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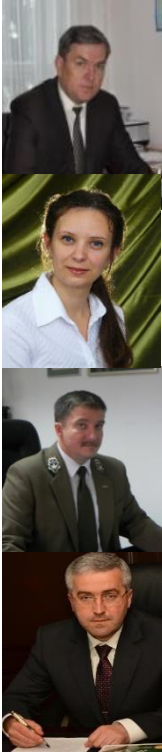
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**PECULIARITIES OF FINANCING NATIONAL NATURAL PARKS  
IN POLAND AND UKRAINE**

**CECHY FINANSOWANIA PARKÓW NARODOWYCH W POLSCE  
I NA UKRAINIE**

**ОСОБЕННОСТИ ФИНАНСИРОВАНИЯ НАЦИОНАЛЬНЫХ ПАРКОВ  
В ПОЛЬЩЕ И УКРАИНЕ**

**Abstract**

*The main sources of financing of national natural parks have been defined. The foreign experience in financing national parks has been analysed. The paper presents the history of creating national parks in Ukraine and Poland, gives their short characteristics. The common issues are revealed in the work of national natural parks and their specifics in each state. The basic prospects of development of the protected areas in Ukraine have been ordered. The innovative mechanisms for biodiversity conservation tools were expanded. The methodology approaches to the biodiversity conservation in the*

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*Ukraine's national state accounts were developed and they are based on the new calculations of the economic evaluation of the natural ecosystem functioning. This technique is based on the concept of total economic value of ecosystem functioning.*

**Keywords:** National Natural Park, Natural Reserve Territories, Financing of National Natural Parks, Nature Protection Funds.

### **Streszczenie**

*W artykule przedstawiono źródła finansowania parków narodowych. Zostało przeanalizowane międzynarodowe doświadczenie w finansowaniu parków narodowych. Została krótko opisana historia parków narodowych w Ukrainie i Polsce. Najczęstsze pytania o parkach narodowych są ujawnione w pracy, a także została przedstawiona ich specyfika w każdym państwie. Główne perspektywy rozwoju systemu obszarów chronionych Ukrainy zostały przedstawione obok innowacyjnych narzędzi ochrony różnorodności biologicznej.*

**Słowa kluczowe:** park narodowy, rezerwat, finansowanie parków narodowych, zasoby naturalne.

### **Аннотация**

*В статье были определены источники финансирования национальных природных парков. Изучен иностранный опыт финансирования национальных природных парков. Предложены краткие характеристики истории создания национальных парков в Украине и Польше. Общие вопросы функционирования национальных природных парков раскрываются в работе и их специфика в каждом государстве. Определены основные перспективы развития системы природно-заповедных территорий Украины. Определены инновационные инструменты сохранения биоразнообразия.*

**Ключевые слова:** национальный природный парк, природный заповедник, финансирование национальных природных парков, природно-заповедный фонд.

### **Statement of the problem in general outlook and its connection with important scientific and practical tasks.**

The preservation and protection of natural environment acquires still bigger importance in the world. Therefore, there are actively set up and developed nature protection structures which are engaged in preserving unique natural areas. In the years of independence in Ukraine the area of nature reserve fund (NRF) has grown

more than twice and is composed of 7607 territories and objects with total area of 3,3 mln. ha, or 5,4% of Ukrainian territory (Proekt natsional'noyi stratehiyi, 2016). During this time in Europe this index for EC countries amounts to 12-15%. An issue arises of the efficient management of objects of nature reserve fund, of financing these works taking into account the legislation, designation and status of each of them.

At present the main structure uniting

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protection territories is the national natural park. The operation of parks implemented under active support of the state has as its aim, first of all, not only the preservation and restoration of valuable species of flora and fauna, but also the active nature protection and recreation activity directed at better comprehension of the environment. The efficiency of parks operation depends on their financing. It is important to develop mechanisms of the efficient financing of natural parks.

**Analysis of latest research where the solution of the problem was initiated.** Studies of flora and fauna of Ukraine, in particular Polissya, were intensively carried out by Yu.R.Shelyag-Sosonko, T.L.Andriyenko-Malyuk (Andriyenko, T. L., Shelyah-Sosonko, Yu. R., 1983), Ya.P.Didukh (Didukh, Ya. P., 1998), V.I.Melnyk (Mel'nyk V. I., 2015), Yu.M.Gryshchenko (Hryshchenko, Yu. M., 2008). Their works became the basis for setting up national natural parks (NNP). The functioning of NNP set new tasks before administrations of these institutions both in the protection and preservation of valuable species of flora and fauna and also in the issue of efficient work. The question of operating national natural parks and of their management on the part of state authorities was studied by A.Yu.Yakymchuk (Yakymchuk A., 2007).

As studies have shown, in Ukraine per 1 ha of annual economic effect of the natural functioning of forest ecosystems is 150 dollars, wetlands – 316 US dollars. We have calculated the share of natural capital in the structure of the state budget of Ukraine, which is about 5 %, in the structure of GDP – 2%. For comparison, the annual economic efficiency of forest and wetland ecosystems Ukraine is equal 12 budgets, for example,

of Rivne region. This is a significant indicator that should be the basis for investing in the conservation of these ecosystems (Yakymchuk A., 2014).

In Poland the research of nature and landscape of NNP was conducted by scholars such as Olaczek R. (Olaczek, R., 2008), Symonides E. (Symonides, E., 2008), Rakowski G. (Rakowski, G., 2009), Kalbarczyk E., Kalbarczyk R., Kasprzak K., Krajewski R., Raszka B. (Kalbarczyk, E., 2016). In connection with the entry of Poland into the European Union requirements concerning the protection of environment increased (Grabowska, G., 2000). Substantial attention is given to the financing of the work of Polish NNP. In particular, the concept of financing parks was developed (Koncepcja, 2005). In the paper by B. Pater (Pater, B., 2013) the analysis was carried out about financing Roztoczanski Park Narodowy and Wigierski Park Narodowy. A more detailed problem of financing NNP in Poland was considered by A. Babczuk, M. Kachniarz in (Babczuk, A. Kachniarz, M., 2015). In particular, authors present the detailed analysis of the state of work of all natural parks of Poland and give their recommendations concerning its improvement.

At present, considering the state of economics, many developed provisions are not implemented. Moreover, for Ukraine an urgent problem arises to adopt real steps to strengthen financial stability of nature protection territories. Therefore, it is important to study the experience of Poland in this respect and to borrow its best solutions.

**Aims of paper.** The aim of the paper is the analysis of financial economic mechanisms of work of national natural parks in Ukraine and Poland. The determination of strong and weak points of financing nature protection institutions in both states and the

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development of recommendations concerning the improvement of financial state of national natural parks.

**Exposition of main material of research with complete substantiation of obtained scientific results.** The term “national park” first appeared in the USA where they were established in the second half of the 19th century. The first park in the world, Yosemite National Park, had been set up in 1864, in 1872 – Yellowstone – at the western coast of the United States of America. At present, in 120 countries of the world, there are 8500 national parks with the total area of almost 850 million hectares (Beckett, A., 1993). The main principle for creating national parks is the organization of leisure and rest with the simultaneous preservation of their landscapes and ecosystems.

As per the definition of the International Union for Conservation of Nature (IUCN) a national park is to be composed of one or two ecosystems not damaged by the anthropogenic activity, where there are species of plants and animals, reliefs or localities which are of scientific, educational or entertainment interest and also natural landscapes of outstanding beauty. In most countries national parks are the main nomination category of protected natural areas. In Europe there were created about 240 national parks. Their area amounts to 10,4 % of nature reserve territories. Thus, in Sweden 22 national parks are functioning with the area of 500 thous. ha, in Norway (in 1990) – 19 national parks with the area of 1370 thous. ha, in former Yugoslavia (by 1990) – 22, in Romania – 12.

In Ukraine the first national park (Carpathian) was set up on the territory of Ivano-Frankivsk region in 1980 on the area of 50300 hectares. Before 1993 the network of national parks in our country had been

increasing slowly. They were only three: Carpathian (1980), Shatsk (1983), Synevryi (1989). From 1993 by 2006 inclusive, there were still fourteen NNP set up. At present, there are 44 NNP with the total area of over 1 mln. ha (Herasymchuk, Z. V., Mykytyn, T. M., Yakymchuk, A. Yu., 2012). The largest number of parks was created in 2009 – 14, in 2010 – 6 parks. In Ukraine the area of parks is used by two indices – by total area and the area allotted for use. Such approach to a certain degree creates the illusion of substantial park areas as in fact the national park occupies much lesser area.

In Poland the first national park (Pieniny NP) with the area of 2346 ha was set up in 1932. Bialowieza National Park was created in 1947 on the area of 10501 ha. From 1950 to 1960 8 parks were founded. In general, in Poland 23 national natural parks function on the area of over 329 thous. ha, the last one, Warta River Mouth National Park, was established in 2001 (Babczuk, A. Kachniarz, M., 2015). As is seen, Poland has a longer history of national parks functioning and correspondingly a more extensive experience in managing parks.

Now, one of the innovative tools of foreign investment in Ukraine is the implementation of the Kyoto Protocol. Implemented calculations allowed to conclude that forest ecosystems of Ukraine, taking into account the economic benefit of their operation among neighboring countries, have been second after Russia. Due to forest ecosystems Ukraine can provide livelihoods over its own population more than 63 million people and among neighboring countries occupies second place after Poland. Moldova and Belarus as a countries carbon-recipients should compensate for Ukraine these effects on forest conservation. This would allow Ukraine to restructure its external debt. A comparison showed

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that the efficiency of forest and wetland ecosystems increased more than 9 times exceeding the total budgetary investment in the environmental protection of 2015 year, more than 5 thousand times, the Nature Reserve Fund – in 226 times, forming a national environmental network – with more than 1,000 times. All this is a real argument for increased funding to preserve natural

ecosystems (State Statistics, 2013).

National parks, as a rule, of great area, are situated in picturesque places. Unlike nature reserves, a substantial territory of national parks is open for visitors. National parks are engaged in commercial activities, their basic characteristics are presented in the table 1.

**Table 1. The Commercial Activity of National parks**

№	Name of index	Unit of measurement	Poland	Ukraine
1.	Number of NNP	pieces	23	44
2.	Area	ha	329005,7	1131032,5(402333,6)*
3.	Number of workers	persons	1545	3091
4.	Expenses for upkeep in total	th. of money units.	194646,8	169277,1
5.	Including from budget	%	38,6	88,2
6.	Length of passerby routes	km	2791	262 (routes)
7.	Number of visitors	mln. person	10,8	2,61
8.	Number of natural museums	pieces	17	
9.	Number of centers of ecological education	pieces	18	39

\*- area allotted to park use

Source: compiled by the authors.

The achievement of the main aim of parks activity – preservation of nature- its popularization depends on proper financing. The system of financing of national natural parks in Ukraine is mainly assigned to the state. Thus, in 2013 88,2% of park income – constitute state subsidies and only 11,8% – other sources which include primarily own incomes from economic activity. It is to be noted that a part of newly created parks by 100% are financed by state finances. Parks situated in the Carpathians and nearer to the sea have larger income

from their own activity. Thus, the Carpathian NNP by 24,8%, Verkhovynski NNP by 32,7%, Priazivski NNP by 46,2% are financed from their own sources (State Statistics, 2013).

Subsidies from budget proportionally to the number of workers, i.e., cover expenses for wages (fig. 1). Such approach does not give the possibility to parks to develop, moreover, the number of working people – is a value not connected with the park area (fig.2). As a rule, parks established earlier have larger number of working people with the same areas.

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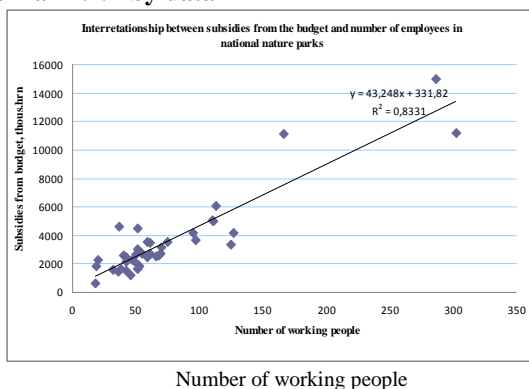
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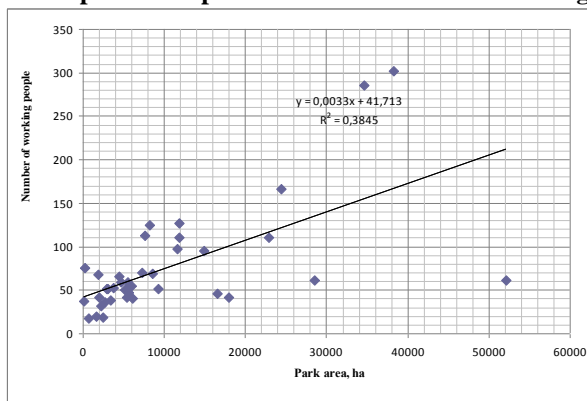
**Fig.1. Interrelationship between subsidies from budget and number of working people in Ukrainian NNP by data**



In this paper, the calculation of the economic effects of the functioning of forest and wetland ecosystems in Ukraine has been made. To do this, the technique based on the concept of total economic value of ecosystem functioning was applied. As calculations show, the annual economic impact of water treatment functions of wetlands Ukraine is about 86 million US dollars. The total mass of oxygen deposit from forests and swamps is about 60 million

tons. This allows to provide them with the livelihood of 147 million people, which is three times more than the actual population of Ukraine. The economic effect of cleaning the atmosphere (carbon dioxide absorption) is about 1.795 billion US dollars. The total economic effect of the natural functioning of forest and wetland ecosystems of Ukraine is estimated at 1,88 billion US dollars (State Statistics, 2013)

**Fig 2. Interrelationship between park area and number of working people**



Source: compiled by the authors.

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In Poland the system of financing national parks is somewhat different. Park income is formed at the expense of subsidies from budget, financing from other Polish funds (Forest fund (FF), National Fund for Environmental Protection and Water Management (NFEPWM), Voivodship Funds for Environmental Protection and Water Management (VFEOWM), European Funds). Subsidies from state budget are not directly connected with the parks area, they are more connected with the number of persons employed in particular parks. Subsidies from state budget in many cases are half or almost half of all revenues of the park.

An important source of outside revenues for nature protection and ecological education for parks are costs received from the National Fund for Environmental Protection and Water Management (NFEPWM). All parks make use of this source but the level of its use is different.

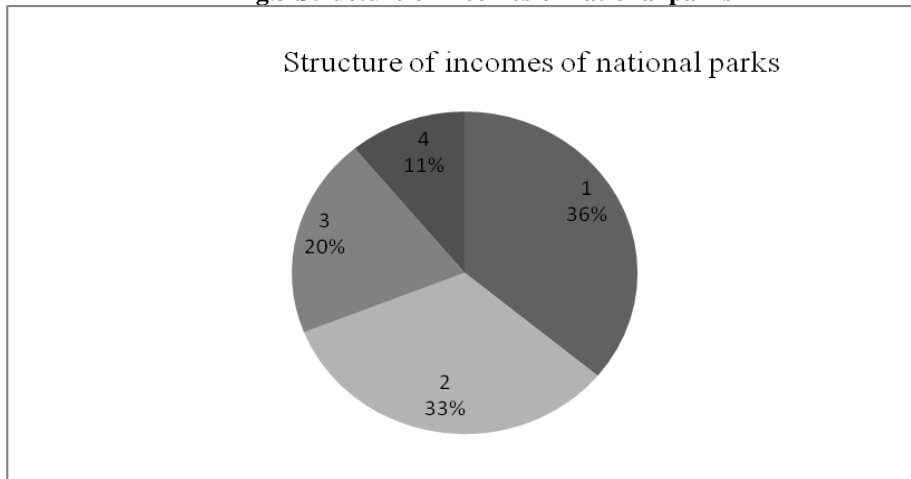
Besides, parks receive funds for nature

protection and ecological education from programs of the European Union, in particular, the operative program «Infrastructure and environment» (IE). Starting from 2012, parks also benefit from funds received from the Forest fund which is managed by State Forests and which are designed to protect forest ecosystem and for the purposes of scientific research.

As far as own incomes are concerned, Tatra National Park has extensive experience, as the park income amounts to 70,7% of needs. Relatively large own incomes are also visible in other mountain parks (Karkonosze NP– 39,3%, Stolowe Mountains NP – 56,2%, Babia GoraNP– 49,6%), and also seaside ones (Slowinski NP– 63,2%).

A substantial part of parks' own incomes is obtained from the entrance fee into the park territory. Less than half parks earn substantial own incomes from the sale of timber obtained as a result of cutting to upkeep forests care and of changes in the formation of tree conditions.

**Fig.3 Structure of incomes of national parks**



(1- own incomes, 2 – subsidies from budget, 3 – other, 4 – European finances)  
Source: compiled by the authors.

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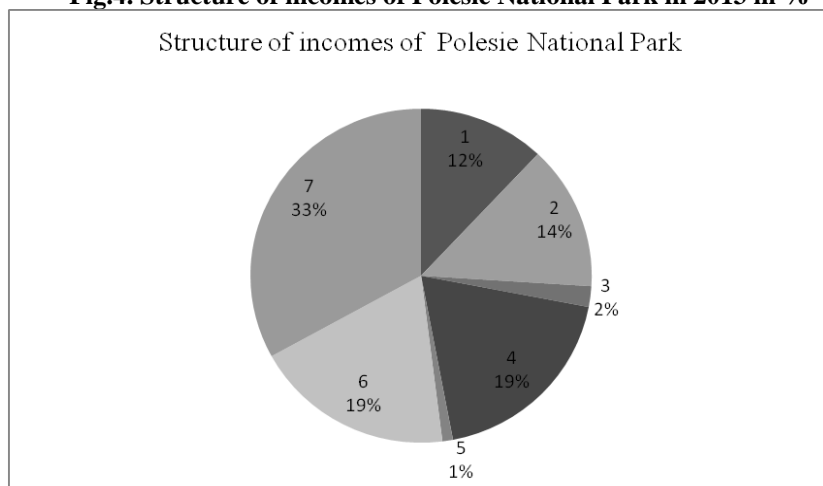
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**Fig.4. Structure of incomes of Polesie National Park in 2013 in %**



(1 – FF, 2 – NFEPWM, 3 – VFEPWM, 4 – EF, 5 – PDAT, 6 – own incomes, 7 – subsidies from budget)

Source: compiled by the authors.

Some parks obtain a substantial part of own incomes from the activity carried out on agricultural lands. Mostly this is the financing within the frameworks of agro-ecological programs (PDAT) and programs in environment protection and also payment for land leased by farmers. As is seen, the functioning of national parks depends on financial provision. The structure of own incomes is connected with the displacement of the park, therefore, parks have different possibilities for their acquisition. The most important sources of own profits are:

- Sale of entrance tickets to the park and park objects;
- Sale of timber obtained within the frameworks of carrying out protection actions;
- Leasing of agricultural land.

The successful functioning of national parks depends firstly on proper financing which, in case of parks in Poland and

Ukraine, is possible from non-state sources. However, the major subsidies are from budget and from other funds which are designated for the protection of the environment.

Financing of parks introduced in Poland via grant support from different funds provides the opportunity for implementing innovations, for creating new attractions in the territory of parks, for carrying out scientific research and expeditions which is not specific for Ukraine. On the other hand, such an approach results from the fact that the financing of the park is not of stable character because each year financing from other funds can change or finish altogether.

Financing from state budget mostly covers the expenses for wages. Newly created parks have lower level of subsidies.

State subsidies are not an objective financial instrument which could be connected with the potential of getting own funds (absence of objective algorithms).

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Such method of assigning state subsidy can have demotivating character (if a park works and increases its own profits and gets outside financing, then as a result can obtain lesser state subsidies).

We think that in order to preserve biodiversity, the most effective is a group of economic methods. This set is divided into two subgroups: the use of negative incentives (enforcement mechanisms) and the use of positive incentives (incentive mechanisms). The state should create economic methods of extracting money from manufacturers of environmentally hazardous goods to replenish environmental funds and use those funds to developers and producers of environmental goods. Also, the state can promote economic methods aimed at creating a material interest in the production of environmental goods, biodiversity conservation, sustainable use of resources. Today, this group of methods insufficiently developed, their formation and use should be given special attention. This should develop competition for subsidies, benefits, grants, loans and more.

The system of «smart innovations» in biodiversity conservation of natural parks is analyzed – selection of new resources (species resistant to the environment), the materials in cryobanks, creating a market of genetic resources, the strains of microorganisms. Noteworthy innovations in plants and bacteria use for lighting (like the New York project scientists «Glowing Plants», with the use of genetically modified Arabidopsis) be taken into account. Extraordinary practical interest are also in «smart» systems reclamation. Berliner scientists have created a sensor that «decides» when and how much water and fertilizer should be added to the soil (Yakymchuk, A. 2014).

**Conclusions.** The efficient work of

national natural parks depends firstly on their financial provision. On the basis of the data analysis it is possible to draw a conclusion that:

1. At present, an optimal mechanism is not formed to provide for the financial state of national parks in both countries.

2. Attention is to be paid to financing Polish national parks via grant support from national and regional funds.

3. Subsidies from state budget are not an objective financial instrument, they are in need of developing clear-cut regulations and algorithms.

4. The most effective is a group of economic methods to preserve biodiversity. Today, this group of methods is insufficiently developed, their formation and use should be given special attention. This should develop competition for subsidies, benefits, grants, loans and more between national natural parks.

5. The system of «smart innovations» in biodiversity conservation of natural parks is analyzed – selection of new resources, the materials cryobanks, creating a market of genetic resources, the strains of microorganisms. Noteworthy innovations in plants and bacteria use for lighting, «smart» systems reclamation.

6. It is proposed to attract a systematic approach to managing conservation of biodiversity based on such principles as integrity, hierarchy, structuring, plurality.

7. Creating an effective system of biodiversity is possible if the application of the best experiences of developed countries in the world is combined with national characteristics, forming a common methodological framework standard indicators of their legislative consolidation, involving economic incentive instruments biodiversity (grants, awards, donations, credits, loans, trading emissions, implementation tools of «green economy»).

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exemptions to the tax construction, granted for creating (developing) investment. The author conducted own research on the relationship between the level of fiscalism (relation of PIT tax revenues and social insurance contributions to average annual GDP growth rate, calculated with purchasing power parity per capita) and the structure of tax system, and economic growth speed for 27 EU countries in 1991-2012.

2. The research shows that in the short period of time it is difficult to prove the relationship between reduction of tax rates and GDP growth rate. Negative correlation means that the higher the level of marginal tax rates, the lower the GDP growth. The obtained correlation coefficients are statistically insignificant, that is so small that there are no grounds for rejecting the hypothesis of the existence of a relationship between the level of marginal tax rates in the short period of time. These results do not allow us to confirm the theoretical postulates of the supply side school of economics. Its advocates claim that reduction of marginal tax rates in income tax leads to lowering labor costs, stimulating consumption and production, and in consequence to shifting the global supply curve so that the balance point between demand and supply indicates higher level of GDP and prices. This activity is supposed to lead to economic growth and lower inflation. An effect of these activities may be increased trade deficit caused by growing demand for consumption and investment goods and increased capital surplus due to increased inflow of foreign capital and decreased outflow of national capital abroad.

3. Apart from the influence of the level of fiscalism on economic growth, we also analyzed and researched the structure of budget tax revenues (including quasi-

taxes). It allowed us to answer how particular types of fiscal revenues affect the GDP growth dynamics. The analysis covered three tax groups. The first one comprises income taxes (PIT, CIT and taxes on capital gains), the second one – social insurance contributions and their derivatives, the third one – incomes from work (jointly PIT and social insurance contributions and their derivatives). Distinguishing the fourth group was justified by the fact that social performance can be financed with general taxes or with premiums outside the budget, as burden classified as social insurance.

4. Analyzing the influence of the share of income taxes in fiscal revenues on GDP growth rate we obtain the coefficient of Pearson's linear correlation  $r_{xy} = 0.12$ . The obtained value of the coefficient means that there is no statistically significant relationship between the share of income taxes in fiscal revenues and average annual GDP growth rate. Similar results are obtained when examining the discussed relationship annually in particular years (with an exception of the Netherlands). Analyzing the power and direction of the correlation between PIT and CIT separately and average annual economic growth rate, we also obtain statistically insignificant relationships. The obtained coefficients of correlation are respectively  $r_{xy} = 0.05$  and  $r_{xy} = 0.37$ . Therefore the share of income taxes in the structure of budget fiscal revenues does not significantly affect the economic growth dynamics (either in the short or in the long term).

5. Determining the power and direction of the relationship between the share of social insurance contributions in total fiscal revenues and average annual GDP growth rate per capita we obtain the coefficient of correlation  $r_{xy} = -0.44$ . This re-

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