour, the price of labour and the impact of labour market openness. The migration of Ukrainian citizens to Italy has significantly increased since the

²⁵ State Statistical Service of Ukraine (2017). Zovnishnia trudova mihratsiia naseleння (za rezultatamy modulnoho vybirkovoho obstezhennia) [External labour migration of population (based on the results of Modular Selective Survey)]. Kyiv, p. 8.

UA-EU Association Agreement has been signed and the visa free regime has been introduced.

The policy of the V4 in the sphere of labour migration is characterized by transition from mostly export-oriented to import-oriented form of participation in the processes of labour movements induced by economic growth in the V4 countries. On the other hand, the channels of labour movement towards Europe intensified in response to conflicts in Syria and Donbas, worsened economic situation in the Middle East, and economic crisis in Ukraine. Strong Ukrainian diasporas have grown up in the V4. These processes challenge the Ukrainian state to develop, together with the V4, a joint mechanism of coordinated demographic policy, which would be focused on economic growth based on the deepening of the division of labour. An acceptable solution in this context can be joint entrepreneurship, primarily in the sectors that have been modernized with the help of western investments. Such firms have upgraded equipment and proprietors, who are willing to venture into foreign production sites and markets and who can become a third party to common business with a potential for common benefit. The main impediment to the development of such integration processes can be a lack of financial resources, which will encourage the creation of joint commercial banks on the counterparties' territories. However, the state should show its ability to assist export-import operations with banking capital, as it will be necessary to develop and use new payment mechanisms with currency clearing, crediting, national currency settlements, and cooperation with international financial centres.

4. Integration of Ukraine into the European Union as a convergence process

The Eurointegration strategy, which is at the core of internal and foreign policy of Ukraine, requires that a vector for the development of economics and society be chosen in the first place. This task should be solved taking into account the fact that the country is located on Europe's periphery. In 2017, Lithuania, which ranks the last among the euro area countries in terms of GDP per capita (PPP-based, constant 2011 international \$), outperformed Ukraine by a factor of 3.2; whereas Bulgaria, ranking the last among the EU countries outside the euro area, produces 2.5 times more output than Ukraine. A similar situation appears when GDP per capita is calculated according to other methodologies: Lithuania produces 5.2 times more than Ukraine, whereas Bulgaria produces 3.1 times more than Ukraine in current dollar prices. Lithuania has the lowest GDP per capita in PPP-based current prices among the euro area countries, but this indicator is 3.2 times higher than in Ukraine, whereas in Hungary, which has the lowest value of

this indicator among the EU countries outside the euro area, it is 1.1 times higher than in Ukraine. Luxemburg and the Netherlands, which are the EU leaders in terms of these indicators, are respectively 11.8 and 6.2 times higher; 39.8 and 18.3 times higher; 11.8 and 6.2 times higher than in Ukraine.²⁶

Table 4.7

**Percentage changes in Ukraine’s GDP in constant prices
over the period of 25 years (1993-2017)**

Change towards an increase ≥ 0				Change towards a decrease ≤ 0				
Below 5%	More than 5% to 10%	More than 10%	Total	Below 5%	More than 5% to 10%	From 10% to 20%	More than 20%	Total
6	7	1	14	4	3	3	1	11

Source: compiled by the authors based on the data of World Economic Outlook. URL: <https://www.imf.org/external/index.htm> (Last accessed: 11.06.2019)

The shown indicators testify to exceptionally poor starting conditions for Ukraine as a country, which began to implement its strategy focused on the EU accession. In general, it appears to be in some kind of a “divergence trap”, the escape from which can only be attained by ensuring constantly high rates of development. However, over the years of independence (1991-2017), the country’s GDP in constant US dollars grew by a factor of 4.2. This corresponds to growth rates observed in developed countries (e.g. for Luxemburg this indicator is 4.5). However, for a developing country, these indicators must be much higher so that not to allow that the divergence be “frozen”, or which is even worse, that it is deepened. We cannot but agree with O. Moskalenko that “the rate of GDP growth in Ukraine equal to 0-3-4% is equivalent to recognizing that the country has no prospects for economic development”.²⁷ Taking this statement into account, it is worth to note that over the period of twenty five years from 1993 to 2017, the percentage annual changes of GDP were positive only during 14 years, whereas they were negative during the other 11 years under study (Table 7).

In view of the positions of Ukraine’s economy on the European continent, its Eurointegration strategy is being transformed into the strategy of convergence with the European national economies, which should become the strategic direction for its social and economic development. In this context, the focus on integration with

²⁶ Calculated by the authors based on data in the World Economic Outlook. Retrieved June 11, 2019, from <https://www.imf.org/external/index.htm>.

²⁷ Moskalenko, O. M. (2014). Vperedzhaiuchy ekonomichnyi rozvytok: teoretyko_institutsionalni zasady i problemy realizatsii v Ukraini [The advanced economic development: Theoretical and institutional foundations and problems of implementation in Ukraine]. *Ekonomika Ukrainy*, 8, 633. Retrieved June, 26, 2019.

the EU should be recognized as the most promising one as, according to World Bank, “since its foundation, the European Union has become the modern world’s largest ‘convergence machine’, propelling poorer, and newer, member states to become high-income economies, and delivering to its citizens some of the highest living standards and lowest levels of income inequality in the world”.²⁸ The Association Agreement with the EU serves as a “convergence machine” for Ukraine, which is similar to the European one. Its successful implementation can make the country much closer to the union. However, it cannot ensure the resolution of all the tasks of convergence, especially along the economic direction. As a matter of fact, the EU itself needs an upgrading of the convergence mechanism so that to use the advantages of scientific and technical achievements of the modern times. The new “convergence machine, version 2.0” should be focused on achieving such a level of convergence that would ensure equal conditions for life and work in the entire union. The EU expects to resolve this problem by applying the concept of “flexicurity”, which consists in finding a balance between two vectors of labour market development: flexibility in satisfying the demands of employers and social security of employees.²⁹

In the conditions of Ukraine, the convergence policy should be developed based on the strategy of advanced economic development. For that, it is necessary to concentrate all types of resources in the sectors representing the country’s competitive advantages. In the course of the discussions taking place during presidential elections of 2019, preference was given to IT-related industries, tourism and agricultural sector. This choice cannot be contested, however, in a country as large in terms of territory, population and natural resources as Ukraine, the competitive advantages cannot be limited to these specific directions. Instead, the reforms should be carried out that would be capable of activating the drivers of nationwide reinvigoration of entrepreneurship and creation of highly productive and highly paid jobs. In addition, the drivers of Ukrainian “convergence machine” should stop migration outflows and encourage labour migrants to gradually return back into the country. This system should be extremely attractive for foreign investors and high technology imports. It should be built on the basis of best foreign practices, without blunt copying, but with consideration for national peculiarities, so that to ensure the positioning of Ukraine as a reliable partner and a promising player.

²⁸ The World Bank. Growing United: Upgrading Europe's Convergence Machine. Overview. Retrieved from <http://documents.worldbank.org/curated/en/852701520358672738/Overview>.

²⁹ Tszhima, Yu. A. (2013). Kontseptsiiia fleksikiuriti ta nestandartni formy zainiatiosti: vyklyky sohodennia [The concept of flexicurity and non-regular forms of employment: Today’s challenges]. *Biznesinform*, 7, 197-202.

Thus, the cooperation of Ukraine and the V4 should be developed based on the principles of balanced mutual benefit according to the “V4+Ukraine” formula. It would be feasible for the counterparties to conclude a free trade agreement. In the sphere of economics, mutual interests can be formulated based on the joint projects dedicated to deepening of the international division of labour and the programmes of SME business development within the V4+Ukraine framework. The creation of innovation clustering centres with joint science, research and education institutions, especially those specializing in the development of disruptive technologies, space and ecology, will become a promising initiative should there be a political will to do so. Over time, this fruitful cooperation with the alliance can lead to emergence of the Visegrad Five.

Therefore, the seventy-year-long development of peaceful European integration enriched economic science and practice with a diverse groundwork on gradual expansion of unions. The experience of the Visegrad Four is invaluable for attainment of the integration goals, as its role is growing considerably in the conditions of intensifying disintegration processes. For Ukraine, the cooperation with the neighbouring countries can be built upon the “V4+Ukraine” integration model with prospects for its reformatting into the Visegrad Five (V5). The preconditions for the priority development of integration processes between us are the common historical experiences in result of centuries-long joint belonging to different European states; developed interpersonal relations; a relatively insignificant language barrier; and the European mentality. On the basis of mutual benefit, within an enlarged grouping Ukraine can develop and use its competitive advantages in the territorial and demographic contexts, in particular by means of integrating national enterprises into regional and global production networks and reducing substantially the international migration processes in the region. The role of the V4 should be enhanced based on the convergence policy. In the sphere of economics, this calls for implementation of the radical economic reforms that would be focused on the strategy of advanced economic development and which would ensure the high level of convergence with the EU countries.

References

- Skrzypek, A., Skóra, M. (Eds.) (September-December 2017). *The Future of the Visegrad Group*. Brussels / Berlin. Retrieved May 06, 2019.
- Shishelina, L.N. (Eds.) (2017). *Vyshegradskaya chetyvorka v Evropejskom soyuze: dilemmy konvergencii* [The Visegrad Four in the European Union: Dilemmas of Convergence]. Moscow, Institute of Europe RAS.
- Ananieva, E. V. (2018). *Vyshegradskaya strategiya razvitiya Karpatskogo regiona* [The Visegrad strategy of Carpathian region development]. *Sovremennaya Evropa*, 7, 86-95. Retrieved May 06, 2019, from <http://www.sov-europe.ru/2018/7-2018/8.pdf>.

- Kuryliak, M. (2018). Terytorializatsiia i terytorialnyi kapital v systemi rehionalnoi polityky Yevropeiskoho Soiuzu [Territorialisation and territorial capital in the system of regional policy of the European Union]. *Mizhnarodni Vidnosyny. Seria "Ekonomichni Nauky"*, 7. Retrieved April 25, 2019, from http://journals.iir.kiev.ua/index.php/ec_n/article/view/3360/3039.
- Kuryliak, M. (2018). Terytorializatsiia i terytorialnyi kapital v systemi rehionalnoi polityky Yevropeiskoho Soiuzu [Territorialisation and territorial capital in the system of regional policy of the European Union]. *Mizhnarodni Vidnosyny. Seria "Ekonomichni Nauky"*, 7. Retrieved April 25, 2019, from http://journals.iir.kiev.ua/index.php/ec_n/article/view/3360/3039.
- Territorial Agenda of the European Union. Towards an Inclusive, Smart and Sustainable Europe of Diverse Regions (2011). Retrieved April 25, 2019, from http://www.nweurope.eu/media/1216/territorial_agenda_2020.pdf.
- The UNO. Population, surface area and density. UNdata. A word of information. Retrieved from http://data.un.org/_Docs/SYB/PDFs/SYB61_T02_Population,%20Surface%20Area%20and%20Density.pdf.
- Pyrozhkov, S. I. (2004). Demohrafichniy faktor u hlobalnii stratehii rozvytku Ukrainy [Demographic factor in the global development strategy of Ukraine]. Demohrafiia ta Protsesty Vidtvorennia Naseleння, 1-2, 5-7. Retrieved from – <http://dspace.nbuv.gov.ua/handle/123456789/11854>
- Lysenko, O.Ye., Perehrest, O. H. (2015). Demohrafichni vtraty Ukrainy u roky Druhoi svitovoi viiny [Demographic losses of Ukraine during the years of Second World War]. *Arkhivy Ukrainy*, 3. Retrieved from https://www.archives.gov.ua/Publicat/AU/AU_3_2015/02.pdf.
- ILOSTAT (November 2018). Unemployment rate – ILO modelled estimates. Retrieved April 24, 2019, from <https://www.ilo.org/ilostat/faces/oracle/webcenter/3.jspx>.
- State Statistical Service of Ukraine (2017). Zovnishnia trudova mihratsiia naseleння (za rezul'tatamy modul'nogo vybirkovoho obstezhennia) [External labour migration of population (based on the results of Modular Selective Survey)]. Kyiv, p. 4-8.
- The IMF. World Economic Outlook. Retrieved June 11, 2019, from <https://www.imf.org/external/index.htm>.
- Moskalenko, O. M. (2014). Vyperedzhaiuchy ekonomichni rozvytok: teoretyko_instytutsionalni zasady i problemy realizatsii v Ukraini [The advanced economic development: Theoretical and institutional foundations and problems of implementation in Ukraine]. *Ekonomika Ukrainy*, 8, 633. Retrieved June, 26, 2019.
- The World Bank. Growing United: Upgrading Europe's Convergence Machine. Overview. Retrieved from <http://documents.worldbank.org/curated/en/852701520358672738>.
- Tsizhma, Yu. A. (2013). Kontseptsiiia fleksikiuriti ta nestandartni formy zainiatosti: vyklyky sohodennia [The concept of flexicurity and non-regular forms of employment: Today's challenges]. *Biznesinform*, 7, 197-202.

CHAPTER 5

Eastern Partnership policy as an integration factor in the development of cooperation between Ukraine and V4

1. Eastern Partnership as a modern policy of the European Union

Ukraine's integration into the European Union requires finding a mechanism to achieve this goal. Moreover, the President, the Government, the Parliament, the judiciary, the public, international economic and financial organizations and enterprises are involved at different stages of implementing the decisions drafted by national and foreign experts and agreed upon with official European institutions regarding the Association Agreement. All this complicates the achievement of integration goals and often slows down the process.

Meanwhile, Europe has a positive experience of four EU member states - the Czech Republic, Hungary, Poland and Slovakia - forming the Visegrad Four (V4) before joining the union, as the former helped them to meet the conditions for accession. This regional, and peripheral at that time EU-wise, alliance did not dissolve after the accession of its founders to the European Union, but developed the ability to flexibly and effectively mobilize integrated resources to use changes in the system of international relations, lobby for its interests in Europe, and facilitate the accession of new members to the EU. This role of V4 has been growing significantly in the context of intensifying disintegration processes due to

the crisis in Greece, Brexit, separatism in Catalonia and strengthening position of right-wing parties in European politics.

The potential of the new V4 mission cannot be realized in practice without changes in the existing European political and economic order, which requires fundamental and applied research. Such developments have already begun in various directions. The Foundation for European Progressive Studies, in collaboration with the Das Progressive Zentrum, is implementing a joint project on the future of the Visegrad Group in the European Union.³⁰ Russia's place in the system of relations with V4 is being studied under the direction of A. Gromyko at the Institute of Europe of the Russian Academy of Sciences³¹ by E. Ananieva.³²

In Ukraine, there is a growing interest in the issue of cooperation with V4 in connection with the signing and implementation of the Association Agreement with the EU. At the same time, the development of Ukraine's relations with the Visegrad Four countries as natural neighbors is gaining importance in view of the European integration processes. Since 2009, they evolve within the framework of the European Union's Eastern Partnership policy, which is separate from the European Neighborhood Policy for six countries - Azerbaijan, Belarus, Armenia, Georgia, Ukraine and Moldova. For Ukraine, the Association Agreement with the European Union declares the expediency of "promoting the gradual rapprochement of the Parties, based on common values and close privileged ties, as well as deepening Ukraine's ties with EU policy and its participation in programs and agencies".³³

Cooperation between Ukraine and the Eastern Partnership countries after its separation from the general European Neighborhood Policy, which now covers the countries of the Mediterranean (Algeria, Egypt, Israel, Jordan, Libya, Morocco, Syria, Tunisia and the Palestinian Authority), mainly pertains to the security and political components of the relationship. The analysis of ten years worth of experience points to the need for identification of specific steps for further integration based on the deepening of cooperation.

Cooperation between Ukraine and the EU in the framework of the Eastern Partnership was carried out in accordance with the "Strategic Report 2007-2013", supplemented by the "Regional Strategic Report of the Eastern Region 2007-

³⁰ The Future of the Visegrad Group. Ania Skrzypek, Maria Skóra (eds.). Brussels/Berlin September–December 2017. 56 p. (Last accessed: 06.05.2019)

³¹ Вышеградская четвёрка в Европейском союзе: дилеммы конвергенции = The Visegrad Four in the European Union: Dilemmas of Convergence / [отв. ред. Л.Н. Шишелина]. – М. : Ин-т Европы РАН, 2017. – 138 с.

³² Анањева. Е.В. «Вышеградская» стратегия развития Карпатского региона. Современная Европа. 2018. № 7. С. 86-95. URL: <http://www.sov-europe.ru/2018/7-2018/8.pdf> (дата звернення: 06.05.2019)

³³ Association Agreement between the European Union and its Member States, of the one part, and Ukraine, of the other part, OJ L 161, 29.5.2014, p. 3–2137.

2013", despite its inauguration on May 7, 2009 in Prague and the first meeting of foreign ministers on December 8, 2009 in Brussels. The documents adopted for the project implementation focused on assistance in carrying out integration reforms.

The peculiarity of Ukraine in the Eastern Partnership project is that, for objective reasons, it has the greatest interest in cooperation with the Visegrad Four. First, for Ukraine, V4 is geographically the most powerful EU neighbor. Second, Ukraine and the Visegrad Four countries share a thousand-year history of joint cooperation and development of good neighborly relations in the political, economic, cultural and military spheres. Third, the imperial policy and aggression of the Russian Federation towards Ukraine is often the factor that determines the development of strategic partnerships with Ukraine's western neighbors. Fourth, the Visegrad Four countries have accumulated a great deal of positive experience in carrying out reforms in the context of transformation and meeting the conditions for EU membership as a planned convergence.

At the same time, it should be noted that there are factors that hinder the development of the partnership between Ukraine and V4. Among them, two are most significant. Firstly, Hungary's demands for Ukraine to grant the status of national-political autonomy to the Hungarian minority. Secondly, there are different approaches in assessing Russia's aggression in the Donbas and the annexation of Crimea. In particular, the Polish leadership views these events as aggression, the Czech Republic – as a civil war. However, differences in political positions are not such that they cannot be resolved. It is important that the European Union and the Visegrad Four continue to have an interest in maintaining the Eastern Partnership in general and with Ukraine in particular. The joint statement of the Foreign Ministers of the Visegrad Group on the occasion of the 10th anniversary of the Eastern Partnership reaffirmed “the support of the Eastern Partnership as a strategic dimension of the European Neighborhood Policy, based on common values, mutual interests and commitments”. They recognized the sovereign right of the Eastern partners to choose the level of ambition in their relations with the European Union and their readiness to continue building bilateral relations individually. They stressed the need to differentiate the European Union's support for the Eastern Partners according to the level of commitment and aspirations made by the partners³⁴.

Any study on the topic of European integration should proceed from the fact that the reformatting of relations from the European Neighborhood Policy to the Eastern Partnership is a qualitatively new stage of coexistence. As in real life, a

³⁴ The Visegrad Group Joint Statement on 10th Anniversary of the Eastern Partnership [PDF]; Bratislava, May 6, 2019. URL: <http://www.visegradgroup.eu/documents/official-statements>

neighbor is someone you can merely greet when you see them and not interact with their life otherwise, but a partner is someone with whom you conduct certain affairs. The same approach should be applied to interstate partnership. Partners must be aware of common interests and balance them so that each party ultimately receives its "added value".

Partnership with the EU means cooperation in various fields with the group in general and with each member state in particular. Given this multi-vector nature, Ukraine must identify common and bilateral interests in the European space. While relations with the group are formed in accordance with common European interests, the ones with individual EU members and their intra-EU groups take into account national interests. For Ukraine, members of the Visegrad Four are such countries.

Despite the fundamental importance of the Eastern Partnership for the development of relations between Ukraine and V4, it is given relatively little attention by scholars. The authors of most publications focus on the connection between the partnership and EU membership³⁵³⁶; priorities in relations between the V4 and the Eastern Partnership countries³⁷³⁸; energy supply³⁹⁴⁰; defining Ukraine's foreign policy priorities within the framework of the Eastern Partnership⁴¹; and development of civil society⁴².

An analysis of the publications shows that the economic component of the Eastern Partnership is the least studied. Practitioners and scholars cover it mainly in the context of assisting in economic reforms and do not touch upon partnerships in the real economy and cooperation in high value-added industries.

³⁵ Goncharenko O. "Eastern Partnership": it is enough for Ukraine to stand still. Economic truth. May 18, 2020. in Ukrainian <https://www.pravda.com.ua/columns/2020/05/18/7252058/>

³⁶ Litra L. Chkhikvadze I. (2016). EU membership prospects for Georgia, Moldova and Ukraine: impossible, forgotten and hidden? Institute of World Politics. 19 s. in Ukrainian

³⁷ Dangerfield M. (2014). V4: A new brand for Europe? Ten years of post-accession regional cooperation in Central Europe. Poznań university of economics review. Vol. 14. Num. 4. 2014. P. 71-90. URL: https://www.ebr.edu.pl/pub/2014_4_71.pdf.

³⁸ Racz A. (2011). A Limited Priority: Hungary and Eastern Neighborhood. Perspectives. Vol. 19, №2. P. 143-163. https://www.researchgate.net/publication/297300820_A_limited_priority_Hungary_and_the_eastern_neighbourhood

³⁹ Getmanchuk A., Solodkyy S. (2014). A Call for the EU – Time to step in Ukraine's expectations from the European Union. Institute of World Policy. 32 P. <http://neweurope.org.ua/wp-content/uploads/2017/12/Zaklik-do-ES-chas-vstupaty-v-gru.pdf>

⁴⁰ Duleba A., Benč V., Bilčík V. (2012). Policy Impact of the Eastern Partnership on Ukraine: trade, energy, and visa dialogue. Bratislava: Research Center of the Slovak Foreign Policy Association, 2012.

⁴¹ Klimkin P. (June 11, 2020). Eastern Partnership in the new reality: what Ukraine should pay attention to. Ukrainian Pravda. <https://www.euointegration.com.ua/experts/2020/06/11/7110953/>

⁴² Solonenko, I. (2011), 'Added Value? Eastern Partnership and EU-Ukraine Bilateral Relations', in *Internationale Politik und Gesellschaft* 3-2011, pp. 120-133. <http://www.fes.de/ipg/>

2. Development of cooperation between Ukraine and V4 in the real economy

Visegrad Four are the first-order neighbors of Ukraine in Central and Eastern Europe. At the moment, the cooperation with this group is limited mainly to transformational actions that implement the experience of policy development aimed at European integration for the sake of joining the EU. At the same time, there is almost no real integration between the neighboring economies. This is evidenced by the geographical structure of Ukraine's foreign trade in goods on the world market, and in particular with the V4 countries. For instance, the share of V4 countries in total Ukrainian exports of goods in 2018 amounted to 14.04%. However, almost half of V4 exports go to Poland. As for Hungary (3.48%), the Czech Republic (1.85%) and Slovakia (1.83%), the volumes are insignificant. The share of imports from V4 countries to Ukraine is even smaller (Table 5.1).

Table 5.1

Geographical structure of Ukraine's foreign trade in goods with the EU and V4 countries in 2018

	Export		Import		Balance, thousand US dollars
	thousand US dollars	% in Ukraine's foreign trade	thousand US dollars	% in Ukraine's foreign trade	
Total Ukraine	47334987,0	-	57187578,0	-	-9852591,
Of these, with the Visegrad Four					
Poland	3257248,5	6,89	3641921,5	6,37	-384673,0
Slovakia	863926,4	1,83	525879,4	0,92	338047,0
Hungary	1646045,9	3,48	1260239,9	2,20	385806,1
Czech Republic	878035,7	1,85	1034786,6	1,81	-384673,0
Total V4	6645256,5	14,04	6462827,4	11,30	-45492,9

Source: Compiled by the author using the data of⁴³

The lack of close economic ties between Ukraine and the countries of the Visegrad Group is becoming a factor that causes limitation of integration processes to the field of technical advice in the implementation of reform policy. Although

⁴³ Держкомстат України. Географічна структура зовнішньої торгівлі товарами у 2018 році. URL: http://ukrstat.gov.ua/operativ/operativ2018/zd/ztt/ztt_u/ztt1218_u.htm

this contributes to the geopolitical and geoeconomic development of the country, it is not a factor for the direct development of interstate economic relations.

Thus, the policy of the Eastern Partnership should have two sections: pan-European and national. Common conditions for all neighboring countries would be determined: forms of cooperation, institutional systems, funding, etc. at the pan-European level. At the same time, a specific cooperation strategy should be developed for each Eastern European country in the partnership, which economically would be focused on the country's inclusion in the Central-Eastern system of industrial cooperation and joint ventures, and through it, in the European and world system of production and exchange. Certain provisions can be borrowed from associations such as the Energy Charter and the Single European Sky. The advantages of such division and cooperation of labor lie in the creation of favorable conditions for more efficient use of human and natural resources in the territorial space of Central and Eastern Europe. The main goal of interstate coordination of these processes will be to increase the welfare of the population of each country, while giving priority to divergence policies.

Ukraine's inclusion in the system of economic integration processes of Central and Eastern Europe is most effective in the energy sector. About a third of Ukraine's gas needs are met by increasing its reverse from Slovakia⁴⁴. At the same time, the idea of creating a gas hub in Central Europe, supported by Slovakia, Poland, the Czech Republic and Ukraine, is being discussed. Unfortunately, its implementation is hampered by the lack of unity in the partners' positions on humanitarian issues, in particular the Hungarians' view on ethnic policy. Nevertheless, pragmatic interests are sure to lead to solutions to economic and general political challenges, as a common understanding of the risks posed by Nord Stream 2 dominates.⁴⁵

An inclusive approach is being developed in the relations between the Eastern Partnership countries and the EU in general, and V4 in particular. It is especially important for the issues of European integration of Ukraine as a large European state in terms of territory, population and natural resources. It is especially important for Ukraine to establish "a deeper sectoral partnership with prepared and interested partners".⁴⁶

The sectoral approach makes it possible to determine the structure of integration processes, so long as certain priorities are ranked to form a balanced

⁴⁴ Лендьял М. Л. Україна та Вишеградська четвірка: стан і перспективи розвитку відносин. Аналітична записка. URL: <http://old2.niss.gov.ua/articles/1861/>

⁴⁵ В. Зеленський: Україна та Словаччина розуміють ризики, які несе «Північний потію-2». URL: <https://www.epravda.com.ua/news/2020/09/24/665497/>

⁴⁶ The Visegrad Group Joint Statement on the Future of the Eastern Partnership; Prague, April 8, 2020. URL: <http://www.visegradgroup.eu/documents/official-statements>

strategic concept of economic development of Ukraine. The latter should be related to the goals and objectives of European integration and the accumulation of physical and financial resources. At the same time, V4's position in the Eastern Partnership should be fully exploited.

In this context, we must note The Visegrad Group Joint Statement on the Future of the Eastern Partnership, which states that “the EU and the Eastern partners should make bold steps to increase and improve their connectivity, transport and infrastructural bedrock for the sake of future economic success”⁴⁷.

Tasks related to Ukraine’s European integration project are being addressed in the context of outdated infrastructure. It is the biggest obstacle to their implementation, which is why the development of quality infrastructure is of paramount importance. To some extent, Ukraine is creating it within the framework of the 2020 national project "Large Construction". It envisages the construction or reconstruction of 6,500 km of roads, 142 schools, 117 kindergartens, 212 emergency departments, 570 outpatient clinics, and 122 sports complexes across the country by 2020.⁴⁸

The launch of the national infrastructure project is currently aimed at eliminating the so-called bottlenecks. Should it be continued, emphasis must be placed on the goals, the achievement of which accelerates the Europeanness of the country. Ukraine should prove itself to be an effective participant in the development of a strategic transport corridor between Europe and Asia now that it has been included in the Trans-European Transport Network (TEN-T) by the decision of the European Commission. Within the framework of such investments, it is expedient, firstly, to develop the EU transport and logistics system as a matter of priority, as the TEN-T core network map in the Eastern Partnership countries has already been approved by the European Commission. Secondly, for this transport corridor, efforts should be made to develop a high-speed rail line for both passenger and, ultimately, freight services that are fully compatible with the conventional rail network. This approach is programmed by the V4 countries and, accordingly, it should ensure the full integration of Ukrainian railways into both Europe and Asia.⁴⁹ The effectiveness of such a project lies in the fact that it has the potential to ensure future economic success through the gradual expansion of access to the EU Single Market and the Asian market.

⁴⁷ The Visegrad Group Joint Statement on the Future of the Eastern Partnership; Prague, April 8, 2020. URL: <http://www.visegradgroup.eu/documents/official-statements>

⁴⁸ Велике будівництво: програма Президента України. URL: <https://bigbud.kmu.gov.ua/>

⁴⁹ Joint Declaration of the Ministers of the Czech Republic, Hungary, the Republic of Poland and the Slovak Republic responsible for transport, development and EU funds. URL: https://www.mzv.sk/documents/10182/3574816/190521+V4+Declaration+on+High-Speed+Rail+Network_Bratislava

Table 5.2

Direct investment in Ukraine in 2019 (million USD)

	Direct investment (total) (2 + 5)	Equity participation instruments (3 + 4)	Equity instruments other than income reinvestment	Reinvestment of income	Debt instruments
	1	2	3	4	5
Total	5860,4	4909,1	1658,8	3250,3	951,4
including V4	451,6	425,8	171,3	237,4	35,2
breakdown of V4 countries					
Czech Republic	4,7	9,4	1,6	10,8	4,7
Hungary	190,6	189,1	91,6	97,6	1,5
Poland	210,3	193,7	77,1	116,6	16,6
Slovakia	46,0	33,6	1,0	32,6	12,4

Analyzing the investment activity of V4 countries in the Ukrainian market, it should be noted that its volumes do not correspond to the existing potential of the parties. However, lack of interest in the Ukrainian market on the part of Visegrad business is not the reason for this situation, as forums with the participation of entrepreneurs from Poland, the Czech Republic, Slovakia and Hungary are organized in Ukraine systematically. Investors from these countries are actively provided support by their embassies in Ukraine. There are examples of successfully implemented investment projects by Kraft Foods, Coca-Cola, Hewlett Packard, Cargill, Knauf, Yazaki-Ukraine, Raiffeisen Bank and others.

In our opinion, the growth of investment inflows from Ukraine's neighbors can be expected if the EU-Ukraine Association Agreement is successfully and systematically implemented, the free trade zone is functioning, and the judicial reform is completed. At the same time, Ukraine must create an economic development strategy aimed at convergence with the countries of the European Union and, above all, with its neighbors. The importance of this direction of development has heightened in recent decades when Ukraine has fallen significantly behind the EU member states. In comparison with the V4 countries, Ukraine lags far behind in terms of GDP, although it has a significant advantage in terms of territory and population (Table 5.3).

Ukraine's European and world economic integration are not gaining the pace that the new EU members had, largely due to the fact that the country has not created an appropriate business climate to attract direct investment. This is especially true of relations with the Czech Republic, Hungary, Poland and Slovakia (Table 3), which should objectively be interested due to Ukraine's relatively large area, human and natural resources, which are usually essential for investors to make decisions in favor of direct investment. In view of this, the legislative bodies of

Ukraine should develop financial, economic and organizational tools that will make profitable use of Ukraine's competitive advantages. The higher volume of GDP compared to Slovakia is achieved only due to the fact that Ukrainian population exceeds that of Slovakia by almost 8 times.

Table 5.3

The ratio of GDP in current prices in US dollars, V4 countries and Ukraine in 2019

V4 Countries	GDP of V4 countries to GDP of Ukraine	Population, thousand persons
Czech Republic	1,62	10650
Hungary	1,04	9773
Poland	3,83	37973
Slovakia	0,68	5450
Ukraine		41733

Source: author's calculations based on IMF statistics.

A retrospective look at the actions aimed at Ukraine's economic development during the years of independence suggests that the Ukrainian government of the past focused its efforts mainly on turning the country into a market economy using the remaining infrastructure of the Soviet-era. In these conditions, the global trends inherent to new economies had little influence as factors of growth in Ukraine. As a consequence of such development, a centrally managed economy transformed into an oligarchic one, precipitating a significant lag behind neighboring post-socialist countries.

In contrast to Ukraine, the V4 countries went the way of transforming the real economy. Overall, the group is the fifth largest economy in Europe and the 25th largest in the world.⁵⁰ Each of the V4 member countries has opened its market to transnational investment. Their economies are characterized by sustainable development with outpacing growth of science-intensive industries. Industries such as mechanical engineering, especially the manufacture of motor vehicles, the manufacture of electrical, electronic and optical devices, the chemical industry, the food industry and the energy sector have gained a high share in the secondary sector of the economy of the V4 countries.

The automotive industry has acquired economic, social and political significance. V4 countries are in the lead in terms of production. In the EU, the Czech Republic ranks 5th, Slovakia 7th, Poland 8th and Hungary 9th; the countries

⁵⁰ Visegrad Group: A new economic heart of Europe? DW recommends. URL: <https://www.dw.com/en/visegrad-group-a-new-economic-heart-of-europe/a-49483505>

are 17th, 21st, 22nd and 23rd in the world economy, respectively⁵¹. The automotive industry of the Visegrad countries has undergone development from the production of components in the first half of the 1990s to the creation of local and regional networks and inclusion in global networks in the 2000s. Emergence of International Production Networks (IPN), which cover both direct production and distribution, was the result of these processes. Their broader significance was that, thanks to the IPN, Western Europe connected itself with the countries of Central and Eastern Europe, creating dynamic internationalization of social development. The expansion of the IPN has identified prospects for integration into the European Union and the establishment of autonomous national industrial structures⁵².

Analyzing the experience of the V4 countries, it should be noted that Ukraine's rebound from the economic crisis should be subject to the task of economic convergence, i.e. convergence in the level of economic development at least to the Central European positions. To do this, a new strategy of economic development must be formed, which should be based on knowledge-intensive industries with a large share of value added. First of all, this strategy must include the revival of the automotive industry, which after the annual growth in 2009 virtually disappeared. However, human potential remains, staff is being trained in higher education institutions, and the historical memory of production and readiness to return to automobile enterprises has been preserved.

3. Integrated demographic policy: population and labor movement

The policy of expanding the integration group should take into account the role of the demographic factor. Economic recovery is directly correlated with population changes. Conversely, a decrease in its growth rate determines the increase in the burden on the younger generation in terms of pension services and, accordingly, reduction in the competitiveness of the economy. In general, the demographic situation in the territorial space of the Visegrad Four for 2005-2018 (Table 5.4) is characterized by a decrease in population of 240 thousand people or 3.7%. For emerging economies, this affects the attraction of domestic and foreign

⁵¹ Traczyk W., Klass L. Poland: Good Results of the Automotive industry. *Spotlightmetal*. 25.03.2019. URL: https://www.spotlightmetal.com/poland-good-results-of-the-automotive-industry-a-812409/?cmp=go-ta-art-trf-SLM_Allg_DSA-20201118&gclid=CjwKCAiAiML-BRAAEiwAuWVgghldgE2Qyd2Z2xVU_7mOfwDOtjhtSbnkr56JavITKo-2FPK8weDoxoCrm0QAvD_BwE

⁵² Tulder and R. Ruigrok W. International production networks in the auto industry: Central and Eastern Europe as the low end of the West European car complexes. *Enlarging Europe: The Industrial Foundations of a New Political Reality*. University of California at Berkeley, 1998. P.2020-237. URL: <https://escholarship.org/content/qt13s757cx/qt13s757cx.pdf#page=206>

investment and scientific and technological development; it also generally limits the use of existing development capacity. In particular, the Czech Republic and Slovakia had an increase of 370.0 thousand (+ 3.6%) and 50.0 thousand people (+ 0.92%), respectively, and Hungary and Poland - a decrease of 240.0 thousand (-0,38%) and 260 thousand (-0.68%).

Table 5.4⁵³

Population of V4 + Ukraine in 2005-2018

	Population		Increase (+), decrease (-) in 2018 compared to 2005	
	2005	2018	тис. осіб	%
CZ	10,26	10,63	+0,37	+3,6
HU	10,09	9,69	-0,24	-2,38
PL	38,36	38,10	-0,26	-0,68
SL	5,40	5,45	+0,05	+0,92
V4	64,11	63,87	-0,24	-3,74
UA	46,89	44,01	-2,86	-4,49
UA/V4, %	73,1	68,9	-	-

Source: compiled by the author according to the statistics of the International Labour Organization

In the demographic context, Ukraine is a country that has suffered great population losses over the past century. According to the Ptoukha Institute for Demography and Social Studies of the National Academy of Sciences of Ukraine, the demographic losses amounted to approximately 18 million people due to the First World and Civil Wars (1917-1921), mass epidemics, famine of the early 1920s and 1930s, mass repressions of 1930s, deportations of 1940s, famine of 1947, interstate migration, political repression, so-called “voluntary organized resettlement” of Ukrainian peasants to work in the coal, oil, forestry and fishing industries, and agriculture in Siberia and the Far East, and the development of virgin and fallow lands in Kazakhstan⁵⁴. In addition, Ukraine suffered heavy losses during World War II, which are among the least studied segments of history. It should be noted that for the period from January 1941 to January 1, 1945 the population of the republic decreased from 40 million 967 thousand to 27 million 383 thousand⁵⁵.

⁵³ Population, surface area and density. UNdata. A word of information. URL: http://data.un.org/_Docs/SYB/PDFs/SYB61_T02_Population,%20Surface%20Area%20and%20Density.pdf

⁵⁴ Пирожков С. І. Демографічний фактор у глобальній стратегії розвитку України. *Демографія та процеси відтворення населення*. 2004. №1-2. С-5-7. URL: <http://dspace.nbuv.gov.ua/handle/123456789/11854>

⁵⁵ Лисенко О. С., Перехрест О. Г. Демографічні втрати України у роки Другої світової війни. *Архіви України*. 2015. № 3. URL: https://www.archives.gov.ua/Publicat/AU/AU_3_2015/02.pdf

In the 2000s, the population of Ukraine continued to decline. During 2005-2018, it decreased by 2.86 million or 4.49%. Nevertheless, Ukraine exceeds the population of each of the V4 countries and in 2018 was almost equal to 70% of the total population of the group. This gives grounds for finding common interests with the countries of Central Europe in the use of the demographic factor. They can be united if a scenario is developed where each country receives economic, social and humanitarian benefits from balancing existing capacities and eliminating "bottlenecks" that hinder development. In order to achieve this, the policy of economic growth of the group as a whole and each member country specifically must be grounded in the demographic resources.

Table 5.5

**Use of labor potential in 2018 according to the methodology of the
International Labour Organization⁵⁶**

	Unemployment, %	Unemployment, thou.			Work force, thou.		
		total	men	women	total	Men	women
World	5,0	172480	98819	73661	3477831	212064	1356952
EU	6,8	16943	8828	8145	24521	134493	114128
Eastern Europe	5.2	7418	4134	3284	143423	75748	67675
CZ	2,4	130	59	71	5407	2995	2411
HU	3,7	171	85	86	4662	2536	2126
PL	3,7	677	372	306	18444	10153	8291
SL	6,8	186	96	90	2752	1494	1258
UA	9,4	1876	1196	771	20003	10532	9471

Source: Author's calculations according to the data of International Labour Organization

In terms of employment, the V4 countries used their labor potential to a greater capacity than was average for the world, Eastern Europe and Europe as a whole in 2018. The Czech Republic, Hungary and Poland had the highest employment rates, with unemployment rates of 2.4%, 3.7% and 3.7%, respectively. The unemployment rate in Slovakia corresponded to the EU average of 6.8%, although it was much higher than that of Poland and Hungary. Unemployment in Ukraine exceeded world, European and Eastern European levels and amounted to 9.4%. Thus, it was much higher than the unemployment rate in the V4 countries. With regard to employment in terms of gender, unemployment

⁵⁶ ILOSTAT the world's leading source of labour statistics. *Unemployment rate -- ILO modelled estimates, Nov. 2018*. URL: <https://filostat.ilo.org/>

rate among women tended to exceed the indicator for men in the analyzed countries (Table 5.5).

Thus, while the V4 countries have practically exhausted human potential in quantitative terms, Ukraine does not use almost 10% of the labor force. Given this, cooperation between Ukraine and its neighboring countries may develop according to three scenarios, at least. First, the V4 countries might invest in Ukraine and attracting free labor to develop their projects. Second, the population of Ukraine might be motivated to migrate to V4 countries, with a focus on filling jobs at new facilities. Third, a hybrid option, which would involve components of both scenarios.

Labor migration from Ukraine is significantly high. According to the results of the modular sample survey by the State Statistics Service, its share in total migration is 4.5%. Additionally, most migrants belong to the second category, i.e. in 2015-2017, 37.7% of migrant workers returned to Ukraine and 48.5% worked abroad in the short term. At the same time, 8.3% of migrant workers acquired the status of emigrant workers. Notably, mostly men and residents of urban settlements return to Ukraine, and men and rural residents become emigrants (Table 5.6).

Table 5.6

Migrant workers by category, sex and place of residence before migration, 2015-2017⁵⁷

	Total	Women	Men	Urban settlements	Countryside
Total number of migrant workers, thousand people	1303,3	385,8	917,5	663,5	639,8
including by categories, %					
migrant workers who returned to Ukraine	43,2	37,7	45,5	47,5	38,7
short-term migrant workers	48,5	49,3	48,1	43,3	53,9
emigrant workers	8,3	13,0	6,4	9,2	7,4
share of labor migrants in the total population aged 15-70 years, %	4,5	2,5	6,7	3,4	6,9

The labor migrants have exhibited a trend important for the development of Ukraine's cooperation with the V4 countries: a shift from prioritizing the Russian destination to preferring the European hosts (although the Russian Federation remains among the top host countries). At the same time, V4 countries are among

⁵⁷ Державна служба статистики України. Зовнішня трудова міграція населення (за результатами модульного вибіркового обстеження). Київ, 2017. С. 4

the most attractive for labor migrants from Ukraine. Ukrainian labor migrants prefer Poland over any other country in the world. It provides jobs to 38.9% of migrant workers from Ukraine. The share of the Czech Republic in terms of labor migrants from Ukraine is 9.4% (fourth place after the Russian Federation and Italy), Hungary's - 1.3% (eighth place after Poland, Russia, the Czech Republic, USA, Belarus and Portugal) (Table 5.7).

Table 5.7

Migrant workers by host country, sex and place of residence before migration, 2015–2017, thousand persons⁵⁸

	Total	Women	Men	Urban settlements	Countryside
Total number of migrant workers, thousand people	1303,3	385,8	917,5	663,5	639,8
including by host country, %					
Poland	38,9	42,6	37,3	38,3	39,5
Russian Federation	26,3	15,1	31,0	33,0	19,3
Italy	11,3	27,0	4,7	7,3	15,4
Czech Republic	9,4	6,2	10,7	5,2	13,7
Hungary	1,3	0,9	1,5	1,2	1,5

The V4 countries have a competitive advantage in the use of labor migrants from Ukraine – a relatively minor language barrier. Despite the widespread use of the Russian language in the system of secondary and higher education, the dominance of Russian-language media in the information space, historically many citizens of Ukraine retain a certain level of knowledge of the languages of Western neighbors or study them independently. In particular, almost 85.0% of migrant workers with Ukrainian citizenship understand or speak Polish at various levels. The vast majority of migrant workers do not have a language barrier in the Czech Republic either. At the same time, one third of labor migrants in Hungary do not speak or understand Hungarian, which in some way explains their smaller number in this country (Table 5.8). In addition, Hungary is chosen mainly by Ukrainians of Hungarian ethnic origin.

Although the language factor influences the migrant workers' choice of the host country, it should be noted that it is not the decisive factor. In particular, Italy ranks third in attracting labor migrants from Ukraine, despite the fact that 51.2% of them do not speak or understand Italian. This can be explained by the high demand for labor, its prices and the influence of the open market factor. The migration of

⁵⁸ Державна служба статистики України. Зовнішня трудова міграція населення (за результатами модульного вибіркового обстеження). Київ, 2017. С.5.

Ukrainian citizens to Italy has increased significantly since the signing of the Association Agreement with the EU and the introduction of a visa-free regime.

Table 5.8

Migrant workers by host country and level of language proficiency of the host country, 2015–2017⁵⁹

	Total, thousand persons	including by level of proficiency in host country's language, %				
		did not talk and did not understand	understood, but did not talk	understood and talked a little	could communicate	spoke the language fluently
Number of labor migrants, total	1303,3	18,0	16,9	24,4	19,3	21,4
including by host country						
Poland	506,5	14,3	29,1	34,1	17,0	5,5
Russian Federation	342,4	–	1,6	6,0	24,6	67,8
Italy	146,7	51,2	14,5	24,9	7,6	1,8
Czech Republic	122,5	18,0	24,2	37,4	17,5	2,9
USA	23,5	–	21,3	35,7	43,0	–
Belarus	22,5	–	–	35,6	56,4	8,0
Portugal	20,3	69,5	3,9	21,2	5,4	–
Hungary	17,1	32,7	–	–	30,5	36,8
Israel	13,9	36,7	–	–	63,3	–
Finland	13,3	72,9	27,1	–	–	–
Germany	10,2	37,3	9,8	41,2	3,9	7,8
Other countries	64,4	42,7	9,9	27,0	15,4	5,0

V4 policy in the field of labor migration is characterized by the transition from a predominantly export form of participation in the movement of labor to import. V4 countries are driven to this primarily by economic growth. On the other hand, the conflicts in Syria and Donbas, the deteriorating economic situation in the Middle East, the economic crisis in Ukraine have created channels of intensive labor flows towards Europe. Powerful Ukrainian diasporas have emerged in V4. These processes are a challenge for the Ukrainian side, which has to work with V4 to develop a mechanism for a coordinated demographic policy focused on economic growth based on the deepening division of labor. Joint ventures may be acceptable in this context, especially in sectors modernized with Western investment. Such firms have upgraded equipment with new owners interested in doing business on remote production sites and markets, which can act as a third

⁵⁹ Державна служба статистики України. Зовнішня трудова міграція населення (за результатами модульного вибіркового обстеження). Київ, 2017. С. 8.

party in a joint venture with the potential to benefit all participants. The lack of financial resources may be the main obstacle to the development of such integration processes, which could motivate the creation of joint commercial banks within the territory of the parties. However, to achieve this, the state must show its ability to facilitate export-import operations with bank capital, as there would be a need to develop and use new payment methods with currency clearing, lending, settlements in national currencies, and cooperation with international financial centers.

4. Development of electronic payment systems in the structure of e-commerce in the Visegrad group and Ukraine

Today rapid development of information technology is leading to significant digitalization and digital transformation in the world, which contributes to the development and expansion of e-commerce in many countries around the world, including Visegrad Group and Ukraine. This process contributes to the complete modernization of most business processes as well as trade and economic relations. That is why e-commerce being a new progressive phenomenon in the world needs to be studied in detail in order to clearly understand its impact on economic and social development. At the same time, the spread of electronic payments in the field of e-commerce contributes to the actualization of the use of electronic payment systems, which is an important vector for the development of payment systems in the Visegrad group and Ukraine.

Electronic payment systems are closely linked to the development of e-commerce, as the level of Internet penetration, volumes of Internet trade and the share of retail trade on the Internet all characterize the level of e-commerce in the country and affect the rate of use of electronic payment systems. The issue of e-commerce development and its impact on the economic development of countries is popular in domestic and foreign scientific circles. Many scientific works have been devoted to the study of the specifics of the functioning of e-commerce and its diverse impact on economic indicators.

In particular, Rana Deljavan Anvaria and Davoud Norouzib (2016)⁶⁰ based on research in 21 countries found that: 1) spending on e-commerce and R&D have a positive and long-term impact on GDP per capita; 2) the size of the government and health care spending also have a positive impact on economic growth.

⁶⁰ Anvari, R.D., Norouzi, D. (2016). The Impact of E-commerce and R&D on Economic Development in Some Selected Countries. *Procedia – Social and Behavioral Sciences*, Vol.229, 354-362.

Elvis Mwenda Kithinji and Perez A. Onono (2020)⁶¹ investigated the impact of e-commerce on Kenya's output and overall factor productivity. The impact of e-commerce on overall productivity factors has been positive. That is, the results obtained by the authors indicate that continued investment in e-commerce in terms of capital and mobile payment technology will be important for the country in the context of increasing output and increasing factor productivity.

Tianqi Wang and Lijun Huang (2018)⁶² conducted a study of the relationship between investment in agricultural science and technology as well as economic growth in agriculture based on the e-commerce model using the entropy method. The results of the analysis show that with the improvement of the level of agricultural e-commerce, the total factor productivity of agriculture increases simultaneously. That is, other conditions being equal, for every 1% increase in the level of agricultural e-commerce, the total factor productivity of agriculture will increase by 0.061%.

In addition, Pavol Kita and Jamal Hasan Attila Póya (2016)⁶³, studying the impact of e-commerce on the economy, labor market and labor productivity in the Slovak Republic, concluded that the use of e-commerce dislocates the labor market, which also saves labor costs. Increased productivity is another advantage of e-commerce for a company that uses this sales channel. In addition, e-commerce has a significant positive impact on the economy as a whole.

Ukrainian researchers Zatonatska Tetiana and Novosolova Valeriia (2017)⁶⁴ comprehensively studied the impact of e-commerce on economic development and economic growth in Ukraine and Poland. The study found that the spread of e-commerce reduces unemployment and contributes to GDP growth per capita. Proving the relationship between e-commerce and economic development of Ukraine and Poland was done through economic and mathematical modeling. In addition, Zatonatska Tetiana (2018)⁶⁵ investigated models for analyzing the impact of e-commerce on the economic development of Ukraine, Poland and Austria. As a result, it was found that the growth of online sales per capita contributes to lower unemployment in Ukraine and Poland in contrast to Austria, where this phenomenon actually causes an increase in unemployment. In addition, e-

⁶¹ Kithinji, E., Onono, P.A. (2020). Effect of electronic commerce on output and total factor productivity in Kenya. *Journal of Economics And Political Economy*, Vol.7(2), 101-130.

⁶² Wang, T., Huang, L. (2018). An Empirical Study on the Relationship between Agricultural Science and Technology Input and Agricultural Economic Growth Based on E-Commerce Model. *Sustainability, MDPI*, Vol.10(12), 1-12.

⁶³ Kita, P., Póya, Y.H. (2016). E-commerce Impacts on Selected Economic Area in Slovakia. *International Journal of Innovative Research in Computer and Communication Engineering*, Vol.4(8), 14952-14959.

⁶⁴ Zatonatska, T., Novosolova, V. (2017). Моделювання впливу електронної комерції на економічний розвиток країни. *Фінансово-кредитна діяльність: проблеми теорії та практики*, Vol.1(22), 265-274.

⁶⁵ Zatonatska, T. (2018). Models for analysis of impact of the e-commerce on indicators of economic development of Ukraine, Poland and Austria. *Marketing and Management of Innovations*, Vol.2, 44-53.

commerce has a positive impact on the development of all three countries and contributes to GDP growth.

Fedirko O., Zatonatska Tetiana, Dluhopolskyi Oleksandr and Londar Sergiy (2021)⁶⁶ analyzed the impact of e-commerce and indicators of sustainable development in Ukraine, Poland and Austria in the context of economic, social and environmental components. The authors Mykhalchuk Taras, Zatonatska Tetiana, Dluhopolskyi Oleksandr et al. (2021)⁶⁷ also analyze the theoretical aspects of e-commerce as an economic category, the current state of the e-commerce clothes market related to the COVID-19 pandemic, consumer distrust and less functionality in choosing clothing. The result of the study was an automated reference system with a module for emotional analysis of texts.

Analysis of e-commerce development in the countries of the Visegrad group allows us to state that the volume of e-GDP in them is constantly growing (quite slowly – in Slovak Republic and Hungary, rapidly – in Poland and Czech Republic). As evidenced by the data of Fig. 5.1, the largest share of e-GDP is recorded today in the Czech Republic (forecast 6.4% of the total country's GDP 2021).

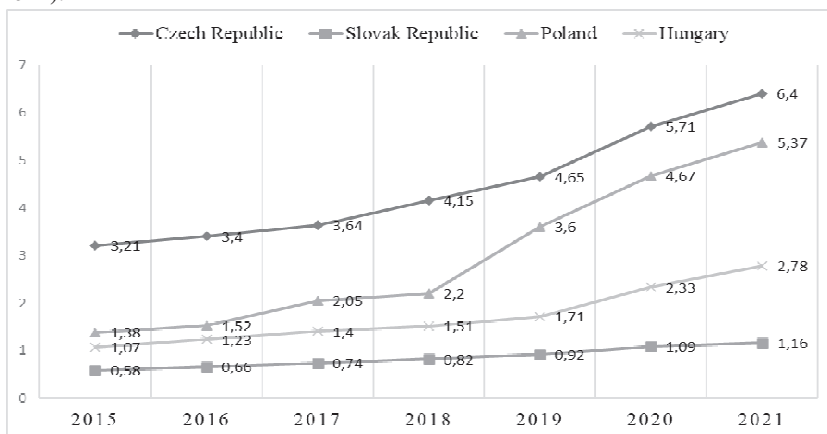


Fig. 5.1. E-GDP, % of GDP comprised of e-commerce sales during 2015-2021⁶⁸

⁶⁶ Fedirko, O., Zatonatska, T., Dluhopolskyi, O., Londar, S. (2021). The impact of e-commerce on the sustainable development: case of Ukraine, Poland, and Austria. *IOP Conference Series: Earth and Environmental Science*, Vol.915, "International Conference on Environmental Sustainability in Natural Resources Management" (15-16 October, 2021). Odesa, Ukraine.

⁶⁷ Mykhalchuk, T., Zatonatska, T., Dluhopolskyi, O., Zhukovska, A., Dluhopolska, T., Liakhovych, L. (2021). Development of recommendation system in e-commerce using emotional analysis and machine learning methods. *The 11th IEEE International Conference on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications (IDAACS)*, Vol.1 (September 22-25, 2021). Cracow, Poland, 527-535.

⁶⁸ Build by the authors based on: Lone, S., Harboul, N., Weltevreden, J.W. (2021). 2021 European E-commerce Report. Amsterdam/Brussels: Amsterdam University of Applied Sciences & Ecommerce Europe. 111 p.

In terms of the number of institutions offering payment services per 1 million people (1436), Poland is the leader not only among the countries of the Visegrad group, but also among the countries of Central and Eastern Europe (Table 5.9). Also, Poland is the leader between Visegrad group in the Easy of Doing Business Index (40 rank), e-Government Development Index (24 rank), The Inclusive Internet Index (12 rank), Universal Postal Union Reliability Index (15 rank), Global Cybersecurity Index (30 rank) and online purchasing from national sellers (94%).

In 2019 the Polish e-commerce market was almost 11% of the entire market, but by 2025 it will grow to almost 20%. The growing e-commerce market in Poland will be affected by such factors: temporary closure of shops in shopping centers; consumer reluctance to visit congested places; limit of the number of people in-store at the same time.

The high penetration rate of banking services in Poland is a result of the inclusion in this ratio of branches that handle cash transactions (for example, Polish post offices) but do not process non-cash payments.

Table 5.9

Digitalization process in Vigergad group in 2020⁶⁹

	Slovak Republic	Czech Republic	Hungary	Poland
Most popular payment method	Cash-on-delivery (72%)	Bank transfer (58%)	Cash-on-delivery (54%)	Bank transfer (52%)
E-shoppers	68%	80%	70%	72%
B2C e-commerce growth rate	22%	26%	35%	34%
E-GDP	1,09%	5,71%	2,33%	4,67%
Online purchasing from national sellers	86%	85%	85%	94%
Number of institutions offering payment services per 1 million people	569	543	642	1436
Logistic Performance Index	3,03 (53)	3,68 (22)	3,42 (31)	3,54 (28)
Easy of Doing Business Index	75,6 (45)	76,3 (41)	73,4 (52)	76,4 (40)
E-Government Development Index	0,78 (48)	0,81 (39)	0,77 (52)	0,85 (24)
The Inclusive Internet Index	34	31	40	12
Universal Postal Union Reliability Index	62,6 (21)	65,0 (18)	55,0 (37)	67,2 (15)
UNCTAD B2C E-commerce Index	85,7 (23)	85,8 (22)	80,5 (31)	82,2 (28)
Global Cybersecurity Index	92,36 (34)	74,37 (68)	91,28 (35)	93,86 (30)

⁶⁹ Build by the authors based on: World bank <https://lpi.worldbank.org/international/scorecard/radar/254/C/SVK>; Doing Business (2020). <https://tradingeconomics.com>; The United Nations E-Government Development Database. <https://publicadministration.un.org/egovkb/en-us/Data-Center>; UNCTAD B2C E-commerce Index (2019). <https://tcddata360.worldbank.org/indicators/hec11e54d>; Global Cybersecurity Index (2020). <https://www.jagranjosh.com/general-knowledge/itu-global-cybersecurity-index-1625207203-1>.

However, not only the number of institutions offering payment services ensure their availability, but also the level of development of Internet banking, which directly depends on the availability of the Internet connection. However, Poland is not the leader in the number of Internet users among the countries of the Visegrad group (Fig. 5.2). The data in Fig. 5.2-3 shows that the Czech Republic has significantly higher rates of Internet users and e-shoppers than Poland. 65% of online shoppers used AliExpress and 36% – Amazon.

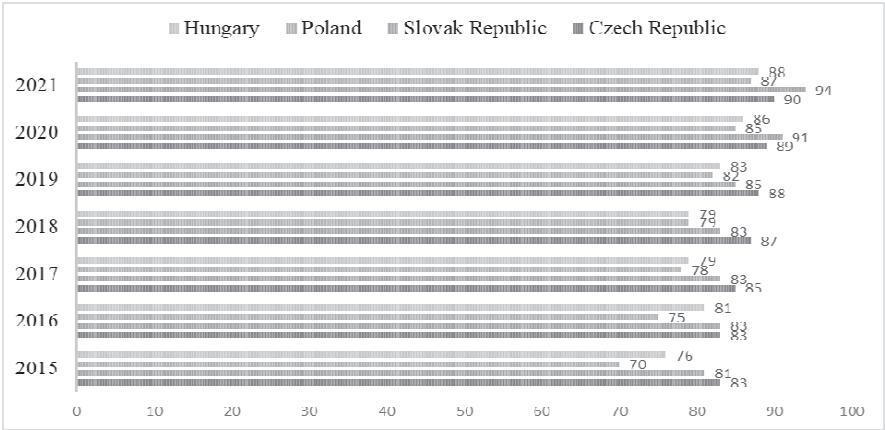


Fig. 5.2. Internet usage, % of the population accessing the Internet during 2015-2021⁷⁰

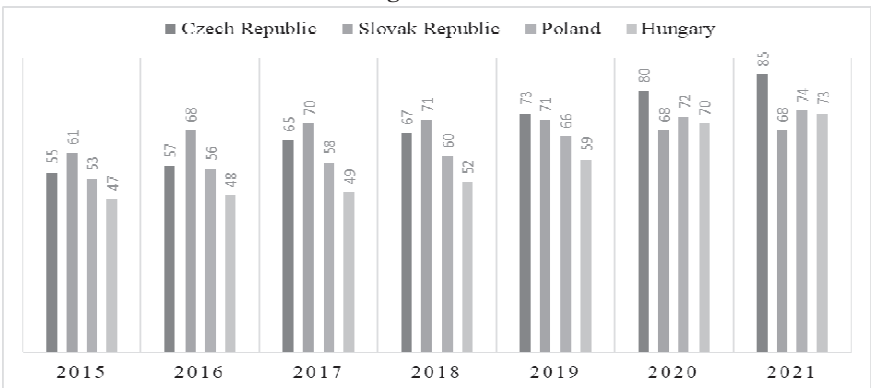


Fig. 5.3. E-shoppers, % of Internet users that bought goods or services online during 2015-2021⁷¹

⁷⁰ Build by authors based on: Lone, S., Harboul, N., Weltevreden, J.W. (2021). 2021 European E-commerce Report. Amsterdam/Brussels: Amsterdam University of Applied Sciences & Ecommerce Europe. 111 p.

⁷¹ ibid

Among the Visegrad countries, Poland (26790) and the Czech Republic (23013) have the largest number of facilities (POS-terminals) accepting electronic payment instruments (Fig. 5.4). The lowest position has Slovak Republic (only 13901 POS-terminals per million inhabitants).

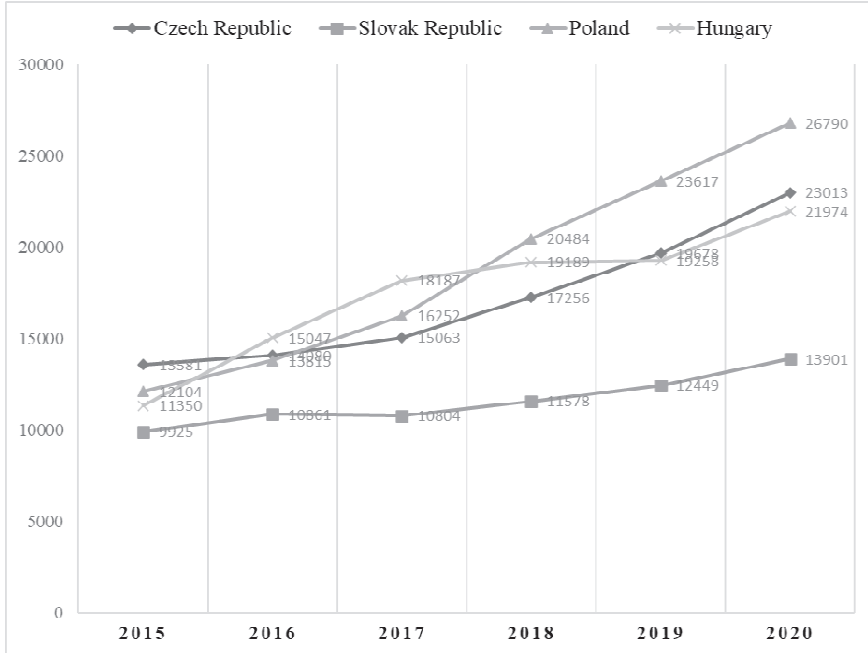


Fig. 5.4. Number of POS-terminals per million inhabitants during 2015-2020⁷²

The expansion of non-cash turnover, along with the rapid development of electronic banking, provides a number of important benefits to the progress of economies, states, businesses and individuals. Diagnosis of the current state of cash settlements in Central and Eastern Europe still shows, unfortunately, a high share of cash turnover and low use of banking infrastructure and non-cash instruments compared to other Western European countries⁷³. The implementation of a joint initiative within the Visegrad group to promote non-cash solutions is justified.

With the use of smartphones, payments through mobile applications and mobile browsers are stimulating the growth of digital commerce in the Visegrad

⁷² Build by authors based on: Statistical Data Warehouse (2021). URL: <https://sdw.ecb.europa.eu>.

⁷³ Mrowiec, P. (2017). Available forms of money in payment turnover versus economic growth of the Visegrad Group countries. *Scientific Journal WSFiP*, Vol.2, 59-74.

countries. It is forecasted that global digital sales via phones will exceed 70% by 2022 (\$4.6 trillion).

Today, there are approximately 19.6 million e-commerce users in Poland who spend \$416.71 online annually. Four years from now, 20.95 million Polish online shoppers are expected to spend \$546.09 online annually. The most popular payment methods in Poland: Pay-by-links, Visa, Mastercard, Paypal, Bank Transfer, eWallet, Credit Card, Cash on Delivery, Pre-Paid, PrePay, Charge Card (Fig. 5.5).

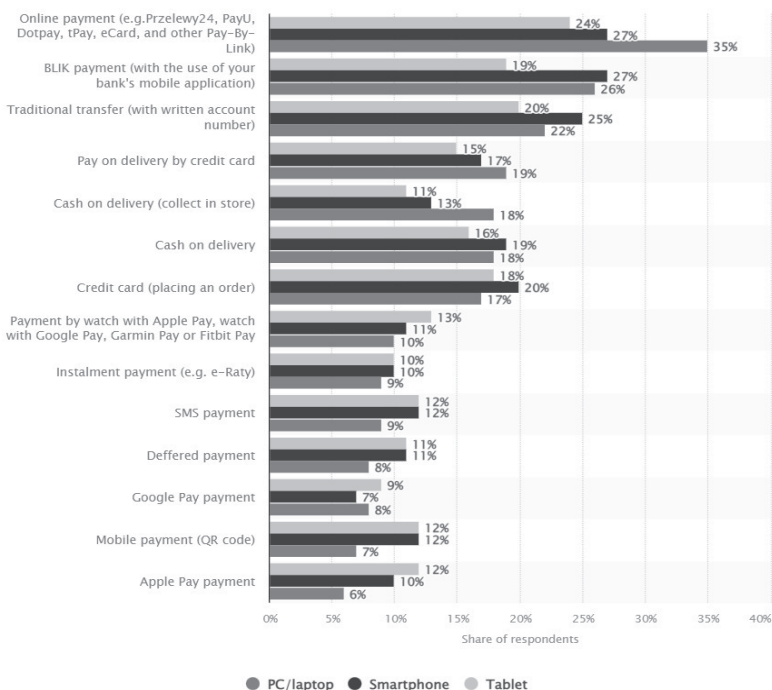


Fig. 5.5. Most popular payment methods in Poland in 2020, by device⁷⁴

In 2019 in the Czech Republic there were 4.93 million e-commerce users, and by 2022 is expected that 5.34 million e-commerce users will spend \$635.60 online annually. The most popular payment methods in the Czech Republic: Mastercard, Online banking, Visa, Paypal⁷⁵. The use of such forms of money in

⁷⁴ Statista (2021). URL: <https://www.statista.com/statistics/959914/poland-online-payment-methods>.

⁷⁵ The most popular payment methods in Europe by countries. URL: <https://ikajo.com/blog/popular-payment-methods-in-europe>.

payment turnover can also contribute to faster economic growth in Visegrad group and Central and Eastern Europe countries.

Analysis of factors that influence the level of development of electronic payment systems in Ukraine is based on statistics from the official website of the National Bank of Ukraine. In general, today most payments and non-cash payments are made using payment cards in Ukraine⁷⁶:

1. The total volume of transactions using payment cards issued by Ukrainian banks in 2019 amounted to 3576.7 billion UAH, and their number – 5057.3 million units. As can be seen from table 2, there is a positive dynamic of growth in the share of non-cash transactions in both volume and quantity.

Table 5.10

Volume and number of transactions using payment cards in Ukraine during 2015-2020⁷⁷

	2015	2016	2017	2018	2019	2020
Volume of transactions using payment cards, UAH billion						
a) increase in the share of cash transactions, %	69	65	61	55	50	45
b) increase in the share of non-cash transactions, %	31	35	39	45	50	55
Number of transactions using payment cards, million units						
a) increase in the share of cash transactions by number, %	35	29	25	22	18	23
b) increase in the share of non-cash transactions by number, %	65	71	75	78	82	86

2. The total number of issued payment cards in circulation in Ukraine as of January 1, 2020 amounted to 68.9 million units, which is shown in Table 5.11. In addition, in 2020-2021 there is a trend of active distribution of contactless payments using contactless cards, smartphones and other NFC-devices, due to the security, speed and convenience of such operations.

Table 5.11

General information about payment cards in Ukraine in 2019⁷⁸

Indicator	Value
Total number of issued payment cards, million units	68,9
Active payment cards, million units	42,2
Contactless payment cards, million units	8,6
Number of active payment cards per 1 Ukrainian, units	1,2

⁷⁶ Національний банк України. URL: <https://bank.gov.ua/ua/news/all/za-kilkisty-ta-sumoyu-v-ukrayini-perevajayut-bezgotivkovi-operatsiyi>.

⁷⁷ Build by authors based on: Національний банк України. URL: <https://bank.gov.ua/ua/news/all/za-kilkisty-ta-sumoyu-v-ukrayini-perevajayut-bezgotivkovi-operatsiyi>.

⁷⁸ ibid

There are three groups of factors that influence the development of the market of electronic payment systems in Ukraine:

1. Factors influencing the increase in the number of payment card users.
2. Factors affecting the quality of electronic payment systems infrastructure.
3. Political and legal factors in the functioning of electronic payment systems.

Let's look at each of these groups in more detail. The first group of factors influencing the increase in the number of payment card users include⁷⁹:

1) public confidence in the financial sector. There is currently a significant level of public distrust in the financial sector in Ukraine, as citizens continue to withdraw their savings from accounts and do not use oftenly electronic payment systems to pay for goods / services;

2) the level of financial literacy of the population. The level of financial literacy of the population has a significant impact on the level of development of the payment card market in Ukraine. The United States Agency for International Development (USAID) conducted the All-Ukrainian Sociological Survey on "Financial Literacy, Financial Inclusion, and Financial Welfare in Ukraine", which found that much of Ukraine's population has a low level of financial awareness (11.2 out of 21). In addition, the level of use of banking services in Ukraine is too low. Many people use only standard financial services: use payment cards only to receive wages, pensions, social benefits, utilities. This can be explained by a significant number of factors: distrust in the banking sector, inexperience in payment cards usage, cases of fraud, etc.;

3) income level of the population. As you know, the level of interest rates and prices is an important factor influencing the level of income. During the period of economic growth, the level of income of the population increases, purchasing power also boosts, which affects the volume of purchases of goods and services and the likelihood of using payment cards when making payments for them;

4) the level of corruption in the country. Currently, Ukraine has a high level of corruption compared to the Visegrad countries, which is a significant negative factor that inhibits both the entry of foreign payment systems into the market of foreign players and the activation of domestic players of electronic payment systems in the Ukrainian market;

⁷⁹ Азарова, А.О., Теслюк, О.В. (2017). Проблеми розвитку платіжної системи України та шляхи їх вирішення. *Вісник Хмельницького національного університету. Економічні науки*, №1, 19-22; Длугопольський, О.В., Вірковська, А.Ю. (2020). Економіка і я: посібник серії «Шкільна бібліотека» для 7 класу закладів загальної середньої освіти. Тернопіль: Астон. 144 с.; Проект USAID «Трансформація фінансового сектору». URL: http://www.fst-ua.info/wp-content/uploads/2019/06/Financial-Literacy-Survey-Report_June2019_ua.pdf

5) the presence of fraudulent actions using payment cards. Payment card fraud is a very important problem for Ukraine, so the majority of the population withdraws funds from their accounts to protect their money and does not use electronic payment systems to purchase goods / services;

6) the level of shadowing of the economy. Significant shadowing of the economy is an important restraint on the development of the electronic payment systems market in Ukraine.

The second group of factors influencing the quality of electronic payment systems infrastructure includes⁸⁰:

1) development of Internet technologies, Internet trade, the level of Internet penetration. The development of Internet technologies and Internet commerce, as well as increasing the level of Internet penetration in the country allows to increase both the speed and number of transactions using electronic payment systems.

Fig. 5.6 shows the dynamics of Internet trade in Ukraine for the period of 2007-2019. The dynamics of Internet penetration in Ukraine for 2007-2019 is shown in Fig. 5.7. The dynamics of the calculated value of the share of retail trade on the Internet is shown in Fig. 5.8.



Fig. 5.6. Volume of Internet trade in Ukraine during 2007-2019⁸¹

⁸⁰ Держстат. URL: <http://www.ukrstat.gov.ua>; World Bank. URL: <https://data.worldbank.org/indicator>; Ain.ua. URL: <https://ain.ua/2013/04/11/e-commerce-v-ukraine>; Finance.ua. URL: <https://charts.finance.ua/ru/currency/official/-/1/usd>; Inau.ua. URL: https://inau.ua/sites/default/files/file/1903/dani_ustanovchyh_doslidzhen_zh_1-y_kvartal_2019_0.pdf; Zet.in.ua. URL: <https://zet.in.ua/statistika-2/rynok-it/rynok-internet-torgovli-v-ukraine>.

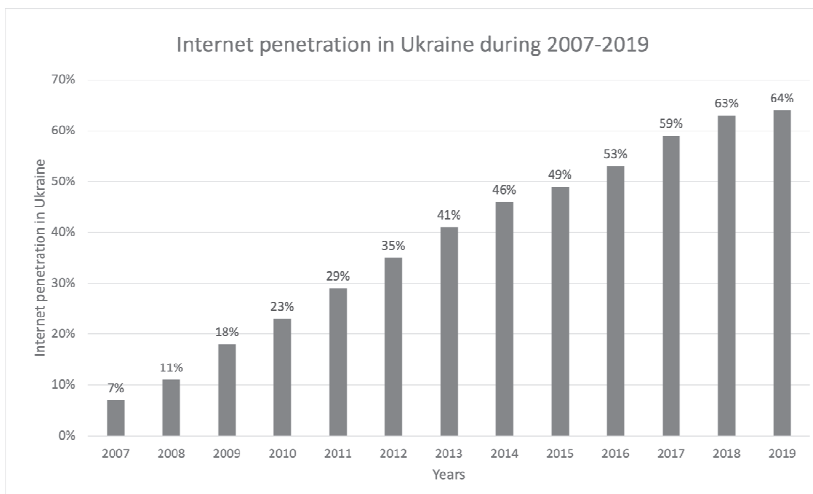


Fig. 5.7. Internet penetration in Ukraine during 2007-2019⁸²



Fig. 5.8. Share of online retail in Ukraine during 2007-2019⁸³

⁸¹ Build by authors based on: Ain.ua. URL: <https://ain.ua/2013/04/11/e-commerce-v-ukraine>; Zet.in.ua. URL: <https://zet.in.ua/statistika-2/rynok-it/rynok-internet-torgovli-v-ukraine>.

⁸² Build by authors based on: World Bank. URL: <https://data.worldbank.org/indicator>; Inau.ua. URL: https://inau.ua/sites/default/files/file/1903/dani_ustanovchyh_doslidzhen_za_1-y_kvartal_2019_0.pdf.

Analysis of trends in the volume of Internet commerce in Ukraine over the past 12 years allows us to draw conclusions about the active spread of e-commerce in the country in recent years and the active use of Internet resources for trade. The steady increase in the level of Internet penetration in Ukraine, calculated by the share of the population using the Internet in the total population of the country, confirms the fact of active implementation of the Internet in the lives of the Ukrainian population.

Analysis of the level of development of e-commerce in Ukraine compared to other European countries shows that as of 2019, B2C turnover of e-commerce in Ukraine is insignificant (Fig. 5.9). However, the growth rate of B2C e-commerce turnover in Ukraine is one of the highest among European countries (Fig. 5.10).

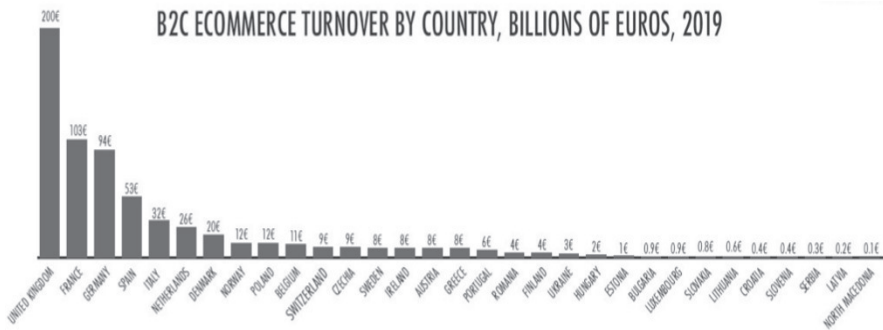
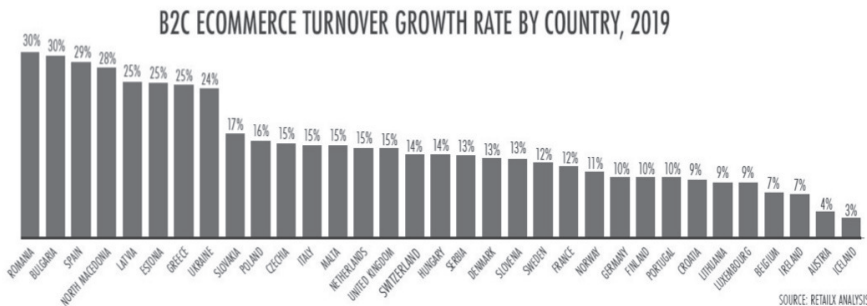


Fig. 9. B2C turnover of e-commerce in Europe in 2019⁸⁴



SOURCE: RETAILX ANALYSIS

Fig. 10. The growth rate of B2C e-commerce turnover in Europe in 2019⁸⁵

⁸³ Build by authors based on: Ain.ua. URL: <https://ain.ua/2013/04/11/e-commerce-v-ukraine>; Zet.in.ua. URL: <https://zet.in.ua/statistika-2/rynok-it/rynok-internet-torgovli-v-ukraine>; Держстат. URL: <http://www.ukrstat.gov.ua>

⁸⁴ E-commerce Germany News. URL: <https://ecommercegermany.com/blog/key-takeaways-from-e-commerce-region-report-europe-2020>

⁸⁵ ibid

2) infrastructure for non-cash payments. During 2019, there was a positive dynamic of development and expansion of payment infrastructure (especially contactless) in Ukraine. Since the beginning of 2019, the network of trade POS-terminals in Ukraine has grown to 333.8 thousand units, with 90% of trade POS-terminals providing the opportunity to make contactless payment⁸⁶. Over the past five years, there has been a significant positive trend in the number of commercial POS-terminals in Ukraine, as shown in Table 5.12.

Table 5.12

Cashless payments using payment terminals in Ukraine in 2019⁸⁷

	Volumes of operations		Number	
	billion UAH	%	million units	%
Calculations with physical reading of the card carrier	329,2	64,1	1363,3	63,9
Contactless payments using cards	135,2	26,3	553,6	26,0
Contactless payments using NFC gadgets	49,0	9,6	216,3	10,1
Total	513,4	100	2133,2	100

At the same time, the territorial distribution of trade POS-terminals on the territory of Ukraine is uneven. The smallest number of payment devices per person is in Luhansk, Donetsk regions, as well as in some western regions of Ukraine. The largest number of trade POS-terminals, ATMs and payment cards is in Kyiv, Kharkiv and Dnipropetrovsk regions. The ratio of the total number of payment terminals to the permanent population of Ukraine as of April 1, 2021 amounted to 9.6 thousand units per 1 million population (Table 5.13), while in 2016 this indicator was only 5.2.

Table 5.13

Payment infrastructure in Ukraine during 2019-2020⁸⁸

	2019	2020
Number of payment terminals per 1 million population, thousand units	8,4	9,4
Trade POS-terminals, thousand units	333,8	375,0
Business entities that accept payment cards, thousand	240,2	326,9
ATMs, thousand units	19,5	18,8

Political and legal factors (the third group of factors) have a significant impact on the sustainable development of the electronic payment systems market. They are closely intertwined, as the legal framework and its legal framework is

⁸⁶ Національний банк України. URL: <https://bank.gov.ua/ua/news/all/za-kilkistyu-ta-sumoyu-v-ukrayini-perevajayut-bezgotivkovi-operatsiyi>.

⁸⁷ ibid

⁸⁸ ibid

formed under the influence of the political situation in the country, which regulates the activities in the market of electronic payment systems.

At present, Ukraine has already formed a system for regulating electronic payments and payment systems. The basic legal norms that establish the general principles of the organization of the payment system in the country are provided in the Laws “On Payment Systems and Funds Transfer in Ukraine”, “On Banks and Banking”, “On the National Bank of Ukraine”.

The National Bank of Ukraine (NBU) is the regulator of the electronic payments market⁸⁹. General regulatory functions and powers of the NBU to monitor the activities of payment systems are established in Part 7 and 40 of the Law of Ukraine “On the National Bank of Ukraine”, as well as Part 13 of the Law of Ukraine “On Payment Systems and Funds Transfer in Ukraine”. Thus, the NBU determines the general procedure for issuing means of payment, conducting operations with their use, the procedure for opening accounts by banks and the modes of their operation. In addition, the NBU has the authority to regulate the activities of domestic and international payment systems. NBU Resolution №34823 sets requirements for the procedure of creating and registering payment systems in Ukraine, the relationship of payment systems with the regulator. In addition, the NBU licenses and registers non-bank financial companies that provide money transfer services in accordance with the Law of Ukraine “On Financial Services and State Regulation of Financial Services Markets”⁹⁰.

Payment services provided in Ukraine exist in two types: non-banking and banking payment services. Banking payment services dominate in the field of C2C e-commerce in the form of bank transfers, in the field of B2C e-commerce – bank transfers and the use of payment cards. Today, Internet banking services are actively introduced, which are provided by a wide range of banking institutions. This contributes to the development of the electronic payment market in Ukraine. Currently active participants in the Internet banking market are PrivatBank, Alfa-Bank, FUIB, UniCredit Bank, UkrExim Bank, UkrSib Bank, OTP Bank, which offer a wide range of services. Non-bank payment services in Ukraine are provided by both domestic and foreign payment providers, including PayPal, Fondy, LiqPay, Plato, UkrMoney, Portmone.com and others⁹¹. In addition, Ukraine has national payment systems: the Electronic Payment System (EPS) and the National

⁸⁹ Національний банк України. URL: <https://bank.gov.ua/ua/news/all/za-kilkisty-ta-sumoyu-v-ukrayini-revevayut-bezgotivkovi-operatsiyi>.

⁹⁰ Постанова «Про забезпечення здійснення повноважень та виконання функцій з державного регулювання та нагляду у сфері ринків фінансових послуг з питань ліцензування та реєстрації». URL: <https://zakon.rada.gov.ua/laws/show/v0083500-20#Text>.

⁹¹ Юрчук Н.П. (2017). Особливості платіжного середовища систем електронної комерції в Україні. *Економіка. Фінанси. Менеджмент: актуальні питання науки і практики*, №6, 157-170.

Payment System “Ukrainian Payment Space”. The system of mass payments in Ukraine is represented by the national system “Ukrainian payment space”, which is a system of retail payments, in which payments for goods and services, cash and other transactions in national currency are made using electronic means of payment, namely payment cards “PROSTIR”⁹².

The National Bank of Ukraine has compiled a list of important, socially important, and systemically important payment systems in Ukraine. The electronic payments system (EPS) of the National Bank of Ukraine is a systemically important payment system in Ukraine. Socially important payment systems include MasterCard; Visa; Western Union; NovaPay; Postal transfer. The status of important payment systems received: Financial world; MoneyGram; City 24; FLASHPAY; RIA; INTELEXPRESS.

The NBU sets additional requirements for payment organizations of payment systems that are included in the categories of importance in the field of management and organization of activities, access and participation in the payment system, risk management system, finality of settlements, cyber resilience and business continuity management.

The analysis of the main factors influencing the level of development of the market of electronic payment systems in Ukraine and the Visegrad countries showed that the degree of spread of e-commerce is decisive. In recent years, there have been positive developments, including the growing share of non-cash payments, increased number, and volume of payment card transactions, which is a prerequisite for increasing the use of electronic payment systems by the population of each country. However, there are currently some gaps in Ukrainian legislation that are slowing down this process, so the experience of the Visegrad group needs to be used to address the constraints and promote e-commerce in Ukraine.

One of the promising areas for development of the market of electronic payment systems in Ukraine is the activation of national payment systems. Another promising area is the active licensing of foreign electronic payment systems, the positive dynamics of which in each country indicates the development of international relations, increasing the country’s credibility and competitiveness at the international level, compliance with domestic standards of international quality standards.

References:

- Anvari, R.D., Norouzi, D. (2016). The Impact of E-commerce and R&D on Economic Development in Some Selected Countries. *Procedia – Social and Behavioral Sciences*, Vol. 229, 354-362.

⁹² Простир. URL: <http://prostir.gov.ua/prostir>.

- Association Agreement between the European Union and its Member States, of the one part, and Ukraine, of the other part. OJ L 161, 29.5.2014, p. 3–2137.
- Dangerfield M. (2014). V4: A new brand for Europe? Ten years of post-accession regional cooperation in Central Europe. Poznań university of economics review. Vol. 14. Num. 4. 2014. P. 71-90. URL: https://www.ebr.edu.pl/pub/2014_4_71.pdf.
- Duleba A., Benč V., Bilčík V. (2012). Policy Impact of the Eastern Partnership on Ukraine: trade, energy, and visa dialogue. Bratislava: Research Center of the Slovak Foreign Policy Association, 2012.
- E-commerce Germany News. URL: <https://ecommercegermany.com/blog/key-takeaways-from-e-commerce-region-report-europe-2020>.
- Fedirko, O., Zatonatska, T., Dluhopolskyi, O., Londar, S. (2021). The impact of e-commerce on the sustainable development: case of Ukraine, Poland, and Austria. IOP Conference Series: Earth and Environmental Science, Vol.915, "International Conference on Environmental Sustainability in Natural Resources Management" (15-16 October, 2021). Odesa, Ukraine.
- Getmanchuk A., Solodkyy S. (2014). A Call for the EU – Time to step in Ukraine’s expectations from the European Union. Institute of World Policy. 32 P. <http://neweurope.org.ua/wp-content/uploads/2017/12/Zaklik-do-ES-chas-vstupaty-v-gru.pdf>
- Goncharenko O. "Eastern Partnership": it is enough for Ukraine to stand still. Economic truth. May 18, 2020. in Ukrainian <https://www.pravda.com.ua/columns/2020/05/18/7252058/>
- ILOSTAT the world's leading source of labour statistics. Unemployment rate -- ILO modelled estimates, Nov. 2018. URL: <https://ilostat.ilo.org/>
- Joint Declaration of the Ministers of the Czech Republic, Hungary, the Republic of Poland and the Slovak Republic responsible for transport, development and EU funds. URL: <https://www.mzv.sk/>
- Kita, P., Polya, Y.H. (2016). E-commerce Impacts on Selected Economic Area in Slovakia. International Journal of Innovative Research in Computer and Communication Engineering, Vol.4(8), 14952-14959.
- Kithinji, E., Onono, P.A. (2020). Effect of electronic commerce on output and total factor productivity in Kenya. Journal of Economics And Political Economy, Vol.7(2), 101-130.
- Klimkin P. (June 11, 2020). Eastern Partnership in the new reality: what Ukraine should pay attention to. Ukrainian Pravda. <https://www.euointegration.com.ua/experts/2020/06/11/7110953/>
- Litra L. Chkhikvadze I. (2016). EU membership prospects for Georgia, Moldova and Ukraine: impossible, forgotten and hidden? Institute of World Politics. 19 s. in Ukrainian
- Lone, S., Harboul, N., Weltevreden, J.W. (2021). 2021 European E-commerce Report. Amsterdam/Brussels: Amsterdam University of Applied Sciences & Ecommerce Europe. 111 p.
- Mrowiec, P. (2017). Available forms of money in payment turnover versus economic growth of the Visegrad Group countries. Scientific Journal WSFiP, Vol.2, 59-74.
- Mykhalchuk, T., Zatonatska, T., Dluhopolskyi, O., Zhukovska, A., Dluhopolska, T., Liakhovych, L. (2021). Development of recommendation system in e-commerce using emotional analysis and machine learning methods. The 11th IEEE International Conference on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications (IDAACS), Vol.1 (September 22-25, 2021). Cracow, Poland, 527-535.
- Population, surface area and density. UNdata. A word of information. URL: http://data.un.org/_Docs/SYB/PDFs/SYB61_T02_Population,%20Surface%20Area%20and%20Density.pdf
- Racz A. (2011). A Limited Priority: Hungary and Eastern Neighborhood. Perspectives. Vol. 19, №2. P. 143-163. https://www.researchgate.net/publication/297300820_A_limited_priority_Hungary_and_the_eastern_neighborhood.perspectives

- Solonenko, I. (2011), 'Added Value? Eastern Partnership and EU–Ukraine Bilateral Relations', in *Internationale Politik und Gesellschaft* 3-2011, pp. 120-133. <http://www.fes.de/ipp/>
- Statista (2021). URL: <https://www.statista.com/statistics/959914/poland-online-payment-methods>.
- Statistical Data Warehouse (2021). URL: <https://sdw.ecb.europa.eu>.
- The Future of the Visegrad Group. Ania Skrzypek, Maria Skóra (eds.). Brussels/Berlin September–December 2017. 56 p. (Last accessed: 06.05.2019)
- The Visegrad Group Joint Statement on 10th Anniversary of the Eastern Partnership [PDF]; Bratislava, May 6, 2019. URL: <http://www.visegradgroup.eu/documents/official-statements>
- Traczyk W., Klass L. Poland: Good Results of the Automotive industry. *Spotlightmetal*. 25.03.2019. URL: https://www.spotlightmetal.com/poland-good-results-of-the-automotive-industry-a-812409/?cmp=go-ta-art-trf-SLM_Allg_DSA-20201118&gclid=CjwKCAiAiML-BRAAEiwAuWVgghllDgE2Qyd2Z2xVU_7mOfwDOtjh
- Tulder and R. Ruigrok W. International production networks in the auto industry: Central and Eastern Europe as the low end of the West European car complexes. *Enlarging Europe: The Industrial Foundations of a New Political Reality*. University of California at Berkeley, 1998. P.2020-237. URL: <https://>
- Visegrad Group: A new economic heart of Europe? DW recommends. URL: <https://www.dw.com/en/visegrad-group-a-new-economic-heart-of-europe/a-49483505>
- Wang, T., Huang, L. (2018). An Empirical Study on the Relationship between Agricultural Science and Technology Input and Agricultural Economic Growth Based on E-Commerce Model. *Sustainability, MDPI, Vol.10(12)*, 1-12.
- Zatonatska, T. (2018). Models for analysis of impact of the e-commerce on indicators of economic development of Ukraine, Poland and Austria. *Marketing and Management of Innovations, Vol.2*, 44-53.
- Азарова, А.О., Теслюк, О.В. (2017). Проблеми розвитку платіжної системи України та шляхи їх вирішення. *Вісник Хмельницького національного університету. Економічні науки, №1*, 19-22.
- Ананьева. Е.В. «Вышеградская» стратегия развития Карпатского региона. *Современная Европа*. 2018. № 7. С. 86-95. URL: <http://www.sov-europe.ru/2018/7-2018/8.pdf> (дата звернення: 06.05.2019)
- Велике будівництво: програма Президента України. URL: <https://bigbud.kmu.gov.ua/>
- Вышеградская четвёрка в Европейском союзе: дилеммы конвергенции = The Visegrad Four in the European Union: Dilemmas of Convergence / [отв. ред. Л.Н. Шишелина]. – М. : Ин-т Европы РАН , 2017. –
- Другопольський, О.В., Вірковська, А.Ю. (2020). Економіка і я: посібник серії «Шкільна бібліотека» для 7 класу закладів загальної середньої освіти. Тернопіль: Астон. 144 с.
- Затонацька, Т., Новосьолова, В. (2017). Моделювання впливу електронної комерції на економічний розвиток країни. *Фінансово-кредитна діяльність: проблеми теорії та практики, Vol.1(22)*, 265-274.
- Лендзьел М. Л. Україна та Вишеградська четвірка: стан і перспективи розвитку відносин. Аналітична записка. URL: <http://old2.niss.gov.ua/articles/1861/>
- Лисенко О. Є., Перехрест О. Г. Демографічні втрати України у роки Другої світової війни. *Архіви України*.2015. № 3. URL: https://www.archives.gov.ua/Publicat/AU/AU_3_2015/02.pdf
- Пирожков С. І. Демографічний фактор у глобальній стратегії розвитку України. *Демографія та процеси відтворення населення*. 2004. №1-2. С-5-7. URI: <http://dspace.nbuv.gov.ua/handle/123456789/11854>
- Юрчук Н.П. (2017). Особливості платіжного середовища систем електронної комерції в Україні. *Економіка. Фінанси. Менеджмент: актуальні питання науки і практики, №6*, 157-170.

CHAPTER 6

Regional monetary integration: the experience of the Visegrad Four countries and guidelines for Ukraine

1. Theoretical approaches to understanding monetary integration

The global trend of the second half of XX century, has become a currency integration, which is manifested in the formation of new forms of monetary cooperation, the most developed of which is the creation of regional currency groups. 11 states and 2 dependent territories support the currency board regime, the official currency dollarization regime is used by 37 states and territories with a total population of less than 50 million people, 4 monetary and 3 currency unions.

Most of the benefits of creating a monetary union are due to the positive impact of increasing the volume of integrated commodity and financial markets, reducing transaction costs, mitigating temporary external shocks by merging financial markets, and avoiding harmful competition between countries, manifested through currency wars. As for the negative aspects of monetary unions, the losses from participation in the monetary union is quite difficult to assess unambiguously. Significant structural reforms, mainly following the creation of a monetary union, aim to reduce the negative effects of shocks on Member States and at least partially replace traditional exchange rate balancing mechanisms.

One of the most difficult practical problems concerns the process of transition to full monetary integration. The debate between "monetarists" and

"economists" about strategy and the timing of further steps toward monetary union has dealt largely with this interim stage. "Monetarists" argue that positive steps toward monetary integration would strengthen and accelerate the process of economic integration. Such steps would force member nations to coordinate their economic and financial policies, thus reducing disparities in wage and price trends and making exchange-rate rigidity easier to achieve. "Economists" argue that policy harmonization and real economic integration must come first, and that further steps toward monetary integration should not be taken until wage and price changes have in fact converged and structural adaptations in response to intra-Community free trade been completed⁹³.

But nevertheless, monetary integration leads to positive effects, if there are sufficient conditions. In a path-breaking paper, Rose used an augmented gravity equation to show that trade between countries sharing the same currency is much larger than trade between other pairs of countries⁹⁴. His cross-sectional regression results imply that the bilateral trade between two currency-union countries is, on average, 3.35 times as large as the bilateral trade between other countries. In language used hereafter, the trade raising effect of a currency union is 235 per cent, and this is additional to the most obvious trade-raising effect of a currency union – the complete suppression of exchange-rate variability⁹⁵.

Neoclassical growth model, developed by R. Boldvin, argues that the decline in real interest rates as a result of monetary union temporarily increases the rate of economic growth (Boldvin, 1989). However, reducing the currency risk also reduces the volume of expected corporate profits. Thus, the use of a common currency has a dual effect: reducing real interest on the one hand, and the reduction of expected investment income – on the other. Neoclassical model of economic growth is represented graphically in Fig. 6.1.

The horizontal axis – the size of capital per manufacturer, vertical – production of one manufacturer. Line $f(k)$ is the production function. Equilibrium in this model established when limit of capital productivity is equal to interest rate at which consumers refuse from future consumption. Equilibrium is reached at point A, where the line rr (its slope is equal to the interest rate) is tangent to the production function. According to this model, economic growth is possible only under the conditions of population growth or external technological changes.

⁹³ Ingram J. C. The Case for European Monetary Integration. *Essays in International Finance*, No. 98. International Finance Section, Department of Economics, Princeton University, 1973. URL: <https://books.google.com.ua/books?id=a8VIAAAAYAAJ>

⁹⁴ Glick R., Rose A. K. Does a currency union affect trade? The time-series evidence. *European Economic Review*. 2002. Vol. 46, No 6. P. 1125–1151.

⁹⁵ Kenen P. Currency internationalisation: an overview. BIS Papers chapters. *Bank for International Settlements*, 2011. URL: <http://econpapers.repec.org/bookchap/bisbisp/61-04.htm>

Applying this model to the monetary union, we can assume that the abolition of currency risk leads to reduction of systemic risk and declining of interest rates (Fig. 6.2).

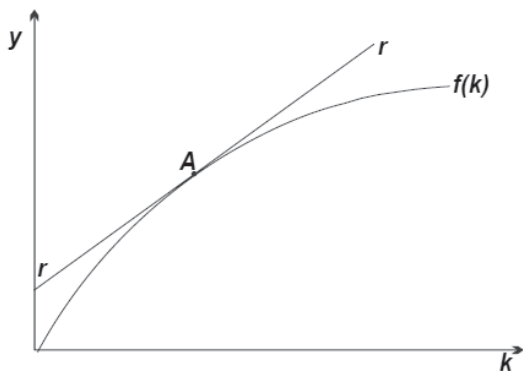


Fig. 6.1 Neoclassical model of economic growth⁹⁶

Reduction of interest rate makes line rr aslope, resulting the equilibrium moves from point A to point B , and is accompanied by accumulation of additional capital and the dynamics of economic growth. In the new equilibrium amounts of capital and production per producer increased. Thus, the decline in real interest rates as a result of monetary union temporarily increases the rate of economic growth.

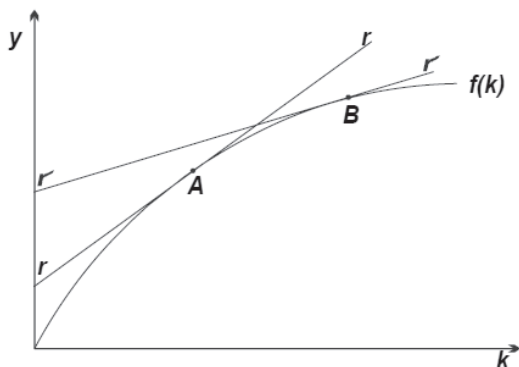


Fig. 6.2. Neoclassical model of economic growth – the effect of monetary union⁹⁷

⁹⁶ Baldwin R. E. Towards an Integrated Europe. Centre for Economic Policy Research, 1994. 272 p

⁹⁷ ibid

Conditions necessary for effective currency (monetary) integration are considered in the theory of optimum (or optimal) currency area (OCA). Optimum currency area implies the existence of fixed rate between currencies and a limited range of floating exchange rates against the currencies of other countries.

The optimum currency area theory tries to answer an almost prohibitively difficult question: what is the optimal number of currencies to be used in one region. The difficulty of the question leads to a low operational precision of OCA theory. It is possible to distinguish two major streams of the optimum currency area literature. The first stream tries to find the crucial economic characteristics to determine where the (illusionary) borders for exchange rates should be drawn (1960s-1970s).

The second stream (1970s-till now) assumes that any single country fulfills completely the requirements to make it an optimal member of a monetary union. As a result, the second approach does not continue in the search for characteristics, identified as important for choosing the participants in an optimum currency area. This literature focuses on studying the costs and the benefits to a country intending to participate in a currency area. The costs and benefits are compared and the question of participating in monetary union becomes largely an empirical problem. Later on, OCA literature takes into account the “Lucas critique”, endogeneity of the optimum currency area criteria and modern macroeconomic theories⁹⁸.

An Optimum Currency Area fall within the ambit of currency unions. An OCA, using Mundell’s definition is ‘a domain within which exchange rates are fixed’⁹⁹. By this definition, Common Currency Area (CCA) would be a step further with the adoption of a single common currency among members of the currency union. Several structural preconditions have been cited as being necessary for an OCA. Mundell argues that a high degree of factor mobility is an essential ingredient. McKinnon, cites trade intensity or integration as a precondition¹⁰⁰. Kenen would examine regional production patterns for product diversification to determine if a region would be well suited for an OCA¹⁰¹. Yet other literature on the configuration needed for a country to be a candidate of a currency union identify factors, such as similar levels of inflation, extensive trade relationships,

⁹⁸ Horvath R., Komarek L. Optimum Currency Area Theory: A Framework for Discussion about Monetary Integration. *Warwick Economic Research Papers*, 2002. URL: <https://warwick.ac.uk/fac/soc/economics/research/workingpapers/2008/twerp647.pdf>.

⁹⁹ Mundell R. A Theory of Optimum Currency Areas. *The American Economic Review*. 1961. Vol. 51, No. 4. P. 657–665.

¹⁰⁰ McKinnon R. I. Optimum Currency Areas. *The American Economic Review*, 1963. Vol. 53, No. 4. P. 717–25.

¹⁰¹ Kenen P. The Theory of Optimum Currency Areas: An Eclectic View. *Monetary Problems of the International Economy*. Chicago [u.a.]: University of Chicago Press, 1969. P. 41-60.

similar or synchronous business cycles and a certain extent of policy congruence. The main factors influencing common currency areas are depicted on Fig. 6.3.

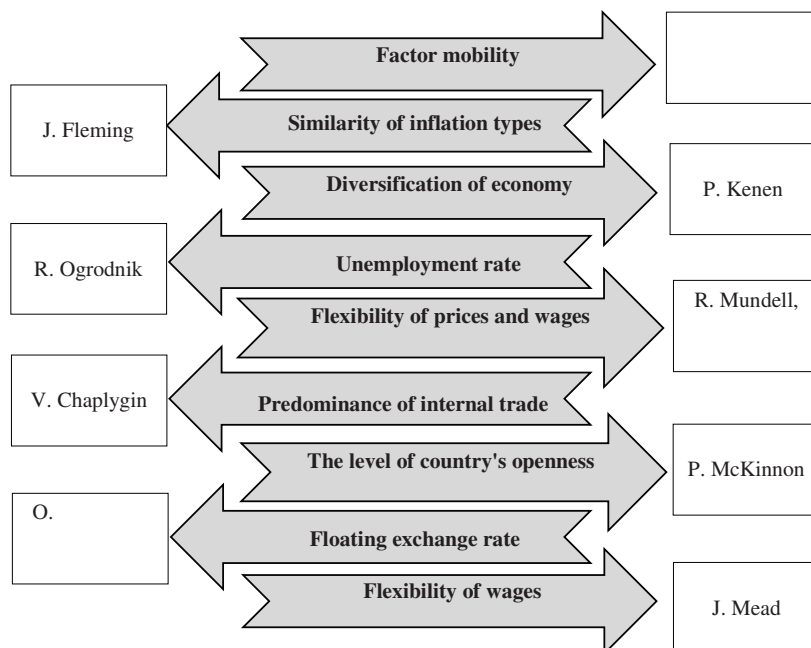


Fig. 6.3. Main factors and researchers of the theory of optimal currency area

Source: McKinnon, 2000; Mundell, 1961; Kennen, 2002; Tavlas, 1993

Tavlas try to summarize main criteria of OCA and show their implications (Table 6.1)¹⁰². We still do not have general agreement on the relative importance of all of these criteria, nor on all of their interrelationships with one another. The recent Argentina crisis illustrates, however, that just meeting a few of the OCA criteria is not enough. While Argentina met the substantial currency substitution criteria with its high level of dollarization, its economy was rather closed with respect to trade and lacked a high degree of domestic economic flexibility. Coupled with the failure of its currency board to promote fiscal as well as monetary discipline, the results were tragic.

¹⁰² Tavlas G. S. The 'New' Theory of Optimum Currency Areas. *World Economy*. 1993. Vol. 16. No 6. P. 663–685. DOI: <https://doi.org/10.1111/j.1467-9701.1993.tb00189.x>.

Table 6.1

OCA Criteria	
Criteria	Implications for OCA
1. Factor mobility	Alternative adjustment mechanisms.
2. Wage and price flexibility	
3. Size and openness.	High pass-through effect can make exchange rate changes ineffective High openness also reduces the cost of Keynesian adjustment under fixed rates.
4. Goods market integration	Promotes intra-regional trade and makes exchange rate fluctuations more costly.
5. Commodity diversification	Shocks tend to cancel out so less need for adjustment.
6. Fiscal integration	Transfers between states reduce adjustment pressure in the short-run.
7. Similar inflation trends	Reduces cost of common monetary policy.
8. Real exchange rate variability (Generalized PPP)	Affects amount of adjustment
9. Political factors.	Commitment of exchange rate and monetary policy coordination
10. Financial integration (It's ambiguous)	Can help finance payments imbalances. Consumers in countries with different economic situations can share risks. But it can also make floating rates work better.
11. Financial instability	Where speculation is unstable, high capital mobility makes flexible rates more costly.
12. Patterns of Shock	Short-term shocks can offset each other. Different patterns can favor fixed or flexible rates. Lowers cost of using common monetary policy. Optimal policy responses depend on nature of shocks.
a. Automatic stabilization	
b. Symmetric medium term shocks	
c. Optimal discretionary	
13. Optimal public finance	Can affect costs of fixed rates. Optimal inflation tax version is similar to differences in inflation rates.
14. New classical policy ineffectiveness	Surrender of monetary policy autonomy will not be costly.
15. Informativeness of price and quantity signals	The larger the variance of monetary disturbances is compared to that of real output, the less confusion about the shocks and the less adjustment of real exchange rate. Also, if the agents cannot distinguish between local and foreign shocks (by definition, in fixed regime), the response of real exchange rate is less.
16. Time inconsistency and credibility discipline problems	Creates case for use of fixed rates as a commitment technology to promote discipline.
17. Liability dollarization	Flexible rates increase the risk of balance sheet effects due to depreciation.
18. Endogenous OCA	Not necessary to fully meet the criteria before joining the currency union. Fixed rates will generate responses that reduce their costs

Source: Tavlas, 1993

Robert Mundell stated: the larger is the optimum currency area, the higher is the value of its currency because of reducing transaction costs for agents (Mundell, 1961). The common currency as a medium of exchange automatically excludes the costs of conversion and forward coatings that are required under floating exchange rate. Another important point related to monetary integration – improvement the efficiency of financial operations and risk management in the financial market. Increasing number of available financial instruments allows both lenders and borrowers to rise the diversification of their portfolio through the acquisition or sale of assets with different risk (Tavlas, 1993).

The classical interpretation of the monetary union was proposed in 1976 by P. Allen, who defined three of its basic criteria¹⁰³ (Fig. 6.4).

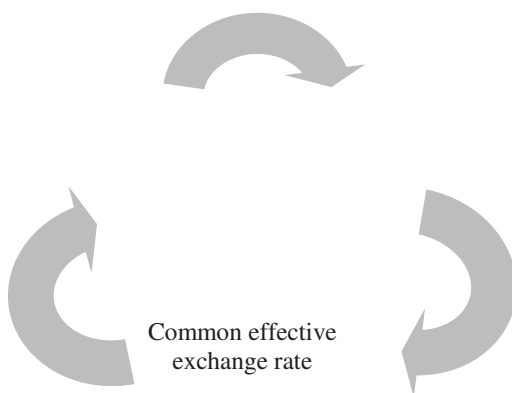


Fig. 6.4. Minimum criteria for a monetary union

Source: formed by the authors on the basis¹⁰⁴.

1. The presence of a common currency or, in the case of several currencies, full mutual convertibility of currencies on the terms of a fixed exchange rate (the creation of a common effective currency). There are three possible scenarios for the introduction of a common currency:

- introduction of a supranational common currency;
- joint use of the supranational currency;

¹⁰³ Polly Reynolds Allen, *Organization and Administration of a Monetary Union* (International Finance Section, Dept. of Economics, Princeton University, 1976), https://www.princeton.edu/~ies/IES_Studies/S38.pdf.

¹⁰⁴ Allen; Xavier De Vanssay, 'Monetary Unions: A Historical Perspective', in *Before and beyond EMU: Historical Lessons and Future Prospects* / Edited by Patrick M. Crowley, Routledge Studies in the Modern World Economy; 35 (London; New York: Routledge, 2002).

- preservation of certain national currencies with a rigidly fixed mutual exchange rate, absolute convertibility and legal tender status in each of the countries of the union¹⁰⁵.

2. Common monetary policy, including supranational regulation of the monetary base and conditionality of the ability of commercial banks to generate money¹⁰⁶. Currently, there are four types of institutional implementation of monetary policy of monetary unions:

- creation of a joint supranational central bank (as the ECB in the EMU);
- the existence of only one national central bank (for example, the Swiss National Bank determines the monetary policy of Switzerland and Liechtenstein);
- operation of more than one multinational central bank (both West African and Central African central banks in the CFA franc zone);
- preserving the relative autonomy of national central banks (historical examples of Latin and Scandinavian monetary unions).

3. A common exchange rate to "third" currencies, i.e., a common foreign exchange policy, which is manifested in the refusal of individual control over foreign exchange reserves of the state in favor of the union. The exchange rate against "third" countries can be:

- fixed (traditional fixation in the case of the CFA franc zone, currency board in the East Caribbean Monetary Union);
- floating (EU EMU, EMU).

These three requirements are a kind of "minimum program" for all types of monetary unions, although other institutional models are possible that introduce additional criteria for the use of currency, the role of central banks and the level of economic and political integration among its members¹⁰⁷.

The report by the Council and Commission of the European Economic Community (better known as the Werner Report, 1970) identified a set of priority conditions¹⁰⁸ for identifying a monetary union:

1. The currencies of the Member States shall be fully and irreversibly convertible.

¹⁰⁵ Лизун М. В. Архітектура сучасних процесів регіональної інтеграції. *Економіка та суспільство*. 2017. № 13. С. 102–107.

¹⁰⁶ Lyzun M. V. The concepts of optimal and common currency areas in the context of regional monetary integration. *The Journal of European Economy*. 2016. Vol 15, No 3. P. 81–85.

¹⁰⁷ Лизун М. В., Ліщинський І. О. Валютні союзи: ретроспективні та сучасні форми. *Економічний простір*. 2017. № 118. С. 47–59

¹⁰⁸ Так звані «необхідні умови» (англ. «*necessary conditions*»), як їх почали називати після Звіту Делора від 1989 р.

Деякі дослідники (наприклад, Дж. Інграм) розглядали згадані умови в якості визначення валютної інтеграції James C. Ingram, *The Case for European Monetary Integration*, Essays in International Finance, No. 98 (International Finance Section, Department of Economics, Princeton University, 1973), <https://books.google.com.ua/books?id=a8VIAAAAYAAJ..>

2. Nominal values of mutual exchange rates are fixed irrevocably.
3. Fluctuations around these parities are completely eliminated.
4. Absolutely free movement of capital.

The second set of conditions set out in the Werner Report concerns the centralization of monetary policy. In particular, all decisions concerning liquidity, interest rates, interventions in foreign exchange markets, reserve management and the establishment of currency parities with the rest of the world should be centralized¹⁰⁹.

Currency union has a positive impact on trade between states involved in. The impact of monetary integration on bilateral trade between the countries are researched detail by Rose, Engel, Frankel, Barro (Rose, 1999; Rose, Engel, 2000; Frankel, Rose, 2002; Barro 2003).

Along with all the benefits of the association, there are also costs that are likely to bear by the countries involved in the integration process. First of all, this is inability to use floating exchange rate as a tool for stabilizing the balance of payments after exposure to various shocks.

Another important drawback of fixed exchange rate regime or monetary integration for potential participants is the loss of autonomy in conducting of monetary policy. Autonomy in this case means that the government is able to run the policy, which is effective only for a given state or region. Loss of control over the national currency is a threat to the state (Ichiyama, 1975). While there are differences in price levels, productivity and wages under fixed exchange rate, the threaten of inflation will always follow the states with surplus of balance of payments; and constant depression and unemployment will follow the states with BoP deficits. Soft monetary policy will be adequate for the regions with high unemployment rate, whereas the increase in inflation, on the contrary, may need to make it tighter. The reasons for losing the independence of monetary policy under the monetary integration are conveniently to considered in the context of so-called "incompatible triangle" or "impossible trinity" (Fig. 6.5).

The main idea of this triangle is that all three conditions could not be reached simultaneously. The state must choose only two of them and give up with third one.

The ideas of OCA and CCA found their practical implication in the forms of regional currency areas (RCA). Regional currency areas originated from various roots such as historical, "existential", economic and especially political reasons. The importance of political factors can be found e.g. in the process of creating an

¹⁰⁹ Ліщинський І. Нова економічна географія та альтернативні концепції агломерації виробництва. *Журнал Європейської економіки*. 2009. Том 8. №3. 348с. С. 241-264

independent Germany in 1871 (as well as in 1990, when east and west part Germany were unified) and many other states (e.g. Switzerland and Italy).

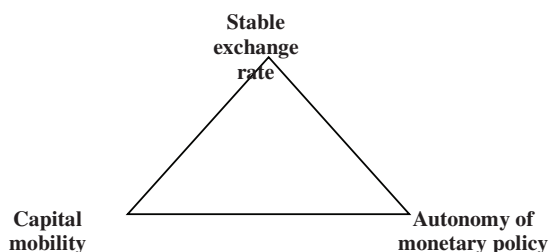


Fig. 6.5. Model of "impossible trinity"

Source: Mundell, 1961

So-called existential reasons were characteristic of the group of geographically small countries (El Salvador, Kiribati, Liechtenstein, Monaco, Nauru and Vatican), where the acceptance and the legalization of the foreign trade partner currency were a necessity. For the sake of completeness, there are also states, where more than one currency circulates within its borders. These are e.g. Hong-Kong and Macao. The best known and economically strongest is certainly the European Monetary Union (EMU) founded in a cashless form in 1999 (Roman, Komarek, 2002).

2. Genesis of European monetary integration

The European Economic and Monetary Union is a kind of benchmark for deep economic integration, which currently has no analogues in the world. The successful introduction of the euro has had a "demonstration effect" for other regions of the world and is a catalyst for monetary integration. However, not all associations are so effective in the process of their monetary integration, in particular due to the fact that it significantly limits the possibilities of the simplest methods of regulating the financial policy of the country.

The most famous monetary union in the world is the European Economic and Monetary Union, whose history is associated with more than fifty years of experience in active processes of economic and monetary integration. The first formal steps of European monetary integration go almost as far back in time as the OCA theory (Table 6.2).

Table 6.2

Genesis of European monetary integration

1958	Establishment of the Monetary Committee
1962	A proposal for economic and monetary union among the members of the European Economic Community (EEC) is first floated in the Marjolin Memorandum.
1964	A Committee of Governors of the central banks of the Member States of the EEC is formed to institutionalise the cooperation among EEC central banks.
1970	The Werner Report sets out a plan to realise an economic and monetary union in the Community by 1980.
1972	A system (the “snake”) for the progressive narrowing of the margins of fluctuation between the currencies of the Member States of the EEC is established.
1973	The European Monetary Cooperation Fund (EMCF) is set up to ensure the proper operation of the snake.
1974	The ECOFIN Council adopted a Decision to foster the convergence of economic policies and a Directive on stability, growth and full employment.
1979	The European Monetary System (EMS) is created.
1988	The European Council mandates a committee of experts under the chairmanship of Jacques Delors (the “Delors Committee”) to make proposals for the realisation of EMU.
1989	The “Delors Report” is submitted to the European Council.
1989	The European Council agrees on the realisation of EMU in three stages.
1990	Completion of “One Money, One Market” evaluation that had been commissioned in 1988 as an input for the Delors Report.
1990	Stage One of EMU begins in July.
1993	The Treaty on European Union enters into force.
1994	Stage Two of EMU begins and the EMI is established.
1997	The European Council in June agrees on the Stability and Growth Pact.
1998	In May Belgium, Germany, Spain, France, Ireland, Italy, Luxembourg, the Netherlands, Austria, Portugal and Finland are considered to fulfil the necessary conditions for the adoption of the euro as their single currency; the Members of the Executive Board of the ECB are appointed.
1998	The ECB and the ESCB are established in June.
1998	In October the ECB announces the strategy and the operational framework for the single monetary policy it will conduct from 1 January 1999.
1999	In January Stage Three of EMU begins; the euro is launched; conversion rates are fixed irrevocably; a single monetary policy is established for the euro area.
2001	Greece joins the euro area.
2004	In May the national central banks (NCBs) of 10 new EU Members join the ESCB.
2007	Slovenia joins the euro area.
2008.	Cyprus and Malta join the euro area, Bulgaria and Rumania join the EU and ESCB
2009	Slovakia joins the EMU.
2011	Estonia joins the EMU.
2014	Latvia joins the EMU.
2015	Lithuania joins the EMU.
2020	Exit the United Kingdom (Brexit)

Source: author’s modification of Mongelli, 2008.

In October 1962 the Commission issued a memorandum – known as the Marjolin Memorandum – that can be considered as the official starting point of monetary integration in Europe. The memorandum kicked off the discussion on a common currency and prompted several measures in the field of monetary cooperation. The exchange rates of the members of the European Economic Community (EEC) were never directly fixed, although they were all pegged to the

US Dollar. At the time exchange rate stability was still secured by the Bretton Woods Arrangement, and there was no urgent need for a new institutional arrangement among European currencies. Under the provisions of the memorandum, a Committee of Governors (CoG) of the national central banks of the EEC was established in 1964. Over the years the Committee gradually gained in importance as it started developing, and managing, an institutional framework for monetary cooperation. It was this committee that prepared the first draft of the Statute of the ECB in 1990¹¹⁰.

By the end of the 1960s, the international environment changed due to persistent current account deficits of the US (the anchor country of the Bretton Woods System) and the emergence of widespread inflationary pressures that were then exacerbated by the first oilshock. The Bretton Woods System collapsed in August 1971 and the members of the EEC pursued different economic policies that in turn led to exchange rate tensions among them and even threatened to disrupt the customs union and the common agricultural market. In 1969 the Heads of State or Government requested a plan for the realisation of an economic and monetary union.

The result was the Werner Report published in 1970, and that proposed to achieve economic and monetary union in several stages by 1980. While the final goal of monetary union was never achieved, as the report turned out to be too advanced for the level of economic and financial integration prevailing at the time, some of its elements could still be implemented. In 1972, after the demise of the Bretton Woods system, the “currency snake”, an exchange rate arrangement for European countries, was created¹¹¹.

Monetary cooperation became closer; internal and external monetary stability became important goals. Countries with relatively high inflation found it easier to pursue disinflation policies. This fostered a downward convergence of inflation rates, reduced excessive exchange rate volatility, and promoted trade and an improvement in overall economic performance. However, the lack of fiscal convergence remained a source of tension as some countries ran persistently large budget deficits.

¹¹⁰ Mongelli F. P. *European Economic and Monetary Integration, and the Optimum Currency Area Theory. European Economy. Economic Papers.* 2008. No. 302. URL: http://ec.europa.eu/economy_finance/publications/pages/publication12081_en.pdf.

¹¹¹ According to the Smithsonian agreement, IMF members pledged to support fluctuations of their exchange rates against the US dollar in the range of $\pm 2.25\%$ (so-called “tunnel”), while EEC states in addition allowed mutual fluctuations between each other in narrower limits – up to $\pm 1.125\%$ (“mini-tunnel” or “snake”) – introducing the system known as “snake in the tunnel”. It is fair to note that such regime was not long-lasting – in 1973 the EU lifted up the limits of fluctuations against the dollar (i.e. a snake came out of the tunnel) and expanded the range of mutual fluctuations to $\pm 2.25\%$. Overall, by the end of the 1970s only 5 of 9 EEC states consistently adhered to the regime of snake (Germany, Denmark and the Benelux countries), the others exited before.

The EMS lasted from 1979 until the launch of the euro in 1999. Exchange rates were based on the ECU, whose value was determined as a weighted average of the participating currencies. Officially no currency was designated as an anchor. However, the Deutsche Mark and the Bundesbank were unquestionably the centre of the EMS. During this period it went through four main phases and several periods of turbulence.

The first phase of the EMS lasted during 1979-85 and is marked with still maintained capital controls, significant inflation differentials, variances in budget deficits and public debt among EEC states. Full nominal convergence had not been established yet. With fixed nominal exchange rates this resulted in continued misalignments that required frequent adjustment of the official parities¹¹², which periodically brought up questions about the sustainability of the ERM.

The second phase of the EMS spanned from 1986 to 1992. Several EMS members (but not all) managed to bring down their inflation rates towards German inflation rates (in this phase the EMS is described by many as a “Deutsche Mark Area”). The quantity of adjustments of official parities was reduced¹¹³, capital controls were being dismantled and were officially banned as of July 1990. Owing to the impossible trinity proposition (refers to the fact that three desiderata of governments – i.e. free trade and capital mobility, monetary policy autonomy, and fixed exchange rates – cannot be reconciled), all central banks participating in the ERM had de facto renounced an independent monetary policy (Fig. 6.6).

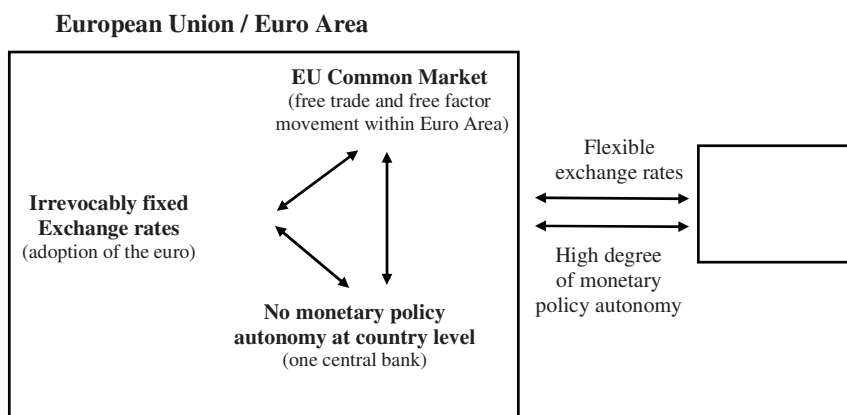


Fig. 6.6. European way to solve the “impossible trinity”

Source: (Mongelli, 2008)

¹¹² During this first phase, there were nine adjustments

¹¹³ There were three more adjustments till 1987

The third phase of the EMS, from September 1992 until March 1993, is marked by the most severe crisis of the whole EMS arrangement. Misalignments kept growing (albeit at a slower pace), because some countries were unable to reduce inflation. The tight monetary policy pursued by the Bundesbank following reunification and the shock of the Danish electorate voting against the Maastricht Treaty alarmed the exchange markets and prompted speculative attacks on the overvalued currencies that almost destroyed the EMS. The UK and Italy were forced to leave the ERM (Italy then rejoined in 1996) and the fluctuation margins were widened from ± 2.25 to $\pm 15\%$.

The fourth phase of the EMS runs until the launch of the euro, allowing the principle of fixed exchange rates, although much weakened, to be kept alive. The European Monetary System ceased to function in its original form when 11 EU countries irrevocably fixed their exchange rates in preparation to adopt the euro. The successor of the original arrangement was ERM II¹¹⁴, launched on 1 January 1999. In it, the ECU basket is discarded and the euro becomes an anchor for other participating currencies (Mongelli, 2008).

Starting from 1999 we can talk about the existence of the European Economic and Monetary Union (EMU): the euro is introduced first in the cashless form, and from 2002 – in cash circulation. Institutional adjustment of monetary policy is carried by ESCB and the ECB. 8 new members gradually join 11 initiators state forming the Euro Area.

In addition to the EMU states, euro is also used now by 6 countries outside the EU and by 4 overseas territories of the EU states. Exchange rates of 22 currencies outside the euro zone are pegged to the euro. Euro has become the second largest world reserve currency (over 20% of world reserves).

Recent years were very challenging for the EMU – debt crisis that harm Ireland, Portugal and especially Greece; Brekzit effect – these and other events give grounds for Eurosceptics to talk about the collapse of the entire system of European integration. However, the attempts to reform the architecture of the EMU are made (the first stage of reform was completed in 2015, the second phase – so-called "Report of five presidents" – is scheduled for the period 2015-2025).

The influence of the OCA theory on the design of EMU is rather blurred. The arguments underlying the Delors Report, which then formed the blueprint for the Maastricht Treaty, are principally aimed at reducing the risk from destabilising exchange rate volatilities and misalignments. Several commentators noted that this argument had no direct links, or very tenuous links at best, with the OCA theory

¹¹⁴ Currencies were allowed to fluctuate within $\pm 15\%$ to the euro. The state needs to join the ERM II regime at least for two years to join the eurozone

(Bini-Smaghi et al., 1993; Baldwin and Wyplosz, 2006): i.e. the OCA properties did not figure prominently in the Delors Report. Furthermore, the “One Market, One Money” Report held a critical view of the “early” OCA theory.

In this lies a paradox as, at the same time, the “One Market, One Money” Report greatly contributed to revitalising interest in the debate on the OCA theory. But the empirical studies surveyed did not show strong effects of exchange rate volatility on either trade or international investment flows. This, in turn, justifies that monetary unification was seen as a limiting case of reduction of exchange rate volatility leading to the elimination of exchange rate uncertainty and to reductions in transactions costs and hedging costs.

It should be noted that the OCA theory mainly focus on the positive effects of monetary integration, while the formation and management of monetary union is sooner institutional and normative process. In this aspect two historical stages of European integration should be considered: "pseudo monetary union" (typical to EMS) and "complete monetary union"(EMU).

Empirical work on the optimality of a European Economic and Monetary Union has dealt with four issues. A large body of work has sought to assess the cost to European countries of giving up exchange rate changes by measuring the co-variation of the exogenous shocks affecting those countries and thus the extent to which those countries (or subsets of those countries) are subject to symmetric or asymmetric shocks. Another body of work has tackled the same question by examining the degree of domestic diversification in European countries or decomposing output shocks into those that are place-specific and those that are industry-specific. A third body of work has looked at the role of labour mobility in international and inter-regional adjustment. And there is now a rapidly growing literature on the ways which a monetary union might itself affect the size and nature of exogenous shocks, the extent of labour mobility, and so on.

Most of the researchers agree that the EMU is monetary union of the countries that do not meet the criteria of OCA theories¹¹⁵. Among the most controversial conditions are: relatively low cross-border labour mobility, the lack of fiscal supranational mechanism of accumulation and transfer, high differentiation of domestic prices, low trade openness, differences in national economic structures.

¹¹⁵ Krugman P. Revenge of the Optimum Currency Area. *NBER Macroeconomics Annual*. 2013. Vol. 27. No 1. P. 439–448. DOI: <https://doi.org/10.1086/669188>.

3. Monetary integration of the Visegrad Four countries

The changes in the monetary policy of most Central and Eastern European countries over the past ten years have been determined by the prospects of their accession to the common currency and the need to harmonize currency regimes in accordance with the institutional requirements of monetary union. The evaluation of the process of currency integration of the Visegrad Group countries takes into account several main perspectives. For the most part, economists consider the macroeconomic conditions of a state's readiness or unwillingness to join the EMU. Emphasis is placed on the effects of "catching up", open economies, synchronization of business cycles, the feasibility of abandoning the exchange rate as a tool for adjustment.¹¹⁶ Instead, scientists are trying to explain how political processes lead to changes in these macroeconomic conditions, bringing the economy in line with the convergence criteria. The focus is on political identity, knowledge transfer between central banks, discourse between political elites, and adaptation to the pressures of globalization and "europeanization".¹¹⁷

Although all the new EU members that joined the organization in 2004, 2007 and 2013 have committed to adopting the euro under the treaty provisions as soon as the convergence criteria are met, the final decision on joining the euro area remains internal prerogative. The country may also remain outside the euro area without meeting some of the convergence criteria. Thus, the applicant may refuse to implement ERM II, one of the key requirements of which is that the fluctuations in exchange rates of EU countries should not exceed $\pm 15\%$, as has happened de facto in the Czech Republic, Hungary and Poland.

After overcoming the economic crisis of the late 1990's and the introduction of market reforms, the Government of the Slovak Republic set itself a rather ambitious task – to enter the euro zone as the first among the countries of the Visegrad Group. A formal condition for the readiness of the country to adopt a single currency is the fulfilment of nominal convergence requirements – the Maastricht criteria, which aims to ensure balanced economic development of the member countries of the Eurozone. Based on data from Eurostat, the Ministry of Finance of the Slovak Republic and the National Bank of Slovakia, VÚB analysts

¹¹⁶ Eichengreen B. European monetary integration with benefit of hindsight. *MIT Press Books*. 2012. Vol. 50. No 1. P. 123–136. URL: <https://ideas.repec.org/b/mtp/titles/0262050846.html>.

¹¹⁷ Epstein R. A., Johnson J. Uneven integration: Economic and monetary union in Central and Eastern Europe. *JCMS J. Common Mark. Stud.* 2010. Vol. 48, No 5. P. 1237–1260.

Pechova A. Legitimising discourses in the framework of European integration: The politics of Euro adoption in the Czech Republic and Slovakia. *Review of International Political Economy*. 2012. Vol. 19, No 5. P. 779–807.

investigated the fulfilment of the convergence criteria during the transformation period. The results of research are shown in Table 6.3.

Table 6.3

Implementation of the Maastricht criteria by the Slovak Republic during the transformation period

Criterion and its fulfilling	Period of time			
	2005	2006	2007	2008
Government deficit (% GDP)	2,8	3,7	2,2	2,0
<i>Fulfilling</i>	V	V	V	V
Government dept (% HDP)	34,1	30,4	29,4	31,0
<i>Fulfilling</i>	V	V	V	V
Measure of inflation (%)	2,8	4,3	1,9	2,9
<i>Fulfilling</i>	x	x	V	V
Stability of long-term interest rates (%)	3,5	4,4	4,7	4,5
<i>Fulfilling</i>	V	V	V	V

Source: J.Klučka, S. Strelcová, E. Leláková Implementation of euro in Slovakia// Mechanics. Transport. Communications. - issue 2, 2009: <http://www.mtc-aj.com/library/353.pdf>

It should be noted that the position of the Slovak government was to implement the policy in favour of satisfying the convergence criteria, since it was considered inevitable and necessary, regardless of joining the euro zone. Indeed, effective public finance, education and health systems, as well as a flexible labour market, are important for the successful development of any country's economy.

Accession to the Eurozone has become an important step in the country's entry into European structures and has influenced the further development of the economy of Slovakia. The process of preparation for joining the euro area began in mid-2003, namely a year before the country actually joined the European Union, with the Government approval of "Strategy for the introduction of the euro in the Slovak Republic". Although the practical implementation of this strategy began with the accession in 2005 to the ERM II and compliance with the Maastricht criteria. The euro adoption process was completed on January 1, 2009. The entire process of joining Slovakia to the euro zone is divided into 4 stages and is presented in Table 6.4.

Slovakia's accession to the eurozone coincided with the most devastating year of the global financial crisis. 2009 was wrapped up by instability and uncertainty around the world, but the economic indicators presented in Table 6.5 indicate that Slovakia maintains monetary and fiscal stability.

During 2007-2015, Slovakia received 12 billion euros from EU funds, accounting for 15% of GDP and more than 2144 euros per capita. Within the convergence objective, European funds are targeted at regions where GDP per

capita is below 75% of the EU average. With the exception of Bratislava, the rest of the regions of the country were entitled to these funds. Instead, Bratislava received financial support to improve competitiveness, support innovation, employment and social inclusion.

Table 6.4

The process of Euro introduction in Slovakia

1st stage – till the entrance to ERM II	
2005	Going through access procedures for the entrance to the mechanism of exchange rates ERM II
2nd stage – from the entrance to ERM II to the decision about the entrance of SR to Eurozone	
28.11. 2005	Entrance to ERM II
till May 2008	Convergence reports of EC and ECB
May – June 2008	Evaluation procedure in European institutions
June 2008	Decision of Council of EU about the cancellation of exception
June 2008	Determination of conversion rate SKK/EUR by the Council of EU
3rd stage – from the decision about the entrance to Eurozone to the entrance to Eurozone	
July – December 2008	Providing with the necessary amount of euronotes and mintage for the cashflow of SR
September – December 2008	Providing NBS and commercial banks with euronotes and coins
December 2008	Providing retail sector with euronotes and coins
July 2008 – December 2009	Compulsory dual pricing – all retail prices, payslips, pensions etc. will be compulsorily stated both in euros and Slovak crowns.
till 31 December 2008	Conversion of cashpoints, automatic and other coin and banknote operating machines.
4th stage – after the entrance to the Eurozone	
1 January 2009	Euro is introduced at the same time to the cashflow as well as the cashless flow without the interim period by the so-called “Big-Bang Scenario” and becomes a legal currency on the territory of SR. Slovak crown becomes a partial unit of euro in the conversion rate stated by the Council of EU.
till 16 January 2009	Dual cashflow – during a short period of a dual cashflow on the territory of SR it is possible to use euro as well as Slovak crowns as means of payment. However, the Slovak crowns are not put back into the circulation but are gradually withdrawn from it, and processed on the premises of NBS.
from 17 January 2009	Continuation of exchange of Slovak crowns for euro coins and notes in the commercial banks and NBS. Slovak circulation euro coins are the valid currency in all countries of eurozone and circulation coins of other countries of eurozone are the valid currency in Slovakia. Banknotes are the same in the whole Eurozone.
till 31 December 2009	Compulsory dual pricing
till June 2010	Recommended dual pricing

Source: J.Klučka, S. Strelcová, E. Leláková Implementation of euro in Slovakia// Mechanics. Transport. Communications. - Issue 2, 2009: <http://www.mtc-aj.com/library/353.pdf>

Table 6.5

Macroeconomic indicators of Slovakia 2003-2020

indicator Years	Growth of real GDP	Inflation	Unemployment rate	Export, billion euros
2003	4.7 %	8.4 %	15.2 %	19.4
2004	5.2 %	7.5 %	14.3 %	29.6
2005	6.5 %	2.8 %	11.6 %	32.9
2006	8.5 %	4.3 %	10.4 %	40.9
2007	10.4 %	1.9 %	8.4 %	47.3
2008	6.4 %	3.9 %	7.7 %	49.5
2009	- 4.7 %	0.9 %	11.4 %	39.7
2010	4.0 %	0.7 %	12.5 %	48.3
2011	3.3 %	4.1 %	13.6 %	56.4
2012	3.4 %	3.7 %	14.4 %	62.1
2013	0.9 %	1.5 %	13.5 %	64.2
2014	2.5 %	- 0.1 %	12.3 %	64.7
2015	3.6 %	- 0.3 %	10.6 %	67.9
2016	3.3 %	- 0.5 %	9.7 %	70.1
2017	3.0 %	1.4 %	7.1 %	80.4
2018	3.7 %	2.5 %	5.4 %	86.1
2019	2.5 %	2.8 %	5.0 %	86.8
2020	-4.8 %	2.0 %	6.8 %	78.5

Source: The Statistical Office of the Slovak Republic (www.statistics.sk); EUROSTAT ([www.ec.europa.eu/ Eurostat](http://www.ec.europa.eu/Eurostat)); Slovak National Bank (www.nbs.sk)

The introduction of the euro in Slovakia has had a positive impact on many economic processes, but it also has its drawbacks. Among the advantages of joining the euro area, it is necessary to distinguish between lowering transaction costs, reducing currency risks; price transparency, increased pressure on the implementation of fiscal policy. In this case, there are a number of restrictions and risks, among which one of the most significant is the loss of autonomy in the field of monetary policy and the ability to respond to market unbalances in the development of the world economy by changing the exchange rate of the national currency.

Thus, Slovakia shows an example of the positive effects of the introduction of the euro, which is accompanied by a reduction in transaction costs of 0.3% of GDP annually¹¹⁸. However, joining the euro area still does not give a clear effect of positive long-term effects on investment, employment and economic growth, mainly due to the coincidence in time of the introduction of the euro in Slovakia and the deployment of the global recession. Nevertheless, the experience of Slovakia confirms the need for flexible labour markets and goods to offset the loss

¹¹⁸Goliaš P. Slovakia in eurozone/ INEKO.- July 2015: <http://Slovakia%20in%20Eurozone.pdf>

of national monetary policy and proves the importance of a common currency for countries with intensive trade relations.

The Republic of Poland has undertaken to introduce a single European currency during its accession to the European Union in 2004, although there were no specific terms for its entry into the currency union. At first, after joining the EU, the vision of the Polish government and society was in line with the political advice of the international institutions. In particular, the International Monetary Fund (IMF) was a supporter of the early adoption of the euro by Poland due to its expected impact on trade recovery, reducing borrowing costs and accelerating economic development. However, with the onset of the global financial crisis, the costs of joining the euro area have become clearer. The new member states, including Poland, start to review the benefits of the currency union and the prospect of a reform of the EMU.

According to the convergence report of the European Commission for 2016¹¹⁹, Poland does not fulfil the conditions for adopting the euro, considering the assessment of legal consistency, the fulfilment of the convergence criteria and some additional factors.

Poland fulfils one of the most important convergence criteria, namely price stability. It should be noted that the average inflation rate in Poland during the 12 months to April 2016 was -0.5%, which is below the reference value of 0.7%. It is expected that such a trend will continue over the next few years.

The annual inflation rate became negative in August 2014 and dropped to its lowest level (-1.3%) in February 2015. These changes were mainly due to the drop-in of world oil and food prices. The annual inflation rate was below the reference value at the time of the last convergence assessment of Poland in 2018. The 12-month average inflation rate is projected to remain well above the reference value in the months ahead (Fig. 6.7). In March 2020 the 12-month average rate of HICP inflation in Poland was 2.8%, i.e. well above the reference value of 1.8% for the criterion on price stability.

With regard to the level of the state budget deficit, Poland also fulfils this convergence criterion. The general government budget deficit fell from 4.0% of GDP in 2013 to 3.3% in 2014 due to the implementation of fiscal consolidation measures¹²⁰. The ratio of the deficit to GDP in 2015 increased to 2.6%, remained unchanged (2.6% of GDP) in 2016, and according to the European Commission forecast, it will increase to 3.1% in 2017. The ratio of total public debt to GDP

¹¹⁹ Convergence Report - June 2016 (PDF)// European Commission Institutional Papers 26. June 2016. Brussels. PDF, 200pp: https://ec.europa.eu/info/sites/info/files/file_import/tip026_en_2.pdf

¹²⁰ *ibid*

increased from 51.3% in 2015 to 52.7% in 2017 (Fig. 6.8.). Poland's general government budget balance and debt complied with the Maastricht criteria in 2019. According to the European Commission's assessment, there is a risk that Poland will not comply with the conditions of the Stability and Growth Pact, as there is a risk of significant deviation from the recommended rate. It should be noted that Poland remains the only EU country that does not plan to create an independent tax council.

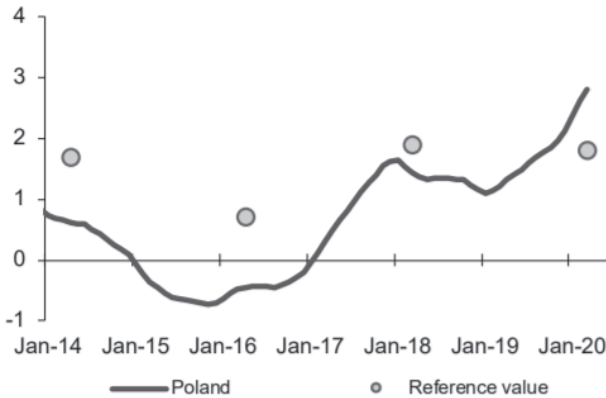


Fig. 6.7. Implementation of the convergence criterion on inflation from 2010 by Poland

Source: Eurostat, Commission services' Spring 2020 Forecast.

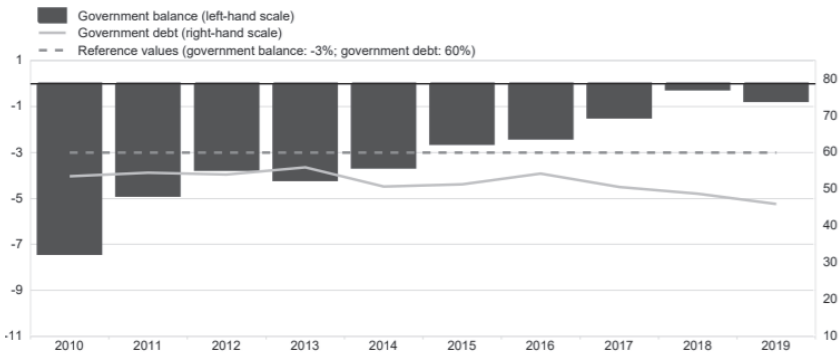


Fig. 6.8. Implementation of the convergence criterion for the balance of the state budget and public debt from 2010 by Poland

Source: Eurostat, Commission services.

Poland also fulfils the convergence criterion for long-term interest rates. The medium-term long-term interest rate in April 2016 was 2.9%, which is lower than the reference value (4.0%). From April 2019 to March 2020, long-term interest rates in Poland stood at 2.2% on average and were thus below the reference value of 2.9% for the interest rate convergence criterion (Fig. 6.9).



Fig. 6.9. Long-term interest rate in Poland¹²¹

However, Poland does not fulfil the exchange rate convergence criterion. Polish zloty does not participate in ERM II. Poland uses the regime of floating exchange rates, which allows for intervention in the foreign exchange market by the central bank. In addition, there are a number of legislative issues that need to be brought into line with the requirements of the EMU, in particular the Law on the National Bank of Poland and the Constitution of the Republic of Poland.

But it should be noted that the decision on the introduction of the euro is not only economical, it is political factor that is often predominant. From this perspective, the advantages of introducing the euro in Poland should be attributed¹²²:

1. The application of the euro moves Poland to the speedway of Europe of "two speeds";
2. The euro stinks from the protection of external threats to the sovereignty of the country;

¹²¹ Convergence Report. June 2020. URL: <https://www.ecb.europa.eu/pub/pdf/conrep/ecb.cr202006~9fefc8d4c0.en.pdf>

¹²² Carlson M., Carroll C., Chan I and others. Should Poland Join the Euro?//An Economic and Political Analysis - Princeton University. - 2016

3. Public opinion on the adoption of the euro;
4. Legal obligations.

Today, the transition to a single European currency in Poland is considered only in the long run. In 2016, Minister of Development and Finance M. Moravetsky declared that for the country it is unprofitable to join the euro zone, but in the medium term, the situation may change.

Thus, the attractiveness of the adoption of the euro for Poland has decreased for two main reasons. First, Poland has demonstrated more effective national supervisory and regulatory systems than the euro area countries, and its monetary policy has been more effective in supporting sustainable economic growth. Secondly, the benefits of adopting the euro related to trade, reducing borrowing costs and reducing transaction costs have been significantly overestimated.

4. Strategic directions of Ukraine's integration into the European monetary space

The approach to the formation of exchange rate policy in Ukraine was not unambiguous in historical retrospect. After the introduction of the national currency, two phases of the de facto fixed exchange rate can be distinguished: 1999–2007, with an official nominal exchange rate slightly higher than 5 UAH for 1 USD USA, and 2008–2013 with an official exchange rate close to 8 UAH for 1 USD USA. These periods alternated with phases of controlled and often "panic" floating. The main milestones in the evolution of exchange rate policy regimes in Ukraine are highlighted in Table. 6.6.

Table 6.6

Evolution of exchange rate regimes

Period	Exchange rate regime
1993	Floating
1993–1996	Fixed binding
1996–2000	Fixed currency corridor
2000–2008	<i>Crawling</i> currency corridor (de jure); Fixed binding (de facto)
2008–2014	Managed floating (de jure); Fixed binding (de facto)
2014–2016	Managed floating
2016–2021	Managed floating / floating with inflation targeting (de jure since 2017)

When considering the possibility of joining an existing or creating a new regional monetary union, it should be borne in mind that the only alternative available to Ukraine today is the European Economic and Monetary Union. Modern geopolitical realities leave no options for establishing economic and monetary union with members of the Eurasian Economic Union.

The prospect of EU membership, without which it is impossible to join the monetary alliance, also seems too distant while maintaining the current pace of economic progress. Achieving nominal convergence with the EMU states is quite problematic, let alone real. Let us consider in retrospect the progress of Ukraine in achieving nominal convergence / divergence with the EMU countries, formalized by the Maastricht criteria.

One of the most difficult to achieve is the criterion of price stability. In a candidate country for accession to the EMU, the average inflation rate over the last 12 months should not exceed by more than 1.5 percentage points the monthly average of the top three (in terms of price changes relative to the previous 12 months) EU member states. It should be emphasized that inflation is not measured in absolute terms, but relative to the previous 12 months, so Ireland, which has an inflation rate that is an order of magnitude higher than the rest of the Member States, has repeatedly been among the top three benchmarks.

The methodological difficulty of assessing the compliance of the level of price stability in Ukraine with the Maastricht criteria is that the ECB uses for its calculations the Harmonized Index of Consumer Prices (HICP), which differs slightly from the consumer price indices calculated by the IMF and the State Statistics Service of Ukraine. As the HICP is not calculated for Ukraine, it is not possible to accurately assess compliance with the Maastricht benchmark. For an approximate comparison, we used the IMF data on the CPI in accordance with last year's figures for EU member states and Ukraine. In the Table 6.7 shows the reference values of the price stability criterion for joining the EMU (not published annually), the average annual inflation rate in the EMU according to the methods of the ECB HICP (as of the date of publication of reference values) and the IMF CPI, as well as the CPI of Ukraine according to the IMF.

Comparing the CPI levels in the EU and Ukraine, it can be seen that inflation rates in Ukraine in recent years have largely exceeded those in the EU. We assume that the price dynamics for 2002 and 2012-2013 were within the reference value. The chosen vector of the NBU to use the inflation targeting regime in case of successful implementation may lead to a gradual equalization of inflation in line with EU dynamics. However, it should be borne in mind that in the

event of accession to the EMU, a one-time sharp jump in prices associated with approaching the EMU level will be inevitable.

Table 6.7

Inflation rates in the EMU and Ukraine

Year	Reference value (Maastricht criterion)	The average inflation rate in the EMU for 12 months. (HICP at the time of publication of reference values)	Average annual inflation rate in the EU according to the CPI (EMU data)	Inflation rate in Ukraine according to the CPI
1998	2,7	1,5	1,2 (3,1)	10,6
1999	n/p	n/p	1,2 (2,4)	22,7
2000	2,4	1,4	2,2 (3,2)	28,2
2001	n/p	n/p	2,4 (3,2)	12,0
2002	3,3	2,4	2,3 (2,5)	0,8
2003	n/p	n/p	2,1 (2,2)	5,2
2004	2,4	2,1	2,2 (2,4)	9,0
2005	n/p	n/p	2,2 (2,3)	13,5
2006	2,6	2,3	2,2 (2,3)	9,1
2007	3	2,1	2,2 (2,4)	12,8
2008	3,2	2,5	3,3 (3,7)	25,2
2009	n/p	n/p	0,3 (1,0)	15,9
2010	1	0,3	1,6 (2,0)	9,4
2011	n/p	n/p	2,7 (3,1)	8,0
2012	3,1	2,8	2,5 (2,6)	0,6
2013	2,7	2,2	1,3 (1,5)	-0,3
2014	1,7	1	0,4 (0,5)	12,1
2015	n/p	n/p	0,0 (0,0)	48,7
2016	0,7	0,1	0,2 (0,2)	13,9
2017	n/p	n/p	1,4	14,4
2018	1,9	1,4	1,7	11,0
2019	n/p	n/p	1,6	7,9
2020	1,8	1,1	0,5	2,7

Note: «n/p» – data was not published.

Source: Convergence report 2016, 2018, 2020.

The second set of EMU convergence criteria is related to the achievement of "...stable financial position of governments"¹²³. The two quantitative indicators of

¹²³ Treaty on the functioning of the European Union. Eur-lex.europa.eu. 2016. URL: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:12012E/TXT&from=EN>

the budgetary discipline of applicants are following: the ratio of gross public debt to GDP exceeds 60% (similarly to the previous criterion, a slight excess of the reference value is allowed in the case of a stable trend to reduce the share of debt).

Theory of optimum currency areas caused increased interest on the part of Ukrainian scientists and politicians for justification of strategic vector for economic (including monetary) integration. Despite the fact that current political realities actually decided for Ukraine this dilemma, rejecting the eastern direction of integration, but the OCA concept could still be helpful for the overall arguing of monetary integration, analysis of its potential benefits or costs and selection of instruments for exchange rate policy.

Most of the pre-crisis scientific researches, devoted to empirical application of OCA theories for Ukraine, obviously dealt with the issues of monetary integration within the CIS. However, a definite conclusion concerning readiness of Ukraine for monetary integration toward post-Soviet states or Western Europe has not been done. The results of some studies showed the benefits of integration, while the results of others were opposite (Table 6.8).

One of the latest research projects of OCA effectiveness criteria for Ukraine has been done by S. Shumska and is based on statistics till 2012. Among the indicators for verification criteria are: mutual volatility of real exchange rate, volatility and correlation of real sector, monetary and inflation indicators, the relative size of economies and mutual trade. The standard deviation for the fluctuations of the real exchange rate of hryvnia to euro (0.16) was less than hryvnia/ruble ratio (0.22). Therefore, according to the criterion of exchange rate volatility, joining the Customs Union for Ukraine may have more losses (and therefore stronger mechanisms of alignment for domestic prices and wages) in comparison with the euro zone.

Undervaluation and overvaluation of the national currency determines the parity of its purchasing power. Under globalization, these phenomena have a transitory effect on the functioning of the country's economy. They affect exporters and importers, the competitiveness and profitability of companies, change the situation with external debt and attract foreign investment. However, instability of the exchange rate and its undervaluation cause negative socio-economic consequences. They are expressed in structural changes of the economy due to the shrinking share of consumption in the national income, the growth of consumer prices and, ultimately, worsening living standards of the population.

On December 18th - 24th of 2015, Razumkov Center conducted sociological surveys in all regions of Ukraine, excluding Crimea and the occupied territories of Donetsk and Luhansk regions. The results have shown that the hryvnia to the

dollar exchange rate has no impact on the standard of living of only 7.4% of the population, significant impact for 44.4 %, and is the determining factor for the welfare of 23.9% of the population.

Table 6.8

Results of pre-crisis researches arguing CIS monetary integration

Authors	States	Conclusions
O. Tereschenko (2001, 2003)	Belarus Russia	Non-readiness of these economies for the monetary union. The need for significant changes.
S. Drobyshevskiy, D. Polevoi (2004, 2007)	12 states of CIS	8 of 13 indicators in Ukraine fulfills the conditions of the OCA theory, Belarus – 6, Kazakhstan – 10. So, in general the readiest for currency union with Russia is Kazakhstan; Ukraine and Belarus later
V. Chaplygin, A. Hughes-Hallett., C. Richter (2006)	Belarus, Kazakhstan, Russia, Ukraine	Creating of union is unnecessarily expensive in terms of growth and reduction of volatility. Economic losses from union forming in the long run will be the lowest for Russia, slightly bigger for Ukraine and Kazakhstan, significant for Belarus. In the short run most affected will be Ukraine and Kazakhstan
T. Savchenko, M.Rebryk, D. Kazarinov (2012)	Belarus, Kazakhstan, Russia, Ukraine	There are quite adequate financial conditions for monetary integration of 4 countries, there is only reservations on Belarus, as only 3 of 8 investigated indicators suggest a partial convergence of Belarus with the other three countries. However, the authors caution that definitive conclusions on this issue will be made on the results of further research
D. Mayes, V. Korhonen (2006)	Belarus, Kazakhstan, Russia, Ukraine	The Union will be very unequal, as Russia is the largest by different indicators. There is a need to develop an effective mechanism of balancing national interests
A. Ursu (2010)	Belarus, Kazakhstan, Russia, Ukraine	Check in of all four countries finds their partial convergence. As a result of the union formation the Dutch disease of Russian economy is quite possible to spread westward, therefore, the costs of formation of such a union will increase. If we exclude Ukraine from the model, three countries which remain will tend to complete cointegration

Source: Shumska S. (2013) Theory of optimum currency area: criteria and analysis of indicators of integration processes in Ukraine and the CIS, No 4, pp. 48-65 (in Ukrainian)

In Ukraine, different approaches have been tested over the years of independence. Among them are: floating regime (1993), currency board (1994), managed floating exchange rate regime (1997), pegged exchange rate within horizontal bands (1998), fixing on the Ukrainian Interbank Stock Exchange (1999), floating (2000-2003), the gradual transition to free floating (2006-2007), as the

weighted average of buyers and sellers rates on the interbank foreign exchange market on the previous day with the possibility of deviation ± 2 and its fixation (2009-2012). Currently, the NBU is trying to implement a free-floating exchange rate regime.

2014-2015 was real period of testing for Ukraine, which was marked by a series of economic shocks. The most painful among them was monetary crisis. Inability of the National Bank of Ukraine to cope with the challenges facing the country, including the result of Russian aggression, led to deep currency crisis, the most prominent appearance of which was the striking devaluation of national currency.

As a result, over the last decade, Ukraine's economy is again experiencing severe crisis caused by macroeconomic imbalances that were accumulated long before the 2008 and 2014 crisis. In addition to a number of factors that are prerequisites for both periods of crisis, the regime of de facto fixed exchange rate leads to increase in the trade deficit, that was financed mainly by FDI inflows and external borrowings in pre-crisis years. However, when access to international capital markets was deteriorated, capital inflows changed into outflows, resulting a powerful devaluating pressure on the national currency.

De facto, the National Bank switched to the inflation targeting regime in the beginning of 2016. Prior to this, preparatory work was underway to create all critical prerequisites for its implementation. In the first phase (by 2015) technical prerequisites were created, in particular, macroeconomic models were built, a quarterly forecast cycle was developed. In the second phase (in the first half of 2015), institutional conditions were created, including ensuring the independence of the National Bank in using the instruments to achieve its goal, eliminating fiscal dominance, changing the decision-making process on monetary policy. Since the second half of 2015, the third phase has started – the implementation of all key elements of inflation targeting.

When choosing a currency exchange rate regime, it is important to form the hierarchy of goals to be achieved by it. Many authors emphasize macroeconomic objectives: economic growth (GDP), shadow economy reduction, full employment, investment growth, containment of inflation, stimulation of economic activity. Among the objectives of monetary policy are: achieving growth in foreign currency savings, improving the availability of loans, optimizing the balance of payments, increasing the flow of foreign investments, achieving an adequate level of gross reserves, servicing and payment of external debt.

Signing the Association agreement with the EU, Ukraine has committed itself to reform the financial sector, whose ultimate goal should be the complete

liberalization of the currency market and cross-border capital flows. For the process of financial liberalization international experience should be researched to select the appropriate pace and sequence of reforms that will take benefits of free movement of capital and minimize the risks associated with the volatility of its flow. Experience of instant financial liberalization (e. g. in Israel, Argentina) clearly demonstrates that under the absence of appropriate macro-stability and developed financial markets, shock mechanisms can significantly enhance the economic crisis.

In Ukraine, the situation with three components of the "impossible trinity" are as follows: in the conditions of free movement of capital, support of the exchange rate implies the rejection of adjustment of monetary indicators. In other words, it is impossible to target inflation and not to release hryvnia in the "free floating" and / or setting limits for movement of capital.

Recent studies of IMF economists also show that states which introduced capital controls before the global recession, were less affected by the sharp economic recession. The choice of regulatory instruments depends on many factors: economic conditions, the level of reserves, the stability of the national currency and so on.

It should be noted that monetary integration of Ukraine and the EU, under doctrine of the theory of optimum currency areas, does not assume introducing the single European currency into circulation for Ukraine (at least not during the nearest decades). This is particularly the convergence of institutions for national monetary systems and instruments of monetary policy, and coordination of monetary policy objectives to improve foreign relations. The tools of this process can be joint consultations, formation of mechanism for currency adjustment to the new paradigm, joining the international monetary and financial organizations.

Potential benefits of monetary integration of Ukraine and the EU could be: lower total monetary dependence on the US dollar; improvement of the currency structure of international reserves of the NBU and external borrowing; development of credit cooperation with the EU; increasing of market liquidity of the euro in Ukraine.

As of today, none of the above options for monetary integration of Ukraine – whether the creation of a single currency area in the CIS (not possible for political reasons) or joining the euro zone – are not practically feasible because of the potentially negative consequences for the national economy caused by different monetary transmission mechanisms, fiscal systems, stock markets. Currently Ukraine has no preconditions to pass through the integration process necessary for joining the monetary union. This prevents objectively insufficient development of

industrial potential, very different social and economic structure, stratification and lack of polycentric structure.

References:

- Allen; Xavier De Vanssay, 'Monetary Unions: A Historical Perspective', in *Before and beyond EMU: Historical Lessons and Future Prospects* / Edited by Patrick M. Crowley, Routledge Studies in the Modern World Economy; 35 (London; New York: Routledge, 2002).
- Argyriou A.-S., Lyzun M., Lishchynskyy I., Savelyev Y., Kuryliak V., Ivashkiv I., Sachenko S. Modeling the Stabilization Factors of Monetary Unions in turbulent economics. The 11th IEEE International Conference on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications. 22-25 September, 2021, Cracow, Poland
- Balassa B. *The Theory of Economic Integration*. London: Routledge, 2013. 286 p.
- Baldwin R. E. *Towards an Integrated Europe*. Centre for Economic Policy Research, 1994. 272 p
- Carlson M., Carroll C., Chan I and others. *Should Poland Join the Euro?//An Economic and Political Analysis* – Princeton University. – 2016
- Convergence Report - June 2016 (PDF)// European Commission Institutional Papers 26. June 2016. Brussels. PDF. 200pp. https://ec.europa.eu/info/sites/info/files/file_import/ip026_en_2.pdf
- Convergence Report - June 2018 (PDF)// European Commission Institutional June 2018. Brussels. URL: https://ec.europa.eu/info/sites/default/files/economy-finance/ip078_en.pdf
- Convergence Report. June 2020. URL: <https://www.ecb.europa.eu/pub/pdf/conrep/ecb.cr202006~9f9fc8d4c0.en.pdf>
- Eichengreen B. *European monetary integration with benefit of hindsight*. MIT Press Books. 2012. Vol. 50. No 1. P. 123–136. URL: <https://ideas.repec.org/b/mtp/titles/0262050846.html>.
- Epstein R. A., Johnson J. Uneven integration: Economic and monetary union in Central and Eastern Europe. *JCMS J. Common Mark. Stud.* 2010. Vol. 48, No 5. P. 1237–1260.
- Glick R., Rose A. K. Does a currency union affect trade? The time-series evidence. *European Economic Review*. 2002. Vol. 46, No 6. P. 1125–1151.
- Goliaš P. Slovakia in eurozone// INEKO.- July 2015: <http://Slovakia%20in%20Eurozone.pdf>
- Horvath R., Komarek L. Optimum Currency Area Theory: A Framework for Discussion about Monetary Integration. *Warwick Economic Research Papers*, 2002. URL: <https://warwick.ac.uk/fac/soc/economics/research/workingpapers/2008/twerp647.pdf>.
- Ingram J. C. *The Case for European Monetary Integration*. Essays in International Finance, No. 98. International Finance Section, Department of Economics, Princeton University, 1973. URL: <https://books.google.com.ua/books?id=a8VIAAAAYAAJ>
- Kang, Y.-D. Development of Regionalism: New Criteria and Typology. *Journal of Economic Integration*. 2016. P. 237
- Kenen P. Currency internationalisation: an overview. *BIS Papers chapters*. Bank for International Settlements, 2011. URL: <http://econpapers.repec.org/bookchap/bisbisbpc/61-04.htm>
- Kenen P. *The Theory of Optimum Currency Areas: An Eclectic View*. *Monetary Problems of the International Economy*. Chicago [u.a.] : University of Chicago Press, 1969. P. 41-60.
- Klučka J., Strelcová S., Leláková E. Implementation of euro in Slovakia// *Mechanics*. Transport. Communications. - Issue 2, 2009: <http://www.mtc-aj.com/library/353.pdf>
- Krugman P. *Revenge of the Optimum Currency Area*. *NBER Macroeconomics Annual*. 2013. Vol. 27. No 1. P. 439–448. DOI: <https://doi.org/10.1086/669188>
- Lyzun M., Lishchynskyy I. Social Efficiency of European Economic and Monetary Union. *Науковий вісник Полісся*. 2018. № 1 (13). С. 184–188. DOI: 10.25140/2410-9576-2018-1-1(13)-184-188.

- Lyzun M., Lishchynskyy I., Savelyev Y., Kuryliak V., Kurylyak Y. Modeling Evaluation of Dollarization Economic Efficiency. Conference Proceedings. Ceske Budejovice, Czech Republic. 2019. P. 366-370.
- Lyzun M. V. The concepts of optimal and common currency areas in the context of regional monetary integration. *The Journal of European Economy*. 2016. Vol 15, No 3. P. 81–85.
- McCauley R.N. Internationalising a Currency: The Case of the Australian Dollar. SSRN Scholarly Paper. Rochester, NY: Social Science Research Network, 1 December 2006. URL: <https://papers.ssrn.com/abstract=1632352>.
- McKinnon R. I. Optimum Currency Areas. *The American Economic Review*, 1963. Vol. 53, No. 4. P. 717–25.
- Mongelli F. P. European Economic and Monetary Integration, and the Optimum Currency Area Theory. *European Economy, Economic Papers*. 2008. No. 302. URL: http://ec.europa.eu/economy_finance/publications/pages/publication12081_en.pdf.
- Mundell R. A Theory of Optimum Currency Areas. *The American Economic Review*. 1961. Vol. 51, No. 4. P. 657–665.
- Pechova A. Legitimising discourses in the framework of European integration: The politics of Euro adoption in the Czech Republic and Slovakia. *Review of International Political Economy*. 2012. Vol. 19, No 5. P. 779–807.
- Polly Reynolds Allen, Organization and Administration of a Monetary Union (International Finance Section, Dept. of Economics, Princeton University, 1976), https://www.princeton.edu/~ies/IES_Studies/S38.pdf.
- Savelyev Y., Lyzun M., Kuryliak V., Lishchynskyy I. Economic Integration of the Visegrad Four and Ukraine in the Context of Historical Narratives and Global Challenges *European Journal of Sustainable Development*, Vol 10, No 2.-P. 44-58. Doi:10.14207/ejsd.2021.v10n2p44
- Shumska S. (2013) Theory of optimum currency area: criteria and analysis of indicators of integration processes in Ukraine and the CIS, No 4, pp. 48–65
- Tavlas G. S. The ‘New’ Theory of Optimum Currency Areas. *World Economy*. 1993. Vol. 16. No 6. P. 663–685. DOI: <https://doi.org/10.1111/j.1467-9701.1993.tb00189.x>.
- Treaty on the functioning of the European Union. *Eur-lex.europa.eu*. 2016. URL: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:12012E/TXT&from=EN>
- Лизун М. В. Архітектура сучасних процесів регіональної інтеграції. Економіка та суспільство. 2017. № 13. С. 102–107. URL: <http://economyandsociety.in.ua/journal/13ukr/17.pdf>
- Лизун М. В. Розвиток парадигми регіональної валютної інтеграції. Економічний простір. 2017. №125. С. 5-16
- Лизун М. В. Розвиток процесів регіональної економічної інтеграції: валютний аспект. Галицький Вісник. 2016. № 1(50). С. 155–163
- Лизун М. В. Розвиток світової валютної системи крізь призму її елементів. Вісник Тернопільського національного економічного університету. 2016. Вип. 4. С.82-94.
- Лизун М. В. Сучасні тенденції формування та розвитку валютних союзів. Вісник Одеського національного університету. Економіка. 2017. Том 22. Вип. 2 (55). С. 22–26
- Лизун М. В., Комар Н. В. Теорія та практика антиінфляційного регулювання. Ефективна економіка. 2012. № 2. URL: <http://www.economy.nayka.com.ua/index.php?op=1&z=962>
- Лизун М. В., Ліщинський І. О. Валютні союзи: ретроспективні та сучасні форми. Економічний простір. 2017. № 118. С. 47–59
- Лизун М. Моделі економічного зростання світової та української економіки. Журнал європейської економіки. 2006. N 2. С. 154-164
- Лизун М. В. Глобальні виклики регіональної валютної інтеграції: монографія. Тернопіль: Економічна думка, 2017. 426 с.

- Лизун М. В., Ліщинський І. О. Регулювання ринку цінних паперів в розвинутих країнах світу: досвід для України. Збірник наукових праць Черкаського державного технологічного університету. Серія: Економічні науки. 2014. Вип. 38 (ч. 2). С. 12–17.
- Ліщинський І. Нова економічна географія та альтернативні концепції агломерації виробництва. Журнал Європейської економіки. 2009. Том 8. №3. 348с. С. 241-264
- Ліщинський І.О., Лизун М.В. Концептуальні візії регіональної та глобальної безпеки. Вісник Тернопільського національного економічного університету. 2020. №2. С. 148-161.
- Ліщинський І. О., Лизун М. В. Глобальне управління в контексті формування світового економічного порядку. Наука молода. 2013. Вип. 20. С. 40-46.
- Ляшенко В. И. Финансово-регуляторные режимы стимулирования экономического развития: введение в экономическую режимологию. Донецк: НАН Украины, Ин-т экономики пром-сти, 2012. 370 с.
- Савельев Е. В., Лизун М. В., Куриляк В. Е., Лищинский И. О. Global monetary integration and determination of strategic priorities for the exchange rate policy in Ukraine. Годишник на СА „Д. А. Ценов”. 2017. №120. С. 177-226.
- Сенатори США пропонують Україні запровадити режим валютного управління – currency board. URL: <https://news.finance.ua/ua/news/-/323691/senatory-ssha-proponuyut-ukrayini-zaprovadyty-rezhym-valyutnogo-upravlinnya-currency-board>
- Сіску Т., Савельев Є. Валютні режими і валютнокурсова політика України у вимірах благословенної і неблагословенної трійці. Журнал Європейської Економіки. 2016. № 2. С. 143–171.
- Харитоновна Ю. А. Современные валютные войны: победители и побежденные. Научно-исследовательский финансовый институт. Финансовый журнал. 2011. №2. С. 19-30.
- Шаров О. М. Перспективи створення країнами ЄС банківського союзу. Вісник Національного банку України. 2015. № 2. С. 34–43.
- Шнирков О.І. Політика регулювання конкуренції і сприяння зростанню конкурентоспроможності в ЄС. Національна безпека і оборона. 2016. № 1–2. С. 77–88.
- Шумська С. Теорія оптимальних валютних зон: критерії та аналіз показників, що характеризують інтеграційні процеси в Україні та СНД. Економічна теорія. 2013. Т. 4. № 48.

CHAPTER 7

Territorial development policy in the Visegrad Group countries

1. Territorial transformation in Visegrad Group countries

In 1990s the Visegrad Group countries had passed long and complicated way of reforms in all fields of social and economic life. In spite of wide range of reforms, territorial transformation is considered to be the most successful in V4.

The *Polish* government undertook a complex and comprehensive restructuring of public administration and public finance. This required complex legislation and was effectively implemented in 1999.

The underpinning of the reforms has been provided by restructuring the country into gminas, poviats and voivoids, giving local authorities more responsibility for service delivery. Decentralizing functional responsibilities has reduced central government employment.

Local self-governments in Poland have been functioning since 1990 in 2,489 gminas. The reforms have introduced two new levels of self-government and significantly reduced the central government's administrative presence at the sub-national levels.

The state has decentralized responsibilities and financial capacities to 308 democratically elected local self-governments at the poviat level and to the authorities of 65 urban gminas that were granted poviat rights.

The reforms have also radically reduced the number of existing voivodships from 49 to 16, with this act enabling them to create regional development policies.

Gminas run nurseries, kindergartens, elementary schools, libraries and cultural centres and maintain local roads. A general responsibility clause provides that gminas are responsible for all public matters of local significance that have not been reserved by law for other entities and authorities.

Gminas also perform tasks delegated to them by the central government and state administration and which remain under state supervision. These responsibilities may be placed on gminas by law or through voluntary agreements with state agencies. The law provides assurance that gminas will be provided with the funds necessary to carry out these delegated tasks.

Poviats constitute the second tier of local self-government. There are 308 poviats (county-level governments) and 65 urban gminas (larger towns) endowed with poviat rights (by assuming poviat functions, poviat infrastructure, and poviat budget authority).

Poviats are large enough to maintain efficiently many of the everyday institutions of public life, such as secondary schools, general hospitals, as well as poviat police and fire stations, sanitary inspectorates and tax offices. They are small enough - on average 80-100 thousand inhabitants - to place the administration and the control over these institutions in the hands of the citizens that they serve.

Unlike the gmina, which is responsible for all matters that have not been explicitly assigned to the other levels of government, the poviat implements only those tasks that have been clearly defined for it in the law. Thus, there is no dependence between the poviat and the gmina: each of them is carrying out separately defined public tasks and responsibilities.

The sixteen new voivodships are quite large, with populations ranging between approximately 1 and 5 million, and an average population of approximately 2.4 million. Democratic voivodship self-governments have independent legal identities, their own budgets and extensive powers in the area of economic policy.

Councils known as Sejmiks (regional parliaments) are the decision-making bodies of voivodship self-governments. They are elected in general elections. The Sejmiks, in turn, elect governing Boards to exercise the executive authority in self-governing voivodships. Boards are headed by the elected Marshals.

Administrative and territorial reform in the Czechia lasts for around 10 years from 1989-2000 and was carried out in two stages.

During the first stage of administrative reform in *Czechia* did not stop further work on the study of its patterns. In 1990 Czechoslovakia gave up a three-tier structure of administrative management – municipality, district, province

– launched in 1960, and returned to the two-tier structure. Despite the fact that in 1997 the Czech Parliament approved a law on a two-tier structure of the administrative division of the country, which borders and names reproduced territorial structure of 1948-1960 period, the actual implementation of the new administrative-territorial division of the country took place only in 2000, after adoption of laws on elections to local self-government bodies, determination of their status, powers and relations between local and central government.

According to the Act no. 129/2000 Coll. (Law on Regions) on higher-level territorial self-governing units, Czechia is divided in 13 regions (*kraje*) and one capital city (*hlavní město*) with regional status as of 1 January 2000; the lower level of self-governance consists of 6242 local communities. The older administrative units seventy-three districts (*okresy*, singular *okres*) are still recognized and remain the seats of various branches of state administration, such as the judicial system.

Territorial reform was held in *Slovakia* in 2002, lasted more than 10 years and was carried out in three stages.

The first stage of reform during 1990-1996: 1) formation of single-level system of governance in municipalities and cities; 2) The Slovak National Council approved a series of laws under which local government was restored and displayed in the Constitution (1992), municipalities received a high degree of independence to solve local problems; 3) cancellation of regions and transition from a 3-tier (province, district, town) to 2-tier system of administration – 38 districts that remained from the previous system and bodies of the first level – 121 territorial unit. Through these events the government enabled to suspend decentralization and reduced reforms to just deconcentration.

During the second stage from 1996 to 1998 structural changes in government were carried out on the principle of division of responsibilities between administrative authorities, namely: 1) 8 regions (*kraje*) and 79 districts were created; 2) at the same time increased the number of district offices from 38 to 79 and reduced the number of local offices, which led to the "horizontal" integration; 3) adopted an amendment to the Act No369 / 1990 "On municipalities" (1998) to determine the clarity on the role of municipalities.

Practice shows that such deconcentration has not justified expectations regarding the rationalization of public administration, and became a tool to strengthen the position of the dominant political party "Movement for a Democratic Slovakia", which used it for their own purposes on the eve of parliamentary elections and led to increase in the number of officials and the formation of "unnecessary" bureaucracy at the district level.

The third stage of the reform from 1998 to 2002 was marked by a change in the political situation of the country, the advent of the new government, which influenced the preliminary plans for the reform of the administrative system and public administration and led to the "broad" reform, which was reflected by the adoption of Strategy of Public Policy Reforms in Slovakia (December 1999); Administrative Reform Strategy (2000) and the Concept of Decentralization and Modernization of Public Administration (2000). This latter document was the main instrument through which a transfer of powers and responsibilities between the state, local governments and territorial units of a higher level is carried out today.

Slovakia, unlike Czechia adopted the Law "On decentralization" in 2001, under which created the elected regional council as compensation for the existence of regional authorities and not conducted liquidation of "regional" government authorities at district level. In our opinion, the aforementioned actions of the government of Slovakia during this period were mainly the result of pressure from the EU on the creation of middleware management.

Completion of reforms in Slovakia took place in 2002, which resulted in creation of around 3000 thousand settlements (towns and villages) and 8 regions with their own government. However, after the adoption by parliament of a number of laws on fiscal decentralization, strengthening government control mechanisms Slovakia hosted the final stage of the administrative reform, which included the development of financial instruments enforcement powers transferred from central government to local and regional self-government decentralization and strengthening of the principle of subsidiarity.

In *Hungary*, it is particularly significant that preparation for local government reform and political discussion had already begun in 1987-8. This fact had an impact on the shape of the reform, which was ratified by parliament as early as in May 1990. Fiscal reform, which created the basic tax structure of the state had already been introduced before the political transition of 1989. In consequence, local government was assigned its own local tax bases and the share of national taxes.

Second, the advanced state of preparation for reform, was also reflected in their scale; since it was applied not only to communes, but also to districts, the next tier of administration. This distinguished the Hungarian reform from all other post-socialist countries.

Administratively, Hungary is divided into 19 counties (megye, plural megyék). In addition, the capital (főváros), Budapest, is independent of any county government. The counties and the capital are the 20 NUTS third-level units of Hungary. The counties are further subdivided into 198 ridings (járás, plural

járások) as of 1 January 2013. There are also 23 towns with county rights (singular megyei jogú város), sometimes known as "urban counties" in English (although there is no such term in Hungarian). The local authorities of these towns have extended powers, but these towns belong to the territory of the respective county instead of being independent territorial units.

Since 1996, the counties and City of Budapest have been grouped into 7 regions for statistical and development purposes. These seven regions constitute NUTS' second-level units of Hungary. They are: Central Hungary, Central Transdanubia, Northern Great Plain, Northern Hungary, Southern Transdanubia, Southern Great Plain, and Western Transdanubia.

2. Poles and axes of development in Visegrad countries

The concept of spatial poles and axes runs back to 1950s and currently it is getting a new spark of interest (after few decades of mixed success implementation in some states). The main idea of the concept is that economic growth is not uniform in different territories but is concentrated in so-called poles, and then it spreads via diverse channels (axes) through the other regions.

Currently some regions in the Europe could be marked as of advanced dynamic development – visually they could be grouped as “Red Octopus” (farther development of the ideas of “Blue Banana”, “Sunny Belt”, “Blue Pentagon”)

The countries of the Visegrad Group (Poland, Czech Republic, Slovakia, Hungary), as well as Bulgaria and Romania (V4 + 2), distinguish as a separate priority the formation and support of the poles and axes of development in their territories, laying the principle of polarization in the national spatial development programs. In addition, in order to harmonize national initiatives, the Common Spatial Development Strategy of the V4+2 Countries was formed.

The vision of the territorial development of the *Republic of Poland* is enshrined in the National Concept of Spatial Development of 2030 (pol. KPZK 2030¹²⁴), which was approved in 2011.

The concept of KPZK vision is based on the five desired characteristics of the Polish socio-economic space: competitiveness and innovation, internal cohesion, biological richness and diversity, as well as security and spatial order.

The main milestone of the Concept was the formation of a polycentric metropolitan network, which was considered as the development poles, as well as cities of regional significance.

¹²⁴ Koncepcja Przestrzennego Zagospodarowania Kraju 2030

According to the KPZK 2030, the metropolitan network includes:

1. Metropolises:

- of pan-European significance: the capital of Warsaw;
- of national significance: Silesian agglomeration, Krakow, Lodz, TriCity (the metropolitan area of Gdansk, Sopot and Gdynia), Poznan, Wroclaw, Bydgoszcz, Torun, Szczecin, Lublin;
- cities that perform some functions of metropolitan areas: Bialystok, Rzeszow, Zelona Gora, Kielce, Olsztyn, Opole, Gorja Wielkopolski.

2. Main functional axes;

3. Regional cities: Plock, Wloclawek, Koszalin, Slavsk, Elblag, Grudziondz, Bielsko-Biala, Rybnik, Częstochowa, Legnica, Walbrzych, Tarnow, Radom, Kalisz, Ostrow-Wielkopolski;

4. Additional functional axes.

Comparison of the structure of poles and axes of development of Poland in 2010 with the project of 2030 is shown in Fig. 7.1.

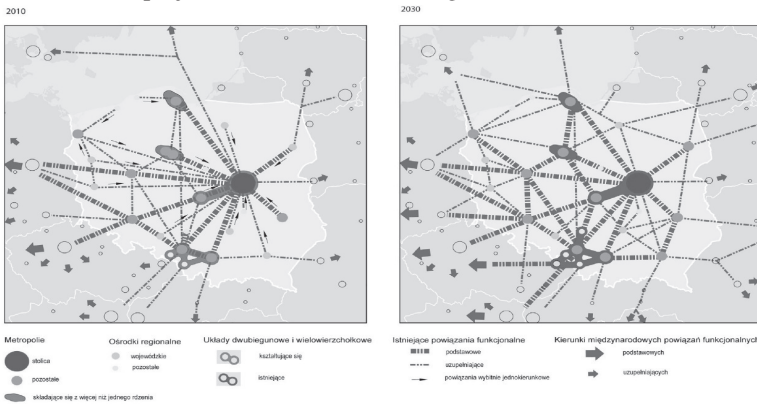


Fig 7.1. Comparison of the structure of development poles and axes of Poland in 2010 with the project of 2030

The peculiarity of the spatial development of Poland is an important role assigned to special economic zones (SEZs), which often become the poles of growth. However, it should be noted that SEZs are not a panacea in themselves and can be developed in both positive and negative scenarios. Thus, the zones can potentially become a platform for the emergence of adverse effects that not only become triggers of economic growth but, on the contrary, can prevent or generate negative processes that intensify each other (a phenomenon of negative synergy).

A negative scenario is likely when the state aid is not adjusted due to the size and specifics of the given region/settlement and according to the structure of private investment in the SEZ. This leads to excessive exploitation or misappropriation of resources, rather than to stimulate development in a viable way. Therefore, it is important to identify the mechanisms that either trigger a positive scenario (becoming the pole of growth), or activate a negative counter-productivity scenario and lead to the formation of an “anti-growth pole”.

In Poland, special economic zones are created in 356 municipalities, representing 14% of all municipalities in Poland (level LAU2 of NUTS). Their total area does not exceed 12 000 hectares. Despite the fact that the SEZ phenomenon has gained considerable popularity among politicians and economists, these territories have a high geographical variance and, accordingly, they significantly affect the local economy only in limited cases, and their role for regional economies is almost unheard of.

A recent study by a group of researchers¹²⁵ demonstrated the interrelation between the activity of SEZ and the economic development of municipalities. The analysis considered the indicators of cumulative investment and the number of jobs (including newly created) in the SEZ, the number of business entities per thousand people, the share of taxes to the municipal budget and other indicators.

According to the study, special economic zones have shown significant importance for economic development in only 27 of the 356 municipalities. However, of these 27 municipalities, only 8 had the characteristics of the growth pole (that is, they were the centers of a polarized region that showed a much higher growth rate than the rest of the region), while the other 19 municipalities were characterized by unstable economic development. The growth poles were mainly located in southwest Poland (Polkowice, Legnickie Pole, Nowogrodzic, Jelcz-Laskowice) and sporadically in other regions (Glogow Malopolska, Nowe Skalmierzyce, Gliwice, Ksawerów). The anti-poles of growth were not detected in Poland.

The mapping of the placement of growth poles and the expansion of investment activity did not reveal a direct relationship (Fig. 7.2). The location of the growth poles in the southern part of the country is mainly due to the proliferation of the automotive industry and the presence of a traditional industrial region.

¹²⁵ Godlewska-Majkowska, H., Komor, A., & Tupa, M. (2016). Special Economic Zones as Growth and Anti-growth Poles as Exemplified by Polish Regions. *Entrepreneurial Business and Economics Review*, 4(4), 189.

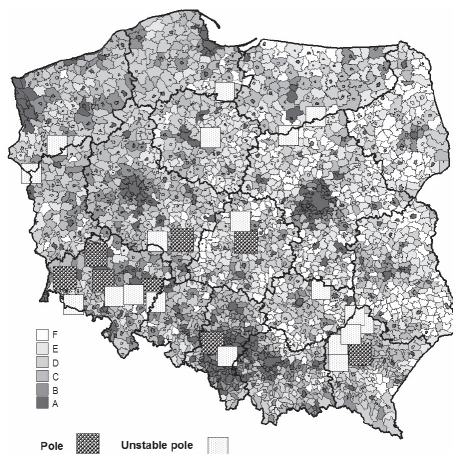


Fig. 7.2. Distribution of regional poles in Poland in comparison with investment attractiveness of municipalities

Source: Godlewska-Majkowska, H., Komor, A., & Typa, M. (2016).

The first fundamental program of the territorial organization of *Slovakia* was adopted in 2001 ("The Concept of Spatial Development of Slovakia") and supplemented in 2011 (since then the commonly used abbreviation of the program was KURS-2011¹²⁶). The foundational principle of the program was the polycentric development of the regions. Among all the countries we have considered, the directions of the formation of the spatial structure of the state are most detailed in the Slovak program.

The key feature of the KURS-2011 program is to rank the system of settlements in focal groups, including agglomerations, groups of settlements and the axis of development of three levels. The expected structure of the development poles and axes in Slovakia is as follows (Fig.7.3):

1. Focal centers of the highest level (1st category):
 - a. special group: Bratislava-Trnava agglomeration;
 - b. Košice-Prešov agglomeration;
 - c. bipolar poles: Banská Bystrica-Zvolen and Žilina-Martin.
 - d. monocentric poles: Nitra, Trencin;
2. Axis of development of the first level (1st category) – 10 priority axes;
3. Poles of the second level (2nd category) – the Liptovský Mikuláš – Ružomberok – Dolný Kubín; the Lučenec - Rimavská Sobota; the Michalovce –

¹²⁶ Slovak Spatial Development Perspective: <http://www.telecom.gov.sk/index/index.php?ids=172817>

Vranov – Humenné; Novy Zamky – Komarno, Poprad – Spišská Nová Ves, Povazska Bystritsa Puchov, Prievidza;

4. Axis of development of the second level (2nd category) - 13 axes;

5. Poles of the third level include two subgroups. The first subgroup includes the poles that arose on the basis of centripetal forces among the group of small cities (8 poles). The second group includes poles of lesser importance, which were formed on the basis of centripetal forces in one locality, that is, the polarization of the center and the outskirts (19 poles);

6. Axis of development of the third level - 29 axes.

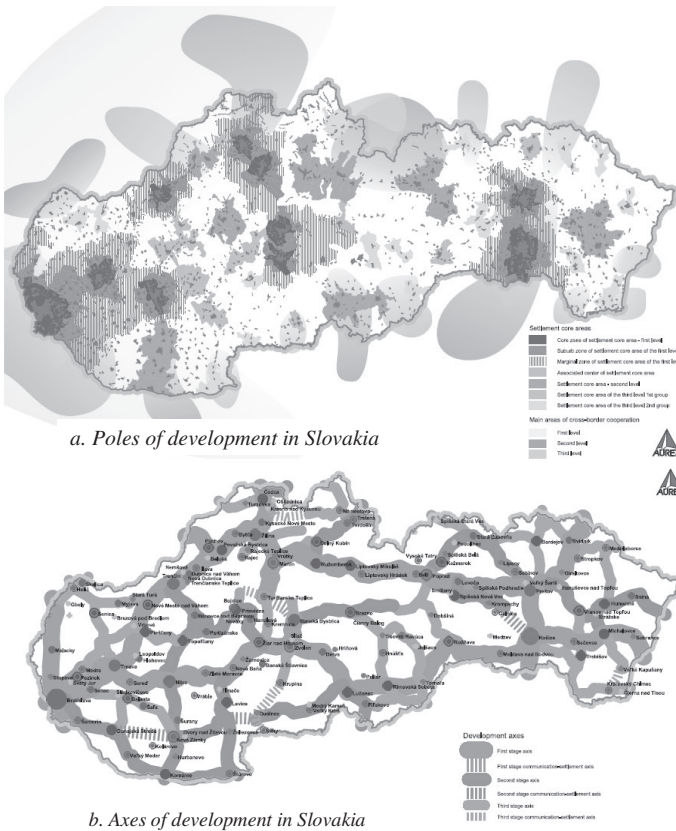


Fig. 7.3. Poles and axes of development in Slovakia

Source: Slovak Spatial Development Perspective

The prospects for the development of the settlement system in Slovakia are based on two principles:

- establishment of interconnections with Pan-European system of settlements;
- creation of favourable conditions for sustainable development of society.

In addition to the economic preconditions for social development and the current trends of globalization, which are closely linked to the spatial structure, one can also highlight a number of other factors of increasing importance for the international "inclusion" of the poles and axes of development of Slovakia:

1. Geomorphological and local features of both marginal and internal territories of Slovakia (the location between two mountainous massifs of the Carpathians and the Alps, the course of the Danube – the river of European significance). The mountainous character of the country is positive for the development of tourist and recreational potential, but it poses a problem for the development of transport (including the transboundary) network;

2. Spatial features relative to neighbouring territories (placement in the centre of Europe on the border of the EU and the post-Soviet space). Particularly in this aspect, it is worth highlighting the following points:

- organization of a promising urbanization axis of development mainly along the Danube in the direction of Stuttgart-Ulm-Munich-Linz / Salzburg-Vienna / Bratislava-Budapest-Belgrade;
- the presence of close densely populated agglomerations of European importance, such as Vienna, Budapest and Katowice-Ostrava;
- the belt of settlements in the direction from north to south of Moravia along the western border of Slovakia: Katowice-Ostrava-Zlin-Brno-Vienna;
- domination of the Kosice-Prešov agglomeration in the Carpathian region at the junction with Poland, Hungary and Ukraine.

3. Possibilities of organization of transboundary systems of settlements;

4. The existence and design of transport networks through the territory of Slovakia (primarily the development of the Trans-European Transport Network TEN-T).

Consequently, the main directions of internationalization of the poles and axes of development of Slovakia may be (Fig. 7.4):

- the North-South link between the Scandinavian and Baltic states with the Balkans via eastern Slovakia (the Via Carpathia corridor);
- connection with the region Povazie through Hungary with the Trieste and Rijeka ports or to Slovenia and Croatia;

- the west-east link as a central axis that connects the existing TEN-T corridors in the direction from Nuremberg/Dresden – Prague – Olomouc – Púchov – Žilina – Košice – state border with Ukraine.

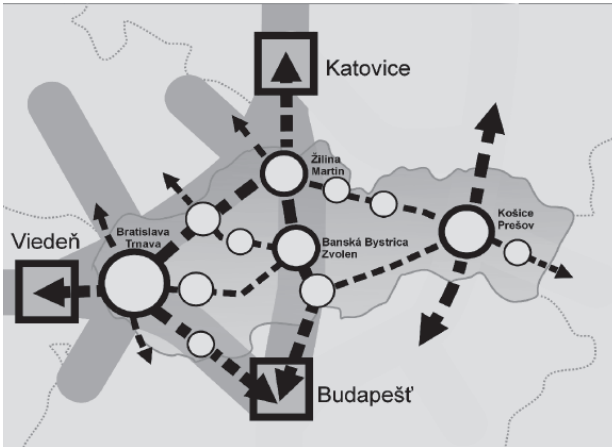


Fig. 7.4. International issues of the settlement core areas of the Slovak Republic

Source: Slovak Spatial Development Perspective

The spatial development program of Slovakia includes not only directions for optimizing the structure of settlements. The complex of measures also covers initiatives on modernization of transport and technological infrastructure, environmental protection, rational use of natural resources etc.

One of the priorities of the *Czech Republic's* Spatial Development Policy 2008 (PÚR ČR 2008), approved by the Government in 2009, is to promote polycentric development of the settlements structure. It defines the so-called development areas and axes, which are defined as territories where due to the concentration of the international, national and trans-regional importance, put forward higher requirements to the nature of change. The development areas and axis are not hierarchical (there is only one category). This results in a relatively larger number of major development poles in Czechia compared to other V4 countries.

The main development areas and axis of development are (Fig. 7.5):

- 12 development areas: Brno, České Budějovice, Hradec Králové / Pardubice, Jihlava, Karlovy Vary, Liberec, Olomouc, Ostrava, Plzeň, Prague, Ústí nad Labem, Zlín (1st category);
- Axis of development that link the above-mentioned areas (1st category).

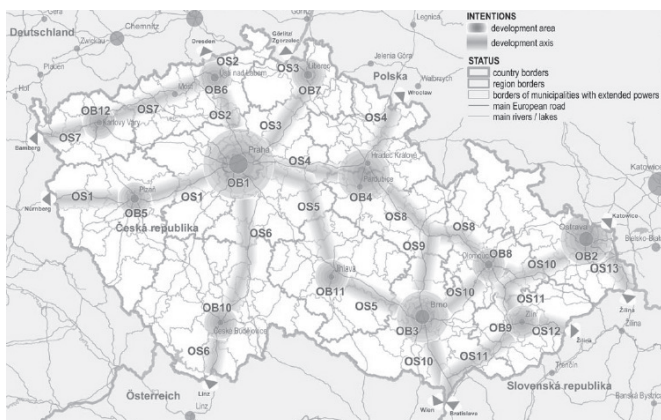


Fig. 7.5. Development areas and axes in Czech Republic

Source: Spatial Development Policy of Czechia 2008

However, since 2020 spatial issues in Slovakia are under the competence of the Ministry of Investments, Regional Development and Informatization of the Slovak Republic. Thus, the infrastructure focus of the formed growth poles and axes is expected to be slightly blurred¹²⁷. Instead, the new accent on local progress becomes vivid – sustainable development (see Methodology of creating and implementing programs of economic development and social development of regions, development programs of municipalities and groups of municipalities by applying the principles of sustainable smart development).

The National Development and Territorial Development Concept (NDTDC)¹²⁸ adopted by the Parliament in 2013 aims to promote balanced polycentric development in *Hungary*. In order to ensure that development is not limited to the capital's territory, economic centers of regions and districts are involved in the creation of a harmonious, polycentric and cooperative network, which is intended to become a catalyst for strengthening competitiveness.

The city network consists of different levels of city centers and functional urban areas (Fig. 7.6):

- the metropolitan region of Budapest (category 0);

¹²⁷ The new strategic programme for the period after 2021 was not available at the web-site of reformed Ministry of Transport and Construction at the moment of current application's submission.

¹²⁸ Nemzeti Fejlesztés 2030: Országos Fejlesztési és Területfejlesztési Konceptió: <https://rio.jrc.ec.europa.eu/en/library/national-development-2030-national-development-and-territorial-development-concept>

- city centers of (potential) international importance (1st category): Debrecen, Szeged, Miskolc, Péc, Győr, Szekesfehérvár;
- city centers of state significance (category 2): Kecskemet, Veszprém, Solnok, Tababány, Dunayvavros, Salgotariyans, Eger, Níryghaz, Sheksard, Szombathey, Kaposvár, Bekeschába, Zalaegerseg, Sopron, Nagykaniza, Khodmezvázary.

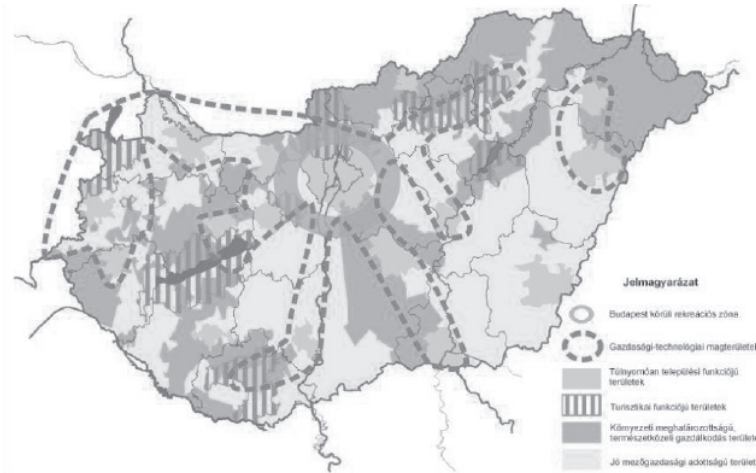


Fig. 7.6. Functional development areas in Hungary

Source: Nemzeti Fejlesztés 2030: Országos Fejlesztési és Területfejlesztési Koncepció

Development axis of Hungary:

- international axis of development (category 1);
- the axis of regional development (2nd category).

The axes of regional significance can also have cross national borders (in this sense they are also international or cross-border).

Most of the V4 states prioritize the formation and maintenance of poles and axes of development in their territories, laying the principle of polarization in national spatial planning programs. In addition, members of the Visegrad Four, as well as Bulgaria and Romania (together – “V4+2”) to achieve harmonization of national initiatives adopted a “Common Spatial Development Strategy of the V4+2 Countries”. This program outlines the “poles of development”, which are the centers of urban agglomerations that affect the surrounding areas, as well as “axes of development”, i.e. areas that connect the individual poles in the presence of transport and other infrastructure.



Fig. 7.7. Poles and axes of development of V4

Source: Common Spatial Development Strategy of the V4+2 Countries. URL: <http://www.v4plus2.eu/en/>. Published 2014. (Last accessed: 15.09.2018).

In Fig. 7.7 the main poles of development of the V4+2 states are shown, as well as the axes of development that connect them. Potential cross-border axes, which are currently at the initial stage of formation, have been singled out.

3. Territorial cohesion: case of V4 countries

Most of the V4 countries have relatively recently switched to territorial decentralization. Despite some successes in this area, the challenge remains to ensure cooperation between relatively autonomous territorial policy actors. Interregional cooperation is the basis of the EU's cohesion policy. We will review cohesion policy as a guide for the elaboration of new tools for territorial development by EU countries. Over the last two decades, EU cohesion policy has been a key European policy and an important financial instrument for helping the EU's more backward regions. The origins of cohesion policy can be traced back to

1986 (ratification of the Single European Act¹²⁹), when issues of cooperation and economic and social cohesion of the EU became the leitmotif of the rule-making process. But it should be noted that in these early stages, the territorial dimension, although manifested in a number of elements (such as the determination of specific conditions for backward regions), but the main emphasis was placed on economic and social cohesion.

Territorial cohesion has been considered as an autonomous integrated goal since 2009 after the ratification of the Lisbon Treaty¹³⁰, which set as a strategic guideline to achieve overall harmonization and balanced development of the EU by reducing inequalities between regions and attracting the most backward socio-economical parameters. Achieving polycentric and balanced development of European regions has been the fundamental principle of territorial cohesion since then. One year before the Lisbon Treaty (2008), the European Commission published a “Green Paper on Territorial Cohesion – Transforming Territorial Diversity into Advantage”¹³¹. However, both documents do not provide a clear definition of the political concept of territorial cohesion. The Green Paper, however, sets out the main policy guidelines for balanced and harmonious development:

1. Concentration: overcoming differences in density;
2. Connected territories: overcoming geographical remoteness;
3. Cooperation: overcoming differences.

Considering the model of territorial cohesion, we should highlight:

– awareness of the key role of the territory in economic growth through the emphasis on territorial aspects of competitiveness, efficiency of territorial resources usage, etc.;

– emphasizing the importance of territorial factors to achieve eco-development;

– highlighting the “territoriality” of many social factors, such as culture or social capital, which play an important role in both sustainable growth and direct satisfaction of human needs¹³².

All of these models raise the key goal of political geography, effectively combining the need for “territorialization” with the growing importance of

¹²⁹ Single European Act. 1986. URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM%3Axy0027>

¹³⁰ Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community. 2007. URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A12007L%2FTXT>

¹³¹ Green paper on territorial cohesion. 2008. URL: <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0616:FIN:EN:PDF>

¹³² Bradley J. F. N., Zaucha J., Brodzicki T., [et al.]. Territorial cohesion: a missing link between economic growth and welfare: lessons from Baltic Tiger. Gdańsk : Uniwersytet Gdański. Katedra Makroekonomii, 2017. ISBN 978-83-944797-4-9

networking (which can ultimately lead to “deterritorialization”). The interpretation of the phenomenon of “territorialization” can cover a wide range of meanings: physical attachment to a particular place, local sovereignty, social commitment to the location¹³³, i.e. self-identification with a particular territory. Accordingly, when considering territorialization in the context of the qualitative characteristics of a particular strategic task, its effects on territorial development and / or achieving territorial cohesion should be taken into account¹³⁴.

Summing up a brief conceptual review of territorial cohesion, we can conclude that it was originally a kind of "superstructure" to economic and social cohesion. However, aspects of urban development, as well as issues of regeneration policy, are gradually coming to the fore in territorial cohesion policy programs. These issues of urbanization are primarily related to aspects of a more balanced and harmonious distribution of urban settlements in a given area. Note the strong connotation of this aspect with the parameter of "polycentrism", which "stimulates regions and cities that cooperate with neighboring territories, develop common strengths and identify potential difficulties to bring additional value that can not be achieved by individual regions and cities in isolation."¹³⁵

It should be noted that the implementation of the policy of territorial cohesion, as a tool for expanding the role of cities, resonates with the practical implementation of the concept of "Functional Urban Areas". The most functional urban areas can be used as "a natural basin of the labour market or the main structure of mobility, which includes the urbanization system of neighbouring cities and villages that are economically and socially dependent on the city centre"¹³⁶. Today, such functional urban areas often transcend national borders, necessitating the implementation of cross-border administration. As we can see, the empirical determination between the existing functional urban areas of the study depends on their methodology, but the aggregate criterion is the association with large urban agglomerations.

The V-4 states are among the least urbanized OECD members. Although according to national statistical portals, the share of the population living in cities is much higher than 55%, but according to the OECD methodology, about a quarter of the population in urban areas live in urban areas in Poland and the Czech

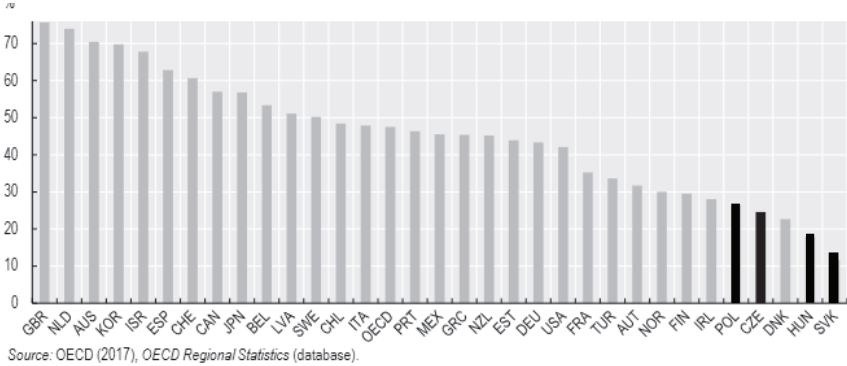
¹³³ Warwick E. J. P. *Defensible space as a mobile concept: the role of transfer mechanisms and evidence in housing research, policy and practice*. King's College London, 2015

¹³⁴ Ліщинський І. О. *Поліуси та осі розвитку в контексті глобалізаційних процесів: монографія*. Тернопіль: ТНЕУ, 2019. 364 с.

¹³⁵ ESPON. *Polycentric territorial structures and territorial cooperation*. 2016. URL: <https://www.espon.eu/topics-policy/publications/policy-briefs/polycentric-territorial-structures-and-territorial>

¹³⁶ URBACT III operational programme. European Regional Development Fund 2014–2020. URL: https://ec.europa.eu/regional_policy/en/atlas/programmes/2014-2020/czechia/2014tc16rfr003

Republic. For Hungary and Slovakia, this criterion is 18% and 12%, respectively (Fig. 7.8).



StatLink <http://dx.doi.org/10.1787/888933723511>

Fig. 7.8. Share of population in predominantly urban areas of V4 and other OECD countries, %

Population density in V4 cities is relatively insignificant compared to EU standards (in terms of LAU-2). The only exceptions are certain regions of Slovak Kosice, which have a high population density (Table 7.1).

Table 7.1

Population density of local administrative units of V4 states and some other EU members

	Highest		Second highest		Third highest	
	Name	(Pop./km ²)	Name	(Pop./km ²)	Name	(Pop./km ²)
Austria	Wien	4 335	Rattenberg	3 641	Matrei am Brenner	2 617
Czech Rep.	Prague	2 538	Havírov	2 340	Zastávka	2 139
France	Paris 11th arr.	42 138	Paris 18th arr.	33 798	Paris 20th arr.	33 117
Germany	München, Landeshauptstadt	4 531	Ottobrunn	3 972	Berlin, Stadt	3 837
Hungary	Budapest	3 347	Szigethalom	1 860	Diósd	1 674
Poland	Legionowo	4 008	Piastów	3 970	Świętochłowice	3 869
Slovenia	Ljubljana	1 044	Maribor	762	Isola	556
Slovakia	Kosice – Sídliško KVP	13 922	Kosice – Západ	7 324	Kosice – Nad jazerom	6 969

a) LAU2.

Source: Eurostat (2016), *Urban Europe: statistics on cities, towns and suburbs*.

In V4 states, there is also the practice of expanded analysis of cities as functional urban areas, which also include switching areas. As we can see from Fig. 7.9 functional urban areas in Poland, Hungary and the Czech Republic account for almost half of the territory, while in Slovakia their share is quite small.



Fig. 7.9. Functional Urban Areas in V4

In fig. 7.10 the role of key functional urban areas in the economy of the V4 states is demonstrated. Thus, in Hungary, the capital generates almost half of the national GDP, despite the fact that its share in total employment and population is about a third.

In Poland, a third of the population and employment accumulate in the 8 largest functional urban areas, which together account for more than 40% of GDP. In the Czech Republic, a third of the population and employment are concentrated in three functional urban areas, generating more than 40% of national GDP. The lowest level of territorial divergence is observed in Slovakia, where the capital has less than 15% of the population and employment, although Bratislava's share of national GDP is quite high – almost 30%.

In addition to the measures already mentioned, the importance of the so-called Integrated Sustainable Urban Development Strategies in the process of implementing territorial cohesion policy in the EU. On the one hand, such strategies increase the potential for environmental sustainability; on the other hand, according to the rationale of the EU Integrated Territorial Investment programs, such strategies contribute to the improvement of territorial governance processes,

as they allow local authorities to initiate broader partnerships with other local economic and political actors¹³⁷. In this context, the example of Poland can be cited, where the Integrated Territorial Investment Program is reserved exclusively for regional administrative centers and their functional areas¹³⁸.

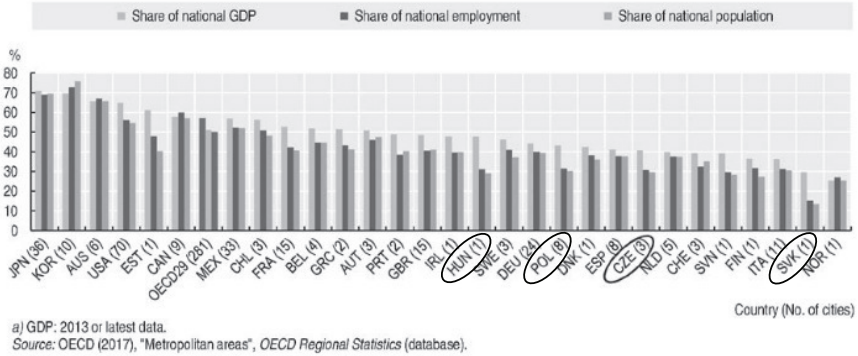


Fig. 7.10. Functional urban areas as engines of economic growth in V4 states

Overall, Integrated Sustainable Development Strategies have been implemented at the pan-European level under the Cohesion Policy 2014-2020 as part of an overall transformation of political ideology and practice in favor of a place-based approach. As we noted earlier, after the publication of F. Barca's Report,¹³⁹ the place-based approach began to dominate over the space-blind in European territorial policy, including cohesion policy. It is believed that an integrated place-based approach should be based on local knowledge, capital and resource control, as well as locally developed strategic programs, which together will achieve endogenous growth.

The first notable step in this direction was a significant reform of the European Structural and Innovation Funds in 2013 with an emphasis on urban development¹⁴⁰. However, financial support for the integrated development of agglomerations and surrounding areas was provided during all periods of implementation of the EU Cohesion Policy, although it was not so significant. In particular, among the earlier tools in this direction are the Urban Community

¹³⁷ Glinka K. Integrated territorial investment as instrument for managing transport security in Lower Silesia's largest cities. *Zeszyty Naukowe. Transport/Politechnika Śląska*. 2017

¹³⁸ Kamrowska-Zaluska D., Obracht-Prondzyska H. Implementation of the integrated territorial investments. *Uncovering the Territorial Dimension of European Union Cohesion Policy*. – Routledge, 2017. – P. 114–126

¹³⁹ Barca F. *Agenda for a reformed cohesion policy*. European Communities, 2009

¹⁴⁰ Tosics I. *Integrated territorial investment: a missed opportunity? EU Cohesion Policy*. – Routledge, 2016. – P. 284–296

Initiative, first launched in 1994-99, continued in 2000-06 and finally integrated with the Investment for Growth and Jobs package in 2007-13.

In addition, the European Territorial Cooperation Program launched the URBACT platform in 2003, focusing on the exchange of knowledge on sustainable integrated urban development, benchmarking of best practices and initiating the networking process between European agglomerations. It is also worth mentioning the LEADER approach, which has existed since 1991 and has been an important tool for rural development, and since 2007 has also been used under the European Maritime and Fisheries Fund to support the sustainable development of fishing communities. It is on the basis of the LEADER toolkit that the Community-Led Local Development (CLLD) program for 2014-2020 was initiated.

The implementation of the Integrated Strategies for Sustainable Urban Development during the 2014-2020 programming period is marked by significant changes compared to the above-mentioned early instruments. First, total funding for the integrated local approach has grown significantly to about 9% of the total Cohesion Policy budget (€ 31 billion). Second, there is a regulatory requirement to introduce an integrated local approach in cities. Third, the integrated approach has received a general wide resonance in society. Fourth, much more information needs to be processed to implement an integrated local approach at the program level. Fifth, more attention is paid to the diffusion of innovation (e.g., guidance, scenarios, participation in urban networks, peer-to-peer review, etc.).

One of the priorities of the Integrated Sustainable Development Strategies is to provide greater financial autonomy to urban structures. A new regulatory approach was the requirement to delegate intervention tasks to cities programmed with a share of at least 5% of the total EU Regional Development Fund. However, Member States retained the right to adopt the methodology for determining urban areas. Moreover, the regulator encouraged city administrations to innovate and experiment, and allowed the introduction of Urban Development Networks to deepen the discussion on improving agglomeration governance.

In general, there are three approaches to the implementation of Integrated Strategies for Sustainable Urban Development. Two of the more traditional ones are similar in nature to other European Structural and Investment Funds programs and include the development of Operational Programs (OPs) and separate mixed Priority Axis (PrAxis). The third more modern approach is called the Integrated Territorial Investment (ITI) strategy and serves as a platform for integrated thematic / sectoral projects with combined funding sources (most often from the European Regional Development Fund and the European Social Fund). Resources

from the aforementioned Community-Based Local Development (CLLD) program can also be used to fund Integrated Urban Sustainable Development Strategies.

A recent study¹⁴¹ by the European Commission identified 853 cases of Integrated Strategies for Sustainable Urban Development, as well as 153 strategies that were implemented under the Integrated Territorial Investment Scheme and were not included in the first group by the leadership of EU member states. In Fig. 7.11 shows 42 examples of the most in-depth application of Integrated Strategies for Sustainable Urban Development, regardless of the type and level of development of the region.



Fig. 7.11. Locations of in-depth Integrated Strategies for Sustainable Urban Development in the EU

Among the Visegrad Four countries, 10 cases of application of Integrated Strategies for Sustainable Urban Development were identified (Table 7.2). Most of them were implemented on the principle of Integrated Territorial Investment, with the exception of Hungary, where the Priority Axis approach was implemented.

According to preliminary estimates, the implementation of Integrated Strategies for Sustainable Urban Development has brought significant added value to the regional development of V4 countries. Thus, in the case of the ISSR in Prague, the implementation of the strategy improved the functional links between the constituent territories, which contributed to the development of strategic solutions to common problems. The Brno ISSR has become a catalyst for institutional change in cooperation with the capital, creating a mechanism for

¹⁴¹ Zwet A. van der, J. Bachtler, M. Ferry, [et al.] Integrated territorial and urban strategies-how are ESIF adding value in 2014-2020? – 2017 URL: https://myresearchspace.uws.ac.uk/ws/files/11036592/Integrated_sustainable_urban_development_strategies_in_the_European_Union_SUBMISSION_250718.pdf

coordinating and financing strategic projects mainly in the city. The strategy of the Lublin ITI has significantly changed the approach to territorial governance in the region, forming a platform for joint strategic decision-making by mayors and representatives of local municipalities.

Table 7.2

Cases of implementation of Integrated Strategies for Sustainable Urban Development in V4 States

Case	State	Type of city	population	Implementation method
Prague	CZ	Metropolitan	1400000	ITI
Brno	CZ	Metropolitan	380000	ITI
Ústí nad Labem	CZ	Town	52000	ITI
Pecs	HU	Metropolitan	145000	PrAxis
Debrecen	HU	Town	145000	PrAxis
Tatabanya	HU	Town	68000	PrAxis
Katowice	PL	Metropolitan	2760000	ITI
Walbrzych	PL	Metropolitan	415800	ITI
Lublin	PL	Metropolitan	547800	ITI
Nitra	SK	Town	92900	ITI

In conclusion, it can be noted that the implementation of diverse territorial instruments by the V4 countries can contribute to the generation of added value in various ways (this aspect is revealed in more detail in the work of Ferry and co-authors¹⁴²). There is evidence of the application of innovation policy at different levels of administration, which manifests itself in three main forms: the delegation of political tasks to the local level, the creation of new governance structures and the strengthening of territorial cooperation. However, the effectiveness of territorial cohesion tools is largely limited by the potential of internal human and creative resources, which are often quite limited (especially for sites that have relatively recently started implementing territorial cohesion programs).

References:

- Barca F. Agenda for a reformed cohesion policy. European Communities, 2009.
 Bradley J. F. N., Zauha J., Brodzicki T., [et al.]. Territorial cohesion: a missing link between economic growth and welfare : lessons from Baltic Tiger. Gdańsk : Uniwersytet Gdański. Katedra Makroekonomii, 2017. ISBN 978-83-944797-4-9.

¹⁴² Publications Office of the European Union Assessing the performance of integrated territorial and urban strategies : challenges, emerging approaches and options for the future. 2018. URL: <https://publications.europa.eu/en/publication-detail/-/publication/41d4bc2b-20f4-11e8-ac73-01aa75ed71a1/language-en>

- Camagni R. TEQUILA SIP ESPON 3.2. Interactive simulation package. 2006. URL: <https://slideplayer.com/slide/7101921/>
- Camagni R. The rationale for territorial cohesion: issues and possible strategies. Pedrazzini L.(a cura di.) The Process of Territorial Cohesion in Europe, Franco Angeli, Milano. 2006.
- Clifton J. Díaz-Fuentes D., Fernández-Gutiérrez M. Public infrastructure services in the European Union: challenges for territorial cohesion. *Regional Studies*. 2016. Vol. 50, No. 2. P. 358–373.
- ESPON. Polycentric territorial structures and territorial cooperation. 2016. URL: <https://www.espon.eu/topics-policy/publications/policy-briefs/polycentric-territorial-structures-and-territorial>
- European Commission. Commission staff working document. executive summary of the impact assessment. accompanying the document proposal for a regulation of the European Parliament and of the Council establishing the connecting Europe facility and repealing regulations (eu) no 1316/2013 and (eu) no 283/2014 / European Commission. 2018. URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=SWD%3A2018%3A313%3AFIN>
- European Commission. Proposal for a regulation of the European Parliament and of the Council laying down common provisions on the European regional development fund, the European Social Fund plus, the Cohesion Fund, and the European maritime and fisheries fund and financial rules for those and for the asylum and migration fund, the internal security fund and the border management and visa instrument. 2018. URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2018%3A375%3AFIN>
- European spatial development perspective (esdp). URL: <https://www.eea.europa.eu/policy-documents/european-spatial-development-perspective-esdp>
- Glinka K. Integrated territorial investment as instrument for managing transport security in lower silesia's largest cities. *Zeszyty Naukowe. Transport/Politechnika Śląska*. 2017.
- González A., Daly G., Pinch P., [et al.] Indicators for spatial planning and territorial cohesion: stakeholder-driven selection approach for improving usability at regional and local levels. *Regional Studies*. 2015. Vol. 49, No. 9. P. 1588–1602.
- Green paper on territorial cohesion. 2008. URL: <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0616:FIN:EN:PDF>
- Kamrowska-Zaluska D., Obracht-Prondzynska H. Implementation of the integrated territorial investments. Uncovering the Territorial Dimension of European Union Cohesion Policy. Routledge, 2017. P. 114–126.
- Luukkonen J., Moilanen H. Territoriality in the strategies and practices of the territorial cohesion policy of the European Union: territorial challenges in implementing “soft planning”. *European Planning Studies*. 2012. Vol. 20, No. 3. P. 481–500.
- Medeiros E. A coesão territorial nas NUTS iii de fronteira de Portugal continental—a iniciativa interreg-a eo desenvolvimento regional. o caso da nut iii do alentejo central. Tese de Mestrado, CEG, UL, Lisbon, 2005.
- Medeiros E. Territorial cohesion: the urban dimension. 2019. URL: https://books.google.com.ua/books?hl=uk&lr=&id=cXB_DwAAQBAJ&oi=fnd&pg=PR5&dq=implementation+of+eu+territorial+agenda&ots=xKQ7kPyX9d&sig=8HXxPPaNdHkAaGGamtv0qlar6k8&redir_esc=y#v=onepage&q=implementation%20of%20eu%20territorial%20agenda&f=false
- Publications Office of the European Union Assessing the performance of integrated territorial and urban strategies : challenges, emerging approaches and options for the future. 2018. URL: <https://publications.europa.eu/en/publication-detail/-/publication/41d4bc2b-20f4-11e8-ac73-01aa75ed71a1/language-en>
- Second report on economic and social cohesion. 2001. URL: <https://www.eesc.europa.eu/en/our-work/opinions-information-reports/opinions/second-report-economic-and-social-cohesion>
- Single European Act. 1986 URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM%3Axy0027.>

- The territorial dimension of environmental sustainability – potential territorial indicators to support the environmental dimension of territorial cohesion. 2010. URL: <https://www.eea.europa.eu/publications/the-territorial-dimension-of-environmental-sustainability>
- Tosics I. Integrated territorial investment: a missed opportunity? EU Cohesion Policy (Open Access). Routledge, 2016. P. 284–296.
- Treaty of Lisbon Amending the Treaty on European Union and the Treaty Establishing the European Community 2007 URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A12007L%2FTXT>
- URBACT III operational programme. European Regional Development Fund 2014–2020. URL: https://ec.europa.eu/regional_policy/en/atlas/programmes/2014-2020/czechia/2014tc16rfir003
- Vanolo A. European spatial planning between competitiveness and territorial cohesion: shadows of neo-liberalism. *European Planning Studies*. 2010. Vol. 18, No. 8. P. 1301–1315.
- Warwick E. J. P. Defensible space as a mobile concept: the role of transfer mechanisms and evidence in housing research, policy and practice. King's College London, 2015.
- Zwet A. Van, Bachtler J., Ferry M., [et al.] Integrated territorial and urban strategies-how are ESIF adding value in 2014-2020? 2017.
- Ліщинський І. О. Політика територіальної когезії в контексті регіональної безпеки ЄС. Журнал європейської економіки. 2019. Т.18. № 4. С. 387-403
- Ліщинський І. О. Полюси та осі розвитку в контексті глокалізаційних процесів: монографія. Тернопіль: THEU, 2019. 364 с.

CHAPTER 8

Transformation of Ukrainian automotive industry in the context of electromobility: applying the experience of Visegrad States

1. Strategic visions of a successful start of Ukraine in the global automotive market

In 2021, Ukraine celebrates the 30th anniversary of its independence. In this time, the country's economy has undergone a transformation from a socialist system to a "trophy" in the hands of oligarchic economic actors. This happened when a small group of "new" entrepreneurs ("oligarchs" in the current terminology) captured large "trophies" – industries¹⁴³. This process was made possible because the privatization mechanism was adapted in such a way as to redistribute state property between the emerging oligarchs, which did not lead to the replacement of the less efficient owner (the state) with a more efficient one. As a result, Ukraine entered the 21st century as a country with predominantly raw material exports and weak innovative industries that could have otherwise brought significant value added. According to the latest results of the International Comparisons Program, the level of Ukrainian GDP in 2017 was equal to 504.4

¹⁴³ Arkhireyev S. *Transaktsionnyye izderzhki trofeynoy ekonomiki postsotsializma* (Transaction costs of the trophy economy of post-socialism). *Business Inform*, 1999. 5-6, 41-45

Ivashchenko M. V. (2020) *Istorychna traiektoriia rozvytku natsionalnoi ekonomiky ta instytutsionalna transformatsiia* (Historical trajectory of national economy development and institutional transformation). *Economic Sciences*. Ser.: Accounting and Finance, 9(1), 454-462

billion US dollars (as per PPP). Ukraine has a GDP per capita of \$11,871 PPP, which, in Europe and Central Asia, exceeds only Tajikistan and Kyrgyzstan.

Ukraine's long-term economic lag has various causes. However, the low level of development of the real economy, especially the processing industry is among the main, if not the main factor. The share of processing industry in the structure of gross value added has a steady downward trend and amounted to 11.6% in 2018 compared to 13.0% at the beginning of the decade (2010), and 19.4% at the start of the century.

This kind of deindustrialization determines the low level of competitiveness of the economy and requires the development of a radical strategy to increase the role of industry in GDP. The indicators of the world market leaders can serve as benchmarks. For instance, the share of industry in the structure of US GDP is 18.9%, for Germany it is 30.15%, for Great Britain - 19.0%, for Norway - 31.1%, for Sweden - 33.0%, for France - 19.1%, and for Japan - 29.7%¹⁴⁴. Despite significant differences in these indicators (caused mainly by international specialization and the peculiarities of post-industrial development), they testify to the expediency of advanced industrial development as an important source of economic growth and job creation.

In order to determine the changes necessary to reverse the trend towards deindustrialization, the proverbial Gordian knot of Ukraine's economy must be found and cut before any significant influence on the country's GDP can be achieved. Today, the automotive industry is the "bottleneck" in the country's industrial sector. Its indicators over the last five years show an unfortunate trend: 2015 - 84.4%; 2016 - 99.0%; 2017 - 116.6%; 2018 - 115.3%; and 2019 - 96.8%. Within this industry, production of vehicles, trailers and semi-trailers is the weakest link, the indicators of which were respectively 94.4; 94.8; 111.6; 101.8; and 74.3.

However, the automotive industry is of great importance in the development of convergence of post-socialist countries and their European integration. This is evidenced by the experience of the Visegrad Four countries, which opened the market for multinational companies and created conditions for the development of knowledge-intensive industries. Their greatest success was the formation and development of mechanical engineering, especially in the automotive industry. In terms of vehicle production, the group is now a leader in the European and world economy. In the European Union, the Czech Republic ranks 5th, Slovakia 7th,

¹⁴⁴ Zadoia A. O. (2017) De stvoriuietsia VVP, abo industrializatsiia chy deindustrializatsiia? (Where is GDP created, or industrialization or deindustrialization?). *European vector of economic development*. 2(23), 27-41

Poland 8th and Hungary 9th. In the world market they have 17, 21, 22 and 23rd positions, respectively¹⁴⁵.

The experience of the Visegrad Four countries is important for Ukraine because the development of the automotive industry introduces them to a market with high effective demand, one that is changing rapidly and growing at the same time. The development of this industry leads to the creation of a large number of enterprises specializing in the production of parts, semi-finished products and accessories, the provision of sales and logistics services. Most enterprises in the modern automotive industry can operate with up to 100 employees, which makes it possible to create jobs without creating large migration flows in the country. At the same time, tens, and over time, hundreds of thousands of jobs can be created in the industry. Finally, the technological capabilities of the automotive industry gradually form local, regional and international production networks, which become the basis for the country's inclusion in the system of European economic integration, as evidenced by the experience of the Czech Republic, Slovakia, Poland and Hungary.

The interest in the automotive industry has declined in the Ukrainian scientific literature in the last decade, which can be explained by the decline in domestic car production. However, despite the crisis in the automotive industry, there are publications that try to find the prospects for vehicle production in Ukraine. They are considered in terms of attracting foreign investment and increasing the competitiveness of the domestic model range¹⁴⁶, resource and infrastructure support necessary for the functioning of a competitive automotive industry and attracting the attention of investors¹⁴⁷, assortment policy transformations¹⁴⁸, state policy for the development of road transport market infrastructure¹⁴⁹. A monograph by I. Yu. Shevchenko offers a systemic view at the development of the automotive industry and a methodology for assessing the

¹⁴⁵ Tulder R., Ruigrok W. International production networks in the auto industry: Central and Eastern Europe as the low end of the West European car complexes. *Enlarging Europe: The Industrial Foundations of a New Political Reality*. (University of California at Berkeley, 1998). 2020-237. <https://escholarship.org/content/qt13s757cx/qt13s757cx.pdf#page=206>

¹⁴⁶ Yurynets O. V., Marushchak O. Ya., *Tendentsii ta perspektyvy rozvytku avtomobilebudivnoi haluzi Ukrainy u pisliakrizovyi period* (Trends and prospects for the development of the automotive industry in Ukraine in the post-crisis period), 99-105. (Lviv Polytechnic National University, 2013) <http://ena.lp.edu.ua/bitstream/ntb/23411/1/15-99-105.pdf>

¹⁴⁷ Kryvokon O. H., Bondarenko A. I. (2011) *Peredumovy ta perspektyvy rozvytku avtomobilebudivnoi haluzi v Ukraini* (Prerequisites and prospects for the development of the automotive industry in Ukraine). *Eastern-European Journal of Enterprise Technologies*, 6/2(54), 46–50

¹⁴⁸ Sterniuk O. B. (2009) *Osoblyvosti asortymentnoi polityky avtomobilebudivnoho pidpryiemstva v umovakh kryzy* (Features of the assortment policy of the automobile enterprise in the conditions of crisis). *Journal of Lviv Polytechnic National University. Series of Economics and Management Issues*, 640, 400 – 406

¹⁴⁹ Boiko O. V., Koval V. V. in *Proceedings of the International Scientific and Practical Conference "Development of Trade and Entrepreneurship in Ukraine: Trends and Prospects"*, Odessa, 2017.

competitiveness designed by the author, as well as original spherical model and concept of the state program of industry development up to 2025¹⁵⁰.

However, the author did not link their proposals to the use of market methods. The concept of competitiveness in a rapidly changing world economy was developed by Braja & Gemnik-Salwach, who proved that the growing role of innovative and destructive technologies is one of the most important factors driving these processes, and knowledge-intensive and innovative industries have become the main drivers of economic growth and economic competitiveness¹⁵¹. In recent years, the development of methodological problems in the context of rapid changes in the world economy has been accelerating. In December 2020, the European Automobile Manufacturers' Association published Roadmap for the deployment of automated driving in the European Union, which discusses the benefits and terminology of automated driving¹⁵². In summary, the analysis of existent publications shows a lack of scientific research that would systematically solve the problem of overcoming the crisis of the automotive industry and position it as a renewed modern production subsystem of Ukraine's economy, an important step for a country with a focus on accelerating European integration.

2. Development of the automotive industry in the years of Ukraine's independence

During the 90s and the first decade of the 2000s, the automotive industry of Ukraine developed as a priority area that provided the solutions to social, economic, environmental, scientific, and technical problems while the market economy was still being established. About 90 thousand jobs were created in this industry and the same number of employees were engaged in related industries. After gaining independence, Ukraine had four plants for the production of vehicles, including cars (Zaporizhzhia and Lutsk), trucks (Kremenchuh) and buses (Lviv), and more than 60 companies that produced components.

Changes in the automotive industry that took place after Ukraine's independence, i.e. after 1991, were mainly precipitated by the relations with Russia. There were several assembly lines in Ukraine, including minibuses

¹⁵⁰ Shevchenko I. Yu. *Rehulivannia rozvytku avtomobilebuduvannia Ukrainy: monohrafiia* (Regulation of automobile development of Ukraine: monograph). (Kharkiv: KhNADU, 2019), p.556

¹⁵¹ Braja M., Gemzik-Salwach A. Competitiveness of high-tech exports in the EU countries. *Journal of International Studies*. 13(1), 359-372 (2020). doi:10.14254/2071-8330.2020/13-1/23

¹⁵² European Automobile Manufacturers Association, Automated driving. Roadmap for the deployment of automated driving in the European Union. (ACEA, 2020), https://www.acea.be/uploads/publications/ACEA_Automated_Driving_Roadmap.pdf. Accessed 14 Dec 2020

"Bogdan" in Cherkasy and cars "Volga" in Illichivsk (now Chornomorsk), low-tonnage cars "Gazelle" - in Simferopol and Lubny. These Russian car models were inferior in their competitiveness to Western brands and their production worsened the lag of the Ukrainian car industry in scientific, technical and innovative terms.

A relative success was achieved by the construction of the "Eurocar" plant for the production of VW Group cars near Uzhhorod, two kilometres from the border with Slovakia and Hungary, where there were global manufacturers of automotive components. In the context of the Eastern Partnership policy, equipment from the best European manufacturers "Transsystem" (Poland), "Chropynska Strojirna" (Czech Republic), "EISENMANN" (Germany) and others was provided to equip the enterprise. "Eurocar"'s innovativeness is also reflected in the uniqueness of software and technological innovations to ensure the flexibility of production processes. However, the plant managed to achieve only minimal profitability mainly due to limited orders of 10,000 cars, while the plant project was estimated for 50,000-100,000 cars. The mistake of the company's founders was to bet on the Russian market, which in Ukraine is problematic for political reasons.

Ukraine's automotive industry has tended to grow since the early 2000s. In 2008, the production peaked at 423,127 cars. Since 2009, the trend has changed to an annual decline. Initially, the cause was the global crisis of 2008-2009. In 2019, the volume of production amounted to 7265 units, which were manufactured mainly at the plant "Eurocar" (table 1). Added to this is Ukraine's accession to the World Trade Organization and the adoption of its terms to reduce import duties on foreign cars from 25% to 10% and the waiver of a number of preferences for domestic producers. At the same time, illegal schemes of importing cars with foreign registration spread. Later, the decline in production was affected by the low competitiveness of Ukrainian cars in Western markets. Simultaneously, Russia waged a trade war with Ukraine in the eastern markets. Common methods were stopping car carriers, banning transit to Kazakhstan, blocking transit routes to the markets of Central Asia and the Caucasus.

The crisis of the automotive industry of Ukraine has led it to a state that can be assessed as approaching zero. Therefore, there are grounds make reviving the industry a priority, as a country with an area of 607 thousand km² and a population of more than 40 million, should not exist without its own automotive industry.

The problem of the revival of the automotive industry should not be understood as a matter of modernization or renewal of bankrupt enterprises. The

task should be to establish modern production by corporate and private owners of the latest scientific and technical achievements in the automotive industry.

Table 8.1

Production of cars and commercial vehicles in Ukraine in 2000-2019¹⁵³.

Year	Cars	Commercial vehicles	Total	Change, %
2019	6254	1011	7265	9,7
2018	5660	963	6623	-22,9
2017	7296	2296	9542	81,2
2016	4340	924	5264	-36,1
2015	5654	2590	8244	-71,3
2010	75261	7872	83133	20,06
2009	65646	3649	69295	-83,6
2008	400799	22328	423127	5,1
2007	380061	22530	402591	39,7
2006	274860	20400	295265	36,8
2005	196722	19037	215759	15,4
2004	179098	7792	186890	73,2
2003	103000	4890	107890	100,6
2002	50393	3380	53773	69,0
2001	24995	6829	31824	1,8
2000	18124	13121	31255	63,0
1999	10136	9044	19180	

It is clear that the latter will drive a hard bargain, to which the state must generally agree. It can be argued in advance that they will prioritize radical reforms of the judiciary and anti-corruption measures to ensure the security of their businesses. According to V. Prykhodko, "safe" investments create an opportunity to make capital investments and production savings at a level that guarantees sufficient rates of expanded reproduction, technological re-equipment and restructuring of the economy, which directly increases the potential protection of economic interests from threats of various origins¹⁵⁴. Given the scale of the project, creating an investment security mechanism is necessary to attract related producers as major investors.

Carrying out a large-scale transformation in the economy with the involvement of investors and world market leaders involves the implementation of measures to achieve good indicators in terms of the ease of doing business, since

¹⁵³ International Organization of Motor Vehicle Manufacturers. Production statistic. URL: <https://www.oica.net/production-statistics/>. Accessed Jan 14 2021

¹⁵⁴ Prykhodko V. P. Investytsiina bezpeka yak vazhlyvyi chynnyk podolannya finansovo ekonomichnoi kryzy (Investment security as an important factor in overcoming

this indicator serves as a guide for making positive decisions about choosing a country for capital investment. Theoretically, it is considered a herald of socio-economic wealth¹⁵⁵. Improving business conditions is particularly important for Ukraine, as it has never been ranked in the top 100 countries in the Ease of Doing Business Index compiled by the World Bank since 2006. However, in 2020 there was a significant improvement in this regard - Ukraine rose to 64th place in the ranking. Now there are reasons to establish a firmer place in the first hundred and continue to further increase the rating.

The world automotive industry is now on the verge of revolutionary changes. According to experts, by 2025, traditional automakers and suppliers should refocus on the challenges of global trends in electric mobility and significantly increase investment in the transformation of their business models. New competitors with new thinking and ideas will enter the market. This is in addition to the fact that, according to expectations, by 2030 more than 55% of new cars can be fully electrified, and in general, 95% of sales of new vehicles will have at least partial electrification. Moreover, up to 40% of mileage in Europe will be carried out by autonomous vehicles (without a driver)¹⁵⁶.

The drivers of change in the automotive industry are largely the technically well-educated young adults. It is the youth that should become the driving force behind the development of more sustainable and convenient scientific and technical solutions. They will have to rethink the whole system of economic relations in the industry, focusing not on the field of production, as has happened since the invention of the car and still continues to happen today, but on the use of vehicles. Given the megatrends, the choice of innovative areas will be based on individualization, urbanization, artificial intelligence, mobility, digital culture, cooperation with other industries, offers of additional goods and services. Given these trends, the European vehicle fleet is projected to decline from 280 million to 200 million units by 2030¹⁵⁷.

Inclusion of Ukraine in competition with existing car manufacturers will happen in conditions of the difficult transition of existing enterprises to a new dimension. Many market leaders, including the Visegrad Four, end their production cycle in 2023, complicating the transformation process. Transnational

¹⁵⁵ Leal-Rodríguez A. L., Sanchís-Pedregosa C. (2019) Could the Ease of Doing Business Index be considered a predictor of countries' socio-economic wealth? An empirical analysis using PLS-SEM, 12(4), 229-243 doi:10.14254/2071-8330.2019/12-4/15

¹⁵⁶ Kühnert F., Stürmer Ch., Koster A. Five trends transforming the Automotive Industry. PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft. 2018. URL: https://www.pwc.at/de/publikationen/branchen-und-wirtschaftsstudien/easyc-five-trends-transforming-the-automotive-industry_2018.pdf

¹⁵⁷ *ibid*

corporations are choosing markets with cheaper labour for new investments. There are several economic studies showing that companies are considering moving production to countries with cheaper labour after the average wages in the region exceeds 1,200 euros.

In the context of transformation, the competition on the market is influenced by the fact that the cost of labour in the Eurozone is higher than in other countries. This encourages investors to look for alternatives to invest in. Among Ukraine's western neighbours, such a situation is emerging in the Visegrad Four. Slovakia, which is the only member of the Eurozone, has higher salaries than the rest of the Group, which is why in 2018 it lost the construction of a new BMW plant to its neighbour Hungary. At the same time, Budapest won the research contract for Jaguar Land Rover, despite the fact that in 2018 the company commissioned the only European plant outside the UK near the Slovak city of Nitra. Simultaneously in the neighboring Czech Republic, BMW is building a research centre to test the management of autonomous vehicles. According to the Slovak Automobile Industry Association, the country has lost its competitiveness in the Visegrad Four region and is losing its advantage over the countries of Southern Europe¹⁵⁸.

Financial and economic readiness to start transformational changes is an important factor in competition in the automotive industry today. At the moment, it is not profitable for the owners of existing enterprises to restructure their production facilities to produce electric cars. They require a lag of time during which the most expensive assets can be depreciated, namely plants for the production of internal combustion engines and gearboxes. Under such conditions, outsider countries have obvious competitive advantages - they have nothing to lose. In view of this, it can be argued that Ukraine, given the entry of a strong investor in its market due to the time factor has a good chance of becoming an automotive state.

Thus, international competition in the field of car production is characterized by the accumulation of sufficient scientific and technical potential to carry out restructuring on market terms. Both current leaders in the automotive business and outsiders have a chance to compete for success in the vehicle market. Given the high cost of future transformations, their success will depend to a large extent on the interest and participation of governments. In this regard, it should be noted that the automotive industry is not a leader in investing in R&D. The top 10 companies in the world in terms of R&D costs include only Tesla Motors, which spends \$ 0.7

¹⁵⁸ Toma B. Ako Detroit? Domáci automobilový priemysel čakajú posledné dobré roky. 2020. URL: <https://ekonomika.pravda.sk/firmy-a-trhy/clanok/538578-koniec-ako-detroit-domaci-automobilovy-priemysel-cakaju-posledne-dobre-roky/>

billion (ranked 10th), while the spending of Alphabet (ranked 1st, specializing in software and internet) amounts to 12.3 billion dollars. At the company level, the prerequisite for success will be the choice of production location on the basis of a competent assessment of the factors of spatial, human, raw material and environmental potential. The final decision should be made taking into account the cooperation with central governments and local authorities.

3. Revival of the automotive industry of Ukraine: priority conceptual components

The revival of the automotive industry is a decade-long task of national importance, because it fundamentally changes the structure of the economy and convergence strategy, affects social institutions and the development of society. The scale of the task should be ensured from the very beginning by the adopted legislative and governmental actions. The experience of Poland is very significant in this context, as in 2003 it was among the top three countries offering the best conditions for the location of plants for the production of components for the automotive industry. This was followed by an increase in FDI inflows and the development of a sub-supplier reserve, and during 2007-2009 Poland became the second largest (after the Czech Republic) car manufacturer in Central and Eastern Europe.

The central government should initiate the invitation of the main investor. It is advisable to attract a multinational company that owns the brand with top sales in the Ukrainian market, namely Toyota, Renault, Skoda, Nissan, Hyundai, or Volkswagen. Regulatory documents should regulate the allocation of land for the creation of industrial zones to the parent company and manufacturers of parts and semi-finished products.

The global trend of transformation of the automotive industry indicates the impossibility of success without the use of public-private partnership. For example, the Automobile Industry Association of Slovakia appealed to the government to conclude a Memorandum of Understanding and Cooperation on creating conditions for sustainable development of the industry. This document should help maintain the competitiveness of the automotive industry in the long run. For Ukraine, which is developing the industry after the fall in production to almost zero, success without close cooperation with central government agencies is almost impossible.

Along with the choice of the main investors and the model range of the cars, it will be necessary to decide on the division of labour. The automotive industry in the narrow sense is a component of mechanical engineering. However, its functioning requires the creation of a kind of symbiosis of mechanical engineering, electrical and chemical industries. To ensure the production of components, the parent company must create a network of related companies and global suppliers. Given the global experience, generally for this purpose cooperation with small and medium-sized businesses, most of which have of 25 - 50 - 100 employees is established and developed. The developed system of automobile production has hundreds of subcontractors. In Slovakia, for example, there are about 700 companies operating in the automotive industry¹⁵⁹.

The creation of an enterprise for the production of electric vehicles will require the development of technology of numerous components for a new type of product. These include autonomous control systems, alternative drives, digital data transmission, braking systems, lane keeping assistance systems, medium capacity batteries that are charged through recuperation during braking, batteries for plug-in hybrids.

The division of labour among car manufacturers forms the geographical structure of the automotive industry. Local, regional and global production networks are created for the purposes of balanced and synchronous functioning of producers. However, this process of division of labour should not be final. Today, in the real economy, more and more attention is paid to global value-added networks. They make it possible to distribute individual production operations between different countries of the world, which is a means of ensuring a high level of competitiveness¹⁶⁰. For Ukraine, this requires finding forms of cooperation with the Visegrad Four. They are, firstly, territorially the closest countries of the European Union, and, secondly, world leaders in the automotive markets. The formation of international production networks and global value-added networks in Central and Eastern Europe with the participation of Ukraine can be an effective direction for successful and accelerated development of the country's automotive industry

Revival of the automotive industry of Ukraine is a road from deindustrialization to industrialization of the country following the newest scientific and technical ideas focused on the future. That is why an electric car with

¹⁵⁹ Udržateľnosť automobilového priemyslu na Slovensku. Môj Elektromobil. 2019. URL: <https://www.mojelektromobil.sk/elektromobilita/infrastruktura/nabijacie-stanice>

¹⁶⁰ Slušná L., Balog M. et al., Automobilový priemysel na Slovensku a globálne hodnotové reťazce Slovenská inovačná a energetická agentúra (Bratislava, 2015). URL: https://www.siea.sk/wp-content/uploads/files/inovacie/publikacie/studia_Automobilovy_priemysel_na_Slovensku_a_globalne_hodnotove_retaazce_SIEA_we_b.pdf

different levels of automation and digitization should be the basis for this process. The mission of the automotive industry is changing rapidly, it can no longer be traditionally interpreted as meeting the growing needs of the population in mobility and approaching the level of economic prosperity of developed countries. At the same time, electrification in combination with digitalization encourages the establishment of new social relations and a new way of life. We do not deny the importance of traditional innovations: economic engine, reliable brake mechanism, high-speed car, attractive design, etc. However, in time there is a need for new innovations, such as autonomous driving and automated cars.

A comprehensive and rapid reorganization of the automotive sector will result in the emergence of new business models. Manufacturers and suppliers must offer consumer-oriented innovations to succeed in the markets. It should be assumed that a certain part of society, especially young people, does not have and does not need a personal car. Multinational companies are already developing models that will be effective in online car-sharing agencies to create driving communities on online platforms with intermediary functions for private travel. The greatest prospects are predicted for business models of car sharing in large cities, combined with public transport. Modern electric cars have great potential to create an inclusive society and expand opportunities for equal participation in public life, in particular with the use of a car without a driver.

Electric mobility experts are developing new concepts based on the fact that the future of the car is the future of mobility. Discussions on such a link are important for developing an automotive strategy. The development of the debate on the future of the automotive industry in the global dimension and in Ukraine in particular can be conducted based on new terminology: the coefficient of integration, infrastructure efficiency, inventory ratio and levels of autonomy.

References:

- Arkhireyev S. (1999) *Transaktsionnyye izderzhki trofeynoy ekonomiki postsotsializma* (Transaction costs of the trophy economy of post-socialism). *Business Inform*, 5-6, 41-45
- Boiko O. V., Koval V. V. in *Proceedings of the International Scientific and Practical Conference "Development of Trade and Entrepreneurship in Ukraine: Trends and Prospects"*, Odessa, 2017.
- Braja M., Gemzik-Salwach A. *Competitiveness of high-tech exports in the EU countries*. *Journal of International Studies*. 13(1), 359-372 (2020). doi:10.14254/2071-8330.2020/13-1/23
- European Automobile Manufacturers Association, *Automated driving. Roadmap for the deployment of automated driving in the European Union*. (ACEA, 2020), https://www.acea.be/uploads/publications/ACEA_Automated_Driving_Roadmap.pdf. Accessed 14 Dec 2020
- International Organization of Motor Vehicle Manufacturers. *Production statistic*. <https://www.oica.net/production-statistics/>. Accessed Jan 14 2021

- Ivashchenko M. V. (2020) Istorychna traiektoria rozvytku natsionalnoi ekonomiky ta instytutsionalna transformatsiia (Historical trajectory of national economy development and institutional transformation). *Economic Sciences. Ser.: Accounting and Finance*, 9(1), 454-462
- Kryvokon O. H., Bondarenko A. I. (2011) Peredumovy ta perspektyvy rozvytku avtomobilebudivnoi haluzi v Ukraini (Prerequisites and prospects for the development of the automotive industry in Ukraine). *Eastern-European Journal of Enterprise Technologies*, 6/2(54), 46–50
- Kuhnert F., Stürmer Ch., Koster A. Five trends transforming the Automotive Industry. PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft. 2018. URL: https://www.pwc.at/de/publikationen/branchen-und-wirtschaftsstudien/eascy-five-trends-transforming-the-automotive-industry_2018.pdf.
- Leal-Rodríguez A. L., Sanchís-Pedregosa C. (2019) Could the Ease of Doing Business Index be considered a predictor of countries' socio-economic wealth? An empirical analysis using PLS-SEM, 12(4), 229-243 doi:10.14254/2071-8330.2019/12-4/15
- Prykhodko V. P. Investytsiina bezpeka yak vazhlyvyi chynnyk podolannia finansovo ekonomichnoi kryzy (Investment security as an important factor in overcoming
- Shevchenko I. Yu. Harmonizatsiia yak novitii pidkhdid do derzhavnoho rehuliuвання rozvytku malosubiektnykh haluzei natsionalnoi ekonomiky (na prykladi avtomobilnoi promyslovosti Ukrainy). International scientific and practical conference, November 2020, 27-28.
- Shevchenko I. Yu. Rehuliuвання rozvytku avtomobilebuduvannia Ukrainy: monohrafiia (Regulation of automobile development of Ukraine: monograph). (Kharkiv: KhNADU, 2019), p.556
- Slušná L., Balog M. et al., Automobilový priemysel na Slovensku a globálne hodnotové reťazce Slovenská inovačná a energetická agentúra (Bratislava, 2015). URL: https://www.siea.sk/wp-content/uploads/files/inovacie/publikacie/studia_Automobilovy_priemysel_na_Slovensku_a_globalne_hodnotove_retaazce_SIEA_web.pdf
- Sterniuk O. B. (2009) Osoblyvosti asortymentnoi polityky avtomobilebudivnogo pidpriemstva v umovakh kryzy (Features of the assortment policy of the automobile enterprise in the conditions of crisis). *Journal of Lviv Polytechnic National University. Series of Economics and Management Issues*, 640, 400 – 406
- Toma B. Ako Detroit? Domáci automobilový priemysel čakajú posledné dobré roky. 2020. URL: <https://ekonomika.pravda.sk/firmy-a-trhy/clanok/538578-koniec-ako-detroit-domaci-automobilovy-priemysel-cakaju-posledne-dobre-roky/>
- Tulder R., Ruijgrok W. International production networks in the auto industry: Central and Eastern Europe as the low end of the West European car complexes. *Enlarging Europe: The Industrial Foundations of a New Political Reality*. (University of California at Berkeley, 1998). 2020-237. <https://escholarship.org/content/qt13s757cx/qt13s757cx.pdf#page=206>
- Udržateľnosť automobilového priemyslu na Slovensku. Mój Elektromobil. 2019. URL: <https://www.mojelektromobil.sk/elektromobilita/infrastruktura/nabijacie-stanice>
- Yurynets O. V., Marushchak O. Ya., Tendentsii ta perspektyvy rozvytku avtomobilebudivnoi haluzi Ukrainy u pislukryzovyi period (Trends and prospects for the development of the automotive industry in Ukraine in the post-crisis period), 99-105. (Lviv Polytechnic National University, 2013) <http://ena.lp.edu.ua/bitstream/ntb/23411/1/15-99-105.pdf>
- Zadoia A. O. (2017) De stvoriuetsia VVP, abo industrializatsiia chy deindustrializatsiia? (Where is GDP created, or industrialization or deindustrialization?). *European vector of economic development*. 2(23), 27-41.

CHAPTER 9

Visegrad Countries in the current conditions of the migration crisis in the EU

1. Economic theories of migration

In the post-war period, not only the volume of migration in the world has increased, but its composition has also changed: instead of Europe, countries of Asia, Africa and Latin America have become, and Europe itself has begun to actively accept migrants.

At the end of the 19th century, the famous English statistician and demographer W. Farr hypothesized that migrations develop without any definite patterns, like a chaotic Brownian motion.

This statement was disputed by his contemporary E. G. Ravenstein, who believed that the general patterns of development of migration processes can be identified.

In response to W. Farr, he formulated the laws of migration, which were published in 1885. Initially, there were seven laws, later, when studying migration data for the United States and other countries, their number was added to eleven. The Laws of Migration attempts to explain and predict migration, both internal and international. Many of these laws are still valid and continue to serve as a starting point for most migration patterns even more than a century later, demonstrating their objectivity.

E.G. Ravenstein identified the following Laws of Migration (English scientist, 1885):

- There is a redistribution of the population between the territories.

- Territories differ mainly in terms of economic characteristics.
- Most migrants move short distances.
- Migration occurs in steps.
- Each migration stream corresponds to a reverse stream.
- Long distance migrants migrate to major centers industry and trade.
- Urban dwellers are less mobile than rural dwellers.
- Women are more mobile than men in movement within the country, men are more mobile than women in long journeys distance.
- Large cities are growing mainly due to migration.
- The volume of migration increases with the development of industry, trade and transport.
- The main reasons for migration are economic.

These laws are rather descriptive and lack explanations for the reasons for migration and the factors that contribute to the reproduction of this phenomenon.

The econometric model by E. Lee (Push / Pull factors) developed in the 1960s also belongs to the classical migration theories.

According to this model, different groups of migration factors operate in each territory:

- restraining,
- attractive,
- push-out and
- intermediate factors
- determining the arrival and departure, with some factors acting on the majority of people, and some - only on certain individuals.

Attracting:

- high level of economic development,
- higher incomes,
- safeness,
- the opportunity to gain access to the labor market (including in the informal sector, which is especially important for illegal immigrants) and others.

Attracting factors have a greater impact on highly educated people, while for low-skilled workers, on the contrary, negative push factors are of greater importance.

Intermediate factors increase with an increase in the distance between the territories – the limitation of migration flows:

- fare,
- legislative regulation of movements,
- availability of information about the expected region of arrival, etc.

E. Lee focuses on the economic factors of migration, overlooking the non-economic ones.

Neoclassical theory of migration M. Friedman, P. Samuelson. The theory was developed to explain labor migration in the process of economic development. This theory characterizes migration processes at both the macro and micro levels (1960-1970s). The direction of flows is determined by the economic characteristics of the territories:

- if they are attractive, then immigration takes place on the territory,
- if negative, then emigration.

Migration is the result of geographic differences in labor supply and demand. The signal for migration is the difference in salary (income) levels between the territories of departure and arrival. It is worth noting that the salary level must be sufficient to cover the costs of travel. According to neoclassical theory, the study of migration is similar to solving the problem of efficient allocation of resources, which is why this approach has found its practical application in many countries of the world.

The provisions of this theory at the macro level contain a number of conceptual assumptions:

1. International labor migration is due to differences in wages between countries.
2. With the elimination of global wage differentials, labor movements will stop.
3. Flows of human capital, in cases of highly skilled and low skilled labor, can occur in different directions due to various driving forces affecting these processes.
4. The labor market is the main mechanism through which international labor flows arise. Other types of markets have much less impact.
5. National governments can manage migration flows mainly by influencing the labor market of sending or receiving countries.

The disadvantages of this model include the fact that the labor market cannot be perfect and it takes time to balance demand, whereas in a perfect market there would be no unemployment.

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- due to differences in wages between countries.
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The labor market is the main mechanism through which international flows of labor force emerge. Other types of markets have much less impact. Country governments can manage migration flows by influencing the labor market of sending or receiving countries.

Microeconomic model of individual choice (M. Todaro, L. Maruzhko) - make a decision based on the analysis of costs and profits associated with the move. One of the key components is assessing the expected benefit from the earnings gap.

People choose the territory of movement in such a way that in the place of introduction they can be the most productive, taking into account their qualifications. Indeed, in low-income countries, the wage gap between unskilled and skilled workers can be in the order of 20%, while in high-income countries this gap can be 10-30 times.

However, in order to move, they must incur certain costs associated with transport costs, job search, efforts to learn a new language and culture, the psychological costs of breaking old ties and establishing new and other difficulties arising in the process of adapting to a new place of residence. The expected benefit from resettlement will be the greater, the higher the level of education of migrants. This causes the fact that migrants, as a rule, have a higher level of education than the population of the country of origin as a whole.

The Dual Labor Market Theory M. Piore (1979):

- international migration arises from the own needs of the labor market of a modern industrial society.
- International migration is understood as a form of investment in human capital.

International migration is caused by the constant demand for immigrant labor, which is inherent in the economic structure of developed countries, immigration in countries of origin is caused by such factors as low wages and high unemployment, while in the host countries, on the contrary, there is a need for foreign labor.

M. Piore linked the demand for labor of immigrants with 4 fundamental characteristics:

1. structural inflation,
2. motivational problems,
3. economic dualism,
4. labor force demographics.

Salary reflects not only the conditions of supply and demand, it also conveys status and prestige, social qualities. People believe that wages should reflect social status. If an employer seeks to attract unskilled labor, he cannot simply raise wages, as this will disrupt certain links between social status and remuneration. If wages at the bottom of the hierarchy increase, there will be pressure to increase wages at other levels. Wages must be increased throughout the entire job hierarchy to keep them in line with social expectations, a problem known as structural inflation. Hiring local workers in times of labor shortages by raising wages is costly and unprofitable for the employer, forcing them to resort to finding lucrative solutions, such as bringing in migrants who are willing to work for lower wages.

The professional hierarchy is also important for the motivation of employees, since people work not only for profit, but also for the accumulation and maintenance of their social status. Severe motivational problems arise in the lower layers of the hierarchy because they do not have a high status to maintain. This problem is inevitable and cannot be eliminated, as it will always be at the bottom of any hierarchy. Employers want workers who view the lower tier of jobs as a means of making money, for whom work is only about income, without consequences for status or prestige. These are immigrants, most of whom strive for the goal of making money for specific purposes (to improve the condition and well-being of the house, building a house, paying for school, buying land, purchasing consumer goods). Due to the different living conditions in developed and developing countries, the salary of a migrant by local standards is sufficient, although he understands that he has a low status abroad. Such migrants do not see themselves as part of the host society. The bifurcation of the labor market characterizes industrialized countries, due to the inherent duality between labor and capital. Capital is a fixed factor of production, while labor is a variable factor of production: when demand falls, workers are laid off. This dualism creates differences between workers, leading to a bifurcation of the workforce. Skilled workers in the capital-intensive sector work with the best equipment and tools. The employer is forced to invest in these workers by providing specialized training and education. Their job is complex and requires significant knowledge and experience. Due to the high costs of workers in the primary sector, they try to keep them from leaving, in this regard, their work becomes a factor similar to capital. In the labor-intensive secondary sector, workers have precarious, unskilled jobs and can be fired at any time with little or no cost to the employer [3].

Thus, the dualism between labor and capital extends to labor in the form of a segmented labor market structure. Low wages, unstable conditions, and a lack of reasonable prospects for mobility in the secondary sector make it difficult to attract

local workers, who, on the contrary, find jobs in primary, capital-intensive industries where wages are higher, safer jobs, and opportunities for professional development. To fill the gap in demand in the secondary sector, employers are turning to immigrants.

The dual labor market theory neither asserts nor denies that actors perform rational and self-serving acts as predicted by microeconomic models. Negative attitudes of people in industrialized countries towards low-wage jobs open up employment opportunities for foreign workers.

The implications of the dual labor market theory differ from those of microeconomic models:

1. International labor migration is based on the demand of employers in developed countries.

2. Since the demand for migrants is formed due to the structural needs of the economy, the level of wages is not a condition for labor migration, so employers can hire workers without raising wages.

3. Low wages in host countries will not increase in response to declining immigrant numbers.

4. Low wages in host countries may decline as a result of an increase in the number of immigrants.

5. Opportunities for the government to influence international migration are low; only serious changes in the economy can affect the demand for immigrant labor.

The disadvantages of M. Piore's theory are that he considers exclusively attractive factors, ignoring push factors (associated with demographic transformations in developing countries). This theory does not consider the mechanisms for making a decision on migration.

The theory of the world-system (world-system paradigm) I. Wallerstein:

- there is a division of the world into the periphery and the center.
- As a result of the expansion of capitalism, the structures of the periphery change.

Driven by the desire for higher profits and wealth, the owners and managers of capitalist firms entered the territory of poor countries, located on the periphery of the world economy, in search of land, raw materials, labor and new consumer markets.

According to the theory of world systems, migration is a natural result of disturbances and dislocations that arise in the process of economic development.

World-system theory argues that international migration follows the political and economic organization of an expanding global market, which implies six different hypotheses:

1. the penetration of the global economy into peripheral regions is a catalyst for international movement,

2. the international flow of labor follows the international flow of goods and capital, but in the opposite direction.

Capitalist investments bring about changes that shape a mobile population in peripheral countries, while at the same time forging strong material and cultural ties with the main countries, which leads to transnational movements.

3. International migration is especially characteristic of the former metropolises of the colonial powers and their colonies because cultural, linguistic, administrative, investment, transport and communication links were established long ago and allowed the development of free competition, which led to the formation of specific transnational markets and cultural systems.

4. International migration is associated with the globalization of the market economy. The channels for government regulation of the level of immigration lie in the regulation of foreign investment activities of corporations and the control of international flows of capital and goods.

5. Political and military intervention by the governments of capitalist countries to protect investments abroad and support foreign governments in their quest to expand the global market, when they fail, produce a movement of refugees directed to specific key countries constituting another form of international migration.

6. International migration has little to do with wages or differences in employment between countries, as follows from the dynamics of market creation and the structure of the global economy. Migration theories were created to understand the impact of migration processes on populations and labor markets.

Sociologist D. Massey proposed a network theory of migration (theory of networks of migration, synthetic theory of migration) - a demographic theory that explains international migration by the dominance of capitalist relations in non-market societies.

With the changes in the world market and the predominance of the capitalist model of the economy, the approaches to the study of socio-economic behavior have also changed. At the end of the 20th century, new theories of migration were born, one of which is the "synthetic theory" of D. Massey. Massey incorporated into the basis of his theory the provisions of the classical theories of migration.

The main principle of his theory is the globalization of the economic market, social and political integration and, as a consequence, the globalization of the labor market. Massey notes that current processes related to international migration can operate at several levels simultaneously. International migration, according to Massey, arises in the course of social, economic and political transformations that lead to the dominance of capitalist relations in non-market (planned economy) and pre-market (agricultural) societies. In the context of the global economic transition to a common market and capitalist relations, traditional economic and social ties are being destroyed, which leads to the displacement of people from their usual way of life (the creation of mobile groups) and forces them to look for new ways of economic enrichment. Therefore, migration flows do not come from isolated regions, but from areas where the market is being transformed and incorporated into the global economy. "That is, migration is not a lack of market development, but, on the contrary, a consequence of its change".

Massey also notes that migration has a peculiarity of self-continuation. Once settled, migrants bring their families, relatives, friends, etc. into the host country. Despite the subsequent prohibitions imposed on immigration by the authorities, companies appear that facilitate the arrival of immigrants, including illegally. Thus, migration turns into a well-established network. A country that supplies labor, over time, using money receipts from abroad, turns into a capitalist country with a developed international market.

The main difference between D. Massey's theory and the "neoclassical theory of migration" is the denial of the size of wages as the main factor influencing migration. In particular, Massey writes: "In practical terms, large-scale international migration is rarely observed in the absence of a wage gap, but the existence of a wage gap does not guarantee international migration, just as its absence does not eliminate it".

The scientific views of theorists in the field of migration serve to understand the causes and factors of not only past, but also modern processes of international migration.

The study of theoretical approaches helps to understand the patterns and consequences of modern migration processes, make forecasts, and pursue a more balanced and rational migration policy.

2. Migration purposes

International migration and movement are, by their very nature, transnational phenomena affecting States of origin and destination, as well as

States through which migrants (often referred to as “transit” States) may travel or where they are received after moving across national borders. Yet, paradoxically, historically, migration management has remained largely the responsibility of individual states, and their migration policies and regulations have usually been developed at the national level. In most cases, the management of migration processes is closely associated with state sovereignty. States retain the right to decide on the entry and stay of non-citizens, as migration directly affects some of the defining elements of the state. The regulation of migration is characterized by the conclusion of bilateral and multilateral agreements, and there are several global agreements in the form of international treaties, in which states have agreed on the application of human rights and related obligations of states in specific areas.

The fight against the pandemic revealed an understanding by the Visegrad Group of the real hierarchy of priorities, in which no one abolished the national level. The Visegrad countries solidarity and mutual support of Hungary, Poland, Slovakia and the Czech Republic proved to be a significant help in defending their rights in Brussels in the distribution of budget funds for the new period and funds to help national economies to overcome the crisis. At the same time, a number of other international events have shown the flexibility of this structure in the name of preserving V4 as a regional factor. From a practical and theoretical point of view, the Visegrad Group can be viewed as a new form of regional European interaction that deserves the attention of other potential interstate associations for its ability to quickly find answers to current challenges.

Migration policy includes: a concept that represents the foundation of migration policy, a system of views that determine the boundaries of the legal, ethical and ideological space, within which program documents on population migration and other areas of state regulation of demographic processes can be formed. The concept of migration policy, if it acts as a legal document of the state level, includes the principles according to which the regulation of migration processes in all subjects of Poland, Slovakia, the Czech Republic and Hungary should be carried out. Such documents at the regional level must comply with the fundamental provisions of the Concept of Migration Policy of the countries. The main elements of the Concept of Migration Policy, in addition to the principles that determine the legal and ethical space within which an impact on migration processes is permissible, are the goal, the tasks arising from it in all areas of migration activity, priorities and mechanisms for implementing the policy. The concept is a system of views on the content, principles and main directions of the Visegrad Group's activities in the field of migration. The Concept also defines the mechanisms for implementing the state migration policy.

The starting point is the substantiation of the goal of the migration policy. For this, different approaches are possible:

- from the position of providing the developing economy with labor resources;
- from the standpoint of the nature of demographic development (migration as a compensator for natural population decline);
- from the standpoint of the geopolitical interests of the state, its national security.

These and other approaches can be used either independently or simultaneously with others. The migration policy is territorially differentiated. Therefore, in different localities there are different migration problems, and therefore, the goals of the migration policy and the directions of their achievement are different. The subordination of goals and their differentiation according to the stages of the migration process, as well as according to the types of migration and its directions, determine their diversity and territorial differences.

The systems approach orients the analysis of each problem in its entirety and interrelationships, towards a solution that meets the interests of the entire system. A systematic approach to the management of the Visegrad countries is one of the fundamental advantages of migration policy. In modern conditions of migration, the systematic approach is characterized by the following main characteristics:

- Provide a comprehensive process for achieving the goals of the system and considering any system as a mechanism to achieve it. The systems approach assumes that each of the elements that make up the system has specific goals of its own. However, the essence of the systematic approach is to ensure an increase in the efficiency of management of complexes or elements of the system as a whole.
- Analysis of internal and external results of the behavior of systems for each alternative.
- Focus on identifying all relationships and interactions in problems using logical, mathematical and organizational modeling, interdisciplinary and expert assessments;
- Organic combination, coordination and integration of different types of activity both in the process of research and in the process of implementing its results;
- Identification and preliminary playing of alternative options for achieving the goal and the long-term consequences of each option.

Population migration is an important socio-economic process that has a significant impact on the demographic situation, the labor market, and the qualitative parameters of the population. Migration plays an important role in the

life of society. It changes the distribution of the population, redistributes it across the territory, allows you to more effectively realize the labor potential of the country, to quickly master new types of production, both due to the influx of new labor force, and due to the influx of specialists from other countries, enterprises of this profile. Migration acts as a kind of indicator of socio-economic development, an indicator of the "attractiveness" of the country and its individual regions.

Many EU countries have clearly realized that it is impossible to successfully pursue a migration policy, functioning in an isolated space. Therefore, the integration of the principle of social collective responsibility into the development strategy of a group of countries has become a characteristic feature of modern migration policy. A strategy is considered sufficiently balanced and successful if the interests and expectations of all parties are met.

The past two years have seen significant changes in the global governance of migration, manifested mainly in the creation of the United Nations Migration Network and in the development of two global treaties on refugees and on migration. Although they are not legally binding, both global treaties embody an almost universal consensus on issues requiring sustainable international cooperation and commitment.

The volume of migration in the Visegrad countries, as well as in other European countries, is increasing. To determine the migration status, relative indicators are determined: the coefficient of arrival, the coefficient of departure, the coefficient of the intensity of the migration turnover. Migration growth rate - is calculated as the difference between arrivals and departures per 1000 people of the population on average per year for a given territory of the Visegrad countries.

$$K = (P - B) / C \times 1000\%$$

where: P is the number of arrivals,

B - the number of departures,

C - the average number of the population for the year.

Migration efficiency ratio is the ratio of the difference between arrivals and departures to the sum of arrivals and departures, multiplied by 100%.

$$\text{Kef.} = (P - V) / P + V$$

where: P - the number of arrivals; B - the number of departures.

These indicators are relative and show the dynamics of the development of migration in the Visegrad countries.

The concept of the state migration policy of the Visegrad Group is aimed at making these states with a high level of attractiveness for foreign highly qualified migrants. Migration is a positive phenomenon for the Visegrad group, as due to the

low level of natural increase, it is the main factor influencing the increase in the population of the country.

The Visegrad vision of migration issues is based on both socio-economic and political factors. But the low level of socio-economic development of the Visegrad countries in comparison with other EU members turns the “four” into a transit territory. The role of the political forces, which currently lead the countries of the Visegrad group and are opponents of mass immigration, is also important.

3. Migration problems of the Visegrad countries

The Visegrad Group and its de facto common policy towards migrants is a reflection of part of the current processes within the EU. Despite the lack of established institutions, the countries of the Visegrad Quartet have been regulating migration issues at their regional level for more than two years, attracting neighboring states. Hungary, Poland, Slovakia and the Czech Republic are affected to varying degrees by the migration crisis, they were able to work out a common position regarding the influx of refugees. The key for these countries was the refusal to accept the quota distribution. So far, despite the pressure from the European Commission and criticism of a number of international organizations, the Quartet does not intend to be included in the quota system.

The migration crisis is not the only one, but the most severe of the crises faced by Europe and the Visegrad countries. If significant progress is made in solving it, it will be much easier to deal with others.

There has been an increase in international migration in line with recent trends. It is estimated that the number of international migrants reaches almost 272 million worldwide, of which almost two thirds are labor migrants. This figure still represents a very small proportion of the world's population (at 3.5%), meaning that it is estimated that the vast majority of the world's people (96.5%) live in the countries of their birth. At the same time, the estimated number and proportion of international migrants already exceed some forecasts made for 2050, which figured about 2.6%, or 230 million people.

With all this, it is generally recognized that the scale and pace of international migration is especially difficult to predict with accuracy, since it is closely related both to events that exacerbate the situation (in particular, extreme instability, economic crisis or conflict) and long-term trends (in particular, demographic change, economic development, advances in communication technology and access to transportation). From the data accumulated over a long period, we also know that international migration is not uniform throughout the

world, but is formed under the influence of economic, geographic, demographic and other factors that lead to the emergence of different migration patterns, in particular migration "corridors" created over many years. Typically, the largest corridors run from developing countries to more advanced economies such as the United States, France, the Russian Federation, the United Arab Emirates, and Saudi Arabia. Most likely, this model will remain unchanged for many years in the future, especially due to the fact that in the coming decades in some developing subregions and countries, population growth is predicted, which will exert migration pressure on future generations.

The main modern trends in migration processes:

The first trend is an increase in the volume and expansion of the geography of migration. Currently, there are about 175 million migrants in the world, that is, almost 3% of the world's population live in countries that are not their homeland. The migration turnover involved 218 countries of the world. In just 5 years, almost 12 million people moved to the more developed regions of the world, that is, about 2.3 million people left the less developed regions annually. The largest number of migrants moved to North America (1.4 million people were sent there annually), to Europe (0.8 million people annually) and Oceania (although much less - 90 thousand annually). According to the UN, the largest number of migrants in 2000 lived in the United States (35 million), Germany (7 million), France (6.3 million), India (6.2 million), Canada (5.8 million), Saudi Arabia. Arabia (5.2 million), Australia (4.7 million), Great Britain (4 million), Israel (2.3 million).

Migrant flows from developing countries to more developed ones have increased significantly since the 1980s, despite the best efforts of the governments of the more developed countries to limit these flows. Moreover, new flows have appeared - from less developed countries to the countries of East Asia, to the so-called newly industrialized countries.

The absolute majority, at least 3/4 of labor migrants work abroad illegally, one of the consequences of this is numerous facts of violations of their rights. The working conditions of migrants working abroad absolutely do not meet the standards established both at home and in the host country. A common situation is an irregular working day, non-observance of safety measures, performance of work associated with a risk to life and health, there are cases of untimely and incomplete payment of wages. Many are at risk of ending up in inhuman living conditions or becoming victims of human trafficking. Medical care for illegal migrants is usually provided illegally (due to personal contacts of the employer with medical workers), that is, there is no question of normal treatment. For long-term migrants, a

significant problem is adaptation to a society that has changed during the period of their absence.

The second trend is the emergence of new types of migrants, the diversity of their socio-cultural characteristics is increasing. First of all, we are talking about the migration of highly qualified labor force. This category of migrants includes highly qualified managers, administrators, specialists, technicians, etc.

The next group of emigrants abroad are athletes and emigrants of the creative intelligentsia. Emigration is selective not so much by the ethnic component (Germans, Jews, Russians) or the countries of settlement, but by professional characteristics. Scientists and highly qualified specialists are leaving the country, and huge sums of money have been spent on their training.

Third trend. Expansion of forced migration. According to experts, a total of about 50 million people in the world can today be considered victims of forced displacement.

Fourth trend. Feminization of migration movements. Although women have always made up a fairly large proportion of migrants, their share has recently increased to 48%. A more important shift in this trend is that while women previously migrated as part of families, today their migratory movements are becoming independent.

Fifth trend. Many countries use emigration to solve employment problems in their own country. This means de facto government involvement in labor recruitment, regulation of nongovernmental organizations, or simply non-interference with spontaneous movement. Some Asian countries have even created special departments (or agencies) to manage labor emigration. However, the regulation of labor emigration is often ineffective, since a large number of emigrants move illegally. This, in turn, allows the receiving party not to comply with any obligations towards them.

According to the Office of the United Nations High Commissioner for Refugees (UNHCR), in the 1970s. about 30 thousand refugees and migrants a year arrived in Europe, in the early 1980s. – 100 thousand each, in 1986 there were already 200 thousand, and in 1989 – 317 thousand. In 1992, about 700 thousand migrants were registered on the continent, which was the maximum indicator for post-war Europe. At this time, many countries of the European Union tightened the migration regime, as a result of which already in 1997 the number of asylum seekers in Europe decreased to 333 thousand, but in 1999 NATO hostilities in Yugoslavia, continuing civil wars and armed conflicts in some countries Asia and Africa increased their number to 440 thousand. Albanians from Kosovo, Kurds from Turkey and Iraq, and Afghans made up a significant proportion. In the 2000s.

the sources of the new wave of migration were the African states located to the south of the Sahara (Ghana, Nigeria, Senegal, Somalia, Chad). In 2000, the number of only legal immigrants in the EU countries was 18.2 million. This is approximately 5% of the EU population, and, according to the International Labor Organization, 80% of migrants settled in Western Europe. In 2010, there were already almost 33 million immigrants in the EU, 12 million of them were internal migrants, i.e., immigrants from EU member states (according to the estimates of the Organization for Economic Cooperation and Development, OECD). As for illegal migrants, in 2007 the International Organization for Migration estimated their number in Europe at 5-7 million people (of which 4.6 million are from Africa). Independent analytical services believe that in 2000-2010, an estimated 20-25 thousand people a year came to Europe through various illegal channels. The flow of immigrants to the EU countries increased strongly in 2011, but especially sharply in 2013-2014. In 2014, 626 thousand labor migrants applied to the EU (an increase of 20%) and the profits of 274 thousand illegal migrants (an increase of 180%; data from the EU External Border Security Agency Frontex). In January-September 2015, the flow of illegal migrants to Europe is estimated at approximately 300-400 thousand, the International Organization for Migration (IOM) gives a figure of 351.3 thousand. By the end of the year, the influx of illegal migrants to the EU may reach 1 million people.

In 2015-2016, more than 2.5 million migrants from Syria, Pakistan, Iraq and other Muslim countries crossed the border of the European Union. In 2017 – another 700 thousand. Having reached Europe by sea or by land, the intruders (mostly men and boys) demanded maintenance and housing from the EU. But the Visegrad Group from the very beginning took a far from tolerant position: the governments of these countries simply refused to let migrants distributed according to quotas from Brussels into their territory. Hungary built a wall with barbed wire on its southern border after 400,000 refugees passed through its territory towards Germany. Other countries have also tightened border controls, breaking the whole concept of a “Europe without borders” that the European Union has been building for so long. “Brethren in Visegrad”, looking at the increased level of crime, ghettos and terrorist attacks, call the current EU migration policy nothing less than suicidal. For several years of the crisis, each of the countries accepted no more than a few hundred migrants, and the Czech authorities even specifically indicated that they prefer Christian migrants. Table provides estimates for the World Migration Reports 2000 and 2020.

Overall, it is estimated that there has been an increase in the number of international migrants over the past five decades. The total estimated number of

people who in 2019 lived in a country other than their country of birth, amounting to 272 million, was 119 million more than in 1990 (when there were 153 million) and three times the estimated number in 1970 (84 million). Although during this period in the world there was also an increase in the proportion of international migrants, it is obvious that the overwhelming majority of people continue to live in the countries in which they were born.

Table 9.1

Key facts and figures in the World Migration Reports 2000 and 2020

	2000 report	2020 report
Estimated number of international migrants	150 million	272 million
Estimated share of migrants in the world population	2,8%	3,5%
Estimated share of women among international migrants	47,5%	47,9%
Estimated proportion of children among international migrants	16,0%	13,9%
Region with the highest proportion of international migrants	Oceania	Oceania
Country with the highest proportion of international migrants	United Arab Emirates	United Arab Emirates
Number of migrant workers	-	164 million
Total volume of international money transfers (in USA)	126 billion	689 billion
Number of refugees	14 million	25,9 million
Number of internally displaced persons	21 million	41,3 million
Number of stateless persons	-	3,9 million

Politicians from the Visegrad Group: plan to share experiences and set priorities in migration, environmental protection, "smart city" technologies, and advocate for values such as tolerance, the rule of law and freedom of opinion. Poland and Hungary in particular have been criticized by the European Commission in recent years for the measures taken in these areas. The so-called "Article 7 procedure" has been initiated against both countries. Brussels accuses the authorities of Poland and Hungary of violating the principles of the rule of law and the basic values of the European Union. The European migration crisis emerged in early 2015. This migration crisis is the largest since the Second World War. It poses a huge danger to the existence of the European Union, due to the ineffective solution program proposed by the European Union.

A number of main and secondary factors can be identified that contributed to the intensification of the inflow of migrants to the Visegrad Group.

Among the main reasons for the increase in migration flows, it is customary to name the intensification of military conflicts in the Middle East and in a number

of African countries. Thus, Syrian citizens fleeing to Europe are simultaneously fleeing from the Islamic State terrorist group and evading conscription into the Syrian army. At the same time, refugees from African countries are more likely to choose the European Union as their destination due to the large disproportion in economic development between the European and African continents. Also important is the fact that everything that refugees need is provided free of charge.

The reasons for the current migration crisis in the Visegrad countries:

- Main reasons:

1. intensification of military conflicts in the Middle East and in a number of African countries,
2. For migrants, Europe, in particular the Visegrad Group, looks like a place where everything that refugees need is provided free of charge.

- Secondary reasons:

1. Public pledges by German Chancellor Angela Merkel to grant migrants a temporary residence permit,
2. elimination of border controls between EU members, as well as weakening it at the external borders of the European Union.

Secondary - dating back to the diplomatic confrontation with the Hungarian leadership in early September 2015, when tens of thousands of refugees tried to cross the Hungarian border without formalizing their own status. This fact, combined with television coverage of joyful Germans welcoming refugees arriving in Munich, convinced large numbers of people to leave Turkey and use the route through the Balkans.

Number of applications from leading host countries in Europe. The current migration crisis did not cause disagreements and weakening of the Visegrad Group, as experts sometimes say. On the contrary, the existing challenges have made it possible for this sub-regional grouping to be more heard at the EU level. Slovakia's chairmanship of the EU Council in the second half of 2016 also played a role, within which Slovakia tried to transfer the ideas of a sub-regional grouping to the pan-European level.

Any crisis gives rise to a number of negative consequences. Among the problems affecting the Visegrad countries, the following are mainly distinguished.

1. The refugee crisis is splitting Europe, 43% of all asylum applications filed in the first half of 2015-2017 in the EU were in Germany. It is she and three other European states that accept almost all refugees. In many countries, especially in Eastern Europe-Visegrad countries, governments, and indeed residents themselves, oppose the admission of refugees and migrants.

2. According to Hungarian Foreign Minister Peter Siyarto, Greece bears great responsibility for the massive influx of migrants due to the lack of proper control over the border, does not protect the borders. Moreover, it does not even register migrants. Czech President Milos Zeeman said that "no one here invited refugees" and added that his country can accept more Ukrainian refugees, because they "can better integrate into society, unlike Muslims."

3. The third problem is "blackmail" by Turkey, which requires more and more funds to contain the incessant flow of refugees. The European Commission approved the creation in Turkey of a special fund for refugees in the amount of 3 billion euros, of which the European Commission itself will allocate 500 million euros, and the remaining 2.5 billion are to be collected by the EU countries.

4. The fourth and perhaps most difficult problem is that the migration crisis threatens the Schengen area. "The European Union must better implement the principles of its migration policy, restore control of its external borders, otherwise the fate of the Schengen Agreement is in jeopardy," said European Council President Donald Tusk (now Charles Michel).

New strategy for solving the migration crisis in the Visegrad Group.

1. First, the European Union and the whole world must accept a significant number of refugees directly from bordering countries, in an orderly manner and with an adequate level of security. This would be more acceptable to the public than today's mess. If the EU made a commitment to admit only 300 thousand refugees annually (and if other countries of the world made such a commitment), most refugees would understand that they have a fairly high chance of reaching their destination. Then they will not try to get to Europe illegally, because this will not allow them to obtain refugee status. Also, if conditions in the bordering countries improved thanks to the assistance received, there would be no migration crisis.

2. Secondly, the EU must end the disorder at its borders. Nothing scares society like pictures of chaos.

3. The EU needs a minimum of € 30 billion to implement a comprehensive refugee strategy. These funds are needed both within the EU (to strengthen borders and create effective institutions that will deal with migration issues, ensure proper conditions for refugees, develop fair asylum procedures and create opportunities for integration), and outside it - to support host countries refugees, and job growth in Africa and the Middle East.

Ways to resolve conflicts:

1. The European Union and the whole world should accept a significant number of refugees directly from bordering countries, in an orderly manner and with an adequate level of security,

2. The EU must end the disorder at its borders,

3. The EU should develop financial instruments capable of providing sufficient funds to meet long-term objectives.

4. The crisis should be used to create common European mechanisms for border protection, the handling of asylum applications and the movement of refugees.

5. There must be a mechanism for the movement of recognized refugees within Europe

6. The European Union and the international community should provide more support to foreign countries hosting refugees than they currently do.

7. Europe, given an aging population, must over time create an environment that welcomes diversity and economic migration

This crisis can be overcome, but it is a rather complex and multifactorial task. Its implementation will require the mobilization of all funds available in the EU and the unity of the countries that are members of the European Union.

4. Socio-economic reasons for migration processes

Modern migration, in particular in the Visegrad Group, is carried out in conditions of awareness of the importance of migration processes:

- to mitigate the demographic crisis,
- overcoming imbalances in the labor market,
- to understand the importance of increasing fertility
- improving the quality of own management capital

Today in Hungary, Poland, Slovakia and the Czech Republic, the construction of the upper floor of the system is in full swing – a national ideology closely linked to historical politics. This is a rather complicated process, since the revival of national ideology is taking place against the background of an active phase of adaptation of common European, Euro-Atlantic values, and one is not always combined with the other. At the crossroads of these two main processes, a new Central European mentality and identity are being formed.

Main part of migrants claim jobs that are not intended for human capital, but for the labor force, so migration does not contribute to an increase in the quality of human capital. For example, it was noticed that the number of labor migrants strongly depends on the seasonal factor (in seasonal work): construction,

renovation of apartments, agricultural work, etc., that is, in work that does not require investment in human development.

The modern labor market is a complex structured institution, where the following resources are represented: labor force, human resources, human potential, human capital. Labor force - in economic theory - the ability of a person to work, a set of physical and spiritual abilities that a person uses in his activities. In statistics, the number of people willing to work for hire. This indicator is calculated differently in different countries. It usually includes the number of employees with the addition of registered unemployed. There are age and other restrictions. For example, American statistics take into account people who are at least 16 years old. There are certain methodological issues - for example, whether to count only employees or to include in this indicator the "self-employed" population (small entrepreneurs, farmers, artists). In most cases, this category of the population is taken into account in the composition of another indicator - "economically active population".

Sometimes the labor force is also understood as employees of an enterprise, often with the exception of administrative personnel. In journalism - workers. Most often, these are manual workers performing low-skilled jobs. Human resources (HR) are a combination of various qualities of people that determine their ability to work to produce material and spiritual benefits, and are a generalizing indicator of the development of social production. In human resources, or "human resources", highlight the following main aspects of the study:

- individual psychological (personality level);
- socio-psychological (team level);
- sociological or socio-economic (the level of society and its substructures).

Today, the information and communication level is also very important, which was not taken into account when considering such issues earlier.

A person is the main value of society and the most important resource of an organization. The human factor (PF) "lies" in the highly professional human potential of the organization's personnel and the management activities of the managers who organize its use.

Labor migration in the Visegrad Group leads to:

- stimulating the growth of the shadow economy,
- dumping of wages,
- increased interethnic tensions,
- competition in the labor market, which does not contribute to the formation of an innovative economy, but rather slows down this process.

Internal migration is also inherent in the Visegrad Group – from regions to large metropolitan areas. It is a mobile highly qualified workforce, which it is appropriate to designate as human capital. Young people with higher education and little practical experience who are highly competitive actors in the labor market.

The knowledge gained in the regions cannot be effectively used in the regions due to the reduction of material production, while the megalopolis provides them, albeit on a competitive basis, with the opportunity to receive income based on the use of human capital.

On the one hand, the market necessitates an increase in the quality of employed human resources and contributes to the formation of managerial capital, on the other hand, the presence of external seasonal migration leads to an increase in the competitiveness of the simple labor force and a decrease in the income of the population, which affects the lack of material opportunities for obtaining a quality education. As a result of two contradictory processes in the labor market, a gap appears between the labor force and human capital.

The current stage of development of the world economy tends to transition to an information society, where information acts as a commodity, but such a transition is possible only in conditions of sufficient provision of society with material benefits. The socio-economic problems that have developed in modern conditions provoke the development of various social risks that affect the reproduction of human resources.

There is a dynamic and complex relationship between migration and health that goes far beyond the crisis. Migration can lead to greater exposure to health risks, but it can also be associated with improved health, especially for those seeking to protect themselves.

Deterioration of health potential. Negative processes with the health of the nations of the Visegrad Group are associated with a number of reasons:

- Reform of medical services led to the closure of medical institutions, which affected the deterioration of medical services. still remains one of the lowest in comparison with other industries, which does not stimulate an increase in the quality of professional knowledge and skills.

- salaries of medical workers still remain one of the lowest in comparison with other sectors, which does not stimulate an increase in the quality of professional knowledge and skills.

- insufficient quality nutrition of parents (organic products).

Modern social conditions impede the use of human potential. This situation is due to a number of reasons:

- uneven development of individual cities and regions (a significant part of peripheral single-industry towns were unable to restore large-scale machine production).

The population of such cities lives in conditions of high unemployment. The tendencies of demographic reproduction that have formed in the Visegrad countries largely predetermine the framework of forecast estimates of population decline.

- the population is aging,
- decrease in the intellectual potential of the population. his education and qualification and vocational training.
- raising the social assessment of the role of women in material production. Shifting the role of the mother towards her career aspirations leads to damage in her role as a mother-educator.

The first function of migration is the redistribution of the population associated with the placement of productive forces, the distribution of production capacities and investments between individual territories of the country (between natural zones), districts, and different types of rural and urban settlements.

The second function of migration is selective (changing the qualitative composition of the population). The bottom line is that uneven participation of various socio-demographic groups in migration leads to a change in the qualitative composition of the population of different territories.

The third function is accelerating. Territorial movements contribute to a change in the socio-psychological characteristics of people, expanding their horizons, the accumulation of knowledge about various areas of life, the exchange of labor skills and production experience, the development of personality, its material, social and spiritual needs, the integration of national cultures.

Population immigration – the entry of the population of one country to another for temporary or permanent residence, considered in relation to the country where the migrants enter. Most countries have special immigration restrictions and quotas (called immigration laws).

Emigration - relocation from one country to another by:

- economic,
- political,
- ecological,
- personal circumstances.

Emigration is an independent decision to relocate a person or family, as opposed to forced relocation - eviction from the country or deportation.

Reasons for emigration: war, hunger, poverty, political repression, ethnic conflicts, sectarian conflicts, natural and environmental disasters, family reunification, discrimination, inability to get an education, profession, job, difficulties in the implementation of creative, professional, economic and other personal and family plans in the country of residence.

In order to improve the efficiency of managing the welfare of the population, it is necessary to periodically identify the assessments of the population of the activities of the authorities, their ability to contribute to the improvement of welfare. The implementation of such approaches to the assessment of economic and social policy, monitoring requires the introduction of indicators of the state of mass consciousness, social psychology into the existing reporting at the regional level, it is possible to create appropriate structures or assign this work to existing structures, including scientific and higher educational institutions.

In recent years, there have been gradual upward changes in migration, in particular the overall scale of migration and displacement, although these changes cannot be characterized as "seismic". Rather, existing patterns of migration appear to be deepening as opportunities emerge from continued economic growth and reform, trade liberalization, and enhanced long-term stability. In addition, there is an accumulation of evidence that, while the general concept of international migration may seem simple and straightforward - for example, as described by the media - its complexity is becoming increasingly evident. The question of how we conceptualize migration and mobility has long been at the center of attention of many scientists and policymakers. Recently, some have called for a rethinking of these phenomena, emphasizing the growing inconsistencies that stem from a fairly well-established concept of "migration".

However, we must acknowledge that the growing complexity of migration is also partly due to the fact that there is now much more information on migration and migrants than ever before. We are more aware of who migrates, why people migrate, where and how they migrate, although probably not to the extent that we would like. However, it became clearer that the broader problem of "complexity" extends to very many changes taking place on a global scale.

The member states of the Visegrad Group also wish to cooperate with their closest neighbors, with reformer countries in the wider region and with other interested countries and regional entities or organizations with which specific areas of cooperation are in common interest and in the spirit of pan-European cooperation.

It is important to borrow the European experience of migration policy, in particular, regarding the attraction of migrants. It is known that in most European

countries the number of deaths exceeds the number of births and the increase in the population is solely due to migration. In Ukraine, due to the exhaustion of the potential for demographic growth, a further decrease in the total population, primarily of the working age, is inevitable. In these conditions, an active migration policy remains almost the only way to regulate the total population of Ukraine. It is the migration inflow that can compensate for the natural decline in the population and ensure the balance of the age and sex structure of the population.

Migration processes play an important role both in the socio-economic and in the socio-political life of the country, regions, and migration policy is one of the directions of state policy.

The most important question for all countries is whether migration facilitates or hinders their further development. Migration can impede the development of countries by pumping qualified personnel from them to other countries (the problem of the so-called "brain drain"), young energetic workers, thereby reducing the opportunities for further positive social change. Thus, migration facilitates the transfer from a less developed country to a more developed one of the most valuable resource - human potential (managerial capital).

References:

- Abylkalikov S. I., Vinnik M. V. Economic theory of migration: labor force and labor market. 2012. № 12. С. 1–19. <https://www.hse.ru/mag/27364712/2012--12/71249233.html>
- EU does not intend to succumb to Turkey's immigration blackmail https://www.ng.ru/world/2020-03-05/6_7811_migrants.html
- EU facing the challenge of the migration crisis. Positions of European countries. Ed. N.K. Arbatova, A.M. Kokeeva. M: IMEMO RAN, 2016, 52 p.
- European migration crisis: problems and prospects [Electronic resource] - Access mode: <http://svom.info/entry/635-evropejskij-migracionnyj-krizis-problemy-i-perspek>
- Massey D. Synthetic theory of international migration // In the collection "The world in the mirror of international migration": Scientific series: international migration of the population: The modern world / Ch. ed. V. A. Iontsev. 2002. Issue 10. with. 135.
- Migration crisis in Europe: causes, consequences, prospects for resolution [Electronic resource] - Access mode: <http://www.scienceforum.ru/2016/1834/23426>
- Migration problems in Europe: thousands of deaths, new borders and a split in the EU <https://tass.ru/mezhdunarodnaya-panorama/2259836>
- Piore M. Birds of passage. Migrant labour and industrial societies [Text] // New York: Cambridge University Press, 1979. 229 p.
- Ravenstein E.G. The Laws of Migration [Text] // Journal of the Statistical Society of London. 1885. Vol. 48, No. 2. P. 167-235.
- Sadchenko E.V., Duzhan V. Labor emigration in Ukraine // Theory and practice of safe management: materials of the international. Scient.-practical. conf., Lutsk, May 18, 2017 /. ed. prof. L. M. Cherchik. Lutsk, 2017. С. 179-181.
- Sadchenko O.V. Migration as a Socio-Economic Factor of Sustainable Development / Economic innovations: collection of scientific works. Odesa, 2017. Issue 63. С.252-259.

- Shishelina L. Visegrad group against the background of the challenges of 2020 // Modern Europe, 2020. № 5. С.89-98
- The migration crisis in Europe in figures and charts [Electronic resource] - Access mode: http://www.bbc.com/russian/international/2016/02/160219_migrant_crisis_charts
- The number of illegal migrants arriving in the European Union. [Electronic resource] - Access mode: <https://www.dw.com/a-51797272>
- The Situation of the Visegrad Group Countries in the Context of the Aggravation of the Migration Crisis in the EU [Text] / A.S. Chetverikova // Contours of global transformations: politics, economics, law. 2017. Vol. 10. No. 4. P. 130-143.
- The Visegrad Four in the European Union: Convergence Dilemmas. The Visegrad Four in the European Union: Dilemmas of Convergence / [resp. ed. L.N. Shishelina]. Moscow: Institute of Evropy RAS, 2017. 138 p. (Reports of the Institute of Europe / Reports of the Institute of Europe / Federal State Budgetary Institution of Science Institute of Europe Russian Acad. Sciences; No. 342). Paral. tit. 1. English ISBN 978-5-98163-094-1.
- White and evil. They hate migrants and spit on decency. They are the future of Europe <https://lenta.ru/articles/2018/04/04/visegrad/>
- World Migration Report 2020. International Organization for Migration (IOM). 2020. 550 c. https://publications.iom.int/system/files/pdf/final-wmr_2020-ru.pdf (www.iom.int/wmr).
- Yudina T.N. Sociology of Migration: Textbook for Universities. M: Academic Project, 2006. 272 c.
- Olena Sadchenko, Maryna Karpitskaya, Kateryna Stasiukova, Mariia Popova, Volodymyr Tytykalo, Olena Makoveieva. Linear Programming as a Data Mining Tool in Assessing Competitiveness in the Face of Uncertainty/ International Journal of Engineering and Advanced Technology (IJEAT) ISSN: 2249-8958, Volume-8 Issue-5, P. 1475-1478. June 2019.

CHAPTER 10

V4 countries in the context of the development of the process of fiscal decentralization in the EU

1. Role of taxes and transfers in the fiscal policy

The problem of rationales for taxes and transfers is very popular among as researches as well as policy makers. Taxes and social transfers had very important role in the formation of the concept of “social state” and improving the living standards in the period of the Second World War in USA and, especially, in West Europe. Taxes as important part of public finance fulfill the three important functions: 1) allocation; 2) distribution and redistribution and 3) stabilization. Function of allocation is concerned with the governmental expenditures on socio-economic needs and their optimal proportions between public and private sectors in the economy. Functions of distribution and redistribution are related with the shift of part of incomes and wealth from rich part of population to the poor population. Here, for the realization of these functions the social transfers as instruments are used. Function of stabilization is very important as preventive measure for the negative consequences of the cyclic development of market economy.

In most countries the total taxes are about 40% of national income and total monetary transfers are approximately 15% of national income. Usually monetary transfers are public pensions, unemployment and family benefits, means-tested transfers. Other government spending or in-kind transfers is made approximately

25% of national income and they are used for education, health care, police, defense, roads, etc. On long-run dynamics the ratio taxes to national income is essentially changed, from less than 10% in the early of XX century to 40% in nowadays.

Taxes have main contribution to the government revenue, tax revenue made up about 90% of total government revenue in the European Union. Government revenue, expenditure and deficit/surplus are main objectives of fiscal policy and the analysis of their dynamics plays very important role in the formation and coordination of the strategic and tactic tasks for socio-economic development in the countries. For the comparative analysis tax revenue is measured in absolute magnitudes (in millions of euro) or as ratio of taxes to GDP, or as ratio of absolute magnitudes to taxes to the inhabitants.

In Fig.10.1 and Fig. 10.2 the total tax revenue and social contributions in EU-28 and EU-19 (in % of GDP and in millions of euro) are presented for period of 2002-2017.

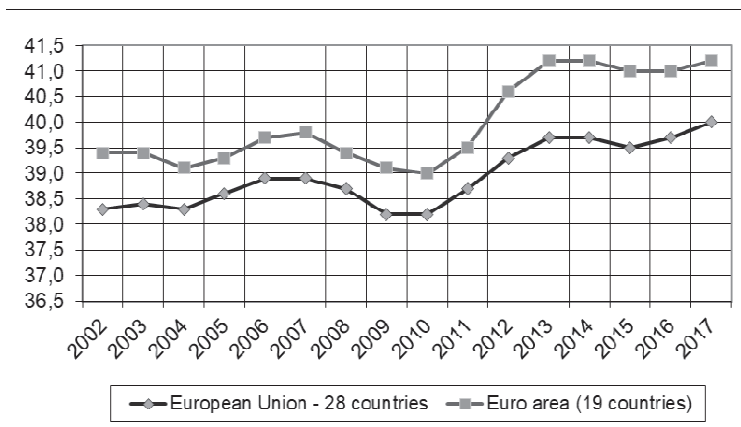


Fig. 10.1. Total revenue from taxes and social contributions for period of 2002-2017, EU-28 and EU-19, % of GDP

Source: Eurostat (gov_a_tax_ag)

As it is observed according to Eurostat data the overall tax-to-GDP ratio started decreasing from 2000. Until 2004 tax-to-GDP ratio reduced, but from 2004 till 2007 this trend was increased (Fig.10.1, Fig.10.2). In 2002, revenue from taxes and social contributions in the EU-28 made up 40.0% of GDP and in EU-18 this ratio was 40.8%. In 2004 tax revenue (including social contributions) in the EU-28 was 39.9% of GDP and in the EU-18 this value made up 40.5% of GDP. In 2000

and 2007 the higher values of these ratios were observed, in 2006-2007 in EU-28 the tax revenue (including social contributions) to GDP varied at 40.6%, and in EU-18 this value varied at 41.2%. But from 2008 and till 2010 due to the essential impact of global economic crisis revenues from taxes and social contributions were dropped. For example, in the EU-28 in 2010 tax revenue (including social contributions) made up 39.6% of GDP and the relevant value in the EU-18 was 40.3% of GDP. In 2012 as a ratio of GDP, tax revenue (including social contributions) increased and made up 40.6% of GDP in the EU-28 and 41.7% of GDP in EU-18. So, the ratio of tax revenue to GDP in the euro area (EA-18) was slightly higher than in the EU-28. As a ratio of GDP, in 2015 tax revenue (including net social contributions) accounted for 40.0 % of GDP in the European Union (EU-28) and 41.4 % of GDP in the euro area (EA-19). In 2015, the highest revenue to GDP ratios from the main categories of taxes and social contributions were at 47% - 48.0 % and recorded in Denmark, France and Belgium. In 2017 the tax revenue (including social contributions) to GDP reached 40% in EU-28 and 41.2% in euro area (EA-19).

In 2018 the highest level of the tax revenue (including social contributions) to GDP was observed in France (48.4%) and the lowest was in Ireland (23.5%).

But in absolute value the tendencies of the tax revenue (including social contributions) for EU-28 and EU-19 were different from graphics represented in Fig.10.1. As it is seen from the Fig.10.1 the absolute values of the tax revenue (including social contributions) increased till 2008 in the both graphics, then due to the global financial crisis these values dropped up and this indicator decreased for EU-28 on 7.11% and for EU-19 on 4.23%.

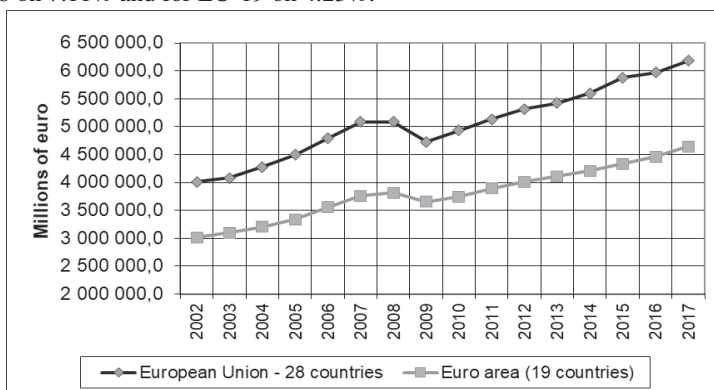


Fig. 10.2. Total revenue from taxes and social contributions for period of 2002-2017, EU-28 and EU-18, millions of euro

Source: Eurostat (gov_a_tax_ag)

Across countries revenue from taxes and social contributions varied that can be explained as the differences in the national tax policy, state of national economy, social support programs, etc.

In the Table 10.1 the data for tax revenue (including social contributions) as percentage of GDP is given for EU-28 countries for period of 2002-2017.

Table 10.1.

Total tax revenue (including social contributions) as % of GDP

	2002	2006	2008	2010	2012	2015	2017	Min	Max	Mean	Std.Dev.	Coefficient of variance, %
BE	46,3	45,5	45,8	45,5	47,3	47,5	47,3	45,2	48,2	46,4	1,01	2,2
BG	28,0	29,9	30,7	26,0	26,7	29,1	29,5	25,3	31,7	28,9	1,93	6,7
CZ	33,4	34,0	33,2	32,7	34,3	34,1	35,4	32,3	35,4	34,0	0,81	2,4
DK	47,0	47,8	46,0	46,3	46,9	47,3	46,5	46,0	49,9	47,3	1,09	2,3
DE	39,1	38,8	39,2	38,2	39,3	39,8	40,5	38,2	40,5	39,2	0,64	1,6
EE	31,3	30,7	31,6	33,5	31,9	33,5	33,0	30,1	35,1	32,1	1,32	4,1
IE	29,1	32,7	30,4	28,4	29,1	23,8	23,5	23,5	32,7	28,9	2,81	9,7
EL	34,6	32,7	33,7	34,2	38,8	39,8	41,8	32,1	41,9	36,0	3,41	9,5
ES	34,0	36,7	32,9	32,1	33,1	34,5	34,5	30,6	37,1	34,1	1,7	5,0
FR	44,1	45,1	44,4	44,2	46,5	47,7	48,4	44,0	48,4	45,6	1,65	3,6
HR	37,6	36,9	36,8	35,9	35,9	37,3	37,8	35,2	37,8	36,7	0,73	2,0
IT	39,9	40,4	41,5	41,7	43,8	43,3	42,4	39,2	43,8	41,7	1,52	3,6
CY	28,0	32,1	34,8	31,9	31,6	33,3	34,0	28,0	36,1	32,1	2,1	6,6
LV	28,0	29,0	28,4	28,7	29,3	30,4	31,4	27,7	31,4	29,1	1,2	4,1
LT	29,0	30,4	30,9	28,7	27,3	29,2	29,8	27,3	30,9	29,2	1,19	4,1
LU	38,9	37,1	38,1	38,9	39,9	38,8	40,3	37,1	40,3	38,9	0,88	2,3
HU	37,4	36,5	39,5	37,3	38,4	38,9	38,4	36,5	39,5	38,0	1,04	2,7
MT	30,8	33,3	33,4	33,2	33,7	32,1	33,4	30,8	34,2	32,9	1,06	3,2
NL	35,9	36,6	36,5	36,1	36,1	37,5	39,2	35,6	39,2	36,6	1,12	3,1
AT	44,1	41,5	42,4	41,9	42,6	43,9	42,4	41,5	44,1	42,7	0,85	2,0
PL	34,1	34,6	35,0	32,4	33,0	33,3	35,1	32,1	35,5	33,7	1,04	3,1
PT	34,0	34,8	34,9	33,7	34,5	37,0	36,9	33,4	37,2	35,2	1,38	3,9
RO	28,4	29,0	27,5	27,1	27,7	28,0	25,8	25,8	29,0	27,6	0,9	3,3
SI	37,4	37,9	36,8	37,4	37,4	36,9	36,8	36,7	38,2	37,2	0,44	1,2
SK	33,0	29,4	29,1	28,2	28,4	32,2	33,2	28,2	33,2	30,6	1,77	5,8
FI	43,5	42,3	41,3	40,9	42,8	44,0	43,4	40,9	44,2	42,6	1,08	2,5
SE	45,6	46,4	44,5	43,7	43,1	43,6	44,9	43,0	47,1	44,7	1,31	2,9
UK	33,3	34,9	35,8	34,9	34,5	34,4	35,4	33,3	35,8	34,6	0,72	2,1

Source: own statistical elaboration based on Eurostat data (gov_a_tax_ag)

It is seen from the data in table 1.1 and statistical calculations, that for EU-28 countries values of tax revenues (including social contributions) as percentage of GDP are changed slowly or varied at the certain level. It is should be noted that tax revenues in the main tax categories displayed a corresponding pattern, with a differing fiscal lag for direct taxes, indirect taxes and social contributions. During

period of 2002-2017 in EU-28 the average value of the tax revenue (including social contributions) to GDP was 39.1% and coefficient of variance was low (1.6%). In euro area EU-19 the average value of the tax revenue (including social contributions) to GDP was 46.4% and coefficient of variance was a little higher (2.2%). Relatively low values of the coefficients of the variance were observed for such countries as: Belgium (2.2%), Czech Republic (2.4%), Denmark (2.3%), Germany (1.6%), Croatia (2%), Luxembourg (2.3%), Hungary (2.7%), Austria (2%), Slovenia (1.2%), Finland (2.5%), Sweden (2.9%) and UK (2.1%). Low values of the coefficient of variance for the indicator tax revenue (including social contributions) to GDP explain the certain stability or small fluctuations in tax and socio-economic development. In Slovakia the coefficient of variance for tax revenue (including social contributions) to GDP was 5.8%. But for some countries such as Ireland and Greece the coefficients of variance for the indicator tax revenue (including social contributions) to GDP were significantly high, approximately 10%. Thus, such countries implemented some essential changes in tax policy and, as it is known, the negative consequences of the global financial crisis for Ireland and Greece were more serious than for the other countries of EU.

The analysis of the tendencies of the total revenue to the GDP in EU-28 countries revealed the common characters of the tendencies for one group of countries and the opposite behavior in other group (see table 1.2), where the correlation matrix for tax revenue is presented for EU-countries for period from 2002-2017.

Despite of the declaration of the common economic policy, as well as tax consolidation policy in EU, we observed some differences in the total revenue to the GDP tendencies.

Using the simple models for time series of the total revenue to the GDP in EU-28 countries the predicted values were obtained (Table 10.3.).

Of course, for real time series the dynamics of the changes of the indicators is more complicated than linear trend, where we assume constant intercept and slope. For some cases of dynamics of the total revenue to GDP the linear trend model is fitted well, and the deviations of real data and predicted by linear model are relatively small and coefficient of correlation R is more than 0.7. For some countries such as Ireland, Greece, Cyprus, Lithuania, Malta, Poland, Portugal and Slovakia we can consider models of linear trends as good tools for prediction, because coefficients of correlation R are quite closed to 1. Nevertheless, for these countries we assume that these tendencies will keep their characteristics in future, if national government does not decide about changes in tax and macroeconomic policy.

Table 10.2.

The correlation matrix for the tax revenue (including social contribution) measured as % from GDP

	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	
Y1	1	-0.21	0.37	0.12	0.11	-0.48	-0.13	0.79	0.08	0.73	-0.03	-0.18	-0.52	0	-0.66	0.28	-0.37	-0.36	-0.16	0.6	-0.18	-0.3	-0.01	0.32	0.38	0.82	-0.12	-0.08	
Y2	-0.21	1	0.68	0.5	-0.04	-0.55	0.73	-0.4	0.66	-0.13	0.51	-0.47	0.36	0.75	0.63	-0.69	0.28	0.08	-0.1	-0.24	0.54	0.07	0.43	0.32	0.31	-0.18	0.7	0.19	
Y3	0.37	0.68	1	0.69	-0.17	-0.88	0.69	0.1	0.81	0.45	0.27	-0.47	0	0.71	-0.06	-0.64	-0.26	-0.08	-0.26	-0.08	0.32	0.02	0.47	0.63	0.47	0.41	0.55	0.05	
Y4	0.12	0.5	0.69	1	-0.31	-0.59	0.76	-0.15	0.75	0.32	0.09	-0.55	0.05	0.57	0.15	-0.51	-0.36	0.19	-0.23	-0.43	0.21	-0.05	0.31	0.83	0.27	0.25	0.69	0.05	
Y5	0.11	-0.04	-0.17	-0.31	1	0.17	-0.26	0.12	-0.31	-0.04	0.27	0.23	-0.2	-0.12	0.17	0.46	0.43	-0.09	-0.17	0.48	0.03	-0.11	0.04	-0.35	0.2	0.32	-0.02	-0.27	
Y6	-0.48	-0.55	-0.88	-0.59	0.17	1	-0.57	-0.19	-0.77	-0.39	-0.45	0.67	0.21	-0.73	0.06	0.56	0.45	0.37	0.26	-0.07	-0.34	-0.02	-0.45	-0.66	-0.65	-0.58	-0.6	-0.13	
Y7	-0.13	0.73	0.69	0.76	-0.26	-0.57	1	-0.29	0.88	0.27	0.29	-0.22	0.44	0.89	-0.48	-0.88	-0.02	0.36	0.23	-0.65	0.65	0.29	0.67	0.52	0.01	-0.05	0.62	0.38	
Y8	0.79	-0.4	0.1	-0.15	0.12	-0.19	-0.29	1	-0.05	0.69	-0.12	0.2	-0.15	-0.06	-0.65	0.33	-0.03	-0.09	0.14	0.44	0.09	0.08	0.24	-0.08	0.06	0.6	-0.48	0.11	
Y9	0.08	0.66	0.81	0.75	-0.31	-0.77	0.88	-0.05	1	0.28	0.5	-0.46	0.19	0.9	0.25	-0.83	-0.2	0.02	0	-0.41	0.58	0.14	0.67	0.68	0.33	0.22	0.68	0.15	
Y10	0.73	-0.13	0.45	0.32	-0.04	-0.39	0.27	0.69	0.28	1	-0.34	0.2	0.05	0.26	-0.53	-0.11	-0.23	0.28	0.32	-0.03	0.21	0.27	0.42	0.21	-0.15	0.54	-0.27	0.35	
Y11	-0.03	0.51	0.27	0.09	0.27	-0.45	0.29	-0.12	0.5	-0.34	1	-0.47	-0.17	0.56	0.51	-0.28	0.14	-0.52	-0.23	0.23	0.4	-0.23	0.3	0.29	0.65	0.23	0.68	-0.19	
Y12	-0.18	-0.34	-0.47	-0.55	0.23	0.67	-0.22	0.2	-0.46	0.2	-0.47	1	0.59	-0.26	-0.03	0.18	0.63	0.66	0.73	-0.19	0.19	0.46	0.15	-0.75	-0.85	-0.45	-0.79	0.35	
Y13	-0.52	0.36	0	0.05	-0.2	0.21	0.44	-0.15	0.19	0.05	-0.17	0.59	1	0.39	0.47	-0.53	0.63	0.83	0.72	-0.72	0.71	0.74	0.59	-0.37	-0.7	-0.68	-0.19	0.69	
Y14	0	0.75	0.71	0.57	-0.12	-0.73	0.89	-0.06	0.9	0.26	0.56	-0.26	0.39	1	0.47	-0.86	0.05	0.13	0.24	-0.42	0.83	0.38	0.82	0.41	0.2	0.11	0.59	0.45	
Y15	-0.66	0.63	-0.06	0.15	0.17	0.06	-0.48	-0.65	0.25	-0.53	0.51	-0.03	0.47	0.47	1	-0.4	0.53	0.25	0.18	-0.41	0.54	0.14	0.3	-0.08	-0.05	-0.5	0.53	0.26	
Y16	0.28	-0.69	-0.64	-0.51	0.46	0.56	-0.88	0.33	-0.83	-0.11	-0.28	0.18	-0.53	-0.86	-0.4	1	0.06	-0.25	-0.3	0.67	-0.67	-0.47	-0.67	-0.36	0.04	0.23	-0.47	-0.45	
Y17	-0.37	0.28	-0.26	-0.36	0.43	0.45	-0.02	-0.03	-0.2	-0.23	0.14	0.63	0.63	0.05	0.53	0.06	1	0.46	0.39	-0.04	0.44	0.21	0.25	-0.62	-0.38	-0.52	-0.21	0.21	
Y18	-0.36	0.08	-0.08	0.19	-0.09	0.37	0.36	-0.09	0.02	0.28	-0.52	0.66	0.83	0.13	0.25	-0.25	0.46	1	0.63	-0.73	0.41	0.59	0.41	-0.29	-0.82	-0.51	-0.3	0.54	
Y19	-0.16	-0.1	-0.26	-0.23	-0.17	0.26	0.23	0.14	0	0.32	-0.23	0.73	0.72	0.42	0.18	-0.3	0.39	0.63	1	-0.5	0.56	0.66	0.47	-0.42	-0.8	-0.44	-0.49	0.78	
Y20	0.6	-0.24	-0.08	-0.43	0.48	-0.07	0.65	0.44	-0.41	-0.03	0.23	-0.19	-0.72	0.24	0.14	0.67	0.44	0.41	0.56	-0.48	1	-0.48	-0.6	-0.47	-0.09	0.58	-0.54	-0.12	-0.5
Y21	-0.18	0.54	0.32	0.21	0.03	-0.34	0.65	0.09	0.58	0.21	0.4	0.19	0.71	0.83	0.54	-0.67	0.44	0.41	0.56	-0.48	1	0.69	0.93	-0.07	-0.16	-0.13	0.2	0.68	
Y22	-0.3	0.07	0.02	-0.05	-0.11	-0.02	0.29	0.08	0.14	0.27	-0.23	0.46	0.74	0.38	0.14	-0.47	0.21	0.59	0.66	-0.6	0.69	1	0.69	-0.38	-0.54	-0.28	-0.31	0.78	
Y23	-0.01	0.43	0.47	0.31	0.04	-0.45	0.67	0.24	0.67	0.42	0.3	0.15	0.59	0.82	0.3	-0.67	0.25	0.41	0.47	-0.47	0.93	0.69	1	0.02	-0.11	0.1	0.16	0.56	
Y24	0.32	0.32	0.63	0.83	-0.35	-0.66	0.52	-0.08	0.68	0.21	0.29	-0.37	0.41	-0.08	-0.36	-0.62	-0.29	-0.42	-0.09	-0.07	-0.38	0.02	1	0.55	0.45	0.72	-0.26		
Y25	0.38	0.31	0.47	0.27	0.2	-0.65	0.01	0.06	0.33	-0.15	0.65	-0.85	-0.7	0.2	-0.05	0.04	-0.38	-0.82	-0.8	0.58	-0.16	-0.54	-0.11	0.55	1	0.65	0.66	-0.52	
Y26	0.82	-0.18	0.41	0.25	0.32	-0.58	-0.05	0.6	0.22	0.54	0.23	-0.45	-0.68	0.11	-0.5	0.23	-0.52	-0.51	-0.44	0.54	-0.13	-0.28	0.1	0.45	0.65	1	0.19	-0.29	
Y27	-0.12	0.7	0.55	0.69	-0.02	-0.6	0.62	-0.48	0.68	-0.27	0.68	-0.79	0.19	0.59	0.53	-0.47	-0.21	-0.3	-0.49	-0.12	0.2	-0.31	0.16	0.72	0.66	0.19	1	-0.21	
Y28	-0.08	0.19	0.03	0.05	-0.27	-0.13	0.38	0.11	0.15	0.35	-0.19	0.35	0.69	0.45	0.26	-0.45	0.21	0.54	0.78	-0.5	0.68	0.78	0.56	-0.26	-0.52	-0.29	-0.21	1	

Source: own calculation for the data from Eurostat (tax revenue statistics)

For some other countries the tendencies included linear trends, but were more complicated, that is why for these models coefficients of correlation are more than 0.5 but less 0.7. For a few countries such as Spain, Luxembourg, Romania the linear trend is absent, so tax revenue to GDP is more or less stable, for these countries coefficients of correlation are closed to 0.

Table 10.3.

**The predicted values of the total revenue to the GDP
in EU-28 for 2019 and 2020**

No.	Country	Linear trend						Exponential smoothing			
		2019			2020			2019	2020	2019	2020
		$\hat{y} - \Delta_y$	\hat{y}	$\hat{y} + \Delta_y$	$\hat{y} - \Delta_y$	\hat{y}	$\hat{y} + \Delta_y$	$\alpha = 0.1$	$\gamma = 0.1$	α and γ different	
1	BE	45,2	46,2	47,3	45,1	46,3	47,4	47,2	47,3	47,9	48
2	BG	26,1	28,8	31,6	25,9	28,8	31,7	29,2	29,2	29,4	29,5
3	CZ	32,8	34	35,2	32,7	34	35,3	34,5	34,6	34,8	34,9
4	DK	45,3	46,5	47,8	45,2	46,5	47,8	47,9	47,9	47,8	47,8
5	DE	36,6	37,8	38,9	36,4	37,6	38,8	39,7	39,7	40,2	40,2
6	EE	31,8	33,9	36,1	31,8	34,1	36,4	34	34,2	34,5	34,6
7	IE	36,6	37,8	38,9	25,9	27,6	29,4	27	26,8	22,6	22,2
8	EL	38,1	41,3	44,4	38,5	41,9	45,4	38,7	39	41,5	41,9
9	ES	31	33,4	35,8	30,9	33,4	35,9	34,1	34,1	34,9	34,9
10	FR	44,5	45,8	47	44,5	45,8	47,1	48,2	48,4	49,4	49,7
11	HR	34,1	35,2	36,3	33,9	35,1	36,3	36,3	36,2	37,6	37,6
12	IT	41,1	42,8	44,4	41,2	42,9	44,6	44,6	44,9	45,1	45,4
13	CY	35,4	38,3	41,2	35,8	38,9	41,9	36	36,4	35	35,4
14	LV	24,6	26,1	27,5	24,4	25,9	27,4	29,4	29,5	30	30,1
15	LT	23,1	25,9	28,7	22,5	25,6	28,7	29,1	29,1	29,5	29,6
16	LU	37,9	39,2	40,5	37,8	39,2	40,6	39,1	39,1	39,2	39,3
17	HU	36,2	37,8	39,3	36,1	37,7	39,4	39,3	39,4	39,7	39,8
18	MT	36,1	37,8	39,6	36,4	38,3	40,1	36,2	36,5	36,4	36,7
19	NL	34,5	35,6	36,7	34,3	35,5	36,6	38	38,1	38,9	39,1
20	AT	39,7	41	42,4	39,5	40,9	42,3	42,7	42,7	44,5	44,5
21	PL	29,3	30,8	32,4	29	30,6	32,2	32,8	32,7	33,1	33
22	PT	36	37,1	38,2	36,2	37,3	38,5	37,2	37,4	38,2	38,4
23	RO	26,1	28	29,8	26	28	29,9	27,5	27,5	27,8	27,7
24	SI	36,3	37	37,8	36,2	37	37,8	37,1	37,1	37	37
25	SK	21,5	23,4	25,3	20,8	22,8	24,8	29	28,8	32,2	32,1
26	FI	38,2	39,8	41,5	37,9	39,6	41,4	42,6	42,6	44,4	44,4
27	SE	41,1	42,6	44,1	40,7	42,3	43,9	43,4	43,3	43,5	43,4
28	UK	35,4	36,7	38,1	35,4	36,8	38,3	36	36,1	35,5	35,6

Source: own statistical elaboration

Taxes play significant role in formation of revenues of state and local budgets. Central or State Government established set of national tax and mechanism of the inter-government grants, transfers or subsidies, but Local

Government has competitiveness to implement local taxes and to manage some part of the own revenue and expenditure. Nevertheless, peculiarities of the taxes and transfers, their relation between different level of government are based on the differences in administrative system and local self-governance.

2. Tax policy and local development

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M. Falzon, M. Peretti-Stahl and A. Verdier described three main “local government models” which depend on the State organization (unitary, federal or regionalized). However, it is no clear classification only in these models, because a lot of national features of organization of public and local administration and their finance, relations between them should be taken into account. Nevertheless, it is interesting to represent short description of mentioned systems.

1. The local model in federal States (Austria, Belgium, Germany). It is characterized by stronghold of the federated States at local level.

There features are:

- Internal organization of local governments defined by the federal States;
- Administrative and budget control on local governments under the federated States responsibility;
- Federated States involvement in the funding of local governments: in Germany and Austria, sharing of taxes between the federal State, the federated States and local governments, and grants allocation by the federated States to local governments. In Belgium grants allocation is given by regions to municipalities and provinces.

2. The local model in “regionalized States” (Spain, Italy) has regions similar to federated States.

The features are:

- Increasing regional responsibilities;
- Independent legislative power for regions;
- Consolidated regional tax autonomy.

3. The local government model in unitary States. This type of model is occurred in Denmark, Finland, France, Greece, Luxembourg, Ireland, the Netherlands, Portugal, the United Kingdom, Sweden. These systems based on local governments with common features, but varying degrees of decentralization.

The common features are:

- No proper legislative powers for local governments (except for the Scottish Parliament);
- No general regulatory powers (except in Wales and Scotland);
- No supervision from one local government level over another (except in the Netherlands).

Varying degrees of decentralization are characterized by:

- Strongly decentralized countries, with local governments assuming a wide range of responsibilities and with important own financial resources (Sweden, Denmark, Finland);
- Decentralized countries with local governments assuming a comparable number of responsibilities (France, Greece, Luxembourg, the Netherlands and Portugal), but benefiting from a low level of tax autonomy in some countries (Greece, Netherlands and Portugal), but benefiting from a low level of tax autonomy in some countries (Greece, the Netherlands and Portugal).
- Countries with a tendency towards centralization, with strict controls over local government expenditure and revenue (Ireland and the United Kingdom).

The local government territorial organization in the EU countries is quite different, with each country finding its own balance between the need to manage local matters at local level and the necessity of having local governments large enough to be able to produce and manage local public services.

Thus, in some countries local governments of a same level of homogeneous, while in others, as federated States and some unitary States (Spain, Italy, Ireland, the United Kingdom) they are diverse.

In most countries, local government responsibilities have been considerably extended over past twenty years. Depending on the country, local governments can exercise three types of responsibilities: 1) own responsibilities for matters of local interest; 2) responsibilities exercised on behalf of State, such as: civil registration, election, organization, etc.; 3) responsibilities delegated by other local governments, by State or by the federated States. Such responsibilities, as environment, culture, transport, health or education, are often jointly managed by several local government tiers and, in some cases, also by the State. Local governments can carry out their responsibilities directly or delegate some of them to another local government, to a private company or to a local public company. In

every European country, municipalities are primarily responsible for the management of local community based services, such as: water supply and sewerage, collection and household waste treatment, culture, urbanism, local road network, social welfare, primary school education and upkeep, etc.

In most EU countries the second local government tier is generally responsible for road network, education, social welfare (the disabled people, child care, etc.) and for environmental protection. It has wider responsibilities in countries with a two-tier local government system than in countries with a three-tier local government one.

In countries with a two-tier local government system the second local government tier is generally also responsible for sectors such as local development and country planning, generally the responsibility of regional local governments in countries with three-tier local government system. In countries with a three-tier local government system the position of the second local government tier varies from one country to another. In these countries local governments generally have responsibilities in country planning, economic development, vocational training, transport, education and health.

Most local government co-operation structures are set in order to jointly manage local public services. They are generally created to minimize costs and maximize savings via a more efficient and rational use of local means. Inter-municipal structures also enable small municipalities to develop services that would otherwise be beyond their capacity and to participate in projects beyond their boundaries. Co-operation between local governments can take different. The most common is a co-operation structure set-up with financial means. Local co-operation structures generally only regroup local governments of a similar level, mostly municipalities. Local co-operation structures are generally run by an assembly of representatives from the member local governments, and by an executive body. The local governments themselves generally initiate the creation of co-operation structures. Local governments are free to define the responsibilities devolved to co-operation structures, as long as these responsibilities fall within their scope of activities. Co-operation structures are often responsible for environmental protection (water supply and household waste) and for transport. In some countries, they also run schools, medical centers, hospitals, fire-fighting and emergency services or retirement homes.

The main sources of revenue for local co-operation structures are the funds allocated by their local governments members and the receipts from the services provided. In some countries co-operation structures also borrow to finance facilities.

Local government resources include tax revenue, financial transfers, borrowing and operating revenue. In some countries (Finland and Germany, for example) the share of national taxes redistributed to local governments is classified among local tax revenue. On the other hand, in some other countries, State transfers to local governments are notably supplied with a share of State tax revenue, for example in Greece and Portugal.

It is possible to compare the different local finance systems using a common definition and consider all local taxes and local surtaxes on a national tax. Local taxes can be divided into two categories: “stacked” and “specialized” taxes. “Stacked” taxes have a tax base common either to several local government tiers, or to both the State and one or several local government tiers (mainly surtaxes). “Specialized” taxes have a tax base exclusive to a single local government tier. The main stacked local taxes are: the property tax; the income tax; the business tax. Other stacked taxes that feature less regularly in some countries are the transfer tax on real estate transactions, vehicle taxes, taxes on advertisement and on household waste. “Specialized” taxes exist in all countries except in Ireland, in the United Kingdom and Sweden. The most frequently found specialized tax categories are: the property tax, specialized in nine countries (Austria, Finland, Germany, Greece, Italy, Luxembourg, the Netherlands, Portugal, Spain); the business tax, specialized in four countries (Austria, Belgium, Luxembourg and Spain); the vehicle tax, specialized in four countries (France, Italy, Portugal, Spain). Also some examples of specialized taxes are: transfer tax on real estate transactions (Portugal), tax on electrification (Greece), tax on advertising (Greece) and tax on inheritance (Spain).

In all European countries, local governments receive financial transfers. There are different categories of the financial transfers: 1) operating or investment transfers; 2) general or earmarked transfers; 3) financial transfers different by origin (State, European Union, Local Governments); financial transfers varied by budget origin of the state financial transfers (transfers coming from identified State tax revenue, transfers coming from mixed resources, transfers coming from non-identified State budget resources).

As we have mentioned earlier, one of the important function of the transfers is reduction of the regional and social disparities.

Thus, taking into account the differences between socio-economic development of the regions and incomes of the different groups of population, observed more or less in each country, the transfers (social transfers, inter-government grants, subsidies, etc.), should have significant impact as tools for equalizing regional and social disparities.

It should be noted that different countries have own experience in the tax-transfers or tax-benefit systems and their efficiency in the reducing inequality between social and ethnical groups, migrants and native population, etc. A lot of publications concerned the study of income transfers and their role in reducing inequality was published in the USA. In the USA the wide income transfers programs are developed, such as: Social Security (OASDI), Unemployment insurance, Workers' compensation, Veterans' disability compensation, railroad retirement, "Black lung", Medicare and Medicaid, Aid to Families with Dependent Children (AFDC), Supplemental Security Income (SSI), Food Stamps, Housing assistance etc. Some of income transfers are in the form of cash benefits (such as OASDI, AFDS, SSI), another in the form of in-kind benefits (Medicare and Medicaid, Food Stamps, Housing Assistance) (D. Betson, R. Haveman, 1981). These authors studied the role of income transfers in the observed reduction of income inequality among regions in the USA during two decades in the XX c. (from 1960 till 1980); geographical distribution of regions with greatest income inequality; the efficiency of income transfers programs in reducing regional market inequality and set of factors determine the impact of transfers in reducing inequality within states and regions. Another authors, such as X. Wu, J. Perloff and A.Golan studied the effects of taxes and other governmental policies on income distribution and welfare in the USA during period of 1981-1997. They examined the distributional effects of major government tax and welfare policies in the USA and found that marginal tax rates have larger income redistribution and equilibrating welfare effects than social insurance of direct transfers programs. Nevertheless, the large difference in the efficiency of tax-transfers or tax-benefit systems is observed between macro regions and countries in the world. M. Luebker shows results of the impact of taxes and transfers on inequality for different macro regions and countries. According to the analysis provided in his paper, the Latin American and East Asian countries have mildly redistributive transfer systems, but European countries have well-developed social security systems. Australia, Canada, Israel and the USA have noticeably higher inequality of disposable incomes than Europe (M. Luebker, 2004, 2011). Luebker argued that the income inequality growth over the past decades was driven by a greater dispersion of market incomes, but countries with the same market inequality achieved different outcomes, so political choice and institutional factors in the formation of effective redistributive results are very important in the national tax and transfers systems.

Paper from Ximing Wu, Jeffrey Perloff and Amos Golan devoted the analysis of income redistribution and equalizing welfare effects in social insurance and direct transfer programs in the USA. The authors tried to study do federal and

state taxes, minimum wage laws, social insurance policies and transfer programs make the income distribution more equal? For the study of distributional effects of major government tax and welfare policies these authors used the Gini index, coefficient of variation of income, relative mean deviation of income and standard deviation of the logarithm of income, the Atkinson welfare index. In this paper the authors used panel data from the 50 states from 1981 to 1997. They analyzed the impact of all major government programs that directly or indirectly transfer income to the poorest members of society and variation of these transfers in real terms over time or across states during the period of 1981-1997.

The theoretical background in this paper based on such statements. The government tax and transfer programs directly affect family income. The minimum wage, disability insurance and unemployment insurance have direct effects on personal received income and indirect effects on their transferred income.

Wu, Perloff and Golan analyzed regression of various inequality indices (Gini index, coefficient of variance of personal income, Atkinson index, etc.) on state dummy variables, government policy variables (the federal marginal income tax rate and low tax to proxy the change of federal income tax over the observed period; minimum wage and maximum weekly unemployment insurance benefits, the benefits from realization of government programs such as the Aid to the Families with Dependent Children (AFDC), the Temporary Assistance to Needy Families (TANF), the Earned Income Tax Credit, etc.), macroeconomic variables (GDP, Unemployment Rate), demographical variables (educational level, percent of Female-Headed Family, percentage of population with different age groups, percent of families with children under 6 years, average number of persons in the family).

They estimated fixed-effect model using generalized least squares method and explained the heteroscedasticity of the standard errors in the model. Due to the model they showed that the marginal income tax rates and the Earned Income Tax Credit play a more important role in equalizing income than do the other government programs. In addition, the mentioned authors found that several of the other government programs have undesirable distributional effects.

Paper "The Role of Income Transfers in Reducing Inequality between and within regions" written by David Betson and Robert Haveman is addressed to the problem of regional inequality and possible convergence of income per capita or household. The authors studied the phenomena of regional convergence of income and the pattern of within-region inequality among the regions. They analyzed the income transfers and their growth for period of 1965-1981 in the USA and built the structural models for the analysis what factors determined the impact of transfers

in reducing inequality within states and regions. Based on the empirical analysis and econometric models the mentioned authors, D. Betson and R. Haveman, found that the marginal impact of transfers on inequality reduction is larger in states with higher unemployment rates, larger average family sizes, a higher proportion of female-headed families and a higher proportion of aged persons.

Optimal tax systems and social state

Another important empirical research devoted the role of taxes and transfers in the solution of income inequality and growth was published in the report for the OECD countries. In this report the six important facts were observed:

1. Inequality of income before taxes and transfers is mainly driven by the dispersion of labor income.

2. Tax and transfers systems reduce overall income inequality in all countries. Approximately 75% of the reduction in inequality is due to the transfers and 25% to direct household taxation.

3. In some countries, cash transfers are small in size but highly targeted on those in need. In others, large transfers redistribute income mainly over the life-cycle rather than across individuals.

4. The personal income tax tends to be progressive, while consumption taxes and real estate taxes often adsorb a larger share of the current income of the less well-off.

5. Some reforms of tax and transfers systems entail a double dividend in terms of reducing inequality and raising GDP per capita. Reducing tax expenditure, which mostly benefit the well-off, contributes to equity objectives while also allowing for a growth-friendly cut in marginal tax rates.

6. Other reforms may entail trade-offs between these two policy objectives. Shifting the tax mix to less-distorting taxes from social contributions to consumption would improve incentives to work and save, but stimulates the raising inequality.

In this report five country groups with similar patterns of inequality were determined.

First group of countries with very low inequality in household disposable income includes Denmark, Iceland, Norway, Sweden and Switzerland. In these countries low dispersion in labor income is observed due to high employment rate and little wage dispersion. Cash transfers tend to be universal and taxes are not highly progressive.

Second group of countries with essential relative low inequality in household disposable includes Belgium, Czech Republic, Estonia, Finland, France,

Italy, Slovak Republic and Slovenia. In these countries the dispersion in labor income is average due to little wage variation, low employment or high part-time rate. The highly concentrated capital and self-employment income are registered. Cash transfers (largely insurance-based) and taxes are not highly progressive.

Third group of countries with middle level of inequality in household disposable income includes Austria, Germany, Greece, Hungary, Japan, Korea, Luxembourg, Poland and Spain. In these countries individual labor income is concentrated, reflecting above average dispersion in wages, low employment or high part-time rate. Taxes and transfers are not highly progressive.

Fourth group of countries with related higher inequality in household disposable income includes Australia, Canada, Ireland, Netherlands, New Zealand and United Kingdom. In these countries the wage dispersion is above average, part-time rate is high. Cash transfers are targeted and taxes are progressive.

Fifth group of countries with high inequality in household disposable income includes Chile, Israel, Mexico, Portugal, Turkey and United States. In these countries the concentration of labor, capital and self-employment income are high, as well as poverty rate.

Thus, this research demonstrated the variety of taxes and transfers systems and different their efficiency, on the one hand, but similar patterns of inequality in household disposable income, on the other hand. Most of the countries have significant income inequality explained by labour market outcomes and differences in wage rates, hours worked, education and skills of the workers, flexibility of the labour market to create new jobs, etc. But in the process of the formation of the adjusted household disposable income the important role plays taxes policies and cash transfers. Nevertheless, the other relevant policy instrument, such as: labour education, migration and gender policy; family policies (child and elder population care), education, health and housing policies should be taken into account for each stage of the formation of household adjusted disposable income from individual income. In addition, a lot of countries have wide regional disparities, where labour market outcomes and living standards are significant varied. As OECD report and other studies conclude, that there are many patterns in the problem of economic growth and inequality. So, some tax reforms improved growth prospects and narrowed the distribution of income. Another was not so successful and implied a trade-off between economic growth and social support policy.

3. The impact of fiscal decentralization on the formation of budgets at different levels in the V4 countries

One of the important tasks to create the optimal mechanism of the tax and transfer relations in SR is to analyze the position of Slovakia and other Visegrad countries on the background of the development of fiscal decentralization in other EU countries. Slovakia is a member of EU and euro area and this means that some co-ordination from the common EU policy in fiscal area and tax harmonization should be followed by Slovakia.

For this purpose, the analysis of the position of SR on the background of the development of fiscal decentralization in other EU countries was carried out by means different methods (integral indicator, cluster analysis and discriminant analysis).

Cluster analysis uses to group the different objects to some groups (clusters) with the same characteristics of values for selected indicators. The main idea of the cluster analysis is that the distance (or difference) between the objects in one type of clusters should be essentially less than the distance between the clusters. For statistical description of the quality of cluster analysis is used analysis of variance with some statistical criteria (F-test, for example), mean and standard deviation for each variable in clusters, some plots, etc. Cluster analysis is connected with discriminant analysis, where we used the results of prior distribution of the objects by cluster and obtain some linear discriminant functions (classification functions) for analysis of the posterior distribution to clusters (or quality of the classification by discriminant functions) or classification of the new objects into some groups (clusters).

Because some set of indicators is used for the cluster analysis we can assume that certain values of this indicators can describe some regime in government policy and the essential change of the values for one or a several indicators may follow to another cluster or regime.

For the cluster analysis we used different set of indicators characterized the state of the different EU countries on central and local government levels. From the grouping the data concerned countries with state level (Belgium, Germany, Spain and Austria) were excepted.

The first set of data for classification of the position of SR on the central government level included such indicators:

1. Share of the capital and current transfers in the revenue ($Z1 - [(Capital\ transfers, receivable + Other\ current\ transfers, receivable)/Revenue] * 100\%$);

2. Share of the capital taxes and current taxes on income, wealth in the revenue ($Z2 - [(Capital\ taxes,\ receivable + Current\ taxes\ on\ income,\ wealth,\ receivable)/Revenue]*100\%$);

3. Share of the property income in the revenue ($Z3 - [Property\ income,\ receivable)/Revenue]*100\%$);

4. Share of the net social contributions in the revenue ($Z4 - [Net\ social\ contributions)/Revenue]*100\%$);

For the data for the analysis and classification was used statistical information from Eurostat for 2002, 2005, 2008, 2011, 2014 and 2017 years. The method of k-means was used for cluster analysis and after the analysis of variance we selected 5 clusters for grouping. The statistical characteristics of these clusters are given in table 10.4 – 10.5.

Table 10.4

The variance for the cluster analysis of the position of SR on the central government level for indicators Z1-Z4

Analysis of Variance (newconvergenceutax19.st)						
	Between		Within			signif.
	SS	df	SS	df	F	p
Z1	1151,113	4	1624,344	139	24,62604	2,02E-15
Z2	13074,1	4	2356,581	139	192,7899	0
Z3	15,51702	4	357,0029	139	1,510398	0,202441
Z4	9541,387	4	1606,313	139	206,4126	0

Source: own statistical elaboration in Statistica

Table 10.5.

Statistical characteristics of the clusters

Variable	Cluster 1		Cluster 2		Cluster 3		Cluster 4		Cluster 5	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
Z1	3,7	2,3	8,6	3	8,5	1,3	4,9	2,1	10,9	5,2
Z2	35	4,6	28,7	3,7	20,5	2,7	43,6	4,9	17,7	3,8
Z3	2,8	1,2	3,3	1,4	2,8	0,7	3,7	2,4	3,4	1,6
Z4	15,8	4	2,8	3,2	26,4	7,5	1,6	1,9	1,3	1,5

Source: own statistical elaboration in Statistica

In the table 10.6 the results of the grouping selected EU countries to the clusters are shown.

From this table it is seen that some countries of EU to have the same policy concerning the ratios Z1-Z4 over 2002-2017 and they included in the one type of clusters during this long-run period. For example, during all time period Ireland, France, Malta, Portugal and the United Kingdom were in Cluster 1. In period of 2002-2017 Greece, Slovakia and Finland were included in Cluster 2. Czechia and Estonia kept their positions in Cluster 3 during all time period since 2002 till 2017.

Italy and Luxembourg were included in Cluster 4 for 2002-2017. Bulgaria, Croatia and Sweden were in Cluster 5 during 2002-2017. For other countries, such as Cyprus, Latvia, Lithuania, Hungary, Poland and Slovenia we observed the essential changes in the values of the mentioned indicators Z1-Z4, that means that the switches between different regimes were implemented on the central level.

Table 10.6.

The results of the grouping selected EU countries to the clusters according indicators Z1-Z4

	2002	2005	2008	2011	2014	2017
Bulgaria	C15	C15	C15	C15	C15	C15
Czechia	C13	C13	C13	C13	C13	C13
Denmark	C14	C14	C14	C14	C14	C14
Estonia	C13	C13	C13	C13	C13	C13
Ireland	C11	C11	C11	C11	C11	C11
Greece	C12	C12	C12	C12	C12	C12
France	C11	C11	C11	C11	C11	C11
Croatia	C15	C15	C15	C15	C15	C15
Italy	C14	C14	C14	C14	C14	C14
Cyprus	C14	C12	C14	C14	C12	C12
Latvia	C15	C15	C12	C15	C15	C15
Lithuania	C12	C14	C12	C15	C15	C12
Luxembourg	C14	C14	C14	C14	C14	C14
Hungary	C12	C12	C12	C15	C15	C15
Malta	C11	C11	C11	C11	C11	C11
Netherlands	C14	C14	C14	C14	C14	C14
Poland	C15	C15	C12	C15	C15	C15
Portugal	C11	C11	C11	C11	C11	C11
Romania	C15	C15	C12	C12	C12	C12
Slovenia	C15	C12	C15	C15	C15	C15
Slovakia	C12	C12	C12	C12	C12	C12
Finland	C12	C12	C12	C12	C12	C12
Sweden	C15	C15	C15	C15	C15	C15
United Kingdom	C11	C11	C11	C11	C11	C11

Source: own statistical elaboration in Statistica

For better visual interpretation of the positions of the countries included in the different clusters C11, C12, C13, C14 and C15 we used module Canonical scores in Discriminant Analysis in statistical package of the programs Statistica and choose the Root 1 and Root 2 to build the plot of the clusters on 2D.

In Fig. 10.3 the position of the clusters on two-dimension scale is given.

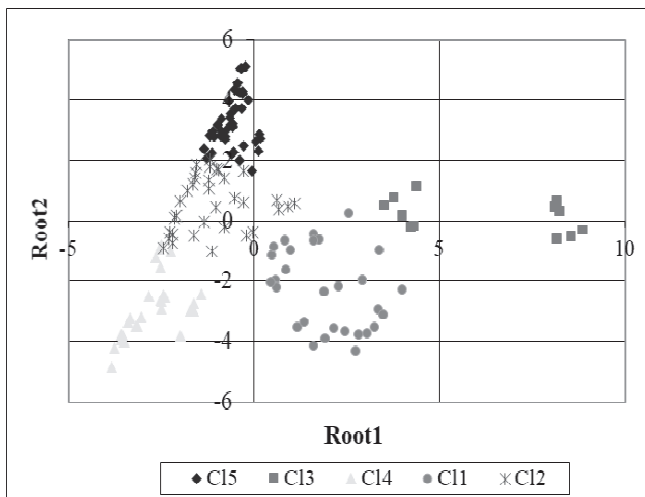


Fig. 10.3. Position of the clusters built for indicators Z1-Z4 in 2D

From the Fig. 10.3 that for Cluster 2 where Slovakia included the common boundaries outlined with Cluster 5, Cluster 1 and Cluster 4, when Cluster 3, where is Czechia occurred, is relatively far from Cluster 2, as well as from Cluster 1 and Cluster 5, and is more closed to Cluster 1. Nevertheless, the distance between some outlined bundles from Cluster 2 and Cluster 3 is not so high.

The second set of data for classification of the position of SR on the central government level included such indicators:

1. Share of subsidies, transfers, grants, payable to expenditure – $(Q1 - [\text{Subsidies, transfers, grants, payable}/\text{Expenditure}] * 100\%)$;
2. Share of current taxes on income and wealth, payable to expenditure – $(Q2 - [\text{Current taxes on income and wealth, payable}/\text{Expenditure}] * 100\%)$;
3. Share of property income, payable to expenditure – $(Q3 - [\text{Property Income, payable}/\text{Expenditure}] * 100\%)$;
4. Share of social benefits other than social transfers in kind to expenditure – $(Q4 - [\text{Social benefits other than social transfers in kind, payable} / \text{Expenditure}] * 100\%)$.

For the data for the analysis and classification were used statistical information from Eurostat for 2002, 2005, 2008, 2011, 2014 and 2017 years. The method of k-means was used for cluster analysis and after the analysis of variance we selected 5 clusters for grouping. The statistical characteristics of these clusters are given in Table 10.7-10.8.

Table 10.7

The variance for the cluster analysis of the position of SR on the central government level for indicators Q1-Q4

Analysis of Variance (newconvergenceeutex19.sta)						
	Between		Within			signif.
	SS	df	SS	df	F	p
Q1	23282,66	4	3124,295	139	258,9615	0
Q2	0,079071	4	0,798429	139	3,441406	0,010253
Q3	479,7707	4	1845,194	139	9,035384	1,62E-06
Q4	11337,72	4	2968,376	139	132,7277	0

Source: own statistical elaboration in Statistica

Table 10.8

Statistical characteristics of the clusters

Variable	Cluster 1		Cluster 2		Cluster 3		Cluster 4		Cluster 5	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
Q1	39,4	4,4	55,4	5,1	26,2	5,6	12,4	2,3	29,9	4,7
Q2	0	0	0	0,1	0	0	0	0,1	0,1	0,1
Q3	7	3,4	6,7	4,7	10,6	3	8,2	1,7	3,8	2,7
Q4	10,5	5,8	7	3,3	14,1	3,5	27,8	3,9	31,2	4,9

Source: own statistical elaboration in Statistica

In the table 10.9 the results of the grouping selected EU countries to the clusters are shown.

From this table it is seen that during period 2002-2017 Czechia, Estonia and the United Kingdom stayed at the Cluster 5; Denmark, Italy, Luxembourg, Netherlands and Finland were all time in Cluster 2; during period of 2002-2017 Malta was in the same cluster – Cluster 4; Portugal was during all time period in Cluster 3. Other countries demonstrated some movement from one type of cluster to another. Nevertheless, some countries stayed in certain cluster long time, in some countries some cyclical movement from one type of cluster to another, and then again to previous type of cluster were observed. For example, Bulgaria in 2002, 2005 and 2008 stayed at Cluster 1 and in 2011, 2014 and 2017 was in Cluster 2. In 2002 Hungary was in Cluster 2, then in 2005 and 2008 this country stayed at Cluster 1, after global financial crisis in 2011 Hungary moved to Cluster 2 again, and finally, in 2014 and 2017 Hungary was in Cluster 1. In 2002, 2005, 2008 and 2011 Poland stayed at Cluster 2, in 2014 it moved to Cluster 1 and then in 2017 came back to Cluster 2. In 2002 Slovakia was in Cluster 3, then in 2005, 2008 and 2011 it was in Cluster 1, and then came back to Cluster 3.

Table 10.9

The results of the grouping selected EU countries to the clusters according indicators Q1-Q4

	2002	2005	2008	2011	2014	2017
Bulgaria	C11	C11	C11	C12	C12	C12
Czechia	C15	C15	C15	C15	C15	C15
Denmark	C12	C12	C12	C12	C12	C12
Estonia	C15	C15	C15	C15	C15	C15
Ireland	C11	C15	C15	C15	C14	C14
Greece	C13	C13	C11	C11	C11	C11
France	C13	C11	C11	C11	C11	C11
Croatia	C12	C12	C11	C11	C11	C11
Italy	C12	C12	C12	C12	C12	C12
Cyprus	C13	C13	C13	C13	C11	C14
Latvia	C11	C11	C11	C11	C11	C11
Lithuania	C11	C11	C11	C12	C11	C11
Luxembourg	C12	C12	C12	C12	C12	C12
Hungary	C12	C11	C11	C12	C11	C11
Malta	C14	C14	C14	C14	C14	C14
Netherlands	C12	C12	C12	C12	C12	C12
Poland	C12	C12	C12	C12	C11	C12
Portugal	C13	C13	C13	C13	C13	C13
Romania	C11	C11	C11	C12	C12	C11
Slovenia	C11	C11	C11	C11	C11	C13
Slovakia	C13	C11	C11	C11	C13	C13
Finland	C12	C12	C12	C12	C12	C12
Sweden	C15	C15	C11	C11	C11	C12
United Kingdom	C15	C15	C15	C15	C15	C15

Source: own statistical elaboration in Statistica

For better visual interpretation of the positions of the countries included in the different clusters C11, C12, C13, C14 and C15 we used module Canonical scores in Discriminant Analysis in statistical package of the programs Statistica and choose the Root 1 and Root 2 to build the plot of the clusters on 2D.

In Fig. 10.4 the position of the clusters on two-dimension scale is given.

The third set of data for classification of the position of SR on the local government level included such indicators:

1. Share of taxes (Taxes on production and import, receivable + Current taxes on income and wealth, receivable + Capital taxes, receivable) in revenue – $(K1 - [Taxes/Revenue] * 100\%)$;

2. Share of transfers (Capital transfers, receivable + Other capital transfers and investment grants, receivable) in revenue – $(K2 - [\text{Transfers/Revenue}] * 100\%)$;

3. Share of net social contributions in revenue – $(K3 - [\text{Net social contributions, receivable/Revenue}] * 100\%)$.

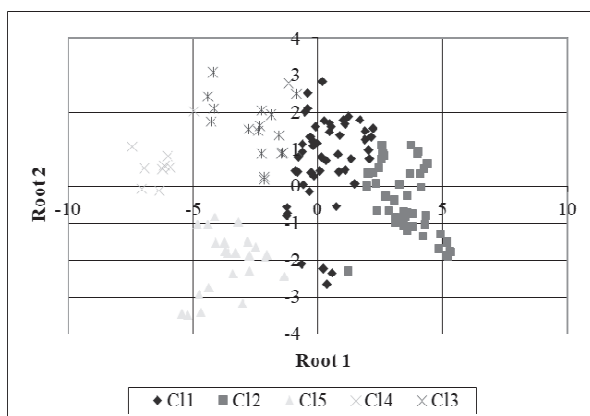


Fig. 10.4. Position of the clusters built for indicators Q1-Q4 in 2D

For the data for the analysis and classification were used statistical information from Eurostat for 2002, 2005, 2008, 2011, 2014 and 2017 years. The method of k-means was used for cluster analysis and after the analysis of variance we selected 5 clusters for grouping. The statistical characteristics of these clusters are given in table 10.10-10.11.

Table 10.10

The variance for the cluster analysis of the position of SR on the central government level for indicators K1-K3

Analysis of Variance (newconvergenceeutax19.sta)						
	Between		Within			signif.
	SS	df	SS	df	F	p
K1	31389,15	4	7237,904	139	150,7029	0
K2	33313,6	4	5292,275	139	218,7429	0
K3	48,82562	4	203,5593	139	8,335114	4,68E-06

Source: own statistical elaboration in Statistica

In the table 10.12 the results of the grouping selected EU countries to the clusters are shown.

Table 10.11

Statistical characteristics of the clusters

Variable	Cluster 1		Cluster 2		Cluster 3		Cluster 4		Cluster 5	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
K1	41,2	7,7	13,6	7,1	25,6	10,5	16,1	7	4,9	4,1
K2	8,2	5,9	17,7	6,1	38	8,6	76,7	13,1	5	3,8
K3	0,2	0,3	0,7	1,1	1,9	2,4	1,9	2,3	0,6	0,8

Source: own statistical elaboration in Statistica

During all time period such countries as Czechia, Denmark, France, Croatia, Italy and Latvia stayed at Cluster 1. The United Kingdom was in Cluster 2 during 2002-2017.

Table 10.12

The results of the grouping selected EU countries to the clusters according indicators K1-K3

	2002	2005	2008	2011	2014	2017
Bulgaria	C11	C15	C15	C12	C13	C15
Czechia	C11	C11	C11	C11	C11	C11
Denmark	C11	C11	C11	C11	C11	C11
Estonia	C15	C15	C15	C12	C15	C15
Ireland	C13	C14	C14	C13	C13	C13
Greece	C13	C13	C13	C12	C13	C13
France	C11	C11	C11	C11	C11	C11
Croatia	C11	C11	C11	C11	C11	C11
Italy	C11	C11	C11	C11	C11	C11
Cyprus	C13	C14	C13	C13	C11	C12
Latvia	C11	C11	C11	C11	C11	C11
Lithuania	C12	C15	C12	C12	C12	C15
Luxembourg	C11	C11	C11	C11	C12	C11
Hungary	C11	C11	C12	C13	C14	C13
Malta	C15	C15	C15	C12	C12	C15
Netherlands	C15	C15	C15	C15	C15	C15
Poland	C15	C12	C15	C12	C12	C15
Portugal	C13	C13	C13	C13	C13	C12
Romania	C15	C15	C15	C13	C12	C12
Slovenia	C15	C15	C12	C12	C12	C15
Slovakia	C12	C12	C12	C13	C12	C15
Finland	C15	C15	C15	C15	C15	C15
Sweden	C15	C15	C15	C15	C15	C15
United Kingdom	C12	C12	C12	C12	C12	C12

Source: own statistical elaboration in Statistica

In Cluster 3 and Cluster 4 a lot of countries stayed periodically, not for all time period. For example, in 2002 and 2005 Hungary was in Cluster 1, in 2008 it was in Cluster 2, then in 2011 Hungary occurred in Cluster 3, in 2014 it moved to Cluster 4 and in 2017 Hungary came back to Cluster 3. In Cluster 5 Netherlands, Finland and Sweden were all time, from 2002 till 2017. But for many countries we can see migration from one cluster to another cluster for different time period. For example, Poland was in Cluster 5 in 2002, 2008 and in 2017, in 2005, 2011 and 2014 Poland occurred in Cluster 2. Slovakia stayed at Cluster 2 in 2002, 2005, in 2008 and 2014. In 2011 Slovakia moved to Cluster 3 and in 2017 Slovakia occurred in Cluster 5.

For better visual interpretation of the positions of the countries included in the different clusters C11, C12, C13, C14 and C15 we used module Canonical scores in Discriminant Analysis in statistical package of the programs Statistica and choose the Root 1 and Root 2 to build the plot of the clusters on 2D.

In Fig. 10.5 the position of the clusters on two-dimension scale is given.

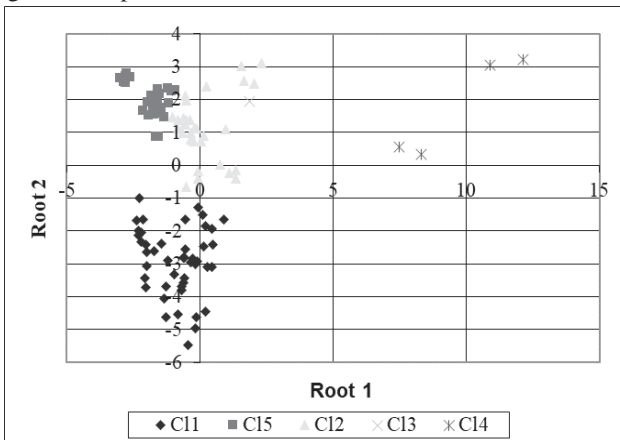


Fig. 10.5 Position of the clusters built for indicators K1-K3 in 2D

For forth set of data for classification of the position of SR on the local government level included such indicators:

1. Share of current taxes on income and wealth, payable in expenditure – $(L1 - [\text{Current taxes on income and wealth, payable} / \text{Expenditure}] * 100\%)$;
2. Share of social benefits other than social transfers in kind, payable in expenditure – $(L2 - [\text{Social benefits other than social transfers in kind, payable} / \text{Expenditure}] * 100\%)$;

3. Share social transfers in kind purchased market production, payable in expenditure – $(L3 - [\text{Social transfers in kind, payable}]/\text{Expenditure}] * 100\%)$;

4. Share of capital transfers, investment grants, other current transfers, payable in expenditure – $(L4 - [(\text{Capital transfers, payable} + \text{Investment grants, payable} + \text{Other current transfers, payable})/\text{Expenditure}] * 100\%)$.

For the data for the analysis and classification were used statistical information from Eurostat for 2002, 2005, 2008, 2011, 2014 and 2017 years. The method of k-means was used for cluster analysis and after the analysis of variance we selected 5 clusters for grouping. The statistical characteristics of these clusters are given in table 10.13-10.14.

Table 10.13.

The variance for the cluster analysis of the position of SR on the central government level for indicators L1-L4

Analysis of Variance (newconvergenceeutax19.sta)						
	Between		Within			signif.
	SS	df	SS	df	F	p
L1	1,547852	4	5,938537	139	9,057427	1,57E-06
L2	5835,356	4	756,47	139	268,0591	0
L3	2157,856	4	854,4107	139	87,76281	0
L4	1969,343	4	1324,716	139	51,65987	1,36E-26

Source: own statistical elaboration in Statistica

Table 10.14

Statistical characteristics of the clusters

Variable	Cluster 1		Cluster 2		Cluster 3		Cluster 4		Cluster 5	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
L1	0	0	0,4	0,5	0	0,2	0,1	0,2	0	0,2
L2	33	1,3	12,2	2,7	4,1	2,2	2,7	2,4	2,7	2,4
L3	4,4	0,3	9,2	5,5	2,9	2,2	16,8	1,6	2,1	1,7
L4	4,4	1,2	2,7	1,6	10,5	4	10,4	4,7	3	2,1

Source: own statistical elaboration in Statistica

In the table 10.15 the results of the grouping selected EU countries to the clusters are shown.

During all time period Denmark was in Cluster 1, the United Kingdom was in Cluster 2, France, Hungary and Portugal stayed at Cluster 3, Italy was in Cluster 4 and Cyprus, Lithuania, Malta, Finland and Sweden stayed at Cluster 5.

Table 10.15

The results of the grouping selected EU countries to the clusters according indicators L1-L4

	2002	2005	2008	2011	2014	2017
Bulgaria	C12	C15	C15	C13	C15	C13
Czechia	C13	C13	C13	C15	C15	C15
Denmark	C11	C11	C11	C11	C11	C11
Estonia	C15	C13	C13	C13	C15	C15
Ireland	C12	C15	C15	C12	C14	C14
Greece	C14	C15	C13	C12	C12	C12
France	C13	C13	C13	C13	C13	C13
Croatia	C13	C13	C13	C15	C13	C13
Italy	C14	C14	C14	C14	C14	C14
Cyprus	C15	C15	C15	C15	C15	C15
Latvia	C13	C13	C15	C15	C15	C15
Lithuania	C15	C15	C15	C15	C15	C15
Luxembourg	C15	C15	C13	C13	C13	C13
Hungary	C13	C13	C13	C13	C13	C13
Malta	C15	C15	C15	C15	C15	C15
Netherlands	C13	C15	C13	C13	C15	C12
Poland	C15	C13	C13	C13	C13	C12
Portugal	C13	C13	C13	C13	C13	C13
Romania	C13	C13	C13	C13	C15	C13
Slovenia	C13	C13	C14	C15	C15	C13
Slovakia	C13	C13	C15	C15	C15	C15
Finland	C15	C15	C15	C15	C15	C15
Sweden	C15	C15	C15	C15	C15	C15
United Kingdom	C12	C12	C12	C12	C12	C12

Source: own statistical elaboration in Statistica

Other countries migrated from one type of cluster to another type of cluster. Nevertheless, some stability of the regimes for certain time period is also observed for several countries. For example, in 2002, 2005 and in 2008 Czechia stayed at Cluster 3 and in 2011, 2014 and 2017 it moved to Cluster 5. In 2002 Poland was in Cluster 5, then in 2005, 2008, 2011 and 2014 it was in Cluster 3 and in 2017 Poland occurred in Cluster 2. Slovakia was in Cluster 3 in 2002 and 2005, then it moved to Cluster 5.

For better visual interpretation of the positions of the countries included in the different clusters C11, C12, C13, C14 and C15 we used module Canonical scores in Discriminant Analysis in statistical package of the programs Statistica and choose the Root 1 and Root 2 to build the plot of the clusters on 2D.

In Fig. 10.6 the position of the clusters on two-dimension scale is given.

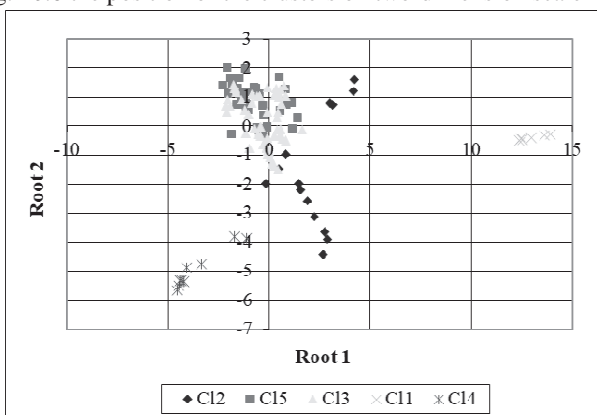


Fig. 10.6. Position of the clusters built for indicators L1-L4 in 2D

Thus, the analysis of grouping to clusters according to indicators from different set, such as Z1-Z4; Q1-Q4, K1-K3 and L1-L4 allows to reveal similarity and diversity between different EU countries in the point of their tax and transfer policy. It is possible to argue the switch between different regimes in the process of reforms in EU countries, and V4 countries particularly, for their tax-transfer policy during 2002-2017.

4. The taxes and transfers dependence on the different government level on the example of Visegrad countries

In this part the analysis of the taxes and transfers dependence on the different government level is carried out on the example of Visegrad countries. We tested the hypothesis about relationship of the taxes and transfers on the different government level by means the econometric models.

For the analysis we used such set of the indicators:

V1_C – share of the capital and current transfers in the revenue on the central government level $[(\text{Capital transfers, receivable} + \text{Other current transfers, receivable})/\text{Revenue}] * 100\%$;

V2_C – share of the capital and current taxes in the revenue on the central government level $[(\text{Capital taxes, receivable} + \text{Current taxes on income and wealth, receivable})/\text{Revenue}] * 100\%$;

V3_C – share of the net social contributions in the revenue on the central government level $[\text{Net social contributions}/\text{Revenue}] * 100\%$;

V4_C – share of the subsidies, transfers and investment grants in the expenditure on the central government level $[(\text{Subsidies, payable} + \text{Other current transfers, payable} + \text{Investment grants, payable}) / \text{Expenditure}] * 100\%$;

V5_C – share of the social benefits in the expenditure on the central government level $[\text{Social benefits other than social transfers in kind, payable}/\text{Expenditure}] * 100\%$;

W1_L – share of the social benefits other than social transfers in kind in the expenditure on the local government level, $[\text{Social benefits other than social transfers in kind, payable}/\text{Expenditure}] * 100\%$;

W2_L – share of the social transfers in kind, purchased market production in the expenditure on the local government level $[\text{Social transfers in kind, purchased market production, payable}/\text{Expenditure}] * 100\%$;

W3_L – share of the social benefits and social transfers in kind in the expenditure on the local government level $[(\text{Social benefits other than social transfers in kind, payable} + \text{Social transfers in kind, purchased market production, payable})/\text{Expenditure}] * 100\%$;

W4_L – share of the capital transfers, investment grants and current transfers in the expenditure on the local government level $[(\text{Capital transfers, payable} + \text{Investment grants, payable} + \text{Other current transfers, payable})/\text{Expenditure}] * 100\%$;

W5_L – share of the taxes in the revenue on the local government level $[(\text{Taxes on production and import, receivable} + \text{Current taxes on income and wealth, receivable} + \text{Capital taxes, receivable})/\text{Revenue}] * 100\%$;

W6_L – share of the transfers in the in the revenue on the local government level $[(\text{Capital transfers, receivable} + \text{Other capital transfers and in investment grants, receivable})/\text{Revenue}] * 100\%$.

In Fig. A.1-A.9 (Appendix) the dynamics of these indicators are given for Visegrad countries.

For the analysis of the horizontal and vertical relations between taxes and transfers on the different government level we used such hypothesis given below.

For central government level and analysis of the horizontal relations we used such indicators:

1) Dependence of the share of the capital and current transfers in the revenue from share of the capital and current taxes in the revenue or $V1_C = f(V2_C)$;

2) Dependence of the share of the social benefits in the expenditure from share of the net social contributions in the revenue or $V5_C=f(V3_C)$;

3) Dependence of the share of the subsidies, transfers and investment grants in the expenditure from the share of the capital and current taxes in the revenue $V4_C=f(V2_C)$.

Because we used time series data which have some tendencies and correlated each other for the specification of the linear econometric model time as additional independent variable was included.

In table 10.16 the results of the econometric model were given for the analysis of the horizontal relations between taxes and transfers on the central government level.

Table 10.16.

The results of the econometric model for the analysis of the dependence of the share of the capital and current transfers in the revenue (V1_C) from share of the capital and current taxes in the revenue (V2_C)

Variable	Czechia					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
Intercept	25,1509	8,4205	2,9868	0,0105	F(2,13)=1.9106 p<0.18731	0.4766
V2_C	-0,7651	0,3928	-1,9477	0,0734		
T (time)	-0,2505	0,1663	-1,5061	0,1509		
Variable	Hungary					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
Intercept	18,7964	4,0896	4,5961	0,0005	F(2,13)=54.840 p<0.00000	0.9455
V2_C	-0,4986	0,1281	-3,8908	0,0019		
T (time)	0,5385	0,1191	4,5196	0,0006		
Variable	Poland					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
Intercept	17,7861	3,5209	5,0516	0,0002	F(2,13)=24.034 p<0.00004	0.8871
V2_C	-0,573	0,1673	-3,4261	0,0045		
T (time)	0,2338	0,052	4,4933	0,0006		
Variable	Slovakia					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
Intercept	44,2298	9,5038	4,6539	0,0005	F(2,13)=8.3059 p<0.00474	0.7489
V2_C	-1,367	0,3552	-3,8486	0,002		
T (time)	0,3839	0,1636	2,3472	0,0354		

Source: own statistical elaboration in Statistica

As we can see from this table for most Visegrad countries the econometric models have good values for the basic statistical criteria (Student criterion or t-value and Fisher criterion or F-value), it means that estimations for the parameters are statistically significant at level $p < 0.05$ for each variables and for model at all. R-values are also relatively high and it means that these models are good fitted for the description of the relations between selected indicators. In the case of Czechia we observe that first parameter (intercept) is statistically significant at level $p < 0.05$, but second parameter for variable V2_C is statistically significant at level $p < 0.1$ and third parameter for time variable is statistically significant at level $p < 0.15$. In addition, value for Fisher criterion is not high and statistically significant only at level $p < 0.2$. R-value for model built for Czechia is not high, only 0.48. Nevertheless, this model can be used for the analysis of relations between selected indicators.

Let to interpret these models. For all models the estimations for the intercept are positive and can be explained as initial level for the share of the capital and current transfers in the revenue without the impact of such factors as the share of the capital and current taxes in the revenue. The highest estimation was used for Slovakia (44,22) and the lowest was for Poland (17,78). For all countries the estimations for variable V2_C (share of the capital and current taxes in the revenue) are negative, it means that the share of the capital and current transfers in the revenue reduced if the share of the capital and current taxes in the revenue increased. For Hungary, Poland and Slovakia the value of the V1_C (share of the capital and current transfers in the revenue) was increasing over the period from 2002-2017, the related estimations for the time variable are positive. In case of Czechia, the estimation for time variable is negative, it means that values of V1_C (share of the capital and current transfers in the revenue) have some tendency to reduce over time.

In table 10.17 the results of the econometric model were given for the analysis of the horizontal relations between social benefits and net social contributions on the central government level.

As we can see from this table only for Czechia the econometric models have good values for the basic statistical criteria (Student criterion or t-value and Fisher criterion or F-value), it means that estimations for the parameters are statistically significant at level $p < 0.05$ for each variable and for model at all. R-values are also relatively high and it means that these models are good fitted for the description of the relations between selected indicators. In case for Hungary and Poland F-value is significant al level $p < 0.05$, but estimations for some parameters are not statistically significant at level $p < 0.05$ according to t-value. In case for Slovakia

only estimation for intercept is statistically significant at level $p < 0.05$, other estimations for variables are not statistically significant at level $p < 0.05$ and this model has relatively low value for Fisher criterion.

Table 10.17.

The results of the econometric model for the analysis of the dependence of the share of the social benefits in the expenditure (V5_C) from share of share of the net social contributions in the revenue (V3_C)

Czechia						
Variable	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
Intercept	17,4104	8,7311	1,9941	0,0676	F(2,13)=43.728 $p < 0.00000$	0.9330
V3_C	0,4689	0,2557	1,8338	0,0897		
T (time)	0,6576	0,0734	8,9558	0		
Hungary						
Variable	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
Intercept	10,6406	2,412	4,4115	0,0007	F(2,13)=4.1519 $p < 0.04033$	0.6243
V3_C	0,0676	0,4581	0,1476	0,8849		
T (time)	-0,1852	0,1187	-1,5597	0,1428		
Poland						
Variable	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
Intercept	5,9316	5,1543	1,1508	0,2705	F(2,13)=5.1538 $p < 0.02249$	0.6650
V3_C	0,2959	1,2166	0,2432	0,8116		
T (time)	-0,1115	0,0348	-3,2086	0,0069		
Slovakia						
Variable	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
Intercept	18,5559	3,0309	6,1221	0	F(2,13)=1.1648 $p < 0.34251$	0.3898
V3_C	-0,7759	1,6218	-0,4784	0,6403		
T (time)	0,1178	0,1165	1,5262	0,1509		

Source: own statistical elaboration in Statistica

The estimations of the intercept are relatively high for case of Czechia and Slovakia and low for Poland.

Then, only for Czechia share of the social benefits in the expenditure (V3_C) has an essential impact on the change of share of the social benefits in the expenditure (V5_C) in this model, for other V4 countries in presented models the variable V3_C does not have statistically significant influence to V5_C. Also, in case for Czechia and Poland the linear trend for the development of share of the social benefits in the expenditure (V5_C) should be taken into account, because the

estimations for the parameters for time variable are statistically significant at level $p < 0.05$.

In table 10.18 the results of the econometric model were given for the analysis of the horizontal relations between subsidies, transfers, investment grants and capital and current taxes on the central government level.

Table 10.18.

The results of the econometric model for the analysis of the dependence of the share of the subsidies, transfers and investment grants in the expenditure (V4_C) from the share of the capital and current taxes in the revenue (V2_C)

Czechia						
Variable	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
Intercept	30,5946	9,3884	3,2588	0,0062	F(2,13)=16.761 p<0.00025	0.8488
V2_C	0,0588	0,438	0,1343	0,8953		
T (time)	-0,591	0,1854	-3,1872	0,0071		
Hungary						
Variable	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
Intercept	48,61	6,9545	6,9898	0	F(2,13)=7.3986 p<0.00716	0.7296
V2_C	-0,0216	0,2179	-0,0992	0,9225		
T (time)	-0,5868	0,2026	-2,8967	0,0125		
Poland						
Variable	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
Intercept	43,2944	7,1716	6,037	0	F(2,13)=0.78422 p<0.47692	R= 0.3281
V2_C	0,2002	0,3407	0,5876	0,5669		
T (time)	0,1314	0,106	1,2402	0,2368		
Slovakia						
Variable	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
Intercept	47,6912	9,7903	4,8713	0,0003	F(2,13)=2.8426 p<0.09460	0.5515
V2_C	-0,3838	0,3659	-1,0488	0,3134		
T (time)	-0,2984	0,1685	-1,7709	0,1		

Source: own statistical elaboration in Statistica

For this kind of the model only estimations for intercept are statistically significant at level $p < 0.05$ and for cases of Czeccia, Hungary and Slovakia the linear trend for the development of the share of the subsidies, transfers and investment grants in the expenditure (V4_C) should be taken into account, because the estimations for the parameters for time variable are statistically significant at level $p < 0.1$. The estimations for the intercept have relatively high values in cases of Hungary and Slovakia, for Czechia the estimation for the intercept is the lowest.

Then, in the presented models the variable share of the capital and current taxes in the revenue (V2_C) does not influence significantly on the change of the variable share of the subsidies, transfers and investment grants in the expenditure on the central government level for all V4 countries.

For local government level and analysis of the horizontal relations we used such indicators:

1. Dependence of share of the capital transfers, investment grants and current transfers in the expenditure from share of the transfers in the in the revenue or $W4_L = f(W6_L)$;

In table 10.19 the results of the econometric model were given for the analysis of the horizontal relations between share of the capital transfers, investment grants and current transfers in the expenditure and the share of the transfers in the in the revenue on the local government level.

From this table it is seen that only for Czechia the econometric models have good values for the basic statistical criteria (Student criterion or t-value and Fisher criterion or F-value), it means that estimations for the parameters are statistically significant at level $p < 0.05$ for each variables and for model at all. R-values are also relatively high and it means that these models are good fitted for the description of the relations between selected indicators. For Hungary and Slovakia the estimations for the intercept and time variable are statistically significant at level $p < 0.05$, but estimations for variable W6_L are not statistically significant. It means that in presented models share of the transfers in the in the revenue does not influence to share of the capital transfers, investment grants and current transfers in the expenditure on local level for Hungary and Slovakia. For case of Poland only the estimation for the intercept is statistically significant at level $p < 0.05$, but other estimations for variables T (time) and W6_L are not statistically significant. In case of Czechia the estimation of the intercept is relatively high in comparison with cases in Hungary, Poland and Slovakia. Also, only for Czechia the share of the transfers in the in the revenue has the essential impact on the change of share of the capital transfers, investment grants and current transfers in the expenditure.

Table 10.19

**The results of the econometric model for the analysis of the dependence
(W4_L) from (W6_L)**

Variable	Czechia					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
Intercept	15,6242	1,7159	9,1055	0	F(2,13)=39.099 p<0.00000	0.9259
T (time)	-0,6537	0,0776	-8,4207	0		
W6_L	-0,1929	0,0882	-2,1862	0,0477		
Variable	Hungary					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
Intercept	8,066	0,9224	8,7445	0	F(2,13)=4.7573 p<0.02816	0.6501
T (time)	0,2864	0,1018	2,8146	0,0146		
W6_L	-0,0098	0,0277	-0,3554	0,728		
Variable	Poland					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
Intercept	7,6341	1,1731	6,5075	0	F(2,13)=0.22560 p<0.80109	0.1831
T (time)	-0,0217	0,0851	-0,2547	0,803		
W6_L	-0,0564	0,1088	-0,5187	0,6127		
Variable	Slovakia					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
Intercept	8,0377	2,9399	2,734	0,0171	F(2,13)=4.8570 p<0.02659	0.6539
T (time)	-0,4491	0,1615	-2,781	0,0156		
W6_L	0,0723	0,1175	0,6157	0,5487		

2. Dependence of the share of the transfers (social transfers and benefits, current transfers, investment grants and capital transfers) in expenditure from or the share of the taxes and transfers in revenue or $W34_L=f(W56_L)$;

In table 10.20 the results of the econometric model were given for the analysis of the horizontal relations between share of the transfers in expenditure and the share of the transfers in the in the revenue on the local government level.

For the presented models we can see that the estimations for the parameters for variable W56_L (share of the taxes and transfers in revenue) are statistically significant at level $p<0.05$ for all V4 countries, it means that share of the taxes and transfers in revenue has the essential impact on the change of share of transfers in expenditure on local government level for all V4 countries. In case of Czechia and Poland the estimations for time variable are also statistically significant at level $p<0.1$, but for Czech Republic the linear trend has negative slope (values of the

share of transfers in expenditure are reducing over time), but in case of Poland the linear trend has positive slope (values of the share of transfers in expenditure are increasing over time).

Table 10.20.

**The results of the econometric model for the analysis of the dependence
(W34_L) from (W56_L)**

Variable	Czechia					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
T (time)	-0,8854	0,0934	-9,4797	0	F(2,14)=366.76 p<0.00000	0.9905
W56_L	0,3373	0,0167	20,2357	0		
Variable	Hungary					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
T (time)	0,1009	0,2143	0,4709	0,645	F(2,14)=131.01 p<0.00000	0.9743
W56_L	0,2233	0,0344	6,4943	0		
Variable	Poland					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
T (time)	0,3831	0,2086	1,8361	0,0877	F(2,14)=169.48 p<0.00000	0.9799
W56_L	0,3125	0,0494	6,3265	0		
Variable	Slovakia					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
T (time)	-0,0654	0,1037	-0,6313	0,538	F(2,14)=59.372 p<0.00000	0.9457
W56_L	0,2366	0,0307	7,7145	0		

Source: own statistical elaboration in Statistica

For local government level and central government level analysis of the vertical relations we used such indicators:

1) Dependence of the share of the taxes and transfers in revenue on local government level from the share of taxes and transfers in revenue on the central government level or $W56_L=f(V12_C)$;

In table 10.21 the results of the econometric model were given for the analysis of the vertical relations between the share of the taxes and transfers in revenue on local government level and the share of taxes and transfers in revenue on the central government level.

From this table it is seen that estimation for time variable is statistically significant at level $p < 0.5$ for Slovakia, this estimation is positive and it means that the linear trend has negative slope and the values of the share of the taxes and transfers in revenue on local government level are reducing over time.

Table 10.21

The results of the econometric model for the analysis of the dependence of the share of the taxes and transfers in revenue on local government level (W56_L) from the share of taxes and transfers in revenue on the central government level (V12_C)

Variable	Czechia					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
Intercept	68,9486	12,0664	5,7141	0,0001	F(2,13)=1.4837 p<0.26279	0.4310
T (time)	-0,0284	0,1908	-0,1489	0,8839		
V12_C	-0,5335	0,3977	-1,3415	0,2027		
Variable	Hungary					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
Intercept	61,5682	60,9849	1,0096	0,3311	F(2,13)=1.6323 p<0.2331	0.4480
T (time)	1,5653	0,9073	1,7253	0,1081		
V12_C	-0,4557	1,7553	-0,2596	0,7992		
Variable	Poland					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
Intercept	41,0718	27,7701	1,479	0,163	F(2,13)=2.3569 p<0.13385	0.5158
T (time)	0,5173	0,2973	1,7403	0,1054		
V12_C	-0,1717	1,0372	-0,1655	0,8711		
Variable	Slovakia					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
T (time)	-1,8273	0,3825	-4,7773	0,0003	F(2,14)=190.47 p<0.00000	0.9821
V12_C	1,2506	0,0985	12,6924	0		

Source: own statistical elaboration in Statistica

For Hungary and Poland these estimations are positive and statistically significant only at level $p < 0.1$ it means that increasing tendency of the values of the share of the taxes and transfers in revenue on local government should be taken into account. The estimations of the parameters for the variable V12_C (the share

of taxes and transfers in revenue on the central government level) is statistically significant at level $p < 0.05$ for Slovakia, in the rest models these estimations are not statistically significant. It means that in the presented models only for case of Slovakia the share of taxes and transfers in revenue on the central government level has an essential impact on the change of the share of the taxes and transfers in revenue on local government level.

2) Dependence of the share of the transfers (social transfers and benefits, current transfers, investment grants and capital transfers) in expenditure on the local government level from the share of the social benefits, subsidies, transfers and investment grants in the expenditure on the central government level or $W34_L = f(V45_C)$;

In table 10.22 the results of the econometric model were given for the analysis of the vertical relations between the share of the transfers in expenditure on the local government level from the share of the social benefits, subsidies, transfers and investment grants in the expenditure on the central government level.

From this table it is seen that the estimations of the parameters for time variable and variable $V45_C$ (the share of the social benefits, subsidies, transfers and investment grants in the expenditure on the central government level) are statistically significant at level $p < 0.05$. It means that for all V4 countries we observed linear tendency of the change of the share of the transfers in expenditure on the local government level over time and the share of the social benefits, subsidies, transfers and investment grants in the expenditure on the central government level had essential impact on the change of the share of the transfers in expenditure on the local government level for Czech Republic, Hungary, Poland and Slovakia.

For the analysis of horizontal and vertical relations simultaneously on the local and central level we tested another model presented in table A.15-A.16 (Appendix). But one of the problems in such models is that the multi collinearity between exogenous and endogenous variables exists and the estimations for the parameters are not statistically significant at level $p < 0.05$ or $p < 0.1$. Nevertheless, the analysis of the correlation matrices presented the coefficient of pair correlation between variables on the central government level and local government level shows that the certain essential relations between mentioned variables exist, but the input-output models may be more complicated than multiple linear models.

Taking it into account we tested more complicated dynamic models for Slovakia. At first, we tested the relations between variables which are connected with taxes, transfers and social benefits on central and local government level by pairwise Granger Causality Tests. As the data we used first differences for the

indicators, because for most of the initial variables the linear trend observed, but we need data based on the stationary time series for the different statistical tests and for the estimation of the autoregression models. In addition, the first differences between values of the time series show the annual change of indicators during one-year period and it is also useful for the analysis and prediction.

Table 10.22.

The results of the econometric model for the analysis of the dependence of the share of the transfers in expenditure on the local government level (W34_L) from the share of the social benefits, subsidies, transfers and investment grants in the expenditure on the central government level (V45_C)

Variable	Czechia					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
T (time)	-0,8433	0,0791	-10,6607	0	F(2,14)=490.54 p<0.0000	0.9929
V45_C	0,2755	0,0117	23,4463	0		
Variable	Hungary					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
T (time)	0,3293	0,1028	3,2047	0,0064	F(2,14)=373.89 p<0.00000	0.9907
V45_C	0,2246	0,0189	11,8756	0		
Variable	Poland					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
T (time)	0,451	0,154	2,9291	0,011	F(2,14)=262.67 p<0.00000	0.9869
V45_C	0,2255	0,0272	8,2798	0		
Variable	Slovakia					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
T (time)	-0,3549	0,1653	-2,1467	0,0498	F(2,14)=40.027 p<0.00000	0.9225
V45_C	0,1849	0,03	6,1715	0		

Source: own statistical elaboration in Statistica

In the table A.17 presented in Appendix we included cases where it is possible to reject Null Hypothesis about absence of influence one variable on the other in simple dynamic model proposed by Granger. Thus in the table A.17 the variables which have dynamic impact on other variables are shown.

In addition, we tested the VAR (vector auto regression models) for some variables which connected with taxes, transfers and social benefits on central and local government level.

In the table A. 18 (Appendix) the results for VAR models are given. In this table the results for VAR model for the analysis of the dynamic relations between

indicators DV1C (annual change of the share of the capital and current transfers in the revenue), DV2C (annual change of the share of the capital and current taxes in the revenue), DV4C (annual change of the share of the subsidies, transfers and investment grants in the expenditure) on the central government level is shown. It is should be noted that these time series are relatively short, initial data is given from 2003 till 2017 and it explains the problem with statistical significance of some estimations, especially for lagged variables.

In table 10.23 the presentation of VAR model is given for indicators DV1C, DV2C, DV4C and their lagged values (see table A.18).

Table 10.23.

System of the equations for VAR model

$DV1C_SK = - 0.1638 * DV1C_SK(-1) + 0.1704 * DV1C_SK(-2) - 0.3819 * DV4C_SK(-1) - 0.1530 * DV4C_SK(-2) + 0.1955 - 1.501294839 * DV2C_SK$
$DV4C_SK = - 0.1158 * DV1C_SK(-1) - 0.2207 * DV1C_SK(-2) + 0.1473 * DV4C_SK(-1) - 0.0676 * DV4C_SK(-2) - 0.2757 - 0.2973527435 * DV2C_SK$

Source: own statistical elaboration in Eviews

From the table it is seen that these systems of the equations can be used for the modelling dynamic relations between annual change of the share of the capital and current transfers in the revenue, annual change of the share of the capital and current taxes in the revenue and annual change of the share of the subsidies, transfers and investment grants in the expenditure on the central government level. The impulse analysis provided for the analysis of the solution of these dynamic equations shows the responses of the endogenous variables DV1C and DV4C to one standard deviation innovations (Fig. 10.7).

From these plots it is clear seen that the impact of the initial fluctuations of the exogenous variables is essential over next four-year period for the endogenous variables DV1C and DV4C.

In table A.19 (Appendix) the results for VAR model for the analysis of the dynamic relations between indicators DW5L (annual change of the share of the taxes in the revenue on the local government level), DV5C (annual change of the share of the social benefits in the expenditure on the central government level), DW3L (annual change of the share of the social benefits and social transfers in kind in the expenditure on the local government level), DW4L (annual change of the share of the capital transfers, investment grants and current transfers in the expenditure on the local government level) and their lagged values are shown. This model presented the complicated dynamic relations between taxes and transfers in central and local government level simultaneously. From the table it is seen that

these systems of the equations can be used for the modelling dynamic relations between mentioned indicators DW5L, DV5C, DW3L and DW4L. The impulse analysis provided for the analysis of the solution of these dynamic equations shows the responses of the endogenous variables DW5L and DV5C to one standard deviation innovations (Fig. 10.8).

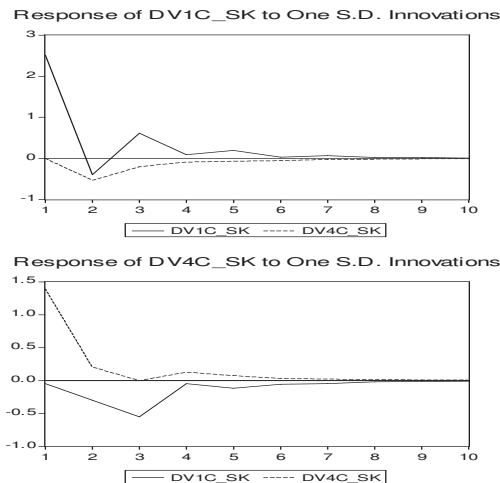


Fig.10.7. Impulse analysis for the estimation of the response the variables DV1C and DV4C to one standard deviation innovations

Source: own statistical elaboration in Eviews

From these plots it is clear seen that the impact of the initial fluctuations of the exogenous variables is essential over next four-year period for the endogenous variable DW5L (annual change of the share of the taxes in the revenue on the local government level) and over next eight-year period for the endogenous variable DV5C (annual change of the share of the social benefits in the expenditure on the central government level).

Thus, the econometric models, analysis of the correlation matrices and using Granger Causality Tests also proved strong relations between horizontal and vertical relations in the formation of the revenue and expenditure on central and government levels and the role of taxes and transfers for mentioned process. These models can be used for the purpose of the macroeconomic modelling for short-time period as simple multiple regression or for analysis and regulation fiscal and tax policy on long-time period as vector auto regression models, but mentioned models have the descriptive character and play additional role in the problem of seeking

optimal mechanism for taxes and transfers distribution on the different government level.

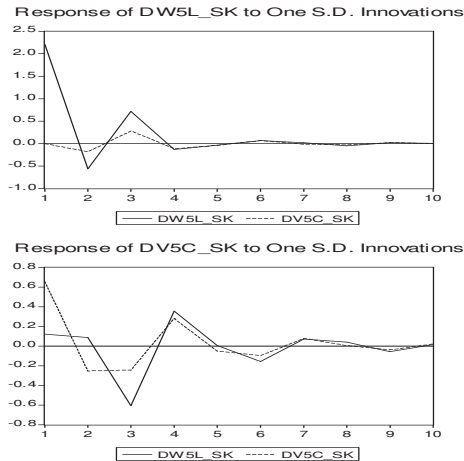


Fig. 10.8. Impulse analysis for the estimation of the response the variables DW5L and DV5C to one standard deviation innovations

Source: own statistical elaboration in Eviews

One of the important problems of the fiscal policy of EU countries is to improve the transparency and efficiency of the taxes and budget systems as the means of the realization of the main social and economic functions of the state and self-governing units. Idea of the financial decentralization in the EU countries is popular and it is gradually realized in some countries where the former financial and administrative systems were centralized. The features of the financial decentralization are closely connected with the public administration and self-governance systems in the separated countries.

The current global economic and financial crisis had negative impact on the social and economic development of whole EU, and CEE countries particularly. In these countries the problems of the regional disproportions and unfavorable environment for the economic activities were very sharp during the crisis period. The negative social and economic consequences were cumulated and led to the financial risks for state and local budgets.

In our research we focused more on the attempt to formalize some process for the analysis of the tax-transfers mechanism in regional and local level and to create complex of the economic and mathematical models as the elements of the decision support system for the enhancement of the tax-transfers mechanism in

Slovakia and seeking optimal solution for some applied problems in regional and local budgets, where taxes and transfers play an essential role.

According to our research and its purposes we discussed following issues.

1. It is difficult to define exact criteria for the optimality of tax-transfers mechanism in real national economy, due to the complicity and weak mathematical formalization of this problem for practical application. A lot of authors discuss the problem of optimality for tax system and taxation, role of transfers in the equalizing social and economic development, but they consider different approaches to study this problem. The developed theoretical models for the solution of the conditions of optimality of the main macroeconomic and fiscal indicators on the national level contributed more to economic theory and policy, but they can't be useful for practical implementation on the level of regional administration and local self-governance bodies. The econometric models developed for other countries are more closed to the practical issues, but they are relevant only for the countries or regions which were involved in the sample. In addition, econometric models have descriptive characters, they describe the existing state or dependence, which are not usually optimal for studied object or process.

2. Taking these theoretical difficulties and practical aspects into account, we tried to evaluate the position of the Slovak Republic on the background of fiscal decentralization of other countries of European Union. Here, one of the theoretical and important practical problem is the implementation of the policy of tax harmonization in countries of EU, in one of the hand, and the development of financial decentralization and role of self-government, in other hand. Thus, we studied the dynamics of the ratio of revenue from taxes and social contributions to GDP in all countries of EU and predicted the possible values for next time period by means linear trend models and exponential smoothing for time series. As we can see from the estimations of the models and comparison of the predicted values with real data, despite the increasing character of the tendencies of ratio of revenue from taxes and social contributions to GDP in most countries of EU, their policy is more flexible and the prediction of these indicators based on the exponential smoothing for time series are more closed to real situation due to their adaptive character, that prediction on linear trend. In addition, a lot of countries of EU used the opportunity of tax mix and changed them over certain time period. We studied the components of the revenue from taxes and social contributions such as taxes on production and imports, current taxes on income and wealth, capital taxes, social contributions in all countries of EU for the different level (general government, central government and local government) and evaluated coefficients of variance

for these components over time. Some of the countries provided the stable policy and did not essentially change the ratio of elements of tax mix to revenue, other, in contrast, used significant changes in components of tax revenue. Nevertheless, we revealed the possible convergence and analyzed correlation matrix in tax dynamics for countries of EU, that it is possible to suggest that policy of tax harmonization is continued in countries of EU, but some countries of EU use the opportunity of competitiveness in tax policy, especially in situation with countries – neighbors.

3. For the evaluation of the position of EU countries in the background of the development of fiscal decentralization it is possible to use multi dimension statistical analysis as cluster analysis, discriminant analysis or aggregated indices calculated by special statistical methods. For the evaluation of the position of EU countries we used available data from Eurostat, because database of OECD for the purpose of study of financial decentralization and fiscal federalism does not contain information about all EU countries, and sometimes the statistical information in this database is not actual. That is why we proposed own set of indicators based on the available and more actualized databases from Eurostat for the evaluation of the level of financial decentralization and local autonomy in different countries of EU. Application of cluster analysis and calculation of the aggregated indices by special statistical methods allows us to evaluate the positions of SR and their dynamics on the background of the financial decentralization development in other EU countries. In this case also some of the countries provided the stable policy concerning the level of financial decentralization and did not essentially change the indicators, other, in contrast, used significant changes in indicators characterized the level of the development of financial decentralization and local autonomy. Thus, due to the essential positive or negative change of political and economic situation in certain countries they used more flexible policy to increase more or, vice versa, to reduce more the level of financial decentralization. Then we analyzed more detail position of SR in the background of Visegrad countries and found some important differences in the policy of these countries-neighbors in the policy of fiscal decentralization and its development. Thus, even some important similarities in historical heritage, economic and social development, the realization of the approach to the problem of the financial decentralization is different in Visegrad countries. Thus, institutional factors, as well as political situation and features of the modern economic and social development play an important role in the choice of the selection of appropriate model of financial decentralization in each country.

4. For the purpose of the analysis of the vertical and horizontal relations between selected indicators characterized financial decentralization and local

autonomy in SR we used correlation matrices, multiple regression models, Granger causality tests and VAR models (Vector Autoregressive Models). The analysis of the correlation matrices showed the existence of the essential relationship between indicators characterized financial decentralization and local autonomy on the vertical and horizontal levels, application of Granger causality tests outlined the character of causality between these variables, nevertheless use of the multiple regression for the analysis of these relations is related to the problem of multi collinearity of the indicators. That is why we considered the application of VAR model for Slovakia and analyzed the joint effects of changes in indicators characterized financial decentralization and local autonomy on the vertical and horizontal levels in SR for long-time period.

References:

- Alesina A., Ardagna S., Perotti R., Schiantarelli, F. 2002. Fiscal Policy, Profits and Investment. *American Economic Review* 92, 571-589.
- Alesina A., Perotti, R. 1997. Fiscal Expansions and Adjustments in OECD Countries. *Economic Policy* 21., 205-248.
- Bahl R.W., Nats S. Public Expenditure Decentralization. In: *Developing Countries//Government and Policy*, No.4. 1986.
- Bahl R., Martinez-Vazquez J. 2006. Sequencing Fiscal Decentralization. World Bank Policy Research Working Paper 3914. World Bank, Washington DC.
- Betson D., Haveman, R. 1981. The role of Income Transfers in Reducing Inequality between and within Regions. In *Economic Transfers in the United States*. University of Chicago Press. Available at: <http://www.nber.org/books/moon84-1>
- Bouckaert G. Nemeč, J. et al. 2008. Public management reforms in Central and Eastern Europe. Budapest, NISPAcee. 2008. ISBN 978-80-89013-41-8.
- Burák E., Nemeč, J. 2016. Optimizing the Slovak Tax Policy and Tax System Performance In: *European Financial Systems 2016. Proceedings of the 13th International Scientific Conference*. Brno. – pp. 65-71. ISBN 978-80-210-8308-0.
- Chodasová Z., 2010. Influence of financial crisis on development organizations in Slovakia. In *Financial crisis, Analysis of consequences of financial crisis and perspectives for further trends*, International Scientific Conference, Copyright SŠ a DS jún 2010, ISBN 978-80-88946-54-0
- Cibáková V. a kolektiv. 2012. *Ekonomika verejného sektora*. Bratislava, Iura Edition. 2012. 356 s. ISBN 978-80-8078-473-7.
- Crook R. 2003. Decentralization and Good Governance. In *Federalism in Changing World: Learning from Each Other*. Montreal: McGill-Queens University Press, 240-259 p.
- Crook R., Manor J. 2000. Democratic Decentralization. OED Working Paper Series. No. 11, World Bank. Washington DC.
- Dostál P. 2008. *Pokročilé metody analýz a modelování v podnikatelství a veřejné správě*. Brno, CERM. 340 s. ISBN 978-80-7204-605-8
- Dreher A. 2006. Power to the People? The Impact of Decentralization on Governance. Swiss Institute for Business Cycle Research (KOF) Working Paper. No. 121. Zurich, January.
- Dubrovina N. 2015. Application of some econometrics models and methods for the analysis of taxes, tax policy and social transfers. In *Problems and prospects of territories' socio-economic development*. International scientific conference. Problems and prospects of territories' socio-economic development : proceedings of the 4th International scientific

- conference, april 29 - may 3, 2015, Opole, Poland. - Opole : Publishing house WSZiA, 2015. ISBN 978-83-62683-62-8, s. 40-44.
- Dubrovina N., Péliová J. 2015. Optimal strategies for tax policy and social policy tools mix. - In European financial systems 2015. International scientific conference. European financial systems 2015 : proceedings of the 12th international scientific conference : June 18-19, 2015 Brno, Czech Republic. - Brno : Masarykova univerzita, 2015. ISBN 978-80-210-7962-5, s. 106-113.
- Dubrovina N., Péliová J., Neubauerová E. 2016. Analysis of the relationship between taxes and social benefits and transfers in the EU. - In European financial systems 2016. International scientific conference. European financial systems 2016 : proceedings of the 13th international scientific conference : June 27-28, 2016 Brno, Czech Republic. - Brno : Masaryk university, 2016. ISBN 978-80-210-8308-0, p. 125-132.
- Dubrovina N., Péliová J., Nestorenko A., Nestorenko, T. The Study of taxation structure by level of government in the EU countries. In Medzinárodné vzťahy 2016: aktuálne otázky svetovej ekonomiky a politiky. Medzinárodná vedecká konferencia. Medzinárodné vzťahy 2016 : aktuálne otázky svetovej ekonomiky a politiky : zborník príspevkov zo 17. medzinárodnej vedeckej konferencie : Zámok Smolenice, 1. - 2. december 2016. - Bratislava : EKONÓM publishing, 2016. ISBN 978-80-225-4365-1, pp. 231-239 online.
- Dubrovina N., Neubauerová E. Issledovanie tendencij nalogovych postuplenij v stranach ES. In Osvita i suspil'stvo : mižnarodnij zbirnik naukovich prac'. - Berdjansk : Berdjanskij deržavnij pedagogičnij universitet, 2016. ISBN 978-617-7291-80-9, s. 235-246 CD-ROM.
- Dubrovina N., Neubauerová E. 2017. Spatial autocorrelation and spatial regimes of the tax and fiscal power in the regions and districts in SR. In Modelirovanije processov upravlenija v informacionnoj ekonomike. - Berdjansk : Izdatel' Tkačuk A. V., 2017. ISBN 978-80-89654-37-6, s. 387-394, 417-418.
- Dubrovina N. 2017. Statistical analysis of the tax and fiscal disparities in Slovakia on the regional and local level. In EDAMBA 2017 : knowledge and skills for sustainable development: the role of economics, business, management and related disciplines. International scientific conference. EDAMBA 2017 : conference proceedings : knowledge and skills for sustainable development: the role of economics, business, management and related disciplines : [20th] international scientific conference for doctoral students and post-doctoral scholars : University of Economics in Bratislava, Slovak Republic, 4 - 6 april 2017. - Bratislava : Publishing House EKONÓM, 2017. ISBN 978-80-225-4429-0, pp. 88-98 online.
- Dubrovina N., Neubauerová, E. 2018. The Financial Power Maximization Problem for the Regions As One of the Tasks of Optimal Taxes and Transfers System in SR. In Informacionnaja ekonomika: etapy razvitija, metody upravlenija, modeli : monografija. - Charkov : VŠEM - CHNEU im. S. Kuzneca, 2018. ISBN 978-80-89654-45-1, s. 634-647.
- Dubrovina N. A., Neubauerová E., Kolupaieva I. V., Borysova, A. O., Shabanov, R. I. Exploring the Nexus Between Tax Revenue Trends and Social Contributions Development in European Union Countries. - In Financial and Credit Activity: Problems of Theory and Practice. - Kharkiv : Kharkiv institute SHEI. ISSN 2310-8770, 2019, vol. 2, no. 29, pp. 498-508.
- Dubrovina N., Neubauerová E., Fabuš, M., Tulai, O. The evaluation of indices of public finance distribution on central and local levels for EU countries // Journal of European Economy. Vol. 18. No.4 (71). 2019. pp. 454-465. ISSN 2519-4070.
- Fabus M., Dubrovina N., Guryanova L., Chernova N., Zyma O. Strengthening financial decentralization: driver or risk for sustainable socio-economic development of territories? In Entrepreneurship and Sustainability Issues. Volume 7 Number 2 (December). pp. 875-890. ISSN 2345-0282 (online) <http://jssidoi.org/jesi/2019> [http://doi.org/10.9770/jesi.2019.7.2\(6\)](http://doi.org/10.9770/jesi.2019.7.2(6))

- Falzon M., Peretti-Stahl M.-P., Verdier A. 2002. Local finance in the fifteen countries of the European Union. Paris. Dexia. Second Edition. 2002. 312 p. ISBN 2-911065-14-X.
- Fisher R. 2007. State and local public finance. Thomson. Mason. USA. 2007. 716 p. ISBN 978-0-324-29155-1.
- Goñi E., López J.H., Servén, L. 2008. Fiscal Redistribution and Income Inequality in Latin America. Policy Research Working Paper 4487. Washington DC, World Bank.
- Halická M., Brunovský, P., Jurča, P. 2009. Optimálne riadenie. Bratislava. EPOS. 2009. 204 s. ISBN 978-80-8057-793-3.
- Hamalová M., Belajová, A., Gecíkova, I., Papcunová, V. 2014. Teoria, riadenie a organizácia verejnej správy. Bratislava. Wolters Kluwer. VSEMVS. 2014. 454 s. ISBN 978-80-8168-140-0.
- Harris R., Sollis, R. 2003. Applied Time Series Modelling and Forecasting. England. Wiley. 302 p. ISBN 0-470-84443-4.
- Hatrák M. 2007. Ekonometria. Bratislava, Ekonomia. 2007. 504 s. ISBN 978-80-8078-150-7.
- Klimešová L. 2014. Daňová optimalizace. Praha. European Business School. 248 s. ISBN 978-80-87974-06-3.
- Kozovsky D. Otvorené otázky fiškálnej decentralizácie v SR. In: Decentralizácia verejnej správy Slovenskej republiky – otvorené otázky. Zborník príspevkov. Bratislava. 2013.
- Luebker M. 2004. Globalization on and perceptions of social inequality. In International Labour Review, Vol. 143, No. 1-2, pp. 91-128
- Luebker M. 2011. The impact of taxes and transfers on inequality. In TRAVAIL Policy Brief No. 4, ILO, Switzerland, pp. 1-8.
- Maaytová A., Ochrana F., Pavel J. 2015. Verejné finance v teorii a praxi. Praha, Grada Publishing. 208 s. ISBN 978-80-247-5561-8.
- Mahler V.A., Jesuit, D.K. 2006. Fiscal redistribution on in the developed countries: New insights from the Luxembourg Income Study. In Socio-Economic Review, Vol. 4, No. 3, pp. 483-511
- Markowska-Bzducha E. 2006. Samodzielność finansowa samorządów terytorialnych w dwudziestu pięciu krajach Unii Europejskiej. In: Fundusze Europejskie. Nr 6(13). 2006. – S.18-21.
- Minea A., Villeu P. Threshold Effects in Monetary and Fiscal Policies in a Growth Model: Assessing the Importance of the Financial System. Journal of Macroeconomics 31, 304-319.
- Miszczuk A., Miszczuk M., Žuk K. 2007. Gospodarka samorządu terytorialnego. Warszawa. PWN. 2007. 220 s. ISBN 978-83-01-15225-3.
- Neubauerová E., Dubrovina N. 2011. Implikácia teórie fiškálneho federalizmu v podmienkach Slovenskej republiky. In Financie a riziko : zborník príspevkov z XIII. ročníka medzinárodnej vedeckej konferencie, ktorá sa konala 28. novembra 2011 na pôde Ekonomickej univerzity v Bratislave pod záštitou rektora EU v Bratislave Dr. h. c. prof. Ing. Rudolfa Siváka, PhD. [elektronický zdroj]. - Bratislava : Vydavateľstvo EKONÓM, 2011. ISBN 978-80-225-3278-5, s. 120-129. ITMS 26240120032.
- Neubauerová E., Švarc J., Dubrovina N. Optimalizácia finančného systému územnej samosprávy v kontexte hospodárskej krízy. In Financie a riziko : zborník príspevkov z XI. ročníka medzinárodnej vedeckej konferencie. - Bratislava : Vydavateľstvo EKONÓM, 2009. ISBN 978-80-225-2867-2, s. 284-293.
- Neubauerová E., Dubrovina N. 2015. The Main features of tax systems, social contributions and social transfers development in EU countries. - In Finance and risk 2015. International scientific conference. Finance and risk 2015 : proceedings of the 17th international scientific conference : 23. - 24. november 2015, Bratislava, Slovak Republic. - Bratislava : Publishing house EKONÓM, 2015. ISBN 978-80-225-4218-0, s. 181-190.
- Neubauerová E., Dubrovina N., Péliová J. 2015. Optimalizácia daňovo-transferového mechanizmu v Slovenskej republike v kontexte krízových vplyvov. In Social'no-ekonomični

- problemi prostorovogo rozvitku : monografija. - Bergdjans`k : O. V. Tkačuk, 2015. ISBN 978-617-7291-04-5, s. 33-40.
- Nižňanský V., Cibáková V., Hamalová M. 2014. Tretia etapa decentralizácie verejnej správy na Slovensku. Wolters Kluwer. VSEMVVS. 2014. 231 s. ISBN 978-80-8168-138-7.
- Ochotnický, P. 2012. Fiškálna udržateľnosť. Bratislava, Iura Edition. 2012. 134 s. ISBN 978-80-8078-538-3.
- Ochotnický P. a kol. 2012. Analýza a prognóza vo financiách. Bratislava, Ekonomia. 2012. 197 s. ISBN 978-80-8078-484-3.
- Ochrana F., Pavel J., Vitek L. 2010. Verejný sektor a verejné financie. Praha. Grada Publishing. 264 s. ISBN 978-80-247-3228-2.
- OECD 2012, "Income inequality and growth: The role of taxes and transfers", OECD Economics Department Policy Notes, No. 9. January 2012.
- Owsiak S. 2005. Finanse publiczne. Teoria i praktyka. Warszawa. PWN. 2005.838 s. ISBN 83-01-14411-4.
- Pauhofova I. a kolektiv. 2013. Paradigmy zmien v 21 storoci. Európa, Slovensko – súvislosti globálneho ekonomického a mierového potenciálu. Bratislava, 2013.
- Prud'homme R. 1995. The Dangers of Decentralization. World Bank Research Observer 10. No.2.
- Richter Ch., Paparas D. 2013. Tax and Spend, Spend and Tax, Fiscal Synchronization or Institutional Separation? Examining of the Case of Greece. In Working Paper. International Network for Economic Research. Available at: www.infer-research.net
- Schultzová A. a kolektiv. 2009. Daňovníctvo: daňová teória a politika. Bratislava. Iura Edition. 2009. 260 s. ISBN 978-80-8078-407-2.
- Shah A., Shah S. 2006. The New Vision of Local Governance and Evolving Roles of Local Governments. In Local Governance in Developing Countries. Washington, DC. World Bank.
- Sivák R. a kol. 2007. Verejne financie. Bratislava. Ekonomia. 2007. 312 s. ISBN 978-80-8078-094-4.
- Tanzi V. 2001. Pitfalls on the Road to Fiscal Decentralization. Working Paper. No. 19. Carnegie Endowment for International Peace, Washington DC.
- Taxation Trends in the European Union. Data for the EU Member States, Iceland and Norway. 2014. Available at: <http://ec.europa.eu/taxtrends>
- Tiebout Ch. 1956. A Pure Theory of Local Expenditures. Journal of Political Economy 64, issue 5.
- Tirunen M., Radvanský M. 2009. Trendy regionálnych disparít Slovenska. Bratislava. 2009. 180 s. ISBN 978-80-7144-176-2.
- Treisman D. 2000. Decentralization and the Quality of Government. Department of Political Science, University of California at Los Angeles.
- Výrostová E. 2010. Regionalna ekonomika a rozvoj. Bratislava, Iura Edition. 352 s.
- White S. 2011. Government Decentralization in 21 st Century. A literature review. CSIS. Center for Strategic & International Studies. – 26 p.
- Wu X., Perloff J., Golan A. 2006. Effects of taxes and other Government Policies on Income Distribution and Welfare. In University of California, Berkeley. 2006. Available at: <http://are.berkeley.edu/~perloff/PDF/tax.pdf>

Appendix

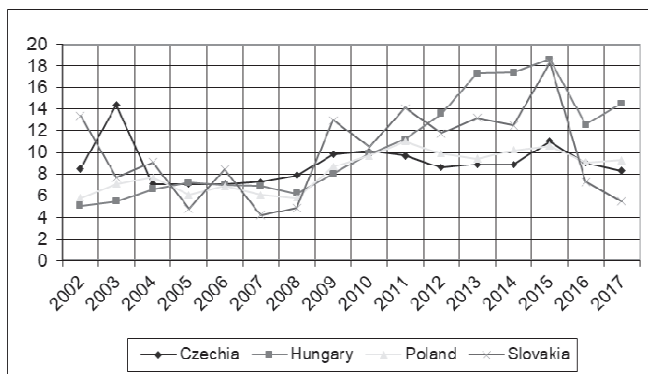


Fig. A.1. The dynamics of the indicators V1_C for the Visegrad countries

Source: own statistical elaboration in Excel

Table A.1.

Correlations between indicators V1_C for V4 countries

	VIC_CZ	VIC_HU	VIC_PL	VIC_SK
VIC_CZ	1	0,12	0,32	0,36
VIC_HU	0,12	1	0,81	0,51
VIC_PL	0,32	0,81	1	0,63
VIC_SK	0,36	0,51	0,63	1

Source: own statistical elaboration in Excel

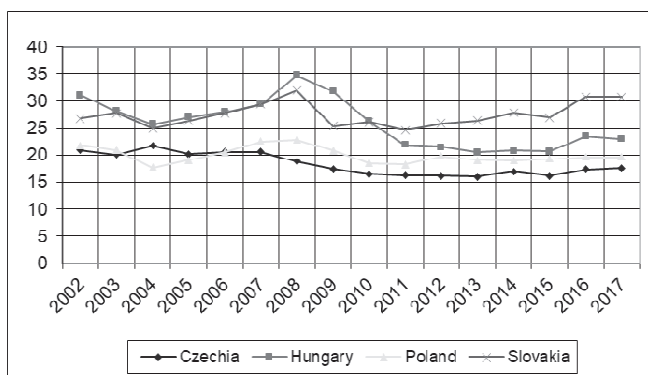


Fig.A.2 The dynamics of the indicators V2_C for the Visegrad countries

Source: own statistical elaboration in Excel

Table A.2.

Correlations between indicators V2_C for V4 countries

	V2C_CZ	V2C_HU	V2C_PL	V2C_SK
V2C_CZ	1	0,62	0,37	0,1
V2C_HU	0,62	1	0,74	0,26
V2C_PL	0,37	0,74	1	0,56
V2C_SK	0,1	0,26	0,56	1

Source: own statistical elaboration in Excel

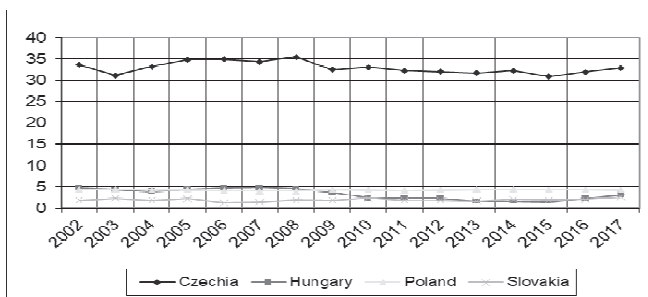


Fig. A.3. The dynamics of the indicators V3_C for the Visegrad countries

Source: own statistical elaboration in Excel

Table A.3.

Correlations between indicators V3_C for V4 countries

	V3C_CZ	V3C_HU	V3C_PL	V3C_SK
V3C_CZ	1	0,73	-0,66	-0,29
V3C_HU	0,73	1	-0,38	-0,27
V3C_PL	-0,66	-0,38	1	0,3
V3C_SK	-0,29	-0,27	0,3	1

Source: own statistical elaboration in Excel

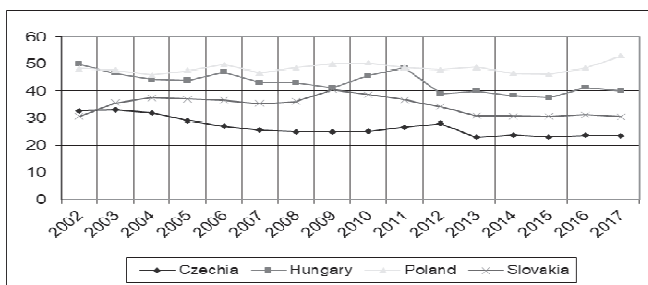


Fig. A.4. The dynamics of the indicators V4_C for the Visegrad countries

Source: own statistical elaboration in Excel

Table A.4.

Correlations between indicators V4_C for V4 countries

	V4C_CZ	V4C_HU	V4C_PL	V4C_SK
V4C_CZ	1	0,66	-0,3	0,27
V4C_HU	0,66	1	0,1	0,39
V4C_PL	-0,3	0,1	1	0,06
V4C_SK	0,27	0,39	0,06	1

Source: own statistical elaboration in Excel

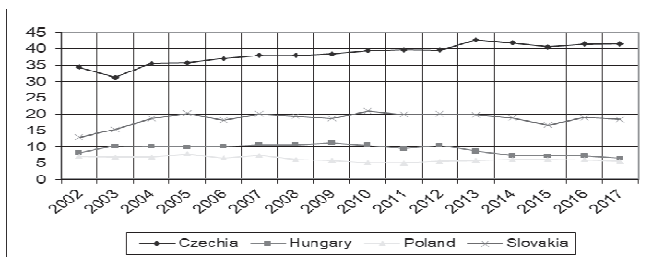


Fig. A.5. The dynamics of the indicators V5_C for the Visegrad countries

Source: own statistical elaboration in Excel

Table A.5.

Correlations between indicators V4_C for V4 countries

	V5C_CZ	V5C_HU	V5C_PL	V5C_SK
V5C_CZ	1	-0,5	-0,63	0,51
V5C_HU	-0,5	1	0,16	0,31
V5C_PL	-0,63	0,16	1	-0,33
V5C_SK	0,51	0,31	-0,33	1

Source: own statistical elaboration in Excel

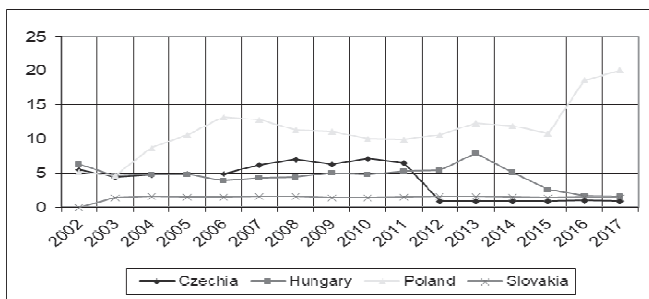


Fig. A.6 The dynamics of the indicators W3_L for the Visegrad countries

Source: own statistical elaboration in Excel

Table A.6.

Correlations between indicators W3_L for V4 countries

	W3L_CZ	W3L_HU	W3L_PL	W3L_SK
W3L_CZ	1	0,32	-0,45	-0,14
W3L_HU	0,32	1	-0,75	-0,12
W3L_PL	-0,45	-0,75	1	0,29
W3L_SK	-0,14	-0,12	0,29	1

Source: own statistical elaboration in Excel

Table A.7.

Correlations between indicators W4_L for V4 countries

	W4L_CZ	W4L_HU	W4L_PL	W4L_SK
W4L_CZ	1	-0,4	-0,06	0,65
W4L_HU	-0,4	1	-0,02	-0,5
W4L_PL	-0,06	-0,02	1	0
W4L_SK	0,65	-0,5	0	1

Source: own statistical elaboration in Excel

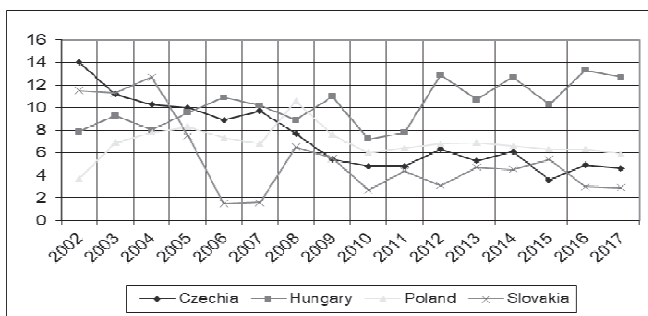


Fig.A.7. The dynamics of the indicators W4_L for the Visegrad countries

Source: own statistical elaboration in Excel

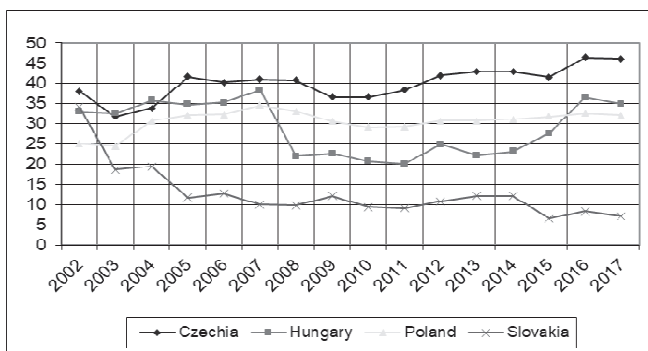


Fig.A.8. The dynamics of the indicators W5_L for the Visegrad countries

Source: own statistical elaboration in Excel

Table A.8.

Correlations between indicators W4_L for V4 countries

	W5L_CZ	W5L_HU	W5L_PL	W5L_SK
W5L_CZ	1	0,1	0,64	-0,49
W5L_HU	0,1	1	0,14	0,25
W5L_PL	0,64	0,14	1	-0,71
W5L_SK	-0,49	0,25	-0,71	1

Source: own statistical elaboration in Excel

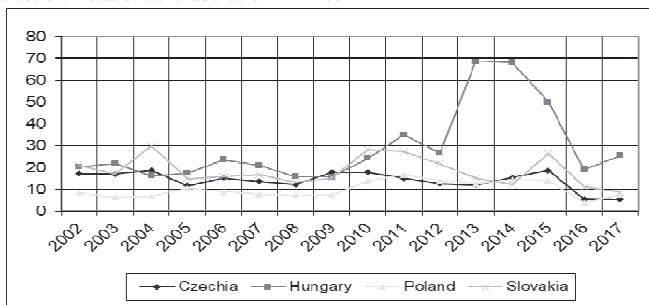


Fig.A.9. The dynamics of the indicators W6_L for the Visegrad countries

Source: own statistical elaboration in Excel

Table A.9.

Correlations between indicators W6_L for V4 countries

	W6L_CZ	W6L_HU	W6L_PL	W6L_SK
W6L_CZ	1	0,06	0,32	0,7
W6L_HU	0,06	1	0,62	-0,04
W6L_PL	0,32	0,62	1	0,46
W6L_SK	0,7	-0,04	0,46	1

Source: own statistical elaboration in Excel

Table A.10.

Correlations between selected indicators for Czech Republic

	V1C_CZ	V2C_CZ	V3C_CZ	V4C_CZ	V5C_CZ	W1L_CZ	W3L_CZ	W4L_CZ	W5L_CZ	W6L_CZ	W56L_CZ	W34L_CZ	V12C_CZ	V45C_CZ
V1C_CZ	1	-0.3	-0.72	0.13	-0.23	-0.05	-0.07	-0.14	-0.44	0.3	-0.19	-0.13	0.54	-0.18
V2C_CZ	-0.3	1	0.59	0.71	-0.79	0.34	0.4	0.89	-0.41	0.19	-0.31	0.82	0.64	0
V3C_CZ	-0.72	0.59	1	0.14	-0.27	0.54	0.57	0.45	0.05	-0.1	-0.08	0.6	-0.06	-0.24
V4C_CZ	0.13	0.71	0.14	1	-0.9	0.27	0.33	0.85	-0.7	0.41	-0.41	0.76	0.73	0.43
V5C_CZ	-0.23	-0.79	-0.27	-0.9	1	-0.45	-0.5	-0.85	0.75	-0.44	0.43	-0.85	-0.88	-0.01
W1L_CZ	-0.05	0.34	0.54	0.27	-0.45	1	1	0.3	-0.57	0.42	-0.2	0.71	0.25	-0.31
W3L_CZ	-0.07	0.4	0.57	0.33	-0.5	1	1	0.36	-0.6	0.43	-0.22	0.76	0.3	-0.29
W4L_CZ	-0.14	0.89	0.45	0.85	-0.85	0.3	0.36	1	-0.47	0.28	-0.27	0.88	0.67	0.2
W5L_CZ	-0.44	-0.41	0.05	-0.7	0.75	-0.57	-0.6	-0.47	1	-0.8	0.25	-0.63	-0.71	-0.05
W6L_CZ	0.3	0.19	-0.1	0.41	-0.44	0.42	0.43	0.28	-0.8	1	0.39	0.42	0.41	0.02
W56L_CZ	-0.19	-0.31	-0.08	-0.41	0.43	-0.2	-0.22	-0.27	0.25	0.39	1	-0.3	-0.43	-0.05
W34L_CZ	-0.13	0.82	0.6	0.76	-0.85	0.71	0.76	0.88	-0.63	0.42	-0.3	1	0.62	-0.01
V12C_CZ	0.54	0.64	-0.06	0.73	-0.88	0.25	0.3	0.67	-0.71	0.41	-0.43	0.62	1	-0.15
V45C_CZ	-0.18	0	-0.24	0.43	-0.01	-0.31	-0.29	0.2	-0.05	0.02	-0.05	-0.01	-0.15	1

Table A.11.

Correlations between selected indicators for Hungary

	V1C_HU	V2C_HU	V3C_HU	V4C_HU	V5C_HU	W1L_HU	W3L_HU	W4L_HU	W5L_HU	W6L_HU	W56L_HU	W34L_HU	V12C_HU	V45C_HU
V1C_HU	1	-0.85	-0.92	-0.75	-0.67	-0.26	-0.18	0.55	-0.36	0.81	0.75	0.45	0.34	-0.85
V2C_HU	-0.85	1	0.84	0.48	0.59	0.15	0.1	-0.41	0.16	-0.7	-0.71	-0.35	0.2	0.6
V3C_HU	-0.92	0.84	1	0.61	0.52	0.1	0.05	-0.36	0.53	-0.74	-0.6	-0.35	-0.21	0.68
V4C_HU	-0.75	0.48	0.61	1	0.36	0.29	0.28	-0.73	0.16	-0.47	-0.46	-0.56	-0.55	0.95
V5C_HU	-0.67	0.59	0.52	0.36	1	0.64	0.51	-0.43	-0.16	-0.5	-0.62	-0.08	-0.19	0.63
W1L_HU	-0.26	0.15	0.1	0.29	0.64	1	0.96	-0.44	-0.5	0.14	-0.05	0.24	-0.22	0.45
W3L_HU	-0.18	0.1	0.05	0.28	0.51	0.96	1	-0.42	-0.49	0.25	0.07	0.28	-0.16	0.41
W4L_HU	0.55	-0.41	-0.36	-0.73	-0.43	-0.44	-0.42	1	0.16	0.27	0.37	0.75	0.3	-0.75
W5L_HU	-0.36	0.16	0.53	0.16	-0.16	-0.5	-0.49	0.16	1	-0.44	-0.07	-0.18	-0.39	0.08
W6L_HU	0.81	-0.7	-0.74	-0.47	-0.5	0.14	0.25	0.27	-0.44	1	0.93	0.46	0.27	-0.56
W56L_HU	0.75	-0.71	-0.6	-0.46	-0.62	-0.05	0.07	0.37	-0.07	0.93	1	0.44	0.13	-0.59
W34L_HU	0.45	-0.35	-0.35	-0.56	-0.08	0.24	0.28	0.75	-0.18	0.46	0.44	1	0.2	-0.49
V12C_HU	0.34	0.2	-0.21	-0.55	-0.19	-0.22	-0.16	0.3	-0.39	0.27	0.13	0.2	1	-0.52
V45C_HU	-0.85	0.6	0.68	0.95	0.63	0.45	0.41	-0.75	0.08	-0.56	-0.59	-0.49	-0.52	1

Source: own statistical elaboration in Excel

Table A.12.

Correlations between selected indicators for Poland

	V1C_PL	V2C_PL	V3C_PL	V4C_PL	V5C_PL	W1L_PL	W3L_PL	W4L_PL	W5L_PL	W6L_PL	W56L_PL	W34L_PL	V12C_PL	V45C_PL
V1C_PL	1	-0.68	0.25	0.12	-0.8	0.14	0.22	-0.29	0.03	0.63	0.54	0.1	0.6	-0.27
V2C_PL	-0.68	1	-0.34	0.05	0.36	-0.11	-0.11	0.17	0.04	-0.48	-0.38	-0.04	0.18	0.23
V3C_PL	0.25	-0.34	1	-0.17	0.02	-0.09	-0.2	-0.47	-0.6	0	-0.36	-0.37	-0.03	-0.19
V4C_PL	0.12	0.05	-0.17	1	-0.49	0.54	0.52	-0.14	0	-0.13	-0.11	0.43	0.2	0.9
V5C_PL	-0.8	0.36	0.02	-0.49	1	-0.14	-0.23	0.11	0.01	-0.46	-0.37	-0.17	-0.67	-0.06
W1L_PL	0.14	-0.11	-0.09	0.54	-0.14	1	0.96	-0.16	0.4	-0.39	-0.08	0.84	0.08	0.54
W3L_PL	0.22	-0.11	-0.2	0.52	-0.23	0.96	1	-0.04	0.6	-0.29	0.12	0.92	0.18	0.48
W4L_PL	-0.29	0.17	-0.47	-0.14	0.11	-0.16	-0.04	1	0.49	-0.17	0.15	0.35	-0.2	-0.1
W5L_PL	0.03	0.04	-0.6	0	0.01	0.4	0.6	0.49	1	-0.05	0.56	0.75	0.08	0
W6L_PL	0.63	-0.48	0	-0.13	-0.46	-0.39	-0.29	-0.17	-0.05	1	0.8	-0.34	0.31	-0.38
W56L_PL	0.54	-0.38	-0.36	-0.11	-0.37	-0.08	0.12	0.15	0.56	0.8	1	0.17	0.31	-0.31
W34L_PL	0.1	-0.04	-0.37	0.43	-0.17	0.84	0.92	0.35	0.75	-0.34	0.17	1	0.09	0.41
V12C_PL	0.6	0.18	-0.03	0.2	-0.67	0.08	0.18	-0.2	0.08	0.31	0.31	0.09	1	-0.11
V45C_PL	-0.27	0.23	-0.19	0.9	-0.06	0.54	0.48	-0.1	0	-0.38	-0.31	0.41	-0.11	1

Source: own statistical elaboration in Excel

Table A.13.

Correlations between selected indicators for Slovakia

	V1C_SL	V2C_SL	V3C_SL	V4C_SL	V5C_SL	W1L_SL	W3L_SL	W4L_SL	W5L_SL	W6L_SL	W56L_SL	W34L_SL	V12C_SL	V45C_SL
V1C_SL	1	-0.61	-0.16	-0.23	-0.27	-0.27	-0.27	0.08	0.12	0.51	0.4	0.05	0.84	-0.29
V2C_SL	-0.61	1	0.2	-0.37	-0.03	0.1	0.1	-0.28	-0.26	-0.7	-0.62	-0.28	-0.09	-0.28
V3C_SL	-0.16	0.2	1	-0.16	-0.01	-0.02	-0.02	0.14	-0.15	-0.16	-0.2	0.14	-0.07	-0.12
V4C_SL	-0.23	-0.37	-0.16	1	0.39	0.3	0.3	0.06	-0.09	0.32	0.15	0.1	-0.53	0.91
V5C_SL	-0.27	-0.03	-0.01	0.39	1	0.78	0.78	-0.59	-0.74	-0.01	-0.49	-0.53	-0.36	0.74
W1L_SL	-0.27	0.1	-0.02	0.3	0.78	1	1	-0.44	-0.81	-0.1	-0.6	-0.34	-0.28	0.58
W3L_SL	-0.27	0.1	-0.02	0.3	0.78	1	1	-0.44	-0.81	-0.1	-0.6	-0.34	-0.28	0.58

W4L_SK	0.08	-0.28	0.14	0.06	-0.59	-0.44	-0.44	1	0.74	0.3	0.67	0.99	-0.09	-0.23
W5L_SK	0.12	-0.26	-0.15	-0.09	-0.74	-0.81	-0.81	0.74	1	0.19	0.78	0.68	-0.02	-0.4
W6L_SK	0.51	-0.7	-0.16	0.32	-0.01	-0.1	-0.1	0.3	0.19	1	0.76	0.3	0.17	0.23
W56L_SK	0.4	-0.62	-0.2	0.15	-0.49	-0.6	-0.6	0.67	0.78	0.76	1	0.64	0.09	-0.12
W34L_SK	0.05	-0.28	0.14	0.1	-0.53	-0.34	-0.34	0.99	0.68	0.3	0.64	1	-0.13	-0.17
V12C_SK	0.84	-0.09	-0.07	-0.53	-0.36	-0.28	-0.28	-0.09	-0.02	0.17	0.09	-0.13	1	-0.56
V45C_SK	-0.29	-0.28	-0.12	0.91	0.74	0.58	0.58	-0.23	-0.4	0.23	-0.12	-0.17	-0.56	1

Source: own statistical elaboration in Excel

Table A.14.

The results of the econometric model for the analysis of the dependence of the share of the subsidies, transfers and investment grants in the expenditure (W3_L) from the share of the capital and current taxes in the revenue W5_L, V5_C

Variable	Czechia					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
V5_C	0,4029	0,1638	2,4596	0,0287	F(3,13)=29.408 p<0.00000	0.9335
W5_L	-0,2167	0,1557	-1,3919	0,1873		
T (time)	-0,3976	0,0994	-4,0003	0,0015		
Variable	Hungary					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
V5_C	0,6189	0,1114	5,5576	0,0001	F(3,13)=77.331 p<0.0000	0.9731
W5_L	-0,0454	0,0358	-1,2691	0,2267		
T (time)	-0,0095	0,0549	-0,173	0,8653		
Variable	Poland					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
V5_C	0,2708	1,0274	0,2635	0,7963	F(3,13)=80.048 p<0.0000	0.9739
W5_L	0,1165	0,259	0,4501	0,6601		
T (time)	0,4749	0,2207	2,1517	0,0508		
Variable	Slovakia					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
V5_C	0,1022	0,0109	9,3852	0	F(3,13)=255.88 p<0.00000	0.9916
W5_L	-0,0293	0,0082	-3,5544	0,0035		
T (time)	-0,0142	0,0143	-0,9968	0,337		

Source: own statistical elaboration in Statistica

Table A.15.

**The results of the econometric model for the analysis of the dependence W4_L
W5_L, W6_L, V1_C**

Variable	Czechia					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
V1_C	0,2004	0,1518	1,3208	0,2112	F(4,12)=209.38 p<0.00000	0.9929
W5_L	0,3296	0,0359	9,187	0		
W6_L	-0,0603	0,0776	-0,7772	0,4521		
T (time)	-0,7991	0,0807	-9,9079	0		
Variable	Hungary					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
V1_C	-0,0118	0,404	-0,0292	0,9772	F(4,12)=162.11 p<0.00000	0.9908
W5_L	0,2199	0,0304	7,2422	0		
W6_L	0,0306	0,061	0,5022	0,6246		
T (time)	0,349	0,268	1,3021	0,2173		
Variable	Poland					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
V1_C	-0,1069	0,3061	-0,3492	0,733	F(4,12)=119.55 p<0.00000	0.9876
W5_L	0,2757	0,049	5,6236	0,0001		
W6_L	-0,0005	0,1204	-0,0046	0,9964		
T (time)	-0,0771	0,1021	-0,755	0,4648		
Variable	Slovakia					
	Estimation for the parameter	Standard deviation for the estimated parameter	t-value	p-level	F-value for the model	R for model
V1_C	-0,0633	0,2254	-0,281	0,7835	F(4,12)=23.269 p<0.00001	0.9411
W5_L	0,3534	0,0984	3,5916	0,0037		
W6_L	0,1147	0,1044	1,0991	0,2933		
T (time)	-0,0553	0,1391	-0,3975	0,698		

Source: own statistical elaboration in Statistica

Table A.16.

Results for Pairwise Granger Causality Tests for variables in case of Slovakia

Pairwise Granger Causality Tests			
Sample: 2003 2017			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Probability
DV3C_SK does not Granger Cause DV12C_SK	13	5,54262	0,03087
DV12C_SK does not Granger Cause DV45C_SK	13	6,27239	0,02299
DV12C_SK does not Granger Cause DW34L_SK	13	6,89778	0,01815
DV12C_SK does not Granger Cause DW4L_SK	13	7,28557	0,01578
DW5L_SK does not Granger Cause DV12C_SK	13	4,37004	0,05216
DV3C_SK does not Granger Cause DV1C_SK	13	4,86224	0,0415
DV1C_SK does not Granger Cause DV45C_SK	13	3,70795	0,07252
DV1C_SK does not Granger Cause DVC5_SK	13	4,84601	0,04181
DV1C_SK does not Granger Cause DW34L_SK	13	5,38298	0,03303

DV1C_SK does not Granger Cause DW4L_SK	13	5,26406	0,03476
DV1C_SK does not Granger Cause DW56L_SK	13	3,06432	0,10279
DV3C_SK does not Granger Cause DV2C_SK	13	4,51183	0,04877
DV2C_SK does not Granger Cause DV45C_SK	13	5,03892	0,03835
DV2C_SK does not Granger Cause DV4C_SK	13	3,27663	0,09131
DV2C_SK does not Granger Cause DVC5_SK	13	3,4301	0,084
DV45C_SK does not Granger Cause DV3C_SK	13	10,3914	0,00597
DVC5_SK does not Granger Cause DV3C_SK	13	4,41021	0,05117
DV3C_SK does not Granger Cause DVC5_SK	13	10,0248	0,00662
DV45C_SK does not Granger Cause DVC5_SK	13	5,14373	0,03662
DV45C_SK does not Granger Cause DW34L_SK	13	5,77602	0,02803
DV45C_SK does not Granger Cause DW4L_SK	13	6,36143	0,02221
DV4C_SK does not Granger Cause DVC5_SK	13	5,14373	0,03662
DVC5_SK does not Granger Cause DW34L_SK	13	7,64927	0,0139
DVC5_SK does not Granger Cause DW4L_SK	13	7,61662	0,01406
DW56L_SK does not Granger Cause DVC5_SK	13	3,41467	0,0847
DW5L_SK does not Granger Cause DVC5_SK	13	5,11462	0,03709
DW3L_SK does not Granger Cause DW34L_SK	13	3,31843	0,08924
DW4L_SK does not Granger Cause DW34L_SK	13	3,31843	0,08924
DW34L_SK does not Granger Cause DW4L_SK	13	3,88608	0,06619
DW5L_SK does not Granger Cause DW34L_SK	13	6,6508	0,01989
DW3L_SK does not Granger Cause DW4L_SK	13	3,88608	0,06619
DW3L_SK does not Granger Cause DW56L_SK	13	4,9918	0,03916
DW5L_SK does not Granger Cause DW4L_SK	13	7,52558	0,01451
DW5L_SK does not Granger Cause DW56L_SK	13	3,93101	0,0647
DW6L_SK does not Granger Cause DW56L_SK	13	3,93101	0,0647

Source: own statistical elaboration in Eviews

Table A.17.

**VAR model for the analysis of the dynamic relations between indicators
DV1C, DV2C, DV4C on the central government level for Slovakia**

Sample (adjusted): 2005 2017		
Included observations: 13 after adjusting endpoints		
Standard errors & t-statistics in parentheses		
	DV1C_SK	DV4C_SK
DV1C_SK(-1)	-0,163843	-0,115861
Std.Dev.	0,26698	0,14824
t-value	(-0.61369)	(-0.78158)
DV1C_SK(-2)	0,170436	-0,220772
Std.Dev.	0,30252	0,16797
t-value	(0,5634)	(-1.31436)
DV4C_SK(-1)	-0,381937	0,147326
Std.Dev.	0,57802	0,32094
t-value	(-0.66077)	(0,45905)
DV4C_SK(-2)	-0,153082	-0,067608

Std.Dev.	0,43691	0,24259
t-value	(-0.35038)	(-0.27869)
C	0,195509	-0,275763
Std.Dev.	0,98141	0,54492
t-value	(0,19921)	(-0.50606)
DV2C_SK	-1,501295	-0,297353
Std.Dev.	0,41425	0,23001
t-value	(-3.62411)	(-1.29278)
R-squared	0,725464	0,406885
Adj. R-squared	0,529366	0,016768
Sum sq. resid	82,09273	25,30866
S.E. equation	3,424549	1,901453
F-statistic	3,699505	0,96042
Log likelihood	-30,42505	-22,77648
Akaike AIC	5,603854	4,427151
Schwarz SC	5,8646	4,687897
Mean dependent	-0,276923	-0,538462
S.D. dependent	4,991852	1,885709
Determinant Residual Covariance		12,28032
Log Likelihood		-53,19439
Akaike Information Criteria		10,02991
Schwarz Criteria		10,5514

Source: own statistical elaboration in Eviews

Table A.18.

**VAR model for the analysis of the dynamic relations between indicators
DV1C, DV2C, DV4C on the central government level for Slovakia**

Sample (adjusted): 2005 2017		
Included observations: 13 after adjusting endpoints		
Standard errors & t-statistics in parentheses		
	DW5L_SK	DV5C_SK
DW5L_SK(-1)	-0,238456	0,060656
Std.Dev.	0,44434	0,13416
t-value	(-0.53665)	0,45212
DW5L_SK(-2)	0,262005	-0,216479
Std.Dev.	0,27444	0,08286
t-value	(0,9547)	(-2.61264)
DV5C_SK(-1)	-0,274383	-0,387569
Std.Dev.	0,6177	0,1865
t-value	(-0.44420)	(-2.07814)

DV5C_SK(-2)	0,261203	-0,506894
Std.Dev.	0,75228	0,22713
t-value	(0,34721)	(-2,23172)
C	-0,4313	-0,266019
Std.Dev.	1,12793	0,34055
t-value	(-0,38238)	(-0,78116)
DW3L_SK	0,718181	6,673962
Std.Dev.	11,135	3,3619
t-value	(0,0645)	(1,98517)
DW4L_SK	0,168893	-0,250854
Std.Dev.	0,4777	0,14423
t-value	(0,35355)	(-1,73928)
R-squared	0,415961	0,804478
Adj. R-squared	-0,168079	0,608956
Sum sq. resids	63,28112	5,7685
S.E. equation	3,247592	0,980519
F-statistic	0,712213	4,114514
Log likelihood	-28,73335	-13,16471
Akaike AIC	5,497438	3,102263
Schwarz SC	5,801641	3,406466
Mean dependent	-0,938462	-0,023077
S.D. dependent	3,004868	1,567989
Determinant Residual Covariance		2,087492
Log Likelihood		-41,67616
Akaike Information Criteria		8,565563
Schwarz Criteria		9,17397

Source: own statistical elaboration in Eviews

CHAPTER 11

Cross-border transport and logistics cluster as an effective form of cooperation between the regions of Ukraine and Visegrad Four

At the present stage, one of the targets of the national transport strategies of Ukraine and the Visegrad Four countries is integration into the European transport space, increasing the volume of exports of transport services and the realization of transit potential in the system of international transport corridors. To achieve this goal it is necessary to implement and develop a cluster approach to traffic management and the formation of transport and logistics systems that promote innovative development, increase competitiveness and modernize the economy of the regions. At the same time, the strategic vector of transformation of transport and logistics systems in the border regions of Ukraine and the Visegrad Four countries, which correspond to political, socio-economic, technological, environmental realities, is the integration of transport and logistics infrastructure into a transport and logistics cluster (Kwilinski & Trushkina, 2019; Ivanov, Dzwigol, Trushkina, 2019; Trushkina, 2019a; Trushkina, 2019b; Ivanov, Liashenko, Trushkina, 2020; Liashenko, Ivanov, Trushkina, 2021; Trushkina, Dzwigol, Kwilinski, 2021; Pushak & Trushkina, 2021; Liashenko, Osadcha, Trushkina, 2021).

Consider the creation of a cross-border transport and logistics cluster, which covers the adjacent border areas of Ukraine (Volyn, Zakarpattia and Lviv regions) and the Visegrad Four (Poland, Slovakia, Hungary). The cluster includes

enterprises in the field of transport and logistics, innovation infrastructure (technology parks, business incubators, industrial parks, etc.), state, regional and local authorities, NGOs, research institutions and centers, higher education institutions that are geographically concentrated in cross-border regions.

1. Analytical assessment of the current state of development transport and logistics systems of the Visegrad Four

According to the United Nations Economic Commission for Europe, rail freight in Poland increased by 26.1% in 2000-2019, and in Hungary by 5.3%. However, the volume of freight transport by rail in Slovakia decreased during this period by 11.6%. Rail freight turnover in Hungary increased by 31.3%, and in Poland – by 1.1%. At the same time, the freight turnover of railway transport in Slovakia decreased by 24.5% (Table 11.1).

Table 11.1

Dynamics of freight volumes and freight turnover of railway transport in the Visegrad Four countries

Years	Cargo transportation, <i>thousand tons</i>			Freight turnover, <i>million tkm</i>		
	Poland	Slovakia	Hungary	Poland	Slovakia	Hungary
2000	185334	54177	49625	54015	11234	8093
2005	269553	49310	48706	49972	9463	8530
2010	216767	44327	45794	48705	8105	8809
2013	232596	48401	49085	50881	8494	9722
2014	227820	50997	50593	50073	8829	10158
2015	224320	47358	50333	50603	8439	10010
2016	222523	50727	50047	50650	9111	10528
2017	239501	47790	52682	54797	8486	11053
2018	249260	50931	52471	59388	8691	10584
2019	233744	47869	52270	54584	8480	10625

Source: compiled on the basis of information materials from the statistical database of the United Nations Economic Commission for Europe.

During 2000-2019, the volume of road freight transport in Poland increased by 39.1%. However, the value of this indicator decreased in Hungary by 22.4%, and in Slovakia - by 0.9%. At the same time, it should be noted that the freight turnover in these countries of the Visegrad Four, on the contrary, has increased.

Thus, the freight turnover of road transport in Poland increased 4.8 times, in Hungary – 2.8, and in Slovakia – 2.4 times (Table 11.2).

Table 11.2

**Dynamics of freight volumes and freight turnover of road transport
in the Visegrad Four countries**

Years	Cargo transportation, <i>thousand tons</i>			Freight turnover, <i>million tkm</i>		
	Poland	Slovakia	Hungary	Poland	Slovakia	Hungary
2000	1083071	188901	261019	72842	14340	19123
2005	863396	195405	197727	111826	22550	13243
2010	1216083	143244	199848	202308	27575	33721
2013	1300608	129032	169211	247594	30147	35818
2014	1300382	142608	193112	250931	31358	37517
2015	1264960	147225	198743	260713	33525	38352
2016	1313657	156279	197762	290749	36106	40006
2017	1501811	176790	188259	335220	35362	39687
2018	1390184	177222	206669	315874	35590	37948
2019	1506450	187161	202631	348952	33888	36951

Source: compiled on the basis of information materials from the statistical database of the United Nations Economic Commission for Europe.

According to the analysis of the statistical database of the United Nations Economic Commission for Europe, the volume of river freight transport in Slovakia increased 4 times in 2000-2019, and in Hungary – 1.9 times. But the volume of river freight transport in Poland decreased by 73.4%. During the study period, the turnover of river transport in Poland decreased by 92.8%, in Slovakia – by 32.2%. The value of this indicator in Hungary, on the contrary, increased 2.4 times (Table 11.3).

It should be noted that the increase in river freight transport is due to the main provisions of the Paris Agreement under the UN Framework Convention on Climate Change to regulate measures to reduce global carbon dioxide emissions. In this regard, the UN is considering ways to reduce the negative impact of freight on nature. One of them, according to the UN Economic Commission for Europe, may be the diversification of inland waterway transport. The United Nations is proposing that the countries of the world (Austria, Hungary, Slovakia, France and Croatia, the share of inland waterway freight is less than 10%, in Bulgaria, Germany, Romania and Serbia it exceeds 10%, and in the Netherlands is approaching 40%) attention to the development of water transport as the most profitable from an economic point of view and safer from an environmental point

of view. Modernization of port infrastructure, expansion of the network of freight routes will create new jobs, ensure sustainable development of the transport system in the context of the European Green Course.

Table 11.3

**Dynamics of freight volumes and freight turnover of river transport
in the Visegrad Four countries**

Years	Cargo transportation, <i>thousand tons</i>			Freight turnover, <i>million tkm</i>		
	Poland	Slovakia	Hungary	Poland	Slovakia	Hungary
2000	10433	1607	4422	1173	1383	882
2005	9607	2350	8413	1277	88	2111
2010	2820	10103	9952	130	1189	2393
2013	3185	8107	7857	91	1006	1924
2014	5899	7010	7825	110	905	1811
2015	4907	5721	8163	83	741	1824
2016	3821	6758	8224	105	903	1975
2017	3412	6896	8414	108	933	1992
2018	2988	5567	6926	119	778	1608
2019	2779	6430	8592	84	937	2120

Source: compiled on the basis of information materials from the statistical database of the United Nations Economic Commission for Europe.

The volume of export transactions in trade in goods of Ukraine with Poland increased in 2010-2020 by 83.3%, and import – by 49.1%. The balance of export-import operations is negative. At the same time, the ratio of imports and exports decreased: if in 2010 the value of this indicator was 1.56 times, in 2020 - 1.27 times. The share of exports of goods increased by 3.2 percentage points or from 3.5 to 6.7% of world foreign trade in goods, and imports - by 3 percentage points or from 4.6 to 7.6%.

Exports of goods from Hungary increased by 47.5% and imports – by 15.3%. The balance of export-import operations is also negative and decreased by 62%. The ratio of imports to exports decreased: if in 2010 the value of this indicator was 1.42 times, then in 2020 – 1.11 times. The share of exports of goods increased by 0.9 percentage points or from 1.7 to 2.6% of world foreign trade in goods, while imports, by contrast, decreased by 1.7 percentage points or from 2 to 0.3%.

During 2010-2020, the volume of export transactions in trade in goods of Ukraine with Slovakia decreased by 20.8%, and imports – by 161.5%. The balance of export-import operations during this period decreased by 81.8%: in 2010 it

amounted to 126.7 million US dollars, and in 2020 –696.6 million US dollars. At the same time, in 2010 exports exceeded imports by 1.26 times. And in 2020, imports exceeded exports by 2.56 times. The share of exports of goods decreased by 0.2 percentage points or from 1.1 to 0.9% of world foreign trade in goods, while imports increased by 1.4 percentage points or from 0.7 to 2.1% (Table. 11.4).

Table 11.4

**Geographical structure of foreign trade in goods with the
Visegrad Four countries**

Years	Exports, <i>million dollars US</i>			Imports, <i>million dollars US</i>		
	Poland	Slovakia	Hungary	Poland	Slovakia	Hungary
2010	1785.6	563.9	857.0	2778.1	437.2	1213.8
2011	2791.8	833.7	1327.9	3164.2	594.3	1279.8
2012	2571.0	665.2	1507.1	3545.3	580.1	1158.6
2013	2547.8	752.8	1556.9	4068.7	663.7	1400.5
2014	2644.7	670.2	1509.9	3070.8	426.9	1463.9
2015	1977.3	468.5	909.7	2324.0	346.3	1608.5
2016	2200.0	471.4	1053.1	2693.3	434.9	802.0
2017	2724.6	656.0	1326.4	3453.8	508.7	1152.3
2018	3257.2	863.9	1646.0	3641.9	525.9	1260.2
2019	3295.8	709.6	1562.8	4109.1	651.8	1251.1
2020	3272.7	446.8	1263.8	4140.9	1143.4	1399.5

Source: compiled on the basis of information and analytical materials of the State Statistics Service of Ukraine.

During the period under study, there is a growing trend in the volume of import transactions in foreign trade in services with the Visegrad Four. Thus, the volume of exports in the structure of foreign trade in services of Ukraine with Poland increased in 2020 compared to 2010 by 4.6 times. However, the value of this indicator in Hungary, by contrast, decreased by 12.8%, and in Slovakia – by 9.3%. The volume of imports in the structure of foreign trade in services of Ukraine with Poland increased by 34.9%, in Slovakia – by 30.2%, in Hungary – by 15.9%. The balance of export-import operations in Slovakia and Hungary is positive, but decreased by 31.5% and 21.6%, respectively. At the same time, the balance of export-import operations in Poland increased 4.5 times: in 2010 it had a negative value, and in 2020 – already positive (Table 11.5).

According to the State Statistics Service of Ukraine, the volume of exports of transport services of Ukraine with Poland increased in 2020 compared to 2010 by 2.5 times, and with Slovakia – by 1.3 times. The volume of imports of transport

services from these countries of the Visegrad Four increased by 2 and 1.7 times. The balance of export-import operations increased 16.6 and 1.2 times, respectively. At the same time, the volume of exports of transport services of Ukraine with Hungary decreased by 42.1%, imports – by 17.5%, and the balance of export-import operations – by 48.5% (Table 11.6).

Table 11.5

Geographical structure of foreign trade in services with the Visegrad Four countries

Years	Exports, <i>million dollars US</i>			Imports, <i>million dollars US</i>		
	Poland	Slovakia	Hungary	Poland	Slovakia	Hungary
2010	90.5	50.6	223.8	141.1	18.2	52.3
2011	132.4	49.4	83.8	142.5	33.6	101.0
2012	140.3	38.0	76.5	175.4	27.6	107.9
2013	217.9	50.0	183.4	167.5	30.8	85.1
2014	202.8	41.4	98.8	148.4	46.0	65.4
2015	181.9	26.8	92.3	98.7	101.8	50.0
2016	220.6	27.1	113.3	138.6	109.2	51.7
2017	296.3	40.9	147.2	150.2	108.3	35.5
2020	417.9	45.9	195.1	190.3	23.7	60.6

Source: compiled on the basis of information and analytical materials of the State Statistics Service of Ukraine.

Table 11.6

Export-import operations for the provision of transport services of Ukraine with the Visegrad Four countries

Country	Exports, <i>thousand dollars US</i>		Imports, <i>thousand dollars US</i>	
	2010	2020	2010	2020
Poland	48072.5	118653.0	46510.3	92784.6
Slovakia	28261.2	36836.0	7773.0	12868.8
Hungary	53623.1	31033.1	11088.5	9147.0

Source: compiled on the basis of information and analytical materials of the State Statistics Service of Ukraine.

According to statistical analysis, there is a negative trend in financing the economy of the Visegrad Four countries through direct investment from Ukraine. Thus, the share of direct investment from Ukraine in the Polish economy in 2019 was 0.13% of the total volume of these investments (in 2010 – 0.73%), and

Hungary – 0.26%. And in the development of the Slovak economy does not receive investment (Table 11.7).

Table 11.7

**Dynamics of the volume of direct investments from Ukraine
in the economy of the Visegrad Four countries, million dollars US**

Years	Poland	Slovakia	Hungary
2010	47.0	-	0.1
2011	46.3	-	0.1
2012	52.3	-	4.2
2013	56.4	-	17.3
2014	53.4	-	16.0
2015	50.2	-	14.6
2016	48.7	-	14.9
2017	6.7	-	17.5
2018	6.7	-	16.8
2019	8.1	-	16.1

Source: compiled on the basis of information and analytical materials of the State Statistics Service of Ukraine.

The share of direct investment from Poland in the economy of Ukraine in 2019 was 2.45% of the European volume of these investments, from Hungary – 1.35%, from Slovakia – 0.24% (Table 11.8).

Table 11.8

**Dynamics of the volume of direct investments from the Visegrad Four
countries in the economy of Ukraine, million dollars US**

Years	Poland	Slovakia	Hungary
2010	913.0	62.1	697.6
2011	834.3	71.1	678.5
2012	897.2	70.4	684.3
2013	819.8	99.7	685.9
2014	708.0	74.2	466.4
2015	679.4	72.2	333.7
2016	509.1	71.1	498.1
2017	571.3	74.9	511.1
2018	631.7	66.5	565.1
2019	693.7	69.1	380.7

Source: compiled on the basis of information and analytical materials of the State Statistics Service of Ukraine.

Thus, in the future it is necessary to pay considerable attention to investing in the development of the economies of Ukraine and the Visegrad Four.

2. Functioning of transport and logistics systems in the border regions of Ukraine: features, trends, barriers and challenges

As a rule, railway and road transport are developed in the border regions of Ukraine. However, according to the analysis of statistical data, the volume of freight transportation by rail in the T Zakarpattia region decreased in 2000-2020 by 66.1%; in Lviv – by 44.7%; in Volyn – by 42.5%. The volumes of road freight transport in Lviv oblast decreased by 15.4%, and in Zakarpattia region – by 6.4%. At the same time, the volume of cargo transportation by road in the Volyn region increased by 63.4% (Table 11.9).

Table 11.9

Dynamics of freight traffic volumes in the border regions of Ukraine

Years	Volyn region		Zakarpattia region		Lviv region	
	<i>railway</i>	<i>road</i>	<i>railway</i>	<i>road</i>	<i>railway</i>	<i>road</i>
2000	1534.7	7581.1	3928.4	10795.2	6168.3	29607.0
2005	1787.5	10332.3	4713.0	13702.2	6487.0	20255.8
2010	1131.1	10106.0	1710.3	11899.2	3826.5	19456.5
2013	1068.9	10358.0	1424.1	9501.3	3223.7	21362.1
2014	1017.8	10122.6	1238.1	8934.3	3551.0	20905.5
2015	1031.5	10555.9	1703.5	9065.5	3840.9	20581.3
2016	985.6	12540.3	1245.6	9236.6	3641.3	21511.2
2017	1063.2	12955.8	1504.8	8747.6	4005.2	23217.9
2018	1124.5	13447.2	1815.8	8751.5	3850.4	25748.9
2019	1052.0	13145.5	1605.0	9778.4	3371.5	24390.2
2020	882.1	12390.0	1332.4	10103.2	3411.4	25038.0

Source: compiled on the basis of information and analytical materials of the Main Department of Statistics in Volyn, Zakarpattia, Lviv regions.

During 2000-2020, the freight turnover of road transport in Zakarpattia region increased 10.4 times, in Volyn – 8.9 times, and in Lviv region – 2.9 times (Table 11.10).

The volume of export transactions in the structure of foreign trade in goods in Lviv region increased in 2010-2020 by 138.4%, in Volyn region – by 47.9%, in Zakarpattia region – by 16.7%.

Table 11.10

**Dynamics of freight turnover of road transport in the border regions of
Ukraine, million tkm**

Years	Volyn region	Zakarpattia region	Lviv region
2000	321.3	423.5	1748.8
2005	998.3	1755.5	1911.3
2010	1690.5	2754.3	3878.0
2013	1755.2	4149.5	4367.9
2014	1622.7	4410.7	4564.4
2015	1838.4	4676.1	4344.8
2016	2108.6	4862.6	4511.1
2017	2401.7	5285.6	4604.1
2018	2770.3	5073.1	5317.6
2019	2966.5	5002.1	5150.1
2020	2885.5	4410.6	5127.7

Source: compiled on the basis of information and analytical materials of the Main Department of Statistics in Volyn, Zakarpattia, Lviv regions.

Table 11.11

Regional volumes of foreign trade in goods in the border regions of Ukraine

Years	Exports, thousand dollars US			Imports, thousand dollars US		
	Volyn region	Zakarpattia region	Lviv region	Volyn region	Zakarpattia region	Lviv region
2010	434800.0	1156600.0	974400.0	571500.0	1348600.0	2028300.0
2011	646350.7	1397588.5	1201931.1	1059592.7	1997931.9	3202346.9
2012	605783.6	1385087.3	1343535.6	1015138.6	2009084.9	3373475.2
2013	628811.2	1299965.6	1290873.7	1089007.1	2062449.2	2655042.5
2014	685422.1	1382795.9	1305077.7	765457.7	1734557.0	2472001.5
2015	631693.7	1094379.6	1206324.8	622087.5	1011507.0	1447944.9
2016	611874.2	1211902.4	1275566.1	1130757.2	1133380.9	1699411.8
2017	689287.7	1446423.2	1585154.1	1334974.0	1341735.6	2180388.2
2018	719980.9	1658975.7	1895635.5	1368504.4	1515819.8	2707300.7
2019	694002.3	1489957.9	2202053.5	1455943.0	1471227.2	3087739.0
2020	642901.2	1349544.5	2322937.5	1315698.3	1255371.3	3443377.1

Source: compiled on the basis of information and analytical materials of the Main Department of Statistics in Volyn, Zakarpattia, Lviv regions.

During this period, the volume of imports increased in Volyn region by 130.2%, in Lviv region – by 69.8%, and in Zakarpattia region, on the contrary,

decreased by 6.9%. At the same time, the ratio of imports and exports in the Volyn region has increased: if in 2010 the value of this indicator was 1.31 times, in 2020 - 2.05 times. In the Lviv region there is a tendency to reduce the value of the indicator: in 2010 - 2.08 times, and in 2020 - 1.48 times. In 2010, in the Zakarpattia region, imports exceeded exports by 1.17 times, and in 2020, exports exceeded imports by 1.07 times (Table 11.11).

If we consider foreign trade in goods (Table 11.12) and services (Table 11.13) between the border regions of Ukraine and the Visegrad Four countries, it should be noted that in the Volyn region there is a negative situation in the organization of export-import operations, as the balance is negative value. And in Lviv and Zakarpattia regions in 2020 the situation has improved and the balance of export-import operations will grow.

Table 11.12

**Foreign trade in goods between the border regions of Ukraine
and the Visegrad Four countries**

Country	Volyn region		Zakarpattia region		Lviv region	
	2010	2020	2010	2020	2010	2020
<i>Exports, thousand dollars US</i>						
Poland	44289.8	110856.8	48241.5	59959.7	175489.2	654772.2
Slovakia	9762.3	13102.5	88612.3	37388.9	20236.5	65502.5
Hungary	43369.6	8467.6	672762.5	808207.8	9860.6	158176.8
<i>Imports, thousand dollars US</i>						
Poland	132880.6	209942.0	27536.3	30770.1	608591.7	766295.7
Slovakia	11510.8	25695.5	43310.6	30025.2	38407.4	52949.7
Hungary	107566.3	127426.1	157451.0	147251.6	45366.6	45424.8
<i>Balance of export-import operations, thousand dollars US</i>						
Poland	-88590.8	-99085.2	20705.2	29189.6	- 433102.5	-111523.6
Slovakia	-1748.5	-12593.0	45301.7	7363.7	-18170.9	12552.8
Hungary	-64196.7	- 118958.5	515311.5	660956.2	-35506.0	112752.0

Source: compiled on the basis of information and analytical materials of the State Statistics Service of Ukraine.

During 2010-2019, the share of direct investment in the economy of Lviv region increased by 0.5 percentage points or from 2.62 to 3.12% of the total volume of these investments; Volyn – by 0.38 percentage points or from 0.48 to

0.86%; Zakarpattia region – by 0.2 percentage points or from 0.8 to 1% (Table 11.14).

Table 11.13

**Foreign trade in services between the border regions of Ukraine
and the Visegrad Four countries**

Country	Volyn region		Zakarpattia region		Lviv region	
	2010	2020	2010	2020	2010	2020
<i>Exports, thousand dollars US</i>						
Poland	4593.3	6519.8	843.5	5964.0	11966.7	94047.1
Slovakia	236.6	200.0	3416.5	10331.0	112.8	2264.4
Hungary	-	170.6	7502.0	145523.6	245.0	3115.7
<i>Imports, thousand dollars US</i>						
Poland	8035.7	7899.4	1027.4	1009.1	13591.3	26095.5
Slovakia	541.9	617.3	6743.2	4116.3	726.1	634.8
Hungary	-	17.7	5221.6	4179.5	4775.7	2640.3
<i>Balance of export-import operations, thousand dollars US</i>						
Poland	-3442.4	-1379.6	-183.9	4954.9	-1624.6	67951.6
Slovakia	-305.3	-417.3	-3326.7	6214.7	-613.3	1629.6
Hungary	-	152.9	2280.4	141344.1	-4530.7	475.4

Source: compiled on the basis of information and analytical materials of the State Statistics Service of Ukraine.

Table 11.14

**Dynamics of direct investment in the economy of the border regions of
Ukraine, million dollars US**

Years	Border regions		
	Volyn region	Zakarpattia region	Lviv region
2010	218.6	364.4	1186.8
2011	291.4	348.5	1300.4
2012	380.5	406.4	1315.8
2013	341.3	437.5	1379.5
2014	271.2	334.2	1097.6
2015	247.1	311.8	1032.9
2016	246.1	317.0	833.5
2017	251.3	325.1	930.0
2018	256.7	343.3	947.8
2019	306.6	360.9	1116.3

Source: compiled on the basis of information and analytical materials of the State Statistics Service of Ukraine.

Statistical analysis shows that from the Lviv region there is an insignificant inflow of investments into the economic development of the world. And from Volyn and Zakarpattya regions no investment resources came to the countries of the world (Table 11.15).

Table 11.15

Dynamics of the volume of direct investments from the border regions of Ukraine in the economy of the world, million dollars US

Years	Border regions		
	Volyn region	Zakarpattya region	Lviv region
2010	-	-	0.8
2011	-	-	21.0
2012	-	-	27.4
2013	-	-	43.8
2014	-	-	38.1
2015	-	-	34.5
2016	-	-	15.4
2017	-	-	10.2
2018	-	-	8.8
2019	-	-	8.7

Source: compiled on the basis of information and analytical materials of the State Statistics Service of Ukraine.

Thus, ensuring balanced sustainable development of the border regions of Ukraine and the Visegrad Four in the context of intensification of integration processes requires the search for qualitatively new tools to increase their competitiveness and investment attractiveness, including the cross-border transport and logistics cluster.

The main mechanism for implementing the development strategies of Ukraine, Poland, Slovakia and Hungary is the clustering mechanism, which involves the development of the concept of regional clusters and a system of measures for financial incentives for cluster initiatives. The concept of clustering of economies is a fundamentally new approach to the territorial organization of ecosystems, which focuses on the links between companies, the presence of clusters of interconnected areas of economic activity.

3. The concept of creating a cross-border transport and logistics cluster in context partnership between Ukraine and the Visegrad Four countries

This work substantiates the Concept of creating a cross-border transport and logistics cluster (Fig. 11.1).

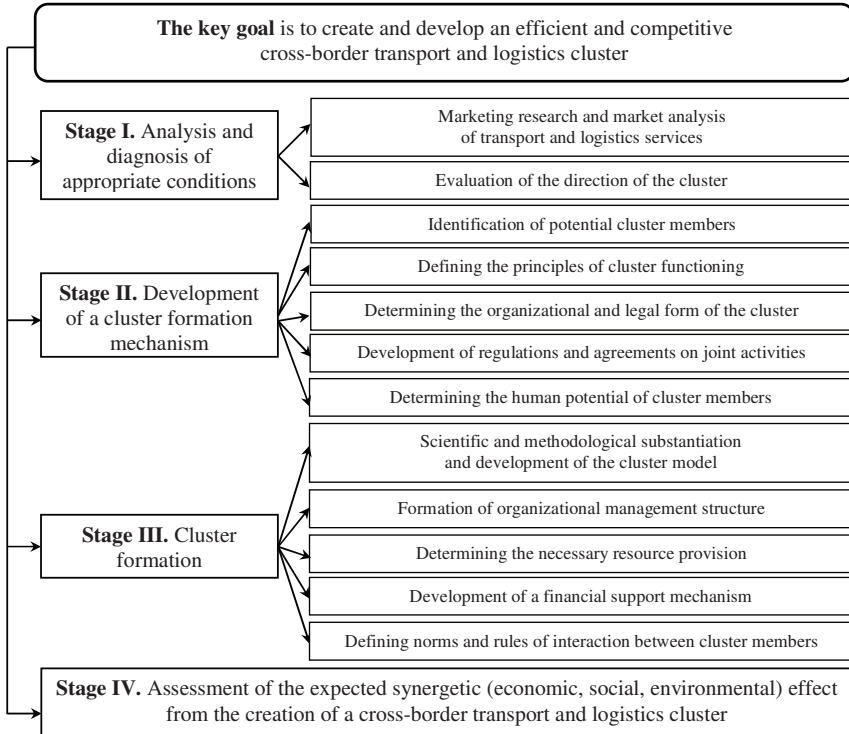


Fig. 1. The main stages of development of the Concept of creation of cross-border transport and logistics cluster

Source: author's development.

Stage I. Analysis of diagnostics of formation conditions. The analysis and diagnostics of conditions of formation of a cluster is carried out, that is it is a question of marketing researches and an estimation of a direction of activity.

Marketing research includes the study of the market of goods and services, supply and demand factors, price dynamics, analysis of competitors and evaluation

of competitive advantages. Enterprises carry out marketing research either on their own, or entrust to specialized organizations – consulting firms. The factors that must be taken into account when studying the current state of the market of transport and logistics services include:

evaluation of exogenous aspects of the macro environment. The macro environment is the external factors that affect the activities of enterprises. The parameters of the macro environment should include global, political, economic, financial, natural, technological, digital trends, and so on. The structure of the regional economy, inflation, tax policy, the state of the financial system and the purchasing power of the population affect the production and development of the freight forwarding complex. Technological trends are identified in order to assess the level of innovative development. International events affecting the development of world and European freight markets, the dynamics of world tariffs are identified by assessing the international aspects of the macro environment;

assessment of competitive advantages of regional transport and logistics systems in economic areas. It is advisable to perform a SWOT analysis, which shows how to use the strengths of the endogenous environment to realize the potential of the exogenous environment. The main internal task is to translate weaknesses into strengths. The solution of these tasks should be devoted to program-targeted innovative proposals for the development of the transport and logistics cluster;

analysis of the price factor. The price factor is most noticeable when assessing the level of competitiveness of companies and determining their competitive advantages. The level of tariffs affects the attraction of new consumers of transport and logistics services, increasing the volume of freight traffic;

estimating the impact of the demand factor. The study of the demand factor is to identify the motives that motivate consumers to use comprehensive transport and logistics services. It is necessary to identify the consumer value, which shows the extent to which supply meets demand.

The assessment of the direction of activity of the enterprises from which it is supposed to organize cluster structure is carried out on the basis of the analysis of competitive advantages in the spheres of transport and logistics on the basis of which the cluster will be created.

Localization coefficients are used for calculations; production of products / services per capita; specialization of the regional economy.

The localization coefficient is determined by the ratio of the share of this area of activity in the structure of the region to the share of the same industry in the economic region. Calculations can be made on the volume of products or services

provided, fixed assets, number of key personnel, labour productivity, return on assets, fixed capital investment, foreign investment, exports and imports. The greater the concentration (or localization) of this type of economic activity in the region, the greater the value of the coefficient. If the value of the coefficient is more than 1, then the localization of the sphere in the region exceeds the average share of this industry in the gross output of the economic region.

The coefficient of specialization of the region in this type of activity is determined by the ratio of the region's share in the economic region in this industry to the share of the region in the GRP of the economic region. It should be noted that the coefficients of localization and specialization cannot be perceived as different coefficients. They have the same meaning, but are calculated differently.

Stage II. Development of a mechanism for the formation of a transport and logistics cluster.

Identification of potential cluster members. Provides motivation for potential cluster members from their need to increase the level of investment attractiveness.

Opportunity for growth and further development, reliability and sustainability of development are an important motivating factor for enterprises. Partnerships between cluster members help to increase the level of competitiveness in the market of transport and logistics services and the understanding that any of the companies has a certain dependence on the activities of another enterprise. When implementing this stage, it is important to determine the level of interdependence of each of the potential participants for further modelling of the organizational structure of the cluster.

Defining the principles of cluster operation, which include the following:

- lack of legal dependence, preservation of economic and legal independence;
- the overall strategic goal of the participants (the long-term goal of the cluster development and the overall corporate strategy should be common to all participants);
- unified system of enterprise coordination; the general organizational culture of the cluster, which is based on ideas, views, core values shared by all participants;
- integrated approach and integrated interconnection (integrated use of transport and logistics infrastructure facilities by all cluster members).

The main criteria for the formation of the transport and logistics cluster are: geographical proximity of participants and their horizontal integration; economic, social and strategic importance of the labour market for the region; development of

production and social infrastructure; the presence of long-term partnerships between participants.

Development of regulations and agreements on joint activities. Ensuring high coordination and productivity of participants in a fundamentally new integrated transport and logistics system, strengthening their interaction. It is necessary to develop norms of cooperation of cluster members, which clearly define the legal and economic independence of enterprises based on the intangible principle of interaction. Norms and regulations on the relationship and interdependence of participants should take into account such actions as:

- the right and conditions of enterprise entry into the cluster and exit from it;
- determining the consequences of the company's exit from the cluster and its further operation;
- determination of norms concerning participants who violate the conditions of cluster functioning and business ethics adopted in the cluster.

Determining the human potential of cluster members. The assessment of the level of human resources should be based on the following provisions:

- determination of the level of personnel qualification; staff stability;
- analysis of staffing needs, training opportunities and ways to attract specialists.

Stage III. Cluster formation – development of a cluster model of organization of logistics activities in the economic region.

The formation of the cluster is to develop its organizational structure, the initial conditions for which are determined by the factors of the exogenous environment, the strategic concept, the type of enterprises, the organizational concept. Endogenous environmental factors are identified on the basis of industrial policy. The organizational concept is based on the classification of clusters.

The most important component of the transport and logistics cluster will be the transport and logistics companies that form its core. The core of the cluster formation is the most investment-attractive part of it and a source of growth of the main competitive advantages of the economic region.

To increase the efficiency of the cluster, the method and ability of its members to flexibly use modern financial tools and mechanisms in the process of their activity are of special importance. Therefore, the most important element of the cluster is its financial and credit component. It includes a regional bank, which has an extensive network of branches in the economic region. Branches and additional offices of large national and international banks, which have a higher competitive advantage at the international level than regional banks, can also be an integral part of the financial and credit component of the cluster association. As a

significant share of the cluster's transport and logistics services can be exported, national and international banks must provide external financial links for the cluster structure and significantly reduce transaction costs. It should be noted that the economic interest of the participation of such banks in the cluster formation will be, as international experience shows, not in the withdrawal of funds outside the cluster, but in the financing of its members.

To implement the cluster approach to the formation of the transport and logistics cluster, it is advisable to use effective tools for innovation and dissemination of technological innovations. As one of such tools, the use of a leasing mechanism is proposed, which reduces the financial burden on enterprises and institutions that form the core of the cluster. Through the leasing mechanism there is an opportunity to introduce and use the latest global technologies to increase the competitiveness of transport and logistics services at the national and global levels. Close interaction between the lessee and the sources of new technologies is established through the leasing company. And therefore, it becomes possible to quickly and professionally support the object during the use of leasing. Thus, an additional network of enterprises is formed, which works effectively within the cluster structure. This, in turn, allows you to optimize financial flows and innovation interaction between cluster members.

The next structural component of the cluster is represented as a set of companies that provide information and consulting services and create an information product. These are advertising, information and consulting, auditing companies, research institutions, higher education institutions, staff training centers. The information-innovation component of the cluster provides information interaction between the participants, reduces the time of implementation and mastering of innovations, creates preconditions for the formation of a single information space of the cluster formation.

The formation of the cluster is associated with the establishment of cooperation between its members, which results in the formation of common economic, technological and organizational conditions for joint activities. Thus, a cluster model is created, all participants of which have a common strategic goal and strive to ensure stability, reliability and security. Regional and local governments play the most important role in ensuring unity in the cluster, as they create a framework for the interaction of participants, forming the international image of the cluster, and are engaged in the modernization of transport infrastructure in the regions.

The next component of the organizational structure of the transport and logistics cluster is the management system, which includes the procedure of

forecasting, planning, organization, controlling and regulation; financial management policy; motivation system; pricing mechanism; performance evaluation criteria; cost management for the organization of logistics activities. One of the components of the organizational structure of the cluster are resources that include natural, material, financial, informational, labour.

In cluster formation, importance should be given to the formation and development of a proper organizational culture. In the process of creating and forming a cluster, the organizational culture of individual enterprises partially loses some of its traditional elements (e.g., closeness, uniformity of organizational forms, restriction of staff freedoms to achieve company goals), as a fundamentally new organizational culture will be formed. Such a culture should ensure constructive interactions between cluster members, which can be considered as equal. The general strategic goal is to expand production for joint work, reduce contradictions between cluster members, create conditions for strengthening the competitive advantages of all elements of the cluster structure.

The financial resources of the cluster are a set of attracted funds of regional structures and funds, foreign investors and subjects of the cluster association. Among the most significant items of expenditure on the organization of the cluster should be noted the cost of: creating a cluster; infrastructure development and support; implementation of individual projects and programs.

Funding for the creation of the cluster is usually based on budgetary resources or funds of international financial organizations and investment funds. Financing of infrastructure development and individual projects in clusters is carried out both on the basis of mixed financing (contributions of cluster member enterprises and budget financing) (this is applied in Germany) and in the absence or with minimal participation of budgetary resources (for example, Great Britain).

In the initial stages of the cluster's formation, the situation is characterized by a lack of positive cash flows and opportunities to make full use of debt instruments provided by institutional investors. In this situation, the following forms of borrowing are available: financing by suppliers; receivables financing (factoring); venture financing; a model that combines the principles of project and venture financing.

Based on the above, it can be noted that the structure of these components may change during operation, but the presence of the components themselves in the cluster structure is a prerequisite for its successful development. In essence, the transport and logistics cluster can be created either as a form of partnership (in the form of an association or public organization), or as a business structure consisting of many companies and institutions connected to each other through a coordinating council - a parity authority, business and science.

The Coordinating Council may consist of representatives of the leading enterprises of the cluster, research institutions, higher education institutions, top managers of companies that provide the infrastructure base. The goal is to ensure interaction, distribution of roles and responsibilities among participants, as well as determining responsibility for management decisions. The main task of the coordination council is to control the implementation of the long-term strategy of development, direction and coordination of the cluster. The functions of the coordination council include the following: determining the strategic direction of cluster development and its support; approval of investment projects; resolution of legal disputes and issues that arise between cluster members; development and transformation of organizational culture taking into account modern organizational and digital challenges; compliance with established norms and rules in the cluster; ensuring the solution of issues related to the risk management of logistics activities.

The formation of the organizational structure is to determine the composition of the cluster and the functional responsibilities of its members. Among the key functional responsibilities of cluster members are the following: implementation of agreed plans; development and implementation of own projects that do not contradict the general strategy of cluster development; ensuring internal control over the activities of the enterprise; formation and provision of adequate human resources, control over the behaviour and motivation of staff.

Stage IV. Estimation of the expected effect from the activity of the transport and logistics cluster. Evaluating the effectiveness of the cluster structure is an important step for further planning and development of design solutions. As a tool for assessing the effectiveness of cluster development in the economic area, you can use a balanced scorecard (BSC, Balanced Scorecard).

Evaluation of the effectiveness of the transport and logistics cluster can be carried out from the point of view of an individual enterprise that is part of the cluster; the cluster as a whole as a market entity; economic area as a whole. From the point of view of the cluster as a market entity, the effectiveness of its operation can be assessed by indicators of the cluster itself: profitability, susceptibility to innovation, financial flows and so on.

4. Mechanisms to ensure the development of cross-border transport and logistics cluster

In the context of global challenges and external threats facing Ukraine, the formation of partnerships and the deepening of cross-border cooperation is

particularly important. Ukraine has a European vector of economic development. At the same time, cross-border cooperation in the field of transport and logistics, which is of strategic importance in ensuring balanced sustainable development of the country, is recognized as a key priority of the national economy and an important object of modern regional policy. The main principles of cross-border cooperation of Ukraine with the Visegrad Four countries are defined by Chapter 27 of the Association Agreement, Laws of Ukraine "On Cross-Border Cooperation" and "On Principles of State Regional Policy", Resolutions of the Cabinet of Ministers of Ukraine "On Approval of the State Strategy for Regional Development 2021-2027" and "On approval of the State program for the development of cross-border cooperation for 2021-2027" (Figure 11.2).

Issues of international cooperation in the transport sector, improvement of mutual and transit transport connections, modernization and development of transport networks are regulated by cooperation agreements, namely: "Agreement between Ukraine and the Republic of Poland on good neighbourliness, friendly relations and cooperation", "Agreements between the Government of Ukraine and the Government of the Slovak Republic on trade, economic and scientific-technical cooperation", "Agreements between the Government of Ukraine and the Government of the Republic of Hungary on economic cooperation".

Legal, economic and organizational principles of cross-border cooperation in Ukraine are regulated by the relevant Law of Ukraine "On Cross-Border Cooperation". But, as the analysis shows, this legislation does not say anything about cluster development and cluster initiatives. It does not refer to cross-border transport and logistics clusters (Table 11.16).

At present, the State Program for the Development of Cross-Border Cooperation for 2021-2027 has been developed and approved. Among the main obstacles to the effectiveness of cross-border cooperation between Ukraine and the Visegrad Four countries are the development of border transport infrastructure, protection and restoration of ecosystems of the regions, low institutional capacity of entities and participants in cross-border cooperation. This is primarily due to insufficient funding for relevant activities and projects from the state budget.

It should be noted that in this State program insufficient attention is paid to the formation and functioning of cross-border transport and logistics clusters. The document does not provide appropriate mechanisms to ensure their creation and development, the implementation of which will help consolidate the efforts and concentration of resources in the field of transport and logistics to achieve balanced development of border areas and increase the competitiveness of Ukraine.

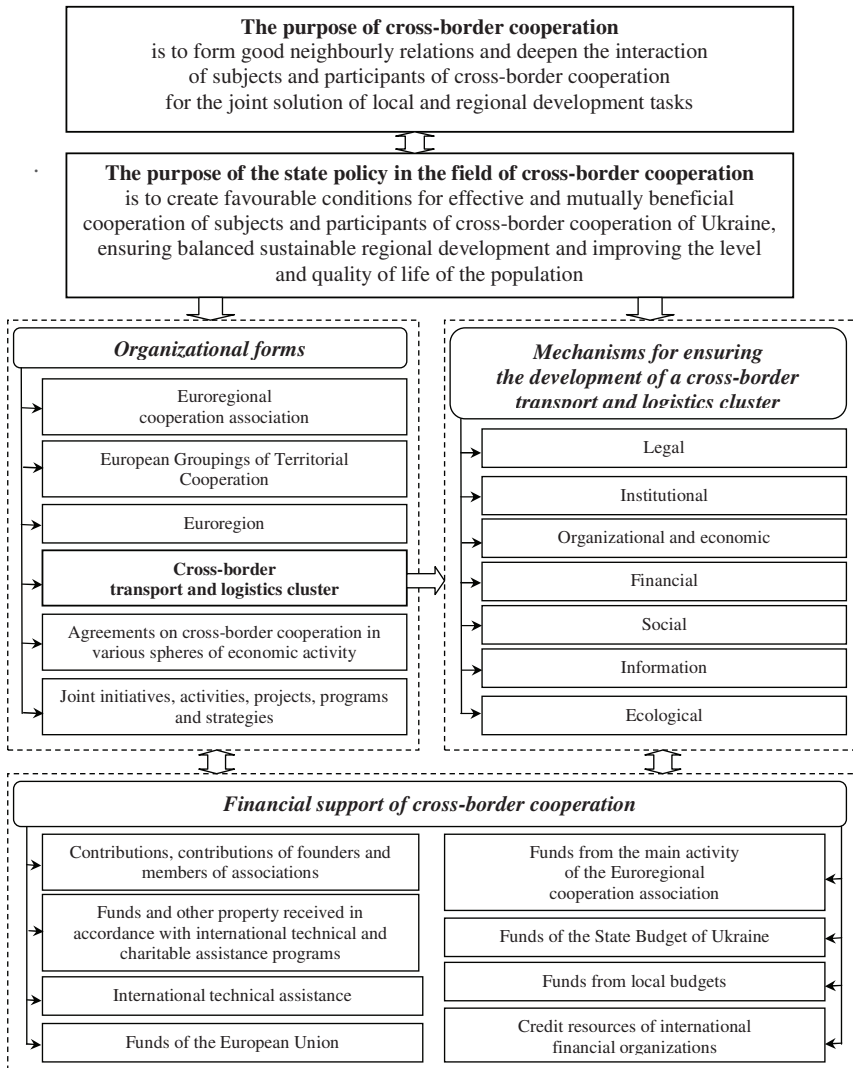


Fig. 11.2. Structural and logical scheme of regulation of cross-border cooperation between Ukraine and the Visegrad Four countries

Source: author's development.

To date, Regional Development Strategies for 2021-2027 have been developed and Action Plans for their implementation for 2021-2023 have been

formed, in which the development of cross-border cooperation is recognized as a strategic priority (Table 11.17).

Table 11.16

The use of conceptual and categorical apparatus on the clustering of the economy

Legislation	Terminology
Association Agreement between Ukraine and the EU	Cluster development (Article 379 of Chapter 10 "Policy in the field of industry and entrepreneurship"). Intersectoral maritime clusters (Article 411)
Law of Ukraine "On Cross-Border Cooperation"	Euroregional cooperation association. European Grouping of Territorial Cooperation. Cross-border association
Law of Ukraine "On Principles of State Regional Policy"	Programs and projects for the development of interregional and cross-border cooperation
State strategy of regional development for 2021-2027	Cross-border clusters. World-class regional, interregional and national clusters. Internationalization of cluster initiatives
State program for the development of cross-border cooperation for 2021-2027	Border transport infrastructure
National transport strategy of Ukraine for the period up to 2030	Network of multimodal transport and logistics clusters. Logistics centers

Source: compiled on the basis of generalization of the current legislative and regulatory framework

Based on the above, we can conclude this. In order to modernize the regional ecosystems of Ukraine and the Visegrad Four countries, it is advisable to develop a concept for the creation of a transboundary transport and logistics cluster. To implement it, it is necessary to use a set of mechanisms, the key of which is regulatory.

At present, it is expedient to amend the Association Agreement between Ukraine and the EU, the Laws of Ukraine "On Cross-Border Cooperation" and "On Principles of State Regional Policy", the State Program for Cross-Border Cooperation for 2021-2027, Regional Development Strategies of Volyn and Zakarpattia and Lviv regions by 2027 in terms of creating appropriate institutional conditions for the formation and operation of the cross-border transport and logistics cluster. In addition, the Concept of the National Strategy for the Formation and Development of Cross-Border Clusters should be developed and approved. It is necessary to determine the mechanisms of financial support for their operation, namely: venture investment, crowdfunding, crowdsourcing, international-private-public partnership based on attracting private investment,

credit institutions, foreign investment resources, grants from international financial institutions. The mechanism of international-private-public partnership will allow to successfully plan the development of border transport infrastructure and provide integrated multimodal logistics services; effectively ensure connectivity between different modes of transport and their integration with the territories; to increase the economic potential of transport and logistics infrastructure facilities.

Table 11.17

**Operational development goals by 2027 in part ensuring
cross-border cooperation in the regions of Ukraine**

Name	Operational goal	Tasks
Development strategy of Volyn region for the period until 2027	Infrastructural support of cross-border cooperation	<ul style="list-style-type: none"> - improving the condition of road transport infrastructure and transport connections of territories; - development of border infrastructure; - implementation of projects for logistics of cross-border cooperation; - development of transit potential
Regional development strategy of Zakarpattya region for the period 2021-2027	Development of cross-border economic relations	<ul style="list-style-type: none"> - creation of multidisciplinary international cross-border clusters; - implementation of cluster initiatives with the use of mechanisms such as "cross-border park and logistics centre"
Development strategy of Lviv region for the period 2021-2027	Road transport, logistics, cross-border and information and communication infrastructure	<ul style="list-style-type: none"> - development of cross-border infrastructure (network of logistics centers in border areas; business border infrastructure and cooperation between local and regional communities of neighbouring countries); - construction of international checkpoints; - implementation of large infrastructure projects

Source: compiled on the basis of the generalization of the Strategies of regional development of Volyn, Zakarpattya and Lviv regions for 2021-2027.

Development and implementation of basic conceptual provisions for the formation of cross-border transport and logistics cluster will create appropriate conditions for increasing the volume and quality of transport and logistics services, gain competitive advantage, strengthen economic partnership, and implement a fundamentally new model of balanced sustainable development of cross-border regions of Ukraine and the Visegrad Four countries, which will meet modern economic requirements.

References:

- Ivanov, S., Dzwigol, H., Trushkina, N. (2019). Proposals for the Formation of a Transport and Logistics Cluster as an Institution of Regional Development (on the Example of Donetsk Economic Region). *Economic Herald of the Donbas*, no. 4(58), pp. 51-60. [https://doi.org/10.12958/1817-3772-2019-4\(58\)-51-60](https://doi.org/10.12958/1817-3772-2019-4(58)-51-60).
- Ivanov, S. V., Liashenko, V. I., Trushkina, N. V. (2020). Pravovi aspekty stvorennia transportno-lohistychnykh klasteriv v rehionakh Ukrainy [Legal aspects of creation of transport and logistics clusters in the regions of Ukraine]. *Gesellschaftsrechtliche Transformationen von wirtschaftlichen Systemen in den Zeiten der Neo-Industrialisierung: Collective monograph*. (pp. 661-668). Nüremberg, Verlag SWG imex GmbH [in Ukrainian].
- Kwilinski, A., Trushkina, N. (2019). Logistics cluster as an institution of regional development in the context of economic modernization. *Science and practice: collection of scientific articles* (June 28, 2019, University of Macedonia) (pp. 55-59). Midas S.A., Thessaloniki, Greece.
- Liashenko, V., Ivanov, S., Trushkina, N. (2021). A Conceptual Approach to Forming a Transport and Logistics Cluster as a Component of the Region's Innovative Infrastructure (on the Example of Prydniprovsky Economic Region of Ukraine). *Virtual Economics*, vol. 4, no. 1, pp. 19-53. [https://doi.org/10.34021/ve.2021.04.01\(2\)](https://doi.org/10.34021/ve.2021.04.01(2)).
- Liashenko, V. I., Osadcha, N. V., Trushkina, N. V. (2021). Mozhlyvi orhanizatsiino-pravovi formy transportno-lohistychnoho klasteru v Prychornomorskomu ekonomichnomu raioni [Possible organizational and legal forms of transport and logistics cluster in the Black Sea economic region]. *Black Sea Economic Studies*, iss. 67, pp. 60-70. <https://doi.org/10.32843/bses.67-10> [in Ukrainian].
- Pushak, H. I., Trushkina, N. V. (2021). Obgruntuvannia dotsilnosti stvorennia transportno-lohistychnoho klasteru v Karpatskomu ekonomichnomu raioni [Substantiation of Expediency of Creation of Transport and Logistics Cluster in the Carpathian Economic Region]. *Economic Herald of the Donbas*, no. 1(63), pp. 61-77. [https://doi.org/10.12958/1817-3772-2021-1\(63\)-61-77](https://doi.org/10.12958/1817-3772-2021-1(63)-61-77) [in Ukrainian].
- Trushkina, N. (2019a). Financial ensuring mechanism of management innovative development of the transport-logistics system. In M. Bezpartochnyi (Ed.). *Organizational-economic mechanism of management innovative development of economic entities: collective monograph* (pp. 227-236). Przeworsk: WSSG, Vol. 3.
- Trushkina, N. (2019b). Strategic directions of development of regional transport and logistics systems in Ukraine. *Proceedings of the 1st International Symposium on Intellectual Economics, Management and Education* (September 20, 2019, Vilnius Gediminas Technical University, Vilnius, Lithuania) (pp. 182-183). Bulgaria: Publishing House FABER Itd-Veliko Tarnovo.
- Trushkina, N., Dzwigol, H., Kwilinski, A. (2021). Cluster Model of Organizing Logistics in the Region (on the Example of the Economic District "Podillya"). *Journal of European Economy*, vol. 20, no. 1, pp. 127-145. <https://doi.org/10.35774/jee2021.01.127>.

REFERENCES

- 2020 European Semester: National Reform Programmes and Stability/Convergence Programmes. URL: https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/european-semester/european-semester-timeline/national-reform-programmes-and-stability-convergence-programmes/2020-european-semester_en
- Alesina A., Ardagna S., Perotti R., Schiantarelli, F. 2002. Fiscal Policy, Profits and Investment. *American Economic Review* 92, 571-589.
- Alesina A., Perotti, R. 1997. Fiscal Expansions and Adjustments in OECD Countries. *Economic Policy* 21., 205-248.
- Allen; Xavier De Vanssay, 'Monetary Unions: A Historical Perspective', in *Before and beyond EMU: Historical Lessons and Future Prospects* / Edited by Patrick M. Crowley, Routledge Studies in the Modern World Economy; 35 (London; New York: Routledge, 2002).
- Ananieva, E. V. (2018). Vyshegradskaya strategiya razvitiya Karpatskogo regiona [The Visegrad strategy of Carpathian region development]. *Sovremennaya Evropa*, 7, 86-95. Retrieved May 06, 2019, from <http://www.sov-europe.ru/2018/7-2018/8.pdf>.
- Anvari, R.D., Norouzi, D. (2016). The Impact of E-commerce and R&D on Economic Development in Some Selected Countries. *Procedia – Social and Behavioral Sciences*, Vol. 229, 354-362.
- Argyriou A.-S., Lyzun M., Lishchynskyy I., Savelyev Y., Kuryliak V., Ivashkiv I., Sachenko S. Modeling the Stabilization Factors of Monetary Unions in turbulent economies. The 11th IEEE International Conference on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications. 22-25 September, 2021, Cracow, Poland
- Arkhireyev S. (1999) *Transaktsionnyye izderzhki trofeynoy ekonomiki postsotsializma* (Transaction costs of the trophy economy of post-socialism). *Business Inform*, 5-6, 41-45
- Association Agreement between the European Union and its Member States, of the one part, and Ukraine, of the other part, OJ L 161, 29.5.2014, p. 3–2137.
- Bahl R., Martinez-Vazquez J. 2006. Sequencing Fiscal Decentralization. World Bank Policy Research Working Paper 3914. World Bank, Washington DC.
- Bahl R.W., Nats S. Public Expenditure Decentralization. In: *Developing Countries//Government and Policy*, No.4. 1986.
- Balassa B. *The Theory of Economic Integration*. London: Routledge, 2013. 286 p.
- Baldwin R. E. *Towards an Integrated Europe*. Centre for Economic Policy Research, 1994. 272 p
- Balvocuete R. (2020). Social Assistance for Poverty Reduction in the EU Countries: An Aspect of Socio-Economic Sustainability. *European Journal of Sustainable Development*, 9(1), 469. <https://doi.org/10.14207/ejds.2020.v9n1p469>
- Barca F. *Agenda for a reformed cohesion policy*. European Communities, 2009.
- Betson D., Haveman, R. 1981. *The role of Income Transfers in Reducing Inequality between and within Regions*. In *Economic Transfers in the United States*. University of Chicago Press. Available at: <http://www.nber.org/books/moon84-1>
- Biznes, (2020, January 22). *Nekontrolovanyi import avtokhlama faktychno znyshchiv rynek novykh avto – hlava Federatsii avtopromu* [Uncontrolled import of used cars actually destroyed the market of new cars - the head of Federation of Automotive Industry]. Retrieved from <https://business.ua/news/8648-nekontrolovaniy-import-avtokhlama-faktychno-znishchiv-rinok-novykh-avto-glava-federatsiji-avtopromu>
- Boiko O. V., Koval V. V. in *Proceedings of the International Scientific and Practical Conference "Development of Trade and Entrepreneurship in Ukraine: Trends and Prospects"*, Odessa, 2017.
- Bouckaert G, Nemeč, J. et al. 2008. *Public management reforms in Central and Eastern Europe*. Budapest, NISPAcee. 2008. ISBN 978-80-89013-41-8.

- Bradley J. F. N., Zaucha J., Brodzicki T., [et al.]. Territorial cohesion: a missing link between economic growth and welfare : lessons from Baltic Tiger. Gdańsk : Uniwersytet Gdański. Katedra Makroekonomii, 2017. ISBN 978-83-944797-4-9.
- Braja M., Gemzik-Salwach A. Competitiveness of high-tech exports in the EU countries. *Journal of International Studies*. 13(1), 359-372 (2020). doi:10.14254/2071-8330.2020/13-1/23
- Bryk, I. (1921). Materiały do historii ukraińsko-czeskich wzajemnych [Materials on the history of Ukrainian-Czech relations]. *Ukraińsko-ruskiy arkhiv*, (15), 169.
- Burák E., Nemeč, J. 2016. Optimizing the Slovak Tax Policy and Tax System Performance In: *European Financial Systems 2016. Proceedings of the 13th International Scientific Conference*. Brno. – pp. 65-71. ISBN 978-80-210-8308-0.
- Business Insider Polska (2020, February 11). Mapa polskiego eksportu i importu. Więcej sprzedajemy za granicę niż sprowadzamy. Retrieved from <https://businessinsider.com.pl/finanse/handel/import-i-eksport-polski-mapa-handlu-zagranicznego-dane-gus-2019/q6phd38>
- Camagni R. TEQUILA SIP ESPON 3.2. Interactive simulation package. 2006. URL: <https://slideplayer.com/slide/7101921/>
- Camagni R. The rationale for territorial cohesion: issues and possible strategies. Pedrazzini L.(a cura di.) *The Process of Territorial Cohesion in Europe*, Franco Angeli, Milano. 2006.
- Carlson M., Carroll C., Chan I and others. Should Poland Join the Euro?//*An Economic and Political Analysis* – Princeton University. – 2016
- Chernyk, P. (2009). *Ukraina v Heopolitychnykh Kontseptsiiakh Chekhiia ta Slovachchyny XX st. [Ukraine in the Geopolitical Concepts of the Czech Republic and Slovakia in the 20th Century]*. *Ukraińska natsionalna ideia: realii ta perspektyvy rozvytku*, (21), 172–179.
- Chodasová Z., 2010. Influence of financial crisis on development organizations in Slovakia. In *Financial crisis, Analysis of consequences of financial crisis and perspectives for further trends*, International Scientific Conference, Copyright SŠ a DS jún 2010, ISBN 978-80-88946-54-0
- Cibáková V. a kolektiv. 2012. *Ekonomika verejného sektora*. Bratislava, Iura Edition. 2012. 356 s. ISBN 978-80-8078-473-7.
- Clifton J. Díaz-Fuentes D., Fernández-Gutiérrez M. Public infrastructure services in the European Union: challenges for territorial cohesion. *Regional Studies*. 2016. Vol. 50, No. 2. P. 358–373.
- Convergence Report - June 2016 (PDF)// European Commission Institutional Papers 26. June 2016. Brussels. PDF. 200pp. https://ec.europa.eu/info/sites/info/files/file_import/
- Convergence Report - June 2018 (PDF)// European Commission Institutional June 2018. Brussels. URL: https://ec.europa.eu/info/sites/default/files/economy-finance/ip078_en.pdf
- Convergence Report. June 2020. URL: <https://www.ecb.europa.eu/pub/pdf/conrep/>
- Crook R. 2003. Decentralization and Good Governance. In *Federalism in Changing World: Learning from Each Other*. Montreal: McGill-Queens University Press, 240-259 p.
- Crook R., Manor J. 2000. *Democratic Decentralization*. OED Working Paper Series. No. 11, World Bank. Washington DC.
- Czech Republic economic snapshot (2021). *Economic forecast summary*. URL: <https://www.oecd.org/economy/czech-republic-economic-snapshot/>
- Dangerfield M. (2014). V4: A new brand for Europe? Ten years of post-accession regional cooperation in Central Europe. *Poznań university of economics review*. Vol. 14. Num. 4. 2014. P. 71-90. URL: https://www.ebr.edu.pl/pub/2014_4_71.pdf.
- Development of EU Financial Institutions and Challenges for Financial Policy of Ukraine: monograph / [Borzenko O.O., Bogdan T.P., Sharov O.M., etc.] ; NAS of Ukraine, SI "Inst. of Economics and Forecasting. NAS of Ukraine". – Electron. resource. – K., 2019. - 372 p.
- Dostál P. 2008. *Pokročilé metody analýz a modelování v podnikatelství a veřejné správě*. Brno, CERM. 340 s. ISBN 978-80-7204-605-8
- Dreher A. 2006. *Power to the People? The Impact of Decentralization on Governance*. Swiss Institute for Business Cycle Research (KOF) Working Paper. No. 121. Zurich, January.
- Dubrovina N. 2015. Application of some econometrics models and methods for the analysis of taxes, tax policy and social transfers. In *Problems and prospects of territories' socio-economic development*. International scientific conference. Problems and prospects of territories' socio-economic development : proceedings of the 4th International scientific

-
- conference, april 29 - may 3, 2015, Opole, Poland. - Opole : Publishing house WSZiA, 2015. ISBN 978-83-62683-62-8, s. 40-44.
- Dubrovina N. 2017. Statistical analysis of the tax and fiscal disparities in Slovakia on the regional and local level. In EDAMBA 2017 : knowledge and skills for sustainable development: the role of economics, business, management and related disciplines. International scientific conference. EDAMBA 2017 : conference proceedings : knowledge and skills for sustainable development: the role of economics, business, management and related disciplines : [20th] international scientific conference for doctoral students and post-doctoral scholars : University of Economics in Bratislava, Slovak Republic, 4 - 6 april 2017. - Bratislava : Publishing House EKONÓM, 2017. ISBN 978-80-225-4429-0, pp. 88-98 online.
- Dubrovina N. A., Neubauerová E., Kolupaieva I. V., Borysova, A. O., Shabanov, R. I. Exploring the Nexus Between Tax Revenue Trends and Social Contributions Development in European Union Countries. - In Financial and Credit Activity: Problems of Theory and Practice. - Kharkiv : Kharkiv institute SHEI. ISSN 2310-8770, 2019, vol. 2, no. 29, pp. 498-508.
- Dubrovina N., Péliová J. 2015. Optimal strategies for tax policy and social policy tools mix. - In European financial systems 2015. International scientific conference. European financial systems 2015 : proceedings of the 12th international scientific conference : June 18-19, 2015 Brno, Czech Republic. - Brno : Masarykova univerzita, 2015. ISBN 978-80-210-7962-5, s. 106-113.
- Dubrovina N., Neubauerová E. 2017. Spatial autocorrelation and spatial regimes of the tax and fiscal power in the regions and districts in SR. In Modelirovanije processov upravlenija v informacionnoj ekonomike. - Berdjansk : Izdatel' Tkačuk A. V., 2017. ISBN 978-80-89654-37-6, s. 387-394, 417-418.
- Dubrovina N., Neubauerová E. Issledovanije tendencij nalogovych postuplenij v stranach ES. In Osvita i suspiľstvo : mižnarodnij zbirnik naukovich prac`. - Berdjansk : Berdjanskij deržavnij pedagogičnij universitet, 2016. ISBN 978-617-7291-80-9, s. 235-246 CD-ROM.
- Dubrovina N., Neubauerova E., Fabuš, M., Tulai, O. The evaluation of indices of public finance distribution on central and local levels for EU countries // Journal of European Economy. Vol. 18. No.4 (71). 2019. pp. 454-465. ISSN 2519-4070.
- Dubrovina N., Neubauerová, E. 2018. The Financial Power Maximization Problem for the Regions As One of the Tasks of Optimal Taxes and Transfers System in SR. In Informacionnaja ekonomika: etapy razvitija, metody upravlenija, modeli : monografija. - Charkov : VŠEM - CHNEU im. S. Kuzneca, 2018. ISBN 978-80-89654-45-1, s. 634-647.
- Dubrovina N., Péliová J., Nestorenko A., Nestorenko, T. The Study of taxation structure by level of government in the EU countries. In Medzinárodné vzťahy 2016: aktuálne otázky svetovej ekonomiky a politiky. Medzinárodná vedecká konferencia. Medzinárodné vzťahy 2016 : aktuálne otázky svetovej ekonomiky a politiky : zborník príspevkov zo 17. medzinárodnej vedeckej konferencie : Zámok Smolenice, 1. - 2. december 2016. - Bratislava : EKONÓM publishing, 2016. ISBN 978-80-225-4365-1, pp. 231-239 online.
- Dubrovina N., Péliová J., Neubauerová E. 2016. Analysis of the relationship between taxes and social benefits and transfers in the EU. - In European financial systems 2016. International scientific conference. European financial systems 2016 : proceedings of the 13th international scientific conference : June 27-28, 2016 Brno, Czech Republic. - Brno : Masaryk university, 2016. ISBN 978-80-210-8308-0, p. 125-132.
- Duleba A., Benč V., Bilčík V. (2012). Policy Impact of the Eastern Partnership on Ukraine: trade, energy, and visa dialogue. Bratislava: Research Center of the Slovak Foreign Policy Association, 2012.
- E-commerce Germany News. URL: <https://ecommercegermany.com/blog/key-takeaways-from-e-commerce-region-report-europe-2020>.
- Economic complexity legacy Rankings. URL: <https://atlas.cid.harvard.edu/rankings>
- Eichengreen B. European monetary integration with benefit of hindsight. MIT Press Books. 2012. Vol. 50. No 1. P. 123-136. URL: <https://ideas.repec.org/b/mtp/titles/>
- Epstein R. A., Johnson J. Uneven integration: Economic and monetary union in Central and Eastern Europe. JCMS J. Common Mark. Stud. 2010. Vol. 48, No 5. P. 1237-1260.

- ESPON. Polycentric territorial structures and territorial cooperation. 2016. URL: <https://www.espon.eu/topics-policy/publications/policy-briefs/polycentric-territorial-structures-and-territorial>
- EU does not intend to succumb to Turkey's immigration blackmail https://www.ng.ru/world/2020-03-05/6_7811_migrants.html
- EU facing the challenge of the migration crisis. Positions of European countries. Ed. N.K. Arbatova, A.M. Kokeeva. M: IMEMO RAN, 2016, 52 p.
- European Automobile Manufacturers Association, Automated driving. Roadmap for the deployment of automated driving in the European Union. (ACEA, 2020), https://www.acea.be/uploads/publications/ACEA_Automated_Driving_Roadmap.pdf. Accessed 14 Dec 2020
- European Commission. Commission staff working document. executive summary of the impact assessment. accompanying the document proposal for a regulation of the European Parliament and of the Council establishing the connecting Europe facility and repealing regulations (eu) no 1316/2013 and (eu) no 283/2014 / European Commission. 2018. URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=SWD%3A2018%3A313%3AFIN>
- European Commission. Proposal for a regulation of the European Parliament and of the Council laying down common provisions on the European regional development fund, the European Social Fund plus, the Cohesion Fund, and the European maritime and fisheries fund and financial rules for those and for the asylum and migration fund, the internal security fund and the border management and visa instrument. 2018. URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2018%3A375%3AFIN>
- European Economic Forecast. Summer 2021. European Commission's. Institutional Paper 156. July 2021
- European migration crisis: problems and prospects [Electronic resource] - Access mode: <http://svom.info/entry/635-evropejskij-migracionnyj-krizis-problemy-i-perspek>
- European spatial development perspective (esdp). URL: <https://www.eea.europa.eu/policy-documents/european-spatial-development-perspective-esdp>
- Eurostat. Annual detailed enterprise statistics for industry. URL: https://ec.europa.eu/eurostat/databrowser/view/SBS_NA_IND_R2__custom_1207611/default/table?lang=en.
- Eurostat. International trade of EU, the euro area and the Member States by SITC product group. <https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do>
- Fabus M., Dubrovina N., Guryanova L., Chernova N., Zyma O. Strengthening financial decentralization: driver or risk for sustainable socio-economic development of territories? In Entrepreneurship and Sustainability Issues. Volume 7 Number 2 (December). pp. 875-890. ISSN 2345-0282 (online) <http://jssidoi.org/jesi/2019> [http://doi.org/10.9770/jesi.2019.7.2\(6\)](http://doi.org/10.9770/jesi.2019.7.2(6))
- Fagerberg, J., Srholec M., and Knell M. 2007. The competitiveness of nations: Why some countries prosper while others fall behind? World Development 35: 1595–620.
- Falzon M., Peretti-Stahl M.-P., Verdier A. 2002. Local finance in the fifteen countries of the European Union. Paris. Dexia. Second Edition. 2002. 312 p. ISBN 2-911065-14-X.
- Fedirko, O., Zatonatska, T., Dluhopolskyi, O., Londar, S. (2021). The impact of e-commerce on the sustainable development: case of Ukraine, Poland, and Austria. IOP Conference Series: Earth and Environmental Science, Vol.915, "International Conference on Environmental Sustainability in Natural Resources Management" (15-16 October, 2021). Odesa, Ukraine.
- Filipchuk, V., Ivashko, I., & Kapitonenko, M. (2019). Ukraine-Poland relations. ICPS. Retrieved from http://icps.com.ua/assets/uploads/images/images/eu/ukr_poland_rozd_a4.pdf
- Fisher R. 2007. State and local public finance. Thomson. Mason. USA. 2007. 716 p. ISBN 978-0-324-29155-1.
- Gazdasági élet Magyarországon. URL: https://www.nkp.hu/tankonyv/foldrajz_8/lecke_03_003.
- Getmanchuk A., Solodkyy S. (2014). A Call for the EU – Time to step in Ukraine's expectations from the European Union. Institute of World Policy. 32 P. <http://neweurope.org.ua/wp-content/uploads/2017/12/Zaklik-do-ES-chas-vstupaty-v-gru.pdf>
- Glick R., Rose A. K. Does a currency union affect trade? The time-series evidence. European Economic Review. 2002. Vol. 46, No 6. P. 1125–1151.
- Glinka K. Integrated territorial investment as instrument for managing transport security in lower silesia's largest cities. Zeszyty Naukowe. Transport/Politechnika Śląska. 2017.

-
- Goliaš P. Slovakia in eurozone// INEKO.- July 2015: <http://Slovakia%20in%20Eurozone.pdf>
- Goncharenko O. "Eastern Partnership": it is enough for Ukraine to stand still. Economic truth. May 18, 2020. in Ukrainian <https://www.pravda.com.ua/columns/2020/05/18/7252058/>
- Goñi E., López J.H., Servén, L. 2008. Fiscal Redistribution and Income Inequality in Latin America. Policy Research Working Paper 4487 .Washington DC, World Bank.
- González A., Daly G., Pinch P., [et al.] Indicators for spatial planning and territorial cohesion: stakeholder-driven selection approach for improving usability at regional and local levels. *Regional Studies*. 2015. Vol. 49, No. 9. P. 1588–1602.
- Green paper on territorial cohesion. 2008. URL: <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0616:FIN:EN:PDF>
- Halická M., Brunovský, P., Jurča, P. 2009. Optimálne riadenie. Bratislava. EPOS. 2009. 204 s. ISBN 978-80-8057-793-3.
- Hamalová M., Belajová, A., Gecfkova, I., Papcunová, V. 2014. Teoria, riadenie a organizácia verejnej správy. Bratislava. Wolters Kluwer. VSEMVŠ. 2014. 454 s. ISBN 978-80-8168-140-0.
- Harris R., Sallis, R. 2003. Applied Time Series Modelling and Forecasting. England. Wiley. 302 p. ISBN 0-470-84443-4.
- Hatrák M. 2007. Ekonometria. Bratislava, Ekonomia. 2007. 504 s. ISBN 978-80-8078-150-7.
- Horvath R., Komarek L. Optimum Currency Area Theory: A Framework for Discussion about Monetary Integration. Warwick Economic Research Papers, 2002. URL: <https://warwick.ac.uk/fac/soc/economics/research/workingpapers/2008/twerp647.pdf>.
- Hudak, V. (2000). Relations between Ukraine and Slovakia: Recent History and Future Opportunities. Retrieved from https://www.files.ethz.ch/isn/90427/2000-01-01_Relations-Between-Ukraine.pdf
- ILOSTAT (November 2018). Unemployment rate – ILO modelled estimates. Retrieved April 24, 2019, from <https://www.ilo.org/ilostat/faces/oracle/webcenter/3.jspx>.
- ILOSTAT the world's leading source of labour statistics. Unemployment rate -- ILO modelled estimates, Nov. 2018. URL: <https://ilostat.ilo.org/>
- Ingram J. C. The Case for European Monetary Integration. Essays in International Finance, No. 98. International Finance Section, Department of Economics, Princeton University, 1973. URL: <https://books.google.com.ua/books?id=a8VIAAAAYAAJ>
- International Centre for Policy Studies. (2018). Ukraine-Slovakia relations: developing a true strategic partnership? Retrieved from http://icps.com.ua/assets/uploads/images/images/eu/ukr_slovakia_rozd_a4.pdf
- International Centre for Policy Studies. (2018, October 24). Kyiv vs Budapest: What's going on in Ukrain-Hungarian relations? Retrieved from <http://icps.com.ua/en/studies-icps/foreign-policy/kyiv-vs-budapest-whats-going-on-in-ukrainian-hungarian-relations/>
- International Organization of Motor Vehicle Manufacturers. Production statistic. <https://www.oica.net/production-statistics/>. Accessed Jan 14 2021
- Ivanov, S. V., Liashenko, V. I., Trushkina, N. V. (2020). Pravovi aspekty stvorennia transportno-logistychnykh klasteriv v rehionakh Ukrainy [Legal aspects of creation of transport and logistics clusters in the regions of Ukraine]. Gesellschaftsrechtliche Transformationen von wirtschaftlichen Systemen in den Zeiten der Neo-Industrialisierung: Collective monograph. (pp. 661-668).Nüremberg, Verlag SWG imex GmbH [in Ukrainian].
- Ivanov, S., Dzwigol, H., Trushkina, N. (2019). Proposals for the Formation of a Transport and Logistics Cluster as an Institution of Regional Development (on the Example of Donetsk Economic Region). *Economic Herald of the Donbas*, no. 4(58), pp. 51-60. [https://doi.org/10.12958/1817-3772-2019-4\(58\)-51-60](https://doi.org/10.12958/1817-3772-2019-4(58)-51-60).
- Ivashchenko M. V. (2020) Istorychna traiektoriia rozvytku natsionalnoi ekonomiky ta instytsionalna transformatsiia (Historical trajectory of national economy development and institutional transformation). *Economic Sciences*. Ser.: Accounting and Finance, 9(1), 454-462
- Ivashkiv I., H. Kupalova, N. Goncharenko, U. Andrusiv, J. Streimikis, O. Lyashenko, V. Yakubiv, M. Lyzun, I. Lishchynskyy, I. Saukh (2020) Environmental responsibility as a prerequisite for sustainable development of agricultural enterprises. *Management Science Letters*, Vol. 10, Issue 13, 2973–2984. Retrieved from DOI: 10.5267/j.msl.2020.5.028

- Joint Declaration of the Ministers of the Czech Republic, Hungary, the Republic of Poland and the Slovak Republic responsible for transport, development and EU funds. URL: <https://www.mzv.sk/>
- Kamrowska-Zaluska D., Obracht-Prondzynska H. Implementation of the integrated territorial investments. Uncovering the Territorial Dimension of European Union Cohesion Policy. Routledge, 2017. P. 114–126.
- Kang, Y.-D. Development of Regionalism: New Criteria and Typology. *Journal of Economic Integration*. 2016. P. 237
- Kapitonenko, M. (2018, December 26). Slovachchyna-Ukraina: buduiuchy stratehichne partnerstvo? [Slovakia-Ukraine: building a strategic partnership?]. LB.ua. Retrieved from https://ukr.lb.ua/blog/kapitonenko_nikolay/415882_slovachchinaukraina_buduyuchi.html
- Kenen P. Currency internationalisation: an overview. BIS Papers chapters. Bank for International Settlements, 2011. URL: <http://econpapers.repec.org/bookchap/bisbisbpc/61-04.htm>
- Kenen P. The Theory of Optimum Currency Areas: An Eclectic View. *Monetary Problems of the International Economy*. Chicago [u.a.] : University of Chicago Press, 1969. P. 41-60.
- Kish, Ye. B. (2008). Tsentralna Yevropa v suchasniy systemi yevrorehionalnoi intehtratsii: monohrafiia [Central Europe in the modern system of Euroregional integration: a monograph]. Lira.
- Kita, P., Polya, Y.H. (2016). E-commerce Impacts on Selected Economic Area in Slovakia. *International Journal of Innovative Research in Computer and Communication Engineering*, Vol.4(8), 14952-14959.
- Kithinjii, E., Onono, P.A. (2020). Effect of electronic commerce on output and total factor productivity in Kenya. *Journal of Economics And Political Economy*, Vol.7(2), 101-130.
- Klimešová L. 2014. Daňová optimalizace. Praha. European Business School. 248 s. ISBN 978-80-87974-06-3.
- Klimkin P. (June 11, 2020). Eastern Partnership in the new reality: what Ukraine should pay attention to. *Ukrainian Pravda*. <https://www.eurointegration.com.ua/experts/2020/06/11/7110953/>
- Klučka J., Strelcová S., Leláková E. Implementation of euro in Slovakia// *Mechanics. Transport. Communications*. - Issue 2, 2009: <http://www.mtc-aj.com/library/353.pdf>
- Kolessa, O. (1924). Pohliad na istoriiu ukrainsko-cheskykh vzaiemyn vid X do XX v. [A look at the history of Ukrainian-Czech relations from the tenth to the twentieth century]. Prague.
- Komissarova Zh.N., Sergeev E.A. Excessive Budget Deficit Procedure in the Visegrad Countries. *RUDN Newsletter. Series: Economics*. 2018. V. 26. № 2. p. 246 – 257.
- Konstytutsiia Ukrainy [Constitution of Ukraine], pmb. (1996). Retrieved from <https://zakon.rada.gov.ua/laws/show/254%D0%BA/96-%D0%B2%D1%80#Text>
- Korsak, R. V. (2016). Istoriia ukrainsko-cheskykh mizhderzhavnykh vidnosyn (kinets XX pochatok XXI stolittia) [History of Ukrainian-Czech interstate relations (end of 20th beginning of 21st century)]. Uzhhorod National University. Retrieved from https://dspace.uzhnu.edu.ua/jspui/bitstream/lib/6548/1/Препринт_посібника_Історія_українсько-чеських_відносин.pdf
- Kowalska A., Kovarnik J., Hamplova E., Prazak P. 2018. The Selected Topics for Comparison in Visegrad Four Countries. URL: <https://www.mdpi.com/2227-7099/6/3/50/htm>
- Kozovsky D. Otvorené otázky fiškálnej decentralizácie v SR. In: *Decentralizácia verejnej správy Slovenskej republiky – otvorené otázky. Zborník príspevkov*. Bratislava. 2013.
- Krajowy Program Reform. Europe 2020. [National Reform Programme | Europe 2020]. Republic of Poland, Update of 2020/2021. Approved by the Council of Ministers on 28 April 2020
- Krochmal, A. (2005). Dokumenty z istorii Ukrainy i polsko-ukrainskykh vidnosyn u zbirkakh polonistychnykh instytutisii [The Documents on Ukrainian History and Polish-Ukrainian Relationships in Collections of Polish Institutions Abroad]. *Arkhivy Ukrainy*, (4), 60-75.
- Krugman P. Revenge of the Optimum Currency Area. *NBER Macroeconomics Annual*. 2013. Vol. 27. No 1. P. 439–448. DOI: <https://doi.org/10.1086/669188>
- Kryvokon O. H., Bondarenko A. I. (2011) Peredumovy ta perspektyvy rozvytku avtomobilbudivnoi haluzi v Ukraini (Prerequisites and prospects for the development of the automotive industry in Ukraine). *Eastern-European Journal of Enterprise Technologies*, 6/2(54), 46–50
- Kuhnert F., Stürmer Ch., Koster A. Five trends transforming the Automotive Industry. PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft. 2018. URL:

-
- https://www.pwc.at/de/publikationen/branchen-und-wirtschaftsstudien/easy-five-trends-transforming-the-automotive-industry_2018.pdf.
- Kuryliak, M. (2018). Terytorializatsiia i terytorialnyi kapital v systemi rehionalnoi polityky Yevropeiskoho Soiuzu [Territorialisation and territorial capital in the system of regional policy of the European Union]. *Mizhnarodni Vidnosyny. Seria "Ekonomichni Nauky"*, 7. Retrived April 25, 2019, from http://journals.iir.kiev.ua/index.php/ec_n/article/view/3360/3039.
- Kwilinski, A., Trushkina, N. (2019). Logistics cluster as an institution of regional development in the context of economic modernization. *Science and practice: collection of scientific articles* (June 28, 2019, University of Macedonia) (pp. 55-59). Midas S.A., Thessaloniki, Greece.
- LB.ua. (2014, December). 73% ukrainsev podderzhivayut kurs na yevrointegratsiyu [73% of Ukrainians support the European integration course]. Retrieved from https://ukr.lb.ua/society/2014/12/25/290516_73_ukraintsiv_pidtrimuyut_kurs.html
- Leal-Rodríguez A. L., Sanchís-Pedregosa C. (2019) Could the Ease of Doing Business Index be considered a predictor of countries' socio-economic wealth? An empirical analysis using PLS-SEM, 12(4), 229-243 doi:10.14254/2071-8330.2019/12-4/15
- Liashenko, V. I., Osadcha, N. V., Trushkina, N. V. (2021). Mozhlyvi orhanizatsiino-pravovi formy transportno-lohistychnoho klasteru v Prychornomorskomu ekonomichnomu raioni [Possible organizational and legal forms of transport and logistics cluster in the Black Sea economic region]. *Black Sea Economic Studies*, iss. 67, pp. 60-70. <https://doi.org/10.32843/bses.67-10> [in Ukrainian].
- Liashenko, V., Ivanov, S., Trushkina, N. (2021). A Conceptual Approach to Forming a Transport and Logistics Cluster as a Component of the Region's Innovative Infrastructure (on the Example of Prydniprovsky Economic Region of Ukraine). *Virtual Economics*, vol. 4, no. 1, pp. 19-53. [https://doi.org/10.34021/ve.2021.04.01\(2\)](https://doi.org/10.34021/ve.2021.04.01(2)).
- List of Countries by Projector GDS per capita. <https://statisticstimes.com/economy/countries-by-projected-gdp-capita.php>
- Litra L. Chkhikvadze I. (2016). EU membership prospects for Georgia, Moldova and Ukraine: impossible, forgotten and hidden? *Institute of World Politics*. 19 s. in Ukrainian
- Litvinchuk, T. (2020, January 9). U 2019 rotsi v Ukraini zareiestruvaly v 3,5 razu bilshе vzhivanykh avto, nizh rokom ranishe [In 2019, Ukraine registered 3.5 times more used cars than a year earlier]. NV. Retrieved from <https://nv.ua/ukr/biz/markets/u-2019-roci-kilkist-reyestraci-vzhivanih-avto-v-ukrajini-zroslo-v-3-5-razu-novini-ukrajini-50063179.html>
- Lone, S., Harboul, N., Weltevreden, J.W. (2021). 2021 European E-commerce Report. Amsterdam/Brussels: Amsterdam University of Applied Sciences & Ecommerce Europe. 111 p.
- Luebker M. 2004. Globalization on and perceptions of social inequality. In *International Labour Review*, Vol. 143, No. 1-2, pp. 91-128
- Luebker M. 2011. The impact of taxes and transfers on inequality. In *TRAVAIL Policy Brief No. 4*, ILO, Switzerland, pp. 1-8.
- Luukkonen J., Moilanen H. Territoriality in the strategies and practices of the territorial cohesion policy of the European Union: territorial challenges in implementing "soft planning". *European Planning Studies*. 2012. Vol. 20, No. 3. P. 481–500.
- Lysenko, O.Ye., Perehrest, O. H. (2015). Demografichni vtraty Ukrainy u roky Druhoi svitovoi viiny [Demographic losses of Ukraine during the years of Second World War]. *Arkhivy Ukrainy*, 3. Retrieved from https://www.archives.gov.ua/Publicat/AU/AU_3_2015/02.pdf.
- Lytvyn, M. (2010-2011). Pytannia ukrainsko-polskykh vidnosyn u naukovii spadshchyni ta hromadskii diialnosti Yaroslava Isaievycha [Ukrainian-Polish relations in Jaroslav Isaievych's academic legacy and public activities]. *Ukraine Poland: Historical Heritage and Public Consciousness*, (3-4), 5-13.
- Lytvyn, V. (2004). Ukrainsko-uhorski vidnosyny: istorychni tradytsii ta novi obrii spivrobitnytstva [Ukrainian-Hungarian relations: historical traditions and new horizons of cooperation]. *Holos Ukrainy*, 97(3347). Retrieved from <http://www.golos.com.ua/article/234300>
- Lyzun M., Lishchynskyy I. Social Efficiency of European Economic and Monetary Union. *Науковий вісник Полісся*. 2018. № 1 (13). С. 184–188. DOI: 10.25140/2410-9576-2018-1-1(13)-184-188.

- Lyzun M., Lishchynskyy I., Savelyev Y., Kuryliak V., Kurylyak Y. Modeling Evaluation of Dollarization Economic Efficiency. Conference Proceedings. Ceske Budejovice, Czech Republic. 2019. P. 366-370.
- Lyzun M. V. The concepts of optimal and common currency areas in the context of regional monetary integration. *The Journal of European Economy*. 2016. Vol 15, No 3. P. 81–85.
- Lyzun, M., Lishchynskyy, I., Savelyev, Y., Kuryliak, V., Kurylyak, Y. (2019) Modeling Evaluation of Dollarization Economic Efficiency. 2019 9th International Conference on Advanced Computer Information Technologies (ACIT): Conference Proceedings (Ceske Budejovice, Czech Republic, June 5–7, 2019). Ceske Budejovice, Czech Republic, 366–369. Retrieved from DOI: 10.1109/ACITT.2019.8780024
- Maaytová A., Ochrana F., Pavel J. 2015. *Verejné finance v teorii a praxi*. Praha, Grada Publishing. 208 s. ISBN 978-80-247-5561-8.
- Magyarország: Politikai és gazdasági háttér. (2021) URL: https://eacea.ec.europa.eu/national-policies/eurydice/content/political-and-economic-situation-35_hu.
- Mahler V.A., Jesuit, D.K. 2006. Fiscal redistribution in the developed countries: New insights from the Luxembourg Income Study. In *Socio-Economic Review*, Vol. 4, No. 3, pp. 483-511
- Maleto, Ye. I. (2018). *Srednevekovaya Rus' i Konstantinopol'*. *Diplomaticheskiye otnosheniya v kontse XIV - seredine XV v. [Medieval Russia and Constantinople. Diplomatic relations at the end of the 14th - the middle of the 15th century]*. Tsentrpoligraf.
- Markowska-Bzducha E. 2006. *Samodzielność finansowa samorządów terytorialnych w dwudziestu pięciu krajach Unii Europejskiej*. In: *Fundusze Europejskie*. Nr 6(13). 2006. – S.18-21.
- Massey D. Synthetic theory of international migration // In the collection "The world in the mirror of international migration": Scientific series: international migration of the population: The modern world / Ch. ed. V. A. Iontsev. 2002. Issue 10. with. 135.
- McCaughey R.N. *Internationalising a Currency: The Case of the Australian Dollar*. SSRN Scholarly Paper. Rochester, NY: Social Science Research Network, 1 December 2006. URL: <https://papers.ssrn.com/abstract=1632352>.
- McKinnon R. I. *Optimum Currency Areas*. *The American Economic Review*, 1963. Vol. 53, No. 4. P. 717–25.
- Medeiros E. *A coesão territorial nas NUTS iii de fronteira de Portugal continental—a iniciativa interreg-a eo desenvolvimento regional. o caso da nut iii do alentejo central*. Tese de Mestrado, CEG, UL, Lisbon, 2005.
- Medeiros E. *Territorial cohesion: the urban dimension*. 2019. URL: https://books.google.com.ua/books?hl=uk&lr=&id=cXB_DwAAQBAJ&oi=fnd&pg=PR5&dq=implementation+of+eu+territorial+agenda&ots=xKQ7kPyX9d&sig=8HXxPPaNdHkAaGGamtv0qIar6k8&redir_esc=y#v=onepage&q=implementation%20of%20eu%20territorial%20agenda&f=false
- Migration crisis in Europe: causes, consequences, prospects for resolution [Electronic resource] - Access mode: <http://www.scienceforum.ru/2016/1834/23426>
- Migration problems in Europe: thousands of deaths, new borders and a split in the EU <https://tass.ru/mezhdunarodnaya-panorama/2259836>
- Minea A., Villeu P. Threshold Effects in Monetary and Fiscal Policies in a Growth Model: Assessing the Importance of the Financial System. *Journal of Macroeconomics* 31, 304-319.
- Miszczuk A., Miszczuk M., Żuk K. 2007. *Gospodarka samorządu terytorialnego*. Warszawa. PWN. 2007. 220 s. ISBN 978-83-01-15225-3.
- Mongelli F. P. European Economic and Monetary Integration, and the Optimum Currency Area Theory. *European Economy. Economic Papers*. 2008. No. 302. URL: http://ec.europa.eu/economy_finance/publications/pages/publication12081_en.pdf.
- Moskalenko, O. M. (2014). *Vyperedzhaiuchy ekonomichnyi rozvytok: teoretyko-institutsionalni zasady i problemy realizatsii v Ukraini [The advanced economic development: Theoretical and institutional foundations and problems of implementation in Ukraine]*. *Ekonomika Ukrainy*, 8, 633. Retrieved June, 26, 2019.
- Motruk, S. (2006). *Ukrainska Hromada v Chekhii: Istoriia ta Sohoddennia [Ukrainian Community in the Czech Republic: History and Present]*. *Scientific Papers of Kamianets-Podilskyi National Ivan Ohienko University. History*, (5), 38–48.

-
- Mrowiec, P. (2017). Available forms of money in payment turnover versus economic growth of the Visegrad Group countries. *Scientific Journal WSiP*, Vol.2, 59-74.
- Mundell R. A Theory of Optimum Currency Areas. *The American Economic Review*. 1961. Vol. 51, No. 4. P. 657-665.
- Mykhalchuk, T., Zatonatska, T., Dluhopolskyi, O., Zhukovska, A., Dluhopolska, T., Liakhovych, L. (2021). Development of recommendation system in e-commerce using emotional analysis and machine learning methods. The 11th IEEE International Conference on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications (IDAACS), Vol.1 (September 22-25, 2021). Cracow, Poland, 527-535.
- Neubauerová E., Dubrovina N. 2011. Implikácia teórie fiškálneho federalizmu v podmienkach Slovenskej republiky. In *Financie a riziko : zborník príspevkov z XIII. ročníka medzinárodnej vedeckej konferencie, ktorá sa konala 28. novembra 2011 na pôde Ekonomickej univerzity v Bratislave pod záštitou rektora EU v Bratislave Dr. h. c. prof. Ing. Rudolfa Siváka, PhD. [elektronický zdroj]. - Bratislava : Vydavateľstvo EKONÓM, 2011. ISBN 978-80-225-3278-5, s. 120-129. ITMS 26240120032.*
- Neubauerová E., Dubrovina N. 2015. The Main features of tax systems, social contributions and social transfers development in EU countries. - In *Finance and risk 2015. International scientific conference. Finance and risk 2015 : proceedings of the 17th international scientific conference : 23. - 24. november 2015, Bratislava, Slovak Republic. - Bratislava : Publishing house EKONÓM, 2015. ISBN 978-80-225-4218-0, s. 181-190.*
- Neubauerová E., Dubrovina N., Péliová J. 2015. Optimalizácia daňovo-transferového mechanizmu v Slovenskej republike v kontexte krízových vplyvov. In *Sociálno-ekonomiční problémy prostorového rozvítku : monografiija. - Bergdjans`k : O. V. Tkačuk, 2015. ISBN 978-617-7291-04-5, s. 33-40.*
- Neubauerová E., Švarc J., Dubrovina N. Optimalizácia finančného systému územnej samosprávy v kontexte hospodárskej krízy. In *Financie a riziko : zborník príspevkov z XI. ročníka medzinárodnej vedeckej konferencie. - Bratislava : Vydavateľstvo EKONÓM, 2009. ISBN 978-80-225-2867-2, s. 284-293.*
- Nižňanský V., Cibáková V., Hamalová M. 2014. Tretia etapa decentralizácie verejnej správy na Slovensku. *Wolters Kluwer. VSEMVS. 2014. 231 s. ISBN 978-80-8168-138-7.*
- Ochotnický P. a kol. 2012. *Analýza a prognóza vo financiách. Bratislava, Ekonomia. 2012. 197 s. ISBN 978-80-8078-484-3.*
- Ochotnický, P. 2012. *Fiškálna udržateľnosť. Bratislava, Iura Edition. 2012. 134 s. ISBN 978-80-8078-538-3.*
- Ochrana F., Pavel J., Vitek L. 2010. *Verejný sektor a verejné financie. Praha. Grada Publishing. 264 s. ISBN 978-80-247-3228-2.*
- OECD 2012, "Income inequality and growth: The role of taxes and transfers", OECD Economics Department Policy Notes, No. 9. January 2012.
- Owsiak S. 2005. *Finanse publiczne. Teoria i praktyka. Warszawa. PWN. 2005.838 s. ISBN 83-01-14411-4.*
- Panfilova T. *Convergence and Divergence of the Sphere of Public Finances of EU Member States and Ukraine. Ekon. Ukr.2020. № 7. pp. 108-120.*
- Pauhofova I. a kolektív. 2013. *Paradigmy zmien v 21 storoci. Európa, Slovensko – súvislosti globálneho ekonomického a mierového potenciálu. Bratislava, 2013.*
- Pechova A. *Legitimising discourses in the framework of European integration: The politics of Euro adoption in the Czech Republic and Slovakia. Review of International Political Economy. 2012. Vol. 19, No 5. P. 779-807.*
- Piore M. *Birds of passage. Migrant labour and industrial societies [Text] // New York: Cambridge University Press, 1979. 229 p.*
- Policy Tracker. IMF. URL: <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>.
- Polly Reynolds Allen, *Organization and Administration of a Monetary Union (International Finance Section, Dept. of Economics, Princeton University, 1976).*
- Population, surface area and density. UNdata. A word of information.URL: http://data.un.org/_Docs/SYB/PDFs/SYB61_T02_Population,%20Surface%20Area%20and%20Density.pdf

- Prud'homme R. 1995. The Dangers of Decentralization. World Bank Research Observer 10. No.2.
- Prykhodko V. P. Investytsiina bezpeka yak vazhlyvyi chynnyk podolannia finansovo ekonomichnoi kryzy (Investment security as an important factor in overcoming Publications Office of the European Union Assessing the performance of integrated territorial and urban strategies : challenges, emerging approaches and options for the future. 2018. URL: <https://publications.europa.eu/en/publication-detail/-/publication/41d4bc2b-20f4-11e8-ac73-01aa75ed71a1/language-en>
- Pushak, H. I., Trushkina, N. V. (2021). Obruntuvannia dotsilnosti stvorennia transportno-lohystychnoho klasteru v Karpatskomu ekonomichnomu raioni [Substantiation of Expediency of Creation of Transport and Logistics Cluster in the Carpathian Economic Region]. Economic Herald of the Donbas, no. 1(63), pp. 61-77. [https://doi.org/10.12958/1817-3772-2021-1\(63\)-61-77](https://doi.org/10.12958/1817-3772-2021-1(63)-61-77) [in Ukrainian].
- Pyrozhkov, S. I. (2004). Demohrafichnyi faktor u hlobalnii stratehii rozvytku Ukrainy [Demographic factor in the global development strategy of Ukraine]. Demohrafiia ta Protsesy Vidtvorennia Naselennia, 1-2, 5-7. Retrieved from – <http://dspace.nbuv.gov.ua/handle/123456789/11854>
- Racz A. (2011). A Limited Priority: Hungary and Eastern Neighborhood. Perspectives. Vol. 19, №2. P. 143-163. https://www.researchgate.net/publication/297300820_A_limited_priority_Hungary_and_the_eastern_neighborhood_perspectives
- Ravenstein E.G. The Laws of Migration [Text] // Journal of the Statistical Society of London. 1885. Vol. 48, No. 2. P. 167-235.
- Rechnitzer J., Hausmann R., Tóth T. (2017). A magyar autóipar helyzete nemzetközi tükörben. URL: <https://hitelinteziszemle.mnb.hu/letoltes/rechnitzer-janos-hausmann-robert-toth-tamas.pdf>.
- Richter Ch., Paparas D. 2013. Tax and Spend, Spend and Tax, Fiscal Synchronization or Institutional Separation? Examining of the Case of Greece. In Working Paper. International Network for Economic Research. Available at: www.infer-research.net
- Ryznykov, V. V., & Borodenko, M. M. (2014). Ekonomiko –Dyplomatychnyi Aspekt Ukrainsko-Cheskykh Vidnosyn na Suchasnomu Etapi [Current Economic and Diplomatic Aspect of Ukrainian-Czech Relations]. The Journal of V. N. Karazin Kharkiv National University Series: 'International Relations. Economics. Country Studies, Tourism', 1(3), 61-64.
- Sadchenko E.V., Duzhan V. Labor emigration in Ukraine // Theory and practice of safe management: materials of the international. Scient.-practical. conf., Lutsk, May 18, 2017 / . ed. prof. L. M. Cherchik. Lutsk, 2017. C. 179-181.
- Sadchenko O.V. Migration as a Socio-Economic Factor of Sustainable Development / Economic innovations: collection of scientific works. Odesa, 2017. Issue 63. C.252-259.
- Saha, D., Giucci, R., Naumenko, D., & Kovalchuk, A. (2014). Ukrainian Machine Building: Strategic options and short term measures in view of trade disruptions with Russia. German Advisory Group Institute for Economic Research and Policy Consulting. Retrieved from http://www.ier.com.ua/files/publications/Policy_papers/German_advisory_group/PP_02_2014_en_f.pdf
- Sanin, H.A. (2018). Rossiya i Ukraina v Vestfal'skoy sisteme mezhdunarodnykh otnosheniy, 1648—1667 gg. [Russia and Ukraine in the Westphalian system of international relations, 1648-1667]. Institute of Russian History of RAS: Tsentri gumanitarnykh iniciativ.
- Savelyev Y., Lyzun M., Kuryliak V., Lishchynskyy I. Economic Integration of the Visegrad Four and Ukraine in the Context of Historical Narratives and Global Challenges European Journal of Sustainable Development, Vol 10, No 2.-P. 44-58. Doi:10.14207/ejsd.2021.v10n2p44
- Schultzová A. a kolektiv. 2009. Daňovníctvo: daňová teória a politika. Bratislava. Iura Edition. 2009. 260 s. ISBN 978-80-8078-407-2.
- Second report on economic and social cohesion. 2001. URL: <https://www.eesc.europa.eu/en/our-work/opinions-information-reports/opinions/second-report-economic-and-social-cohesion>
- Shah A., Shah S. 2006. The New Vision of Local Governance and Evolving Roles of Local Governments. In Local Governance in Developing Countries. Washington, DC. World Bank.
- Shevchenko I. Yu. Harmonizatsiia yak novitnii pidkhid do derzhavnogo rehuliuвання rozvytku malosubiektnykh haluzei natsionalnoi ekonomiky (na prykladi avtomobilnoi promyslovosti Ukrainy). International scientific and practical conference, November 2020, 27-28.

-
- Shevchenko I. Yu. Rehuliuвання розвитку avtomobilebuduvannya Ukrainy: monohrafiia (Regulation of automobile development of Ukraine: monograph). (Kharkiv: KhNADU, 2019), p.556
- Shishelina L. Visegrad group against the background of the challenges of 2020 // *Modern Europe*, 2020. № 5. С.89-98
- Shishelina L.N. (Eds.) (2017). *Vyshegradskaya chetyvorka v Evropejskom soyuze: dilemmy konvergencii* [The Visegrad Four in the European Union: Dilemmas of Convergence]. Moscow, Institute of Europe RAS.
- Shumska S. (2013) Theory of optimum currency area: criteria and analysis of indicators of integration processes in Ukraine and the CIS, No 4, pp. 48-65
- Single European Act. 1986 URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM%3Axy0027>.
- Sivák R. a kol. 2007. Verejne financie. Bratislava. *Ekonomia*. 2007. 312 s. ISBN 978-80-8078-094-4.
- Skrzypek, A., Skóra, M. (Eds.) (September-December 2017). *The Future of the Visegrad Group*. Brussels / Berlin. Retrieved May 06, 2019.
- Slušná L., Balog M. et al., *Automobilový priemysel na Slovensku a globálne hodnotové reťazce* Slovenská inovačná a energetická agentúra (Bratislava, 2015). URL: https://www.siea.sk/wp-content/uploads/files/inovacie/publikacie/studia_Automobilovy_priemysel_na_Slovensku_a_globalne_hodnotove_retazce_SIEA_web.pdf
- Snyder, T. (2011). *Bloodlands: Europe between Hitler and Stalin*. Random House.
- Social protection statistics – overview. Data extracted in September 2020. Eurostat. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Social_protection_statistics_-_overview
- Sokotowicz, M. E., & Lishchynskyy, I. (2018). Are Poland and Ukraine gravity centres for each other? Study on the labour migration patterns. *Comparative economic research*, 21(1), 45-65. Retrieved from DOI: 10.2478/cer-2018-0003
- Solonenko, I. (2011), 'Added Value? Eastern Partnership and EU-Ukraine Bilateral Relations', in *Internationale Politik und Gesellschaft* 3-2011, pp. 120-133. <http://www.fes.de/ipg/>
- Statistical Data Warehouse (2021). URL: <https://sdw.ecb.europa.eu>.
- Sterniuk O. B. (2009) *Osoblyvosti asortymentnoi polityky avtomobilebudivnoho pidpriemstva v umovakh kryzy* (Features of the assortment policy of the automobile enterprise in the conditions of crisis). *Journal of Lviv Polytechnic National University. Series of Economics and Management Issues*, 640, 400 – 406
- Tanzi V. 2001. Pitfalls on the Road to Fiscal Decentralization. Working Paper. No. 19. Carnegie Endowment for International Peace, Washington DC.
- Tavlas G. S. The 'New' Theory of Optimum Currency Areas. *World Economy*. 1993. Vol. 16. No 6. P. 663–685. DOI: <https://doi.org/10.1111/j.1467-9701.1993.tb00189.x>.
- Taxation Trends in the European Union. Data for the EU Member States, Iceland and Norway. 2014. Available at: <http://ec.europa.eu/taxtrends>
- Territorial Agenda of the European Union. Towards an Inclusive, Smart and Sustainable Europe of Diverse Regions (2011). Retrieved April 25, 2019, from http://www.nweurope.eu/media/1216/territorial_agenda_2020.pdf.
- The Budapest Times (2019, February 11). 'Important milestone' in history of Ukrainian-Hungarian relations. Retrieved from <https://www.archiv.budapesttimes.hu/2019/02/11/important-milestone-history-ukrainian-hungarian-relations>
- The Future of the Visegrad Group. Ania Skrzypek, Maria Skóra (eds.). Brussels/Berlin September–December 2017. 56 p. (Last accessed: 06.05.2019)
- The IMF. *World Economic Outlook*. Retrieved June 11, 2019, from <https://www.imf.org/external/index.htm>.
- The migration crisis in Europe in figures and charts [Electronic resource] - Access mode: http://www.bbc.com/russian/international/2016/02/160219_migrant_crisis_charts
- The number of illegal migrants arriving in the European Union. [Electronic resource] - Access mode: <https://www.dw.com/number-of-illegal-migrants-arriving-in-the-European-Union-has-decreased/a-51797272>
- The Situation of the Visegrad Group Countries in the Context of the Aggravation of the Migration Crisis in the EU [Text] / A.S. Chetverikova // *Contours of global transformations: politics, economics, law*. 2017. Vol. 10.No. 4.P. 130-143.

- The territorial dimension of environmental sustainability – potential territorial indicators to support the environmental dimension of territorial cohesion. 2010. URL: <https://www.eea.europa.eu/publications/the-territorial-dimension-of-environmental-sustainability>
- The UNO. Population, surface area and density. UNdata. A word of information. Retrieved from http://data.un.org/_Docs/SYB/PDFs/SYB61_T02_Population,%20Surface%20Area%20and%20Density.pdf.
- The Visegrad Four in the European Union: Convergence Dilemmas. The Visegrad Four in the European Union: Dilemmas of Convergence / [resp. ed. L.N. Shishelina]. Moscow: Institute of Evropy RAS, 2017. 138 p. (Reports of the Institute of Europe / Reports of the Institute of Europe / Federal State Budgetary Institution of Science Institute of Europe Russian Acad. Sciences; No. 342). Paral. tit. 1. English ISBN 978-5-98163-094-1.
- The Visegrad Group Joint Statement on 10th Anniversary of the Eastern Partnership [PDF]; Bratislava, May 6, 2019. URL: <http://www.visegradgroup.eu/documents/official-statements>
- The World Bank. Growing United: Upgrading Europe's Convergence Machine. Overview. Retrieved from <http://documents.worldbank.org/curated/en/852701520358672738>.
- This is the golden age: Eastern Europe's extraordinary 30-year revival. *theguardian.com*. 27.10.2019
- Tiebout Ch. 1956. A Pure Theory of Local Expenditures. *Journal of Political Economy* 64, is. 5.
- Tirunen M., Radvanský M. 2009. Trendy regionálnych disparít Slovenska. Bratislava. 2009. 180 s. ISBN 978-80-7144-176-2.
- Tkach, D. I. (2009). Ukraïnsko-Uhorski Vidnosyny Novitnoi Doby [Ukrainian-Hungarian Relations of Modern Times]. *Annual Journal of the Diplomatic Academy of Ukraine*, (15), 78-89. Retrieved from <https://www.krok.edu.ua/download/publikatsiji/tkach-dmitro-ivanovich/dmitro-tkach-publikatsiya-012.pdf>
- Tkachenko, I. (2013). Istorychna Retrospektyva Vzaiemyn Ukrainy z Cheskoïu Respublikoïu [Historical Retrospective Review of Relation between Ukraine and Czech Republic]. *Scientific Notes*, (4), 260-271. Retrieved from http://nbuv.gov.ua/UJRN/Nzzipiend_2013_4_26
- Toma B. Ako Detroit? Domáci automobilový priemysel čakajú posledné dobré roky. 2020. URL: <https://ekonomika.pravda.sk/firmy-a-trhy/clanok/538578-koniec-ako-detroit-domaci-automobilovy-priemysel-cakaju-posledne-dobre-roky/>
- Tosics I. Integrated territorial investment: a missed opportunity? EU Cohesion Policy (Open Access). Routledge, 2016. P. 284–296.
- Traczyk W., Klass L. Poland: Good Results of the Automotive industry. *Spotlightmetal*. 25.03.2019. URL: https://www.spotlightmetal.com/poland-good-results-of-the-automotive-industry-a-812409/?cmp=go-ta-art-trf-SLM_Allg_DSA-20201118&glid=CjwKCAiAiML-BRAAEiwAuWVgghldgE2Qyd2Z2xVU_7mOfwDOtjh
- Treaty of Lisbon Amending the Treaty on European Union and the Treaty Establishing the European Community 2007 URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A12007L%2FTXT>
- Treaty on the functioning of the European Union. *Eur-lex.europa.eu*. 2016. URL: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:12012E/TXT&from=EN>
- Treisman D. 2000. Decentralization and the Quality of Government. Department of Political Science, University of California at Los Angeles.
- Trushkina, N. (2019a). Financial ensuring mechanism of management innovative development of the transport-logistics system. In M. Bezpartochnyi (Ed.). *Organizational-economic mechanism of management innovative development of economic entities: collective monograph* (pp. 227-236). Przeworsk: WSSG, Vol. 3.
- Trushkina, N. (2019b). Strategic directions of development of regional transport and logistics systems in Ukraine. *Proceedings of the 1st International Symposium on Intellectual Economics, Management and Education* (September 20, 2019, Vilnius Gediminas Technical University, Vilnius, Lithuania) (pp. 182-183). Bulgaria: Publishing House FABER ltd-Veliko Tarnovo.
- Trushkina, N., Dzwigol, H., Kwilinski, A. (2021). Cluster Model of Organizing Logistics in the Region (on the Example of the Economic District “Podillya”). *Journal of European Economy*, vol. 20, no. 1, pp. 127-145. <https://doi.org/10.35774/jee2021.01.127>.

- Tsizhma, Yu. A. (2013). Kontsepsiia fleksikiuriti ta nestandartni formy zainiatosti: vyklyky sohodennia [The concept of flexicurity and non-regular forms of employment: Today's challenges]. *Biznesinform*, 7, 197-202.
- Tulder R., Ruigrok W. International production networks in the auto industry: Central and Eastern Europe as the low end of the West European car complexes. *Enlarging Europe: The Industrial Foundations of a New Political Reality*. (University of California at Berkeley, 1998). 2020-237. <https://escholarship.org/content/qt13s757cx/qt13s757cx.pdf#page=206>
- Turchenko, M. S., & Zavadskaya, M. A. (2017). Kauzal'nyy Mekhanizm vs Nagromozhdeniye Faktov? Kriterii Otsenki Prichinno-Sledstvennykh Svyazey v Case Studies [Casual Mechanism vs Pile of Facts: How to Evaluate Casual Links in Case Study Research]. *Polis. Political Studies*, (2), 134-146. Retrieved from <https://doi.org/10.17976/jpps/2017.02.09>
- Udržateľnosť automobilového priemyslu na Slovensku. *Môj Elektromobil*. 2019. URL: <https://www.mojelektromobil.sk/elektromobilita/infrastruktura/nabijacie-stanice>
- Ukrainian-Hungarian historical times. (1964). *Naukova Dumka*. Retrieved from http://history.org.ua/LiberUA/UkrUglstZv_1964/UkrUglstZv_1964.pdf
- Unemployment statistics and beyond. Eurostat. URL: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Unemployment_statistics_and_beyond
- URBACT III operational programme. European Regional Development Fund 2014–2020. URL: https://ec.europa.eu/regional_policy/en/atlas/programmes/2014-2020/czechia/2014tc16rfir003
- Vahner, O. (2006, August 18). Ukraintsi v Chekhii: maizhe sto rokov natsionalnoi istorii [Ukrainians in the Czech Republic: almost a hundred years of national history]. Retrieved from https://zn.ua/ukr/SOCIUM/ukrayintsi_v_chehiyi_mayzhe_sto_rokov_natsionalnoyi_istoriyi.html
- Vanolo A. European spatial planning between competitiveness and territorial cohesion: shadows of neo-liberalism. *European Planning Studies*. 2010. Vol. 18, No. 8. P. 1301–1315.
- Visegrad Group: A new economic heart of Europe? DW recommends. URL: <https://www.dw.com/en/visegrad-group-a-new-economic-heart-of-europe/a-49483505>
- Vorotniuk, M. (2016). Foreign Policy Audit: Ukraine-Slovakia. Institute of World Policy. Retrieved from https://glavcom.ua/pub/pdf/10/1037//Aud_Ukr_Slovak_01_40_ukr.pdf
- Výrostopová E. 2010. Regionalna ekonomika a rozvoj. Bratislava, Iura Edition. 352 s.
- Wang, T., Huang, L. (2018). An Empirical Study on the Relationship between Agricultural Science and Technology Input and Agricultural Economic Growth Based on E-Commerce Model. *Sustainability*, MDPI, Vol.10(12), 1-12.
- Warwick E. J. P. Defensible space as a mobile concept: the role of transfer mechanisms and evidence in housing research, policy and practice. King's College London, 2015.
- White and evil. They hate migrants and spit on decency. They are the future of Europe <https://lenta.ru/articles/2018/04/04/visegrad/>
- White S. 2011. Government Decentralization in 21 st Century. A literature review. CSIS. Center for Strategic & International Studies. – 26 p.
- World Migration Report 2020. International Organization for Migration (IOM). 2020. 550 c. https://publications.iom.int/system/files/pdf/final-wmr_2020-ru.pdf (www.iom.int/wmr).
- Wu X., Perloff J., Golan A. 2006. Effects of taxes and other Government Policies on Income Distribution and Welfare. In University of California, Berkeley. 2006. Available at: <http://are.berkeley.edu/~perloff/PDF/tax.pdf>
- Yudina T.N. Sociology of Migration: Textbook for Universities. M: Academic Project, 2006. 272 c.
- Yurasov, M. (2018). Na zapadnykh rubezhakh Rusi [On the western borders of Russia]. *Nauka*.
- Yurynets O. V., Marushchak O. Ya., Tendentsii ta perspektivy rozvytku avtomobilebudivnoi haluzi Ukrainy u pislakryzovyi period (Trends and prospects for the development of the automotive industry in Ukraine in the post-crisis period), 99-105. (Lviv Polytechnic National University, 2013) <http://ena.lp.edu.ua/bitstream/ntb/23411/1/15-99-105.pdf>
- Zadoia A. O. (2017) De stvoruietsia VVP, abo industrializatsiia chy deindustrializatsiia? (Where is GDP created, or industrialization or deindustrialization?). *European vector of economic development*. 2(23), 27-41 Abylkalikov S. I., Vinnik M. V. Economic theory of migration: labor force and labor market. 2012. № 12. C. 1–19. <https://www.hse.ru/mag/27364712/2012--12/71249233.html>

- Zatonatska, T. (2018). Models for analysis of impact of the e-commerce on indicators of economic development of Ukraine, Poland and Austria. *Marketing and Management of Innovations*, Vol.2, 44-53.
- Zub, S. (2018). Osnovni Chynnyky Vnutrishnoi ta Zovnishnoi Vzaiemodii Krain Vyshehradskoi Hrupy [The Main Factors of Internal and External Interaction of the Visegrad Countries]. *Geopolitics of Ukraine: history and modern times*, 1(20), 217-235. Retrieved from DOI:10.24144/2078-1431.2018.1(20).231-249
- Zwet A. Van, Bachtler J., Ferry M., [et al.] *Integrated territorial and urban strategies-how are ESIF adding value in 2014-2020?* 2017.
- Азарова, А.О., Теслюк, О.В. (2017). Проблеми розвитку платіжної системи України та шляхи їх вирішення. *Вісник Хмельницького національного університету. Економічні науки*, №1, 19-22.
- Ананьева. Е.В. «Вышеградская» стратегия развития Карпатского региона. *Современная Европа*. 2018. № 7. С. 86-95. URL: <http://www.sov-europe.ru/2018/7-2018/8.pdf> (дата звернення: 06.05.2019)
- Велике будівництво: програма Президента України. URL: <https://bigbud.kmu.gov.ua/>
- Вышеградская четвёрка в Европейском союзе: дилеммы конвергенции = The Visegrad Four in the European Union: Dilemmas of Convergence / [отв. ред. Л.Н. Шишелина]. – М. : Ин-т Европы РАН, 2017. –
- Другопольський, О.В., Вірковська, А.Ю. (2020). Економіка і я: посібник серії «Шкільна бібліотека» для 7 класу закладів загальної середньої освіти. Тернопіль: Астон. 144 с.
- Затонацька, Т., Новосолова, В. (2017). Моделювання впливу електронної комерції на економічний розвиток країни. *Фінансово-кредитна діяльність: проблеми теорії та практики*, Vol.1(22), 265-274.
- Лендшел М. Л. Україна та Вишеградська четвірка: стан і перспективи розвитку відносин. Аналітична записка. URL: <http://old2.niss.gov.ua/articles/1861/>
- Лизун М. В. Архітектура сучасних процесів регіональної інтеграції. *Економіка та суспільство*. 2017. № 13. С. 102–107. URL: <http://economyandsociety.in.ua/jour-nal/13ukr/17.pdf>
- Лизун М. В. Валютна інтернаціоналізація кризь призму детермінуючих факторів та функцій. *Науковий вісник Ужгородського національного університету. Серія: Міжнародні економічні відносини та світове господарство*. 2017. Вип.13. Частина 2. С. 9-12
- Лизун М. В. Валютні війни в світовому геомонетарному просторі. *Бізнес-навігатор*. 2017. Вип. 4-1 (43). С. 26–30.
- Лизун М. В. Валютні союзи: теоретичні підходи до трактування та мотивація створення. *Науковий вісник Міжнародного гуманітарного університету. Серія: «Економіка і менеджмент»*. 2017. Вип.25. Частина 1. С. 25-28
- Лизун М. В. Вплив інтернаціоналізації валюти на розвиток бізнес. *Міжнародні відносини. Серія «Економічні науки»*. 2017. № 10. URL: <http://journals.iir.kiev.ua/index>.
- Лизун М. В. Глобальні виклики регіональної валютної інтеграції: монографія. Тернопіль: Економічна думка, 2017. 426 с.
- Лизун М. В. Економічна ефективність валютних рад у межах монетарної інтеграції. *Проблеми системного підходу в економіці*. 2017. Випуск 6 (62). Частина 1. С. 44-49
- Лизун М. В. Особливості розвитку процесу інтернаціоналізації валюти в рамках геополітичного підходу. *Science of Europe*. 2017. Vol 1. №17 (17). С. 32–37
- Лизун М. В. Розвиток парадигми регіональної валютної інтеграції. *Економічний простір*. 2017. №125. С. 5-16
- Лизун М. В. Розвиток процесів регіональної економічної інтеграції: валютний аспект. *Галицький Вісник*. 2016. № 1(50). С. 155–163
- Лизун М. В. Розвиток світової валютної системи кризь призму її елементів. *Вісник Тернопільського національного економічного університету*. 2016. Вип. 4. С.82-94.
- Лизун М. В. Сучасні тенденції формування та розвитку валютних союзів. *Вісник Одеського національного університету. Економіка*. 2017. Том 22. Вип. 2 (55). С. 22–26
- Лизун М. В., Комар Н. В. Теорія та практика антиінфляційного регулювання. *Ефективна економіка*. 2012. № 2. URL: <http://www.economy.nayka.com.ua/index.php?op=1&z=962>

-
- Лизун М. В., Ліщинський І. О. Валютні союзи: ретроспективні та сучасні форми. *Економічний простір*. 2017. № 118. С. 47–59
- Лизун М. В., Ліщинський І. О. Глобальне управління в контексті формування світового економічного порядку. *Наука молода*. 2013. Вип. 20. С. 40–46.
- Лизун М. В., Ліщинський І. О. Регулювання ринку цінних паперів в розвинутих країнах світу: досвід для України. *Збірник наукових праць Черкаського державного технологічного університету. Серія: Економічні науки*. 2014. Вип. 38 (ч. 2). С. 12–17.
- Лизун М. В., Савельєв Е. В., Куриляк В. Е., Лищинский И. О. Global monetary integration and determination of strategic priorities for the exchange rate policy in Ukraine. *Годишник на СА „Д. А. Ценов”*. 2017. №120. С. 177-226.
- Лизун М. Моделі економічного зростання світової та української економіки. *Журнал європейської економіки*. 2006. N 2. С. 154-164
- Лисенко О. С., Перехрест О. Г. Демографічні втрати України у роки Другої світової війни. *Архіви України*. 2015. № 3. URL: https://www.archives.gov.ua/Publicat/AU/AU_3_2015/02.pdf
- Ліщинський І. Нова економічна географія та альтернативні концепції агломерації виробництва. *Журнал Європейської економіки*. 2009. Том 8. №3. 348с. С. 241-264
- Ліщинський І. О. «Благословенна трійця» регіональної економіки. *Держава Та Регіони*. 2018. №5(104). С. 4-11.
- Ліщинський І. О. «Перезапуск» концепції полюсів зростання. *Збірник тез доповідей Міжнародної науково-практичної Інтернет-конференції студентів та молодих вчених*. Тернопіль: ТНЕУ. 2017. С. 40-43.
- Ліщинський І. О. Агломераційні форми міжнародної та просторової економічної інтеграції України. *Структурні реформи економіки: світовий досвід, інститути, стратегії для України: монографія*. Тернопіль: ТНЕУ, 2011. С. 591-605.
- Ліщинський І. О. Агломерація інноваційного виробництва в країнах «Старої Європи». *Вісник Тернопільського Національного Економічного Університету*. 2009. № 5. С. 145-157.
- Ліщинський І. О. Глокалізація, фрагментація та альтернативні візії внутрішніх геоелементів суперечностей. *Науковий Вісник Ужгородського Національного Університету*. 2018. № 22. Ч. 2. С. 77-81.
- Ліщинський І. О. Зasadничі принципи стратегії полюсів зростання. *Інтелект XXI ст*. 2018. № 6. С. 77-81.
- Ліщинський І. О. Інноваційні форми агломерації виробництва: кластери та креативні регіони. *Вісник Тернопільського Національного Економічного Університету*. 2010. №5(1). С. 158-166.
- Ліщинський І. О. Інституційні передумови формування кластерних агломераційних структур в Україні. *Перший етап модернізації економіки України: досвід та проблеми: монографія*. Запоріжжя: Класичний приватний університет. 2014. С. 644-649.
- Ліщинський І. О. Концептуальний мейнстрим регіонального зростання. *Економічний Вісник Запорізької Державної Інженерної Академії*. 2018. №6(18). С. 46-51.
- Ліщинський І. О. Новий міський регіоналізм як сучасна парадигма регіональної економіки. *Бізнес-Навігатор*. 2018. №6(49). С. 14-18.
- Ліщинський І. О. Політика територіальної когезії в контексті регіональної безпеки ЄС. *Журнал європейської економіки*. 2019. Т.18. № 4. С. 387-403
- Ліщинський І. О. Поліси та осі розвитку в контексті глокалізаційних процесів: монографія. Тернопіль: ТНЕУ, 2019. 364 с.
- Ліщинський І.О., Лизун М.В. Концептуальні візії регіональної та глобальної безпеки. *Вісник Тернопільського національного економічного університету*. 2020. №2.
- Пирожков С. І. Демографічний фактор у глобальній стратегії розвитку України. *Демографія та процеси відтворення населення*. 2004. №1-2. С-5-7. URL: <http://dspace.nbuv.gov.ua/handle/123456789/11854>
- Юрчук Н.П. (2017). Особливості платіжного середовища систем електронної комерції в Україні. *Економіка. Фінанси. Менеджмент: актуальні питання науки і практики*, №6, 157-170.

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