

CONCEPTUAL BASIS OF TAX POLICY FORMATION IN THE GLOBALIZATION CONDITIONS

Svitlana Khalatur¹, Olena Trokhymets², Oleksandr Karamushka³

Abstract. *The purpose* of the article is to analyze the tax systems of the countries of the European Union and Ukraine, the impact of individual indicators of the tax system on the economies development, study the possibility of applying the accumulated experience. *The subject-matter* of the study is the methodological and conceptual foundations of the tax policy-making process of the EU and Ukraine. *Methodology.* Based on the analyzed scientific literature on tax policy formulation of countries, the methodological principles of this study provide for the joint application of a set of well-known general scientific and special methods of research in economics. In particular, the dialectical method, the method of scientific abstraction, the method of systematic analysis, economic and mathematical modeling were used. *Results.* The article analyzes the individual indicators of the tax system functioning of 28 countries of the European Union and Ukraine; and the impact of these indicators on the economy development. In particular, the following indicators were studied: customs and other import duties, firms expected to give gifts in meetings with tax officials; firms that do not report all sales for tax purposes; firms visited or required meetings with tax officials; labor tax and contributions; net taxes on products; other taxes; other taxes payable by businesses; profit tax; tax payments; tax revenue; taxes on exports; taxes on goods and services; taxes on income, profits and capital gains; taxes on income, profits and capital gains; taxes on international trade; time to prepare and pay taxes; total tax rate. The dependence of foreign direct investment on profit tax, tax revenue; taxes on income, profits and capital gains; time to prepare and pay taxes and total tax rate have been studied. The study shows that, on average, tax revenue affects foreign direct investment, net inflows with the same strength as time to prepare and pay taxes, but almost twice as much as taxes on income, profits and capital gains. *Practical implications.* The article contains a set of tools and rules for reviewing approaches, guidelines and criteria for the effectiveness of Ukraine's tax policy in line with the global development concept. *Value / originality.* The conceptual criteria for the formation and implementation of the tax policy of the state are determined, it is carried out the comparative analysis of the tax policy of Ukraine and the EU countries within the framework of the European economic integration, which occurs simultaneously with the globalization of the world economy.

Key words: tax, labor tax, tax rate, profit tax, tax revenue.

JEL Classification: C51, E62, F63

1. Introduction

Being a coherent system, the economic system of a country combines the various, often conflicting interests of its members. At the same time, the process of tax regulation is also free of conflicts, since the interests and local goals of its participants do not coincide.

Exacerbation of conflicts arising in the process of tax policy development of the state occurs during periods of downturn, increased competition and in times of economic crisis. This fact necessitates the search for the concept of the tax policy of the state aimed at the maximum reduction of conflict situations in order to

Corresponding author:

¹ Dnipro State Agrarian and Economic University, Ukraine.

E-mail: skhalatur@gmail.com

ORCID: <https://orcid.org/0000-0001-8331-3341>

ResearcherID: T-7645-2019

² Classic Private University, Ukraine.

E-mail: yelena.trohim@gmail.com

ORCID: <https://orcid.org/0000-0001-7587-7948>

ResearcherID: O-2591-2018

³ Dnipro State Agrarian and Economic University, Ukraine.

E-mail: k80504949768@gmail.com

ORCID: <https://orcid.org/0000-0002-9369-7972>

ResearcherID: T-7645-2019

preserve the stability and integrity of society, reduce social tension.

European economic integration, which occurs at the same time as the globalization of the world economy, updates tax policy studies not only at the level of the state, which, in particular, seeks to reap the benefits of engaging in global economic ties and participation in integration processes, but also at the level of integration (supranational level). Moreover, these two tax policy makers develop it to achieve positive shifts in socio-economic development, but set different goals depending on their priorities for functioning and development. A taxpayer state aims primarily to pursue its own national interests under specific internal and external socio-economic and institutional conditions (including, depending on whether it seeks to improve the functioning of its economy as one of the world leaders in terms of economic development), is geared to growing economic development by reducing the gap between world leaders). At the same time, the tax policy of integration education presupposes balancing of often conflicting national interests in order to create favorable conditions for the development of integration education as a whole and its participants in particular. Sometimes this requires the latter's consent to the deterioration of certain economic conditions for other benefits in the near future as well as in the future.

The aim of the article is to analyze the tax systems of the countries of the European Union and Ukraine, the impact of individual indicators of the tax system on the economies development, to study the possibility of applying the learned lessons.

2. Previous research review

Naidenko O. (2019) writes that the socio-economic processes that take place in the country affect the welfare of the population. Rating estimates of recent years indicate deterioration in the level of well-being, human and social development of the population in Ukraine, global wealth.

Hrysenko M., Pryiatelchuk O. and Shvorak L. (2019) argue that the social market economy is the dominant economic system for industrialized countries. In addition to creating economic and technological conditions, the active participation of the state is a key factor in the effective functioning and sustainable development of the economy. Glushchenko J. and Kozhalina N. (2019) consider local taxation, its problematic aspects and trends. Economic independence of any community is not possible without sufficient financial resources, relative independence of tax and other mandatory payments.

Uwuigbe O. R., Omoyiola A., Uwuigbe U., Lanre N. and Ajetunmobi O. (2019) write that taxation is a very important tool in any country. It is a macroeconomic tool, very necessary for the functioning of the state. Oladipo O. A., Iyoha F., Fakile A., Asaley A.J. and

Eluyela D. F. (2019) rightly argue that taxation is a sustainable and genuine source of government revenue, a tool for macroeconomic policy and fiscal management.

3. Modern trends in tax policies of Ukraine and the European countries

Conceptual criteria for the formation and implementation of state tax policy are the following:

1. **Compromise.** It is necessary to balance the interests of the state, business sector and citizens, so that all subjects of redistribution relations are satisfied with the results of redistribution approximately equally. Government expenditures should ensure the optimal combination of social measures and measures to promote GDP growth.

2. **Complementarity of tax changes.** Tax innovations should be well coordinated with other legislation, provide for measures to influence the informal level of the institutional environment, and be positively assessed by society.

3. **Rejection of radical tax initiatives.** Significant changes in taxation are often associated not so much with the positive economic effect and expansion of the tax base, but with the fiscal losses that have to be offset by government borrowing.

4. **Stability and flexibility.** The tax policy should, on the one hand, correspond to the directions of modification of the tax system and the system of contributions to state social funds defined in its concept, and on the other hand, to respond to changes in the reproductive and fiscal processes quickly.

For a more detailed explanation of the study topic, let us analyze the individual indicators of the tax system functioning of 28 countries of the European Union and Ukraine; and the impact of these indicators on the economy development. Thus, let us compare the indicators related to the tax system in the EU countries and Ukraine, in particular the following indicators will be analyzed: customs and other import duties (% of tax revenue); firms expected to give gifts in meetings with tax officials (% of firms); firms that do not report all sales for tax purposes (% of firms); firms visited or required meetings with tax officials (% of firms); labor tax and contributions (% of commercial profits); net taxes on products (current US\$); other taxes (% of revenue); other taxes payable by businesses (% of commercial profits); profit tax (% of commercial profits); tax payments (number); tax revenue (% of GDP); taxes on exports (% of tax revenue); taxes on goods and services (% of revenue); taxes on goods and services (% value added of industry and services); taxes on income, profits and capital gains (% of revenue); taxes on income, profits and capital gains (% of total taxes); taxes on international trade (% of revenue); time to prepare and pay taxes (hours); total tax rate (% of commercial profits).

Table 1

The average value of the tax system functioning of the EU and Ukraine for the period of 2001-2019

Country Name	Labor tax and contributions (% of commercial profits)	Other taxes (% of revenue)	Profit tax (% of commercial profits)	Tax payments (number)	Tax revenue (% of GDP)	Taxes on goods and services (% of revenue)
Austria	34.41	3.93	16.86	12.00	26.01	27.18
Belgium	48.55	0.50	8.50	11.00	25.02	25.08
Bulgaria	23.24	0.16	5.19	16.33	19.67	44.42
Croatia	19.11	0.74	0.00	24.93	20.73	46.25
Cyprus	12.37	4.85	8.78	27.83	31.57	35.02
The Czech Republic	38.77	0.14	5.60	10.60	14.44	28.50
Denmark	3.11	4.56	20.84	10.00	32.84	37.84
Estonia	38.79	- 8.58	7.67	20.14	36.24	
Finland	26.09	0.79	14.65	11.20	20.82	36.38
France	51.82	4.26	4.37	11.40	22.63	23.36
Germany	21.68	- 22.06	10.40	11.22	23.37	
Greece	30.58	2.99	17.54	10.20	22.21	31.39
Hungary	35.47	1.09	10.17	12.33	21.89	35.97
Ireland	12.13	2.01	12.15	9.00	22.64	34.41
Italy	41.52	5.01	23.06	13.80	22.35	22.79
Latvia	27.05	0.47	6.27	8.47	21.24	41.00
Lithuania	35.17	0.24	6.47	11.07	17.87	34.07
Luxembourg	15.44	2.09	4.32	23.00	25.02	30.45
Malta	10.84	0.57	31.16	7.44	38.43	35.45
Norway	15.90	0.51	23.91	4.13	25.94	25.16
Poland	25.15	0.73	15.05	23.80	16.49	35.82
Romania	29.81	0.17	11.61	62.67	17.21	36.26
The Slovak Republic	39.65	0.06	8.38	22.20	16.62	30.10
Slovenia	19.41	1.79	13.74	15.33	19.22	35.36
Spain	35.55	0.19	15.75	8.80	14.25	43.37
Sweden	35.81	29.75	15.07	6.00	27.05	37.26
Ukraine	40.57	-0.01	11.17	72.73	16.96	32.98
The United Kingdom	11.16	5.38	20.71	8.07	25.12	32.34

Source: compiled by authors based on World Bank data

Having analyzed Table 1, we can draw the following conclusions. Labor tax and contributions is highest in France (51.82% of commercial profits), in Belgium (48.55% of commercial profits), in Italy (41.52% of commercial profits); and the lowest one is in Denmark (3.11% of commercial profits), in Malta (10.84% of commercial profits), in the United Kingdom (11.16% of commercial profits). In Ukraine, this figure is at 40.57% of commercial profits. In terms of other taxes payable by businesses (% of commercial profits), it can be said that the highest level is in France (10.49%), the lowest one is in Norway (0.03%), and in Ukraine it is 0.91%.

Tax revenue refers to compulsory transfers to central government for public purposes. Tax revenue in% of GDP is the lowest in Germany (11.22%), the highest one is in Malta (38.43%), and in Ukraine it averages to 16.96%. Taxes on goods and services include general sales and turnover or value added taxes, selective excise taxes on goods, selective taxes on services, taxes on the use of goods or property, and some others. Taxes on goods and services in% of revenue is highest in Croatia

(46.25%), lowest one is in Italy (22.79%); in Ukraine this indicator is at the level of 32.98%.

The continuation of the analysis of the tax system functioning indicators of the EU and Ukraine is shown in Table 2.

After analyzing such indicators: customs and other import duties (% of tax revenue), firms expected to give gifts in tax officials meetings (% of firms), firms that do not report all sales for tax purposes (% of firms), firms visited or required meetings with tax officials (% of firms), it can be said that in many studied countries this data is missing. In Ukraine, they are at 6.43; 46.65; 31.90; 59.15 respectively. The highest value of the first indicator was recorded in Slovenia (2.22); the lowest one was in Greece (0.02). The second indicator, firms expected to give gifts in meetings with tax officials (% of firms) ranges from 28.80 in Greece to 0.30 in Sweden. Firms that do not report all sales for tax purposes (% of firms) range from 53.19 in Greece to 18.33 in Spain. Firms visited or required meetings with tax officials (% of firms): the highest one was in Bulgaria (64.77) and the lowest one was in Sweden (8.90).

Table 2

The average value of the tax system functioning of the EU and Ukraine for the period 2001-2019

Country Name	Taxes on income, profits and capital gains (% of revenue)	Taxes on income, profits and capital gains (% of total taxes)	Taxes on international trade (% of revenue)	Time to prepare and pay taxes (hours)	GINI index (World Bank estimate)	Total tax and contribution rate (% of profit)
Austria	27.61	47.01	0.00	154.13	30.27	51.87
Belgium	35.84	58.35	- 141.53	28.43	57.73	
Bulgaria	15.56	25.59	0.41	508.73	35.47	30.73
Croatia	7.87	14.14	1.48	202.53	32.14	20.55
Cyprus	24.99	38.10	0.63	139.75	32.62	22.17
The Czech Republic	15.98	35.63	0.95	412.47	26.42	46.57
Denmark	40.81	48.98	- 133.27	26.70	26.73	
Estonia	20.36	35.93	0.08	73.13	33.25	50.57
Finland	17.87	32.35	0.00	159.53	27.56	41.95
France	25.07	47.58	-0.01	134.87	32.09	66.67
Germany	15.97	40.58	- 209.93	30.85	47.88	
Greece	18.97	35.57	0.01	216.07	34.64	48.87
Hungary	18.68	33.22	0.66	296.67	29.79	49.78
Ireland	38.66	51.53	- 77.83	32.62	25.72	
Italy	32.39	53.81	- 283.20	34.40	65.87	
Latvia	10.92	20.59	0.36	219.20	36.03	36.32
Lithuania	20.72	36.88	0.76	156.42	35.50	44.25
Luxembourg	28.81	46.96	- 57.00	31.61	20.29	
Malta	30.40	45.14	1.40	139.00	29.11	42.54
Norway	28.55	52.26	0.20	84.60	27.22	39.85
Poland	12.98	26.05	0,56	334.67	33.88	41.40
Romania	18.62	33.35	0.86	189.67	36.58	42.65
Slovak Republic	17.17	36.23	0.20	241.47	26.73	49.03
Slovenia	12.62	25.05	1.07	234.27	24.95	33.62
Spain	39.20	47.18	- 198.57	34.54	52.06	
Sweden	14.36	17.62	- 122.00	27.42	51.51	
Ukraine	12.90	26.28	3.58	804.60	26.50	52.64
The United Kingdom	35.84	48.71	- 104.27	34.11	33.51	

Source: compiled by authors based on World Bank data

Taxes on income, profit and capital gains are deducted from the actual or projected net income of individuals, from the profits of corporations and enterprises, as well as from capital gains. Taxes on income, profits and capital gains in% of revenue are the highest in Denmark (40.81%) and the lowest are in Croatia (7.87%). In Ukraine this indicator is at the level of 12,90%. Taxes on income, profits and capital gains in% of total taxes are the highest in 58.35%, the lowest are in Croatia 14.14%. In Ukraine this indicator is at the level of 26.28%. GINI index (World Bank estimate) is the highest in Romania (36.58); the lowest one is in Slovenia (24.95); in Ukraine this indicator is at the level of 26.50.

Next, it was analyzed the profit tax in the EU and Ukraine. This is the amount of business income taxes paid.

In Table 3, it is shown that profit tax decreased in many countries in 2019 compared to 2005. A slight increase in profit tax is observed in Belgium, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, and the Slovak Republic. In Ukraine, profit tax in% of commercial profits decreased from 12.3 to 10.2%, which is a positive trend.

Enterprise tax payments are the total amount of taxes paid by businesses, including the submission of electronic materials. The tax is considered paid once a year, even if it is more frequent.

Tax payments number, according to Table 4, decreased by 2-3 times in 2019 compared to 2005 in the countries of Bulgaria, Croatia, the Czech Republic, Finland, France, Greece, Latvia, Poland, Romania, the Slovak Republic, Slovenia. This decrease is considered a positive trend. In Ukraine, tax payments number decreased from 147 in 2005 to 5 in 2019. This is a very significant decrease.

Tax preparation and payment time is the time in hours per year for which you need to prepare, file and pay three main types of taxes: corporate income tax, value added tax or sales tax, and labor taxes.

A very significant decrease in time to prepare and pay taxes is observed in Ukraine more than five times, from 2085 hours in 2005 to 327 hours in 2019. This is a positive trend. The surveyed EU countries also show a decrease in this indicator.

Table 3

Profit tax, % of commercial profits

Country Name	2005	2014	2015	2016	2017	2018	2019	2019 to 2005 ratio
Austria	21.2	16.8	16.8	16.9	17	17.1	17.1	80.66
Belgium	9.8	8.3	8.4	9.1	10.3	10.9	10.3	105.10
Bulgaria	7	5	5	5	5	4.9	4.9	70.00
Croatia	0	0	0	0	0	0	0	-
Cyprus	..	9.5	9.3	9.6	8.1	8.1	8.3	-
The Czech Republic	7.2	5.6	5.6	5.1	5.1	5.2	5.2	72.22
Denmark	27.9	19.6	18.1	18.4	17.1	17.1	17.1	61.29
Estonia	11.2	8.2	8.2	7.8	7.8	7.8	7.7	68.75
Finland	19.1	14.6	11.8	11.7	11.7	11.9	12.1	63.35
France	6.8	5.4	-0.2	0.2	1	0.3	0.2	2.94
Germany	21.4	23.3	23.2	23.2	23.2	23.2	23.2	108.41
Greece	21.5	19	19.7	22.4	23	23	23	106.98
Hungary	5.9	11.8	11.8	9.9	9.9	9.1	9.4	159.32
Ireland	11.9	12.4	12.4	12.4	12.4	12.4	12.4	104.20
Italy	30.6	19.9	19.5	17	23.3	16.8	14.6	47.71
Latvia	6.8	4.9	6.3	6.3	6.3	6.4	7.8	114.71
Lithuania	5.7	5.9	5.9	5.9	5.9	5.9	5.9	103.51
Luxembourg	..	4.6	4.6	4.6	4.2	4.2	4.2	-
Malta	..	30.2	30.2	32.4	32.3	32.3	32.3	-
Norway	25.2	24.5	23.6	23.6	21.8	20.8	20	79.37
Poland	14.8	14.5	14.5	14.5	14.5	14.5	14.5	97.97
Romania	17.2	10.7	10.9	12.3	12.3	12.3	15.6	90.70
The Slovak Republic	8	8.4	9.4	9.5	9.5	9.1	9.1	113.75
Slovenia	14.3	12.7	12.7	12.7	12.7	12.7	12.7	88.81
Spain	23.4	21.7	13.4	12.5	10.6	10.6	10.6	45.30
Sweden	16.6	13.1	13.1	13.1	13.1	13.1	13.1	78.92
Ukraine	12.3	9.5	9	8.7	11.9	11	10.2	82.93
The United Kingdom	21.8	20.6	19.2	18.3	18.1	17.3	16.6	76.15

Source: compiled by authors based on World Bank data

Table 4

Tax payments, number

Country Name	2005	2013	2014	2015	2016	2017	2018	2019	2019 to 2005 ratio
Austria	12	12	12	12	12	12	12	12	100.00
Belgium	11	11	11	11	11	11	11	11	100.00
Bulgaria	29	14	14	14	14	14	14	14	48.28
Croatia	40	12	12	12	13	13	12	12	30.00
Cyprus	..	31	30	28	28	28	27	16	-
The Czech Republic	27	8	8	8	8	8	8	8	29.63
Denmark	10	10	10	10	10	10	10	10	100.00
Estonia	7	8	8	8	8	8	8	8	114.29
Finland	20	8	8	8	8	8	8	8	40.00
France	21	9	9	9	9	9	9	9	42.86
Germany	12	9	9	9	9	9	9	9	75.00
Greece	19	8	8	8	8	8	8	8	42.11
Hungary	13	12	11	11	11	11	11	11	84.62
Ireland	9	9	9	9	9	9	9	9	100.00
Italy	14	13	13	14	14	14	14	14	100.00
Latvia	29	7	7	7	7	7	7	7	24.14
Lithuania	11	11	11	11	11	11	10	10	90.91
Luxembourg	..	23	23	23	23	23	23	23	-
Malta	..	7	7	7	8	8	8	8	-

(End of Table 4)

Country Name	2005	2013	2014	2015	2016	2017	2018	2019	2019 to 2005 ratio
Norway	4	4	4	4	4	4	5	5	125.00
Poland	41	19	19	7	7	7	7	7	17.07
Romania	108	39	14	14	14	14	14	14	12.96
The Slovak Republic	32	22	22	11	8	8	8	8	25.00
Slovenia	22	10	10	10	10	10	10	10	45.45
Spain	8	9	9	9	8	9	9	9	112.50
Sweden	6	6	6	6	6	6	6	6	100.00
Ukraine	147	28	5	5	5	5	5	5	3.40
The United Kingdom	8	8	8	8	8	8	8	9	112.50

Source: compiled by authors based on World Bank data

Table 5

Time to prepare and pay taxes, hours

Country Name	2005	2012	2013	2014	2015	2016	2017	2018	2019	2019 to 2005 ratio
Austria	170	170	166	131	131	131	131	131	131	77.06
Belgium	156	131	135	135	136	136	136	136	136	87.18
Bulgaria	598	436	436	436	453	453	453	453	441	73.75
Croatia	232	196	196	208	206	206	206	206	206	88.79
Cyprus	..	146	146	146	145	127	127	122	119	-
The Czech Republic	866	230	230	230	222	222	236	230	230	26.56
Denmark	135	130	132	132	132	132	132	132	132	97.78
Estonia	81	81	81	81	81	56	50	50	50	61.73
Finland	269	93	93	93	93	93	93	90	90	33.46
France	132	132	137	137	137	139	139	139	139	105.30
Germany	196	207	218	218	218	218	218	218	218	111.22
Greece	264	202	193	193	193	193	193	193	193	73.11
Hungary	340	277	277	277	277	277	277	277	277	81.47
Ireland	75	79	79	79	81	81	81	81	81,5	108.67
Italy	340	269	269	269	269	240	238	238	238	70.00
Latvia	280	224	224	193	193	168	168	168	168	60.18
Lithuania	166	175	175	171	171	171	109	99	95	57.23
Luxembourg	..	59	55	55	55	55	55	55	55	-
Malta	..	139	139	139	139	139	139	139	139	-
Norway	87	87	83	83	83	83	83	79	79	90.80
Poland	420	286	286	286	269	269	258	334	334	79.52
Romania	192	218	202	161	161	161	163	163	163	84.90
The Slovak Republic	325	207	207	207	188	192	192	192	192	59.08
Slovenia	248	233	233	233	233	233	233	233	233	93.95
Spain	298	167	167	167	158	152	152	147	143	47.99
Sweden	122	122	122	122	122	122	122	122	122	100.00
Ukraine	2085	488	386	346	346	355	327	327	327	15.71
The United Kingdom	100	105	105	105	105	105	105	105	114	114.00

Source: compiled by authors based on World Bank data

The GINI index measures the extent to which the distribution of income among individuals or households within the economy deviates from a uniform distribution. Thus, the GINI index of 0 represents perfect equality, while the index of 100 indicates perfect inequality. According to the GINI index (Figure 1), Ukraine ranks the 26th in the 2005-2019 average compared to the EU countries. According to the UN, more than 60% of the population lives below the poverty line in Ukraine, but according to the World Bank, the figure is 25%.

One of the areas that needs to be improved is tax policy, since tax revenues form a large revenue part of the state budget.

The total tax rate measures the amount of taxes and mandatory contributions paid by businesses after accounting for allowable deductions as a proportion of commercial income.

Let us compare in more detail three countries of approximately the same area: Ukraine (579290 sq. Km), Spain (499564 sq. Km), and France (547557 sq. Km).

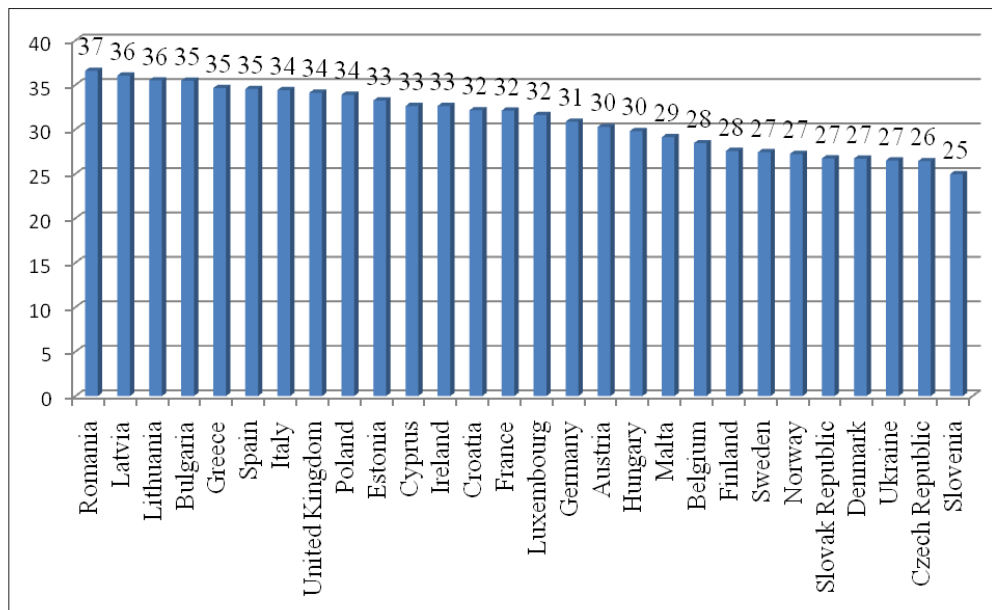


Figure 1. Gini index of the EU countries and Ukraine

Source: compiled by authors based on World Bank data

Table 6

Total tax and contribution rate, % of profit

Country Name	2005	2013	2014	2015	2016	2017	2018	2019	2019 to 2005 ratio
Austria	57.2	51.9	51.7	51.7	51.6	51.8	51.5	51.4	89.86
Belgium	60.1	58	58.4	58.4	58.7	57.1	57.7	55.4	92.18
Bulgaria	45.2	27	27	27	27	27.1	27.7	28.3	62.61
Croatia	20.8	19.3	18.4	20	20.9	20.6	20.5	20.5	98.56
Cyprus	..	21.9	22.5	24	24.2	22.7	22.2	22.4	-
The Czech Republic	48.7	45.6	46.5	46.5	46.1	46.1	46.1	46.1	94.66
Denmark	32.6	25.6	25.4	23.9	24.4	23.8	23.8	23.8	73.01
Estonia	50.4	49.6	49.2	49.2	48.5	48.5	48.5	47.8	94.84
Finland	49.5	39.9	40.1	37.9	38.1	38.4	37.3	36.6	73.94
France	68.3	69.8	71.3	64.9	64.1	62.6	60.4	60.7	88.87
Germany	47.7	49.1	48.8	48.8	48.9	48.9	49	48.8	102.31
Greece	54	44	50.7	49.6	50.7	51.7	51.9	51.9	96.11
Hungary	53.6	49.2	47.9	48.2	46.3	46.4	40.3	37.9	70.71
Ireland	25.4	25.9	26	26	26	26	26	26.1	102.76
Italy	76.7	65.6	65.2	64.8	62	48	53.1	59.1	77.05
Latvia	36.2	35	35	35.9	35.9	35.9	36	38.1	105.25
Lithuania	51.2	42.9	42.4	42.6	42.6	42.7	42.6	42.6	83.20
Luxembourg	..	20.4	20.6	20.6	20.8	20.5	20.5	20.4	-
Malta	..	41.4	41.5	41.5	43.8	43.9	44	44	-
Norway	41.1	40.7	40.4	39.5	39.5	37.7	37	36.2	88.08
Poland	43.2	40.1	40.1	40.3	40.4	40.5	40.7	40.8	94.44
Romania	55.8	43.2	43.2	42	40	40	40	20	35.84
The Slovak Republic	50	48.7	49.4	50.4	50.1	50.1	49.7	49.7	99.40
Slovenia	39.2	31.4	31	31	31	31	31	31	79.08
Spain	60.4	56.9	57.9	49.8	48.7	46.9	47	47	77.81
Sweden	54.1	52.1	49.1	49.1	49.1	49.1	49.1	49.1	90.76
Ukraine	57.3	54.4	52.7	52.2	52.3	37.8	41.7	45.2	78.88
The United Kingdom	34.7	34.7	33.5	32	30.9	30.7	30	30.6	88.18

Source: compiled by authors based on World Bank data

Table 7

General indicators of the economies development of the studied countries on average for 2001-2019

Indicator	Spain	France	Ukraine
Population, total	46723749	66987244	44622516
Land area (sq. km)	499564	547557	579290
Foreign direct investment, net inflows (% of GDP)	3.15	2.15	1.89
GDP growth (annual %)	2.35	1.72	3.34
Inflation, GDP deflator (annual %)	1.09	0.79	15.41
Interest payments (% of expense)	12.10	3.63	9.78
Trade (% of GDP)	67.52	66.45	99.02
Net acquisition of financial assets (% of GDP)	2.59	4.62	2.89
Imports of goods and services (% of GDP)	32.40	32.11	53.81
Exports of goods and services (% of GDP)	35.12	31.34	45.21
Researchers in R&D (per million people)	2873.41	4441.07	994.08

Source: compiled by authors based on World Bank data

Therefore, Ukraine needs further tax reform, which should emphasize:

- 1) simplification of tax legislation, elimination of contradictions and shortcomings in it;
- 2) simplification and automatization of tax administration, improving the system of risk-oriented tax control (including the introduction of indirect tax control methods), improving relations between tax authorities and taxpayers, taking into account the experience of the EU countries.

With the shift in socio-economic development, the shading of economic relations and the further resolution of fiscal problems in Ukraine, tax policy of the EU and its Member States should increasingly be taken into account.

Therefore, considering the tax system of the European countries, it can be noted that the tax system of each country has its own features that can and should be

taken into account when reforming the tax system of Ukraine. It is advisable to use the experience of other countries. Research on the performance of the tax system in dynamics should be used to create an effective tax system to prevent mistakes and miscalculations that adversely affect the economic development of states.

4. Results

Next, there was studied the dependence of foreign direct investment, net inflows (% of GDP) (Y) on profit tax (% of commercial profits) (X₁), tax revenue (% of GDP) (X₂); taxes on income, profits and capital gains (% of revenue) (X₃); time to prepare and pay taxes (hours) (X₄) and total tax rate (% of commercial profits) (X₅). In order to test the hypotheses, data from three countries for 2001-2019 were obtained by the sampling method.

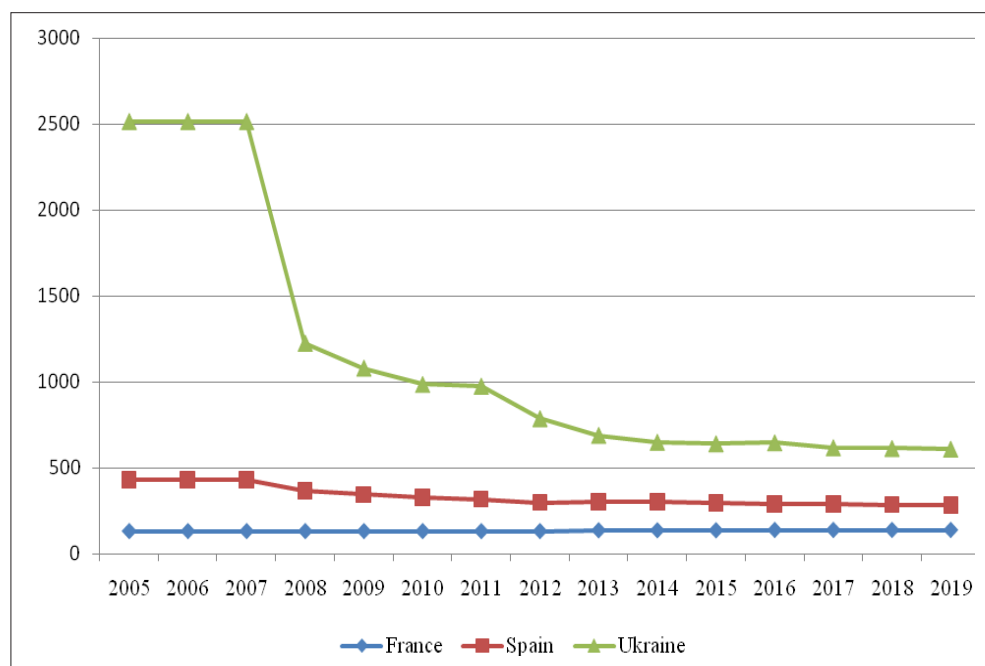


Figure 2 Dynamics of change "time to prepare and pay taxes" indicator in three studied countries, hours

Several equations can be used to describe the regression, the most important of which is the Fisher's criterion. The Fisher's test is used for verification of different hypotheses. If the hypothesis about the significance of the chosen regression model is tested, its empirical value is calculated:

$$\hat{F} = \frac{\frac{1}{n} \cdot \left(\sum_{i=1}^n (Y_i - \bar{Y})^2 \right)}{\frac{1}{n-m-1} \cdot \left(\sum_{i=1}^n (Y_i - \hat{Y}_i)^2 \right)},$$

where m is the number of factor features of the model.

The multiple regression model should include factors that are strongly correlated with the resultant variable and not strongly correlated with each other. Multicollinearity is an undesirable phenomenon. For the selection of factors to be included in the regression model, all elements of the matrix of paired correlation coefficients are calculated.

The matrix of double correlation coefficients is symmetric: the values of the correlation coefficients above and below the principal diagonal (ie $r_{12} = r_{21}$ etc.). The values of the elements on the main diagonal of the matrix are always equal to one. The results of the calculations of the coefficients are given in Table 8.

The analysis of the matrix shows that there is a strong internal correlation between the factor variables X_1 i X_2 and the correlation coefficient is 0.96268. Of these, the factor variable X_2 (correlation coefficient 0.97342) has a slightly stronger effect on the resultant indicator. Therefore, we exclude the factor variable X_1 from further consideration. The matrix of paired correlation coefficients for the remaining variables is as follows (Table 9).

There are no factor variables in this matrix, which are closely related with a correlation coefficient of more than 0.8.

Thus, to further investigate the impact on Foreign direct investment, net inflows (Y), it should be left four factor variables: Tax revenue (% of GDP) (X_2); Taxes on income, profits and capital gains (% of revenue) (X_3); Time to prepare and pay taxes (hours) (X_4), and Total tax rate (% of commercial profits) (X_5).

The multivariate correlation analysis evaluates the link strength of the investigated variables and the multiple regression model to describe the factor link it is selected a multivariate statistical model. It is necessary to build a linear regression model with m independent (factor) variables:

$$\hat{Y}_t = a_0 X_{i0} + a_1 X_{i1} + a_2 X_{i2} + a_m X_{im} + \varepsilon_i,$$

where X_{ij} – are the factor variables observed on the i^{th} object;

i – number in the order of the object under study, $i = 1, 2, \dots, n$;

ε_i – a random error that has a mathematical reading of 0 and a variance σ^2 ;

X_{i0} is a dummy variable equal to 1 in all observations.

The parameters a_{ij} to be evaluated are unknown in this model.

On the basis of the previous paired correlation-regression analysis, it is established the dependence of foreign direct investment, net inflows (Y) on four indicators: Tax revenue (% of GDP) (X_2); Taxes on income, profits and capital gains (% of revenue) (X_3); Time to prepare and pay taxes (hours) (X_4) ra Total tax rate (% of commercial profits) (X_5). All factor variables have not multi-linear relationships. The multivariate regression model is assumed to be linear:

$$\hat{Y}_t = a_0 X_0 + a_1 X_1 + a_2 X_2 + a_3 X_3 + a_4 X_4 + a_5 X_5,$$

To estimate the parameters, we use data previously considered for three countries without a factor X_1 . The output to estimate the regression model parameters is supplemented by a dummy variable X_0 . It is found the vector of the regression model parameters

Table 8

The original matrix of paired correlation coefficients

Variables	Y	X ₁	X ₂	X ₃	X ₄	X ₅
Y	1.00000					
X ₁	0.97185	1.00000				
X ₂	0.97342	0.96268	1.00000			
X ₃	0.59370	0.40481	0.56789	1.00000		
X ₄	0.72654	0.74487	0.77043	0.06234	1.00000	
X ₅	0.84128	0.86542	0.66342	0.78329	0.70376	1.00000

Table 9

The reduced matrix of paired correlation coefficients

Variables	Y	X ₂	X ₃	X ₄	X ₅
Y	1.00000				
X ₁	0.97342	1.00000			
X ₂	0.59370	0.56789	1.00000		
X ₃	0.72654	0.77043	0.06234	1.00000	
X ₄	0.84128	0.66342	0.78329	0.70376	1.00000
X ₅					

$$a = (X^T X)^{-1} \cdot X^T Y = \begin{pmatrix} 233,664552 & 0,004414 & \dots & 61,167152 \\ 0,004414 & 0,00001 & \dots & 0,000729 \\ -165,980835 & -0,002651 & \dots & -44,437166 \\ -88,326984 & -0,00169 & \dots & -23,459449 \\ 61,167152 & 0,000729 & \dots & 16,730803 \end{pmatrix} \cdot \begin{pmatrix} 106890,0 \\ 160603392,0 \\ 159030,0 \\ 313010,1 \\ 463580,1 \end{pmatrix} = \begin{pmatrix} -2014,2994 \\ 4,1598 \\ -1961,5899 \\ -171,3482 \\ 1340,8085 \end{pmatrix}$$

It was written the regression model using the numerical values of the regression parameters

$$\hat{Y}_t = -2,341 + 4,1598X_{i2} - 1,9615X_{i3} - 1,7167X_{i4} + 1,3401 X_{i5}$$

and it is defined the area of factor variables change

$$4,56 \leq X_{i2} \leq 2,099$$

$$0,93074 \leq X_{i3} \leq 1,69878$$

$$2,29698 \leq X_{i4} \leq 3,54427$$

$$2,35746 \leq X_{i5} \leq 5,41386$$

Positive signs of model parameters indicate that an increase in the relevant factors leads to an increase in the performance indicator, and negative signs of the model parameters indicate that an increase in the corresponding factors leads to a decrease in the performance indicator.

Thus, in the research above, increases in tax revenue (% of GDP) (X_{i2}) and total tax rate (% of commercial profits) (X_{i5}) cause an increase in the resultant variable, whereas growth in taxes on income, profits and capital gains (X_{i3}) and time to prepare and pay taxes (hours) (X_{i4}) cause a decrease in the output variable: Foreign direct investment, net inflows (% of GDP). The nature of the impact on FDI of the last two variables is contrary to economic content. However, this is due to the fact that, within the linear regression model, we have roughly replaced the nonlinear relationship between Taxes on income, profits and capital gains (X_{i3}) and Time to prepare and pay taxes (hours) (X_{i4}) with the magnitude of FDI, which is one of the reasons for the appearance of a minus sign in the regression parameters for these variables.

The magnitude of each parameter in the model indicates how much the value of the resulting variable will change by increasing or decreasing the relevant factor by one unit.

Thus, in a study with a 1% increase in the factor variable X_{i2} , the resultant variable (Foreign direct investment, net inflows) will increase by 4.1598%, and with the 1% increase in the factor variable X_{i5} by 1.3401%. An increase in the other two factor variables leads to a decrease in the resultant variable.

The degree of influence of factor variables on the outcome variable can be detected in two ways: 1) by analyzing the parameters of the regression model; 2) by analyzing the private correlation coefficients. In this paper the first method was used, which was the least time consuming and simple.

The estimation of the factors influence degree by analyzing the parameters (coefficients) of the regression model can be performed in two ways:

- using beta coefficients;
- using the coefficients of elasticity.

A direct comparison of regression coefficients in the multiple regression equation gives an idea of the factor influence degree traits on the outcome variable only when they are expressed in identical units and have approximately the same fluctuations. Normalized regression coefficients β_j are used to make the regression coefficients comparable. The coefficient β_j shows the magnitude of the change in the result factor in the values of the root mean square error when changing the factor sign X_j by one standard error:

$$\beta_j = a_j (\sigma_{x_j} / \sigma_y),$$

where a_j is the regression coefficient at the X_j factor, $j = 1, 2, \dots, m$.

The β_j coefficients that characterize the impact of Tax revenue (β_2), Taxes on income, profits and capital gains (β_3), Time to prepare and pay taxes (β_4) and Total tax rate (β_5) on Foreign direct investment, net inflows in the model are calculated:

$$\hat{Y}_t = -2,341 + 4,1598X_{i2} - 1,9615 X_{i3} - 1,7167 X_{i4} + 1,3401 X_{i5}$$

Mean square deviations of the variables:

$$\sigma_Y = -2,447,1; \sigma_{X_2} = 448,6; \sigma_{X_3} = 0,2023531;$$

$$\sigma_{X_4} = -0,360497; \sigma_{X_5} = 0,7440662.$$

To calculate beta coefficients we use the formula

$$\beta_j = a_j \left(\frac{\sigma_{X_j}}{\sigma_y} \right). \text{ We obtain the following values:}$$

$$\beta_2 = 0,76242$$

$$\beta_3 = 0,16221$$

$$\beta_4 = 0,02524$$

$$\beta_5 = 0,407687$$

From here it was seen that the most significant impact on Foreign direct investment, net inflows is made by Tax revenue $\beta_2 = 0,76242$, Total tax rate $\beta_5 = 0,407687$.

In doing so, Tax revenue affects Foreign direct investment, net inflows in 1.9 times (0.76242 / 0.407687) stronger than Total tax rate.

Also, temporary elasticity coefficients E_j are used to estimate the degree of influence of factor traits, relative X_j .

$$E_j = \frac{\partial \hat{Y}}{\partial X_j} \cdot \frac{X_j}{\hat{Y}} \text{ or } E_j \approx a_j \cdot \frac{\bar{X}_j}{\bar{Y}},$$

where $\frac{\partial \hat{Y}}{\partial X_j}$ is a derivative of a regression on a variable X_j .

The coefficient E_j shows how many percent the result will change if the factor is changed by one percent when

the values of other factors are fixed at any level. The coefficients of elasticity E_j that characterize the impact of Tax revenue (E_2), Taxes on income, profits and capital gains (E_3), Time to prepare and pay taxes (E_4) and Total tax rate (E_5) on Foreign direct investment, net inflows in the model are calculated

$$\hat{Y}_t = -20,341 + 4,1598X_{i2} - 1,9615X_{i3} - 1,7167X_{i4} + 1,3401X_{i5}$$

Under these conditions, the coefficients of elasticity are as follows:

$$E_2 = 0,9768$$

$$E_3 = 0,5041$$

$$E_4 = 0,0857$$

$$E_5 = 0,9612$$

Comparison of the coefficients shows that on average Tax revenue affects Foreign direct investment, net inflows with the same strength as Time to prepare and pay taxes ($E_2 = 0,9768$; $E_5 = 0,9612$), but almost twice as much as Taxes on income, profits and capital gains ($E_3 = 0,5041$).

This conclusion does not coincide with the conclusion obtained using beta coefficients. It is accepted that a more accurate conclusion is the use of beta coefficients. However, elasticity coefficients have a better economic interpretation. Thus, using a correlation-regression analysis, a regression equation is constructed that can be applied in calculating the projected value of foreign direct investment into the country.

5. Conclusions

Therefore, tax policy and its tasks within a systematic approach can be formulated as a concept of "economic

development priority", which implies in the conflict situations the search and implementation of those solutions that are optimal for most participants in economic relations. The concept of "economic development priority" is based on the laws of interaction between the part and the whole, and takes into account the concept and methods of forming optimal decisions in order to increase efficiency.

In the article it is examined the dependence of foreign direct investment, net inflows (% of GDP) (Y) on profit tax (% of commercial profits) (X_1), tax revenue (% of GDP) (X_2); taxes on income, profits and capital gains (% of revenue) (X_3); time to prepare and pay taxes (hours) (X_4) and total tax rate (% of commercial profits) (X_5). Thus, in a study with a 1% increase in the factor variable X_{i2} , the foreign variable investment (net inflows) will increase by 4,1598%, and with the 1% increase in the factor variable X_{i5} the foreign variable investment will increase by 1,3401%. An increase in the other two factor variables leads to a decrease in the resultant variable.

The coefficients of elasticity that characterize the impact of tax revenue, Taxes on income, profits and capital gains, time to prepare and pay taxes, and time to prepare and pay taxes on foreign direct investment, net inflows in the model have been calculated. Comparison of ratios shows that on average tax revenue affects foreign direct investment, net inflows with the same strength as time to prepare and pay taxes ($E_2 = 0,9768$; $E_5 = 0,9612$), but almost twice as much as taxes on income, profits and capital gains ($E_3 = 0,5041$). Thus, using a correlation-regression analysis, a regression equation is constructed that can be applied in calculating the projected value of foreign direct investment into the country.

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