

## ABSTRACTS

**Cherevatsky D.Yu., Soldak M.O.** *On impact of research and development funding on improving energy efficiency of national economies.* – P. 17.

Reduction of energy consumption at the macroeconomic level is traditionally perceived as a result of scientific and technical progress, and thus, in its turn – as a manifestation of the budget financing of R&D in the country. The article deals with the study of the significant statistical relationship between the amount of science financing at the level of national economies and the reduction of energy consumption by countries. The acceleration (deceleration) is proposed to be used as a dependent variable – the second derivative of a time function of accumulation of the volume of primary energy resources consumed by the national economy, and as the independent variable – data on the cumulative budget investments inherent in the national economy.

We used data received after long-term observations of the development of 44 countries with different economic, climatic, and structural-economic characteristics to conduct research. As to make a detailed analysis of energetic and economic relations all countries in the sample have been divided into three groups by five attributes in automatic mode (using the methods of a cluster analysis) – the per capita GDP, annual budget allocations for science, output of industrial production per capita, climatic factor, primary energy resources per capita. The first cluster's included the richest countries in the world with the highest expenditures on R&D, in the second cluster there have been the countries with the warmest climate, and the third cluster has been for the emerging economies historically developed as industrial ones.

Statistically significant relationships have been established between the acceleration in the economies of the countries – the representatives of each cluster of the cumu-

lative consumption of primary energy resources and financing of R&D. It was proved that the development of investment in R&D results in lower energy costs for the national economies. The acceleration (not a slowdown in the rates of energy consumption as in advanced economies) in the countries with low volumes of budget financing of R&D can be logically explained by the rebound effect. The presence of "black swans" – the countries with specific energy consumption due to high expenditures on R&D is revealed.

Keywords: energy efficiency, energy consumption, R&D, financing, cluster.

**Garkushenko O.M.** *Directions of environmental regulation of economy in Ukraine due to Ukraine-European Union Association Agreement.* – P. 50.

Nowadays Ukraine faces the task of more active work in the field of environmental protection in order to approximate its existing environmental legislation (norms, standards) and taxation to the European ones according to the Ukraine-European Union Association Agreement. Environmental regulation of the economy has a long history in EU, which led to the pollution reduction by industries (major polluters) and citizens. This was due to changes of polluters' behaviour toward more conscientious attitude to natural resources, pollution reduction at the source, and the wide implementation of environmental-friendly technologies.

At the same time Ukraine, despite some achievements in the field of environmental regulation of the economy that have occurred since the independence of the country, still imprisoned in post-Soviet heritage and is far behind EU in terms of environmental protection and regulation of the economy. One of the reasons for this phenomenon is that these tasks hold far from first positions in Ukraine giving place to solving financial, political, social and other

problems. Undoubtedly, their solution is important, just as much as environmental protection and regulation, which could improve life quality of the population and have positive influence on economy of the state. Therefore it would be useful to analyze European experience in this field with the aim to define ways of approaching environmental regulation in Ukraine to EU standards. But for now any comprehensive analysis of the legal framework for environmental regulation of the economy in Ukraine could hardly be found, especially after signing the Association Agreement. Similarly, there are virtually no academic papers considering groundings of changes of the environmental taxes' level in Ukraine towards the European.

Therefore, the main objective of the paper is to compare the peculiarities of economy environmental regulation in the EU and Ukraine and to develop recommendations and proposals for the approximation of national norms, standards and taxes on environmental protection to European ones. This is highlighted in several sections of the paper: approaching Ukrainian environmental policy principles and regulation of the economy to the EU ones; peculiarities of the environmental regulation of the economy in the EU and Ukraine by the directions; approaching environmental regulation of solid waste management in Ukraine to the EU one; approaching national environmental taxes level and structure to the EU ones. The paper represents a brief study of the existing problems in the field of environmental regulation of economy in Ukraine in the context of the Association Agreement and recommendations, developed on this basis. Moreover, it defines the circle of problems that need further research.

*Keywords:* environmental pollution, environmental regulation of economy, environmental taxes, European Union, Association Agreement.

**Polovyan O.V.** *Optimization of structure of primary energy consumption. – P. 5.*

The consumption of different types of energy is the basis for a modern economy. Energy is one of the basic sectors of the economy. It ensures the smooth functioning of economic development. Questions to optimize the structure of energy consumption, which can reduce energy costs with existing technology, are poorly understood, despite the significant research results in the formation of an effective energy policy.

Methodical approach suggested in the paper that allows a given production technology to determine the values of primary energy consumption, which optimize energy costs. Translog function is the basis of this approach. It allows determining the elasticity's between the main factors that influence energy consumption taking into account existing technology. The function cost energy costs determined on the basis of the duality theorem. The resulting system of equations allows finding the value of individual consumption of primary energy and the minimum of the total costs in terms of value for a given technology. The solution to this problem is to coordinate the point of tangency constraints and the objective function. The resulting system of equations is proposed to be solved by the method of Lagrange multipliers, which allows determining the optimal values of the individual energy consumption.

The metallurgical complex of Ukraine is considered as an example of the practical application of the proposed approach. Parameter estimation equations of the relationship of total consumption by the official and shadow volumes of sales to the metallurgical enterprises of Ukraine, as well as the energy consumption of individual are given. The equation of energy consumption in value depending on the price of individual energy is rated. These equations allow reflecting the current level of technology and replacement and can be used to find the values of natural gas and coal, which optimize

the cost of their purchase. Scenario simulations conducted, which is associated with changes in the prices for natural gas and coal in Ukraine. Optimal direction of the change in the structure of primary energy consumption is revealed. Main advantages and disadvantages of this approach are analyzed.

*Keywords:* primary energy, translog function, Lagrange method, energy optimization.

**Stadnyk M.V.** *Applicability of reverse charge mechanism of VAT payment in Ukraine.* – P. 93.

The EU VAT system is notably characterized by fractionized payments, and VAT being collected at each stage of the production and distribution chain after offsetting the input VAT paid on purchases against the output VAT received on sales. However, this system has also led to the risk of “missing trader” fraud, where the supplier evades paying to the State the VAT collected on sales while the customer has the right to deduct VAT on the basis of a valid tax invoice. A way to tackle such a fraud is the application of a so-called “reverse charge mechanism”, where the customer becomes liable for the VAT on goods or services supplied to him. In this case, the customer is paying and deducting the VAT via the same VAT return (within the limit of its VAT deduction right), thus eliminating the cash risk as no actual payment of the VAT takes place.

The following international trends led to researching of applicability of reverse charge mechanism within the Ukrainian VAT system. After analyzing the shadow economy in separate sectors and examining their level of profitability it was singled out the list of operations that may use reverse charge mechanism of VAT, namely supply of: mobile telephones, game consoles, tablet PCs and laptops; used material, used material which cannot be re-used in the same state, scrap; agricultural products (may not only

cereals and industrial crops including oil seeds and sugar beet); construction work.

However, the list of these sectors is not exhaustive. Thus, the perspectives of further research may be as follows: studying of possibilities of adaptation of the mechanism to national realities; analyzing of the economic situation of each sector, which are presented in Directive 2006/112/EC, in Ukraine. Such further studies will enhance the reliability of the information and confirm the economic efficiency of any changes of current tax legislation of Ukraine.

*Keywords:* reverse charge mechanism of VAT payment, European Union, VAT of unilateral action, shadow economy.

**Vietska O.V.** *Harmonization of corporate income taxation in EU: experience for Ukraine.* – P. 69.

The process of harmonization of corporate income taxation in European Union is investigated in the article. The stages of acceptance of CCCTB are distinguished. Advantages and disadvantages of CCCTB from the position of separate member's states of European Union are set. The possible consequences of harmonization of corporate income taxation in European Union are divided on three directions: formula of income distribution, corporate income tax rate, and corporate income tax base.

It is set that the old and new member states of European Union can have different consequences of corporate income taxation in European Union by virtue of different features of national economies. Size of economy, requirement in a capital, tax culture and moral, system of personal income taxation, accounting model, rates of GDP, and rates of inflation are considered to be the basic influencing factors. It is reasonable that distinctions in these factors require the different model for the construction of corporate income taxation. Thus, the new member states of European Union can suffer both from introduction of corporate income tax rate and corporate income tax base.

It was grounded that full-scale including of Ukraine in the process of harmonization of corporate income taxation in European Union is impossible. It is related to the condition of Ukrainian economy. All analyzable factors fall behind from the new member states of European Union, and even more – from the old member states of European Union. Moreover, the aim of old member states of European Union is the maintenance of high standards, and new member states of European Union – bringing in foreign investments, and the aim of Ukraine is the solution of issue of fiscal deficit. All this requires the different model on the construction of corporate income taxation.

*Keywords:* harmonization of corporate income taxation, CCCTB, corporate income tax rate, corporate income tax base, European Union, old member states of EU, new member states of EU.

**Zanizdra M.Yu.** *Concept of production greening in context of neo-industrial development.* – P. 33.

The concept of production greening in the context of neo-industrial development is formulated. The strategic goal of the concept is to increase the competitiveness of the national economy due to the changes in niches in the global chain of added value creation and also to maintain a competitive advantage in the long run by the greening of industry according to the paradigm of sustainable development. It relies on several hypotheses about the basis (material production) and drivers (innovation and crisis) of stable economic development. Environmental standards act as competitive barriers to entry into markets. Concept methodological principles are (1) eco-technological determinism, (2) loyal group eco psychology and (3) cybernetic evolutionism.

The principal tool for the intensification of knowledge and production greening are "green" industrial clusters. The founda-

tion of the cluster is "active core" of city basis enterprises, which due to the effects of entrainment provide a harmonized growth with other members of the cluster and the society. As levers of influence on dependent units the management of demand for products and services (scale effect), dynamics of prices (productivity effect), and the range of products and services (innovations effect) are used. Coordination and cooperation of cluster members is based on social contract according to such matters: indicative planning and forecasting; quotas limit the total emissions of pollutants; establishment of the environmental development bank.

The advantages of using the tool proposed are as follows: reduction of the risk of uncertainty and asymmetry of information; coordination of actions of participants of the cluster on economic priorities and a unified development strategy; ensuring the stability and controllability of growth, optimization the allocation of resources, minimization of costs and increase economic efficiency of production while preserving the independence of economic agents in the market; accumulation and mobilization of financial and intellectual capital investments for targeted programs of technical and technological neoindustrialization; target use of funds intended for prevention and compensation of damage caused by industrial activity directly to the place of occurrence of technogenic pressure; implementing a systematic policy approach to increase production efficiency and greening the life cycle of products according to the principle of the theory of constraints; expansion of possibilities for cooperation in the innovation sphere for cluster participants and the local population as shareholders.

*Keywords:* neoindustrialization, production greening, industrial clusters, social contract, indicative plan, bubble principle, environmental development bank.