FEATURES OF FUNCTIONING NATIONAL MODEL OF RESOURCE ECONOMICS IN UKRAINE

Abstract. Introduction. Almost thirty years in the modern history of Ukraine were marked by modest economic and social outcomes. Extremely low rates of economic growth, price and exchange rate instability, technological backwardness of the majority of domestic enterprises, their mass closing, degradation of production and social infrastructure, as well as human capital, low incomes of the vast majority of the population and their significant differentiation, deformations in the work of democratic mechanisms led to the need to revise the existing paradigm of socio-economic development.

The purpose of the research is to study the theoretical and practical features of forming and functioning of national model of resource economics.

Results. The main methodological approaches for assessing the nature and features of the functioning of the domestic economy are outlined. It is determined that Ukrainian export and GDP are highly dependent on the production and export of hard and soft resources, with the latter replacing the former. We can conclude that there is a long-term trend in the structure of commodity export to the replacement of hard resources export by the export of soft resources, and the calculated correlation coefficient is 0.95. There have been positive trends towards a gradual increase in the gross production of grain, including through the increased productivity of production and labour, which will facilitate medium-term economic growth.

Conclusions. The creation of a modern model of competitive economics can help to catch up the level of social and economic development of the leading countries of the world. However, in the medium term, the reform of the national economic model with minimal transformation costs is possible only under the conditions of further development, primarily, of agrarian production, which will act as a medium-term development driver and at the same time will ensure certain macroeconomic stability.

Keywords: resource economy, export and import of resources, Gross Domestic Product, ferrous metallurgy, agrarian production, national economic model of Ukraine.

JEL Classification O11, P4.

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ОСОБЛИВОСТІ ФУНКЦІОНИВАННЯ НАЦІОНАЛЬНОЇ МОДЕЛІ РЕСУРСНОЇ ЕКОНОМІКИ В УКРАЇНІ

Анотація. Майже тридцять років у новітній історії України ознаменувалися досить скромними як економічними, так і соціальними результатами. Український економічний розвиток у минулому відбувся при низьких темпах економічного зростання, що визначалось невисоким експортним потенціалом. Постійний перебіг економіки зазнає серйозних внутрішніх та зовнішніх негативних позицій, що її стабільність забезпечується не тільки в результаті екстенсивної економічної динаміки, але й інноваційних напрямів розвитку економіки.

Метою роботи є дослідження теоретичних положень і практичних особливостей формування та функціонування національної модель ресурсної економіки.

Окреслено основні методичні підходи до оцінки характеру та особливостей функціонування вітчизняної економіки. Визначено, що український експорт з ВВП має високу залежність від виробництва та експорту важких і легких ресурсів, причому останні мають незначну частину у загальній вартості виробничого потенціалу. Виділення в даному контексті значної ролі виробничого потенціалу важких ресурсів, як було вибачено під час аналізу, обумовлено, що вказані ресурси виготовляються на експорт і відносяться до найважливіших для розвитку економіки.

Оцінено роль виробництва важких ресурсів у загальному розвитку національної економіки, що підтверджено на власному прикладі розвитку аграрного виробництва, яке вимагає досить складного і нестабільного розвитку, але постійно зростає відносно інших вітчизняних секторів. Будь-яка економічна динаміка відновлюється через підвищення продуктивності та утримання конкурентоспроможності виробництва, яке відбувається через підвищення продуктивності та утримання конкурентоспроможності виробництва.
Ключові слова: ресурсна економіка, експорт та імпорт ресурсів, валовий внутрішній продукт, чорна металургія, аграрне виробництво, національна економічна модель України.
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ОСОБЕННОСТИ ФУНКЦИОНИРОВАНИЯ НАЦИОНАЛЬНОЙ МОДЕЛИ РЕСУРСНОЙ ЭКОНОМИКИ В УКРАИНЕ

Аннотация. Проведен анализ особенностей функционирования национальной модели ресурсной экономики в Украине. Очерчены основные методические подходы к оценке характера и особенностей функционирования отечественной экономики. Определено, что украинский экспорт и ВВП имеют высокую зависимость от производства и экспорта тяжелых и легких ресурсов, причем последние замещают первые. Выявлено наличие долгосрочной тенденции в структуре товарного экспорта в замещении экспорта тяжелых ресурсов экспортом легких, что подтверждено высоким значением рассчитанного коэффициента корреляции. Полученные результаты позволяют утверждать, что в среднесрочной перспективе реформирование национальной модели экономики с минимальными трансформационными издержками возможно лишь при условии дальнейшего развития аграрного производства, которое будет выступать среднесрочным драйвером развития и одновременно обеспечивать определенную макроэкономическую стабильность.

Ключевые слова: ресурсная экономика, экспорт и импорт ресурсов, валовой внутренний продукт, черная металлургия, аграрное производство, национальная экономическая модель Украины.
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Introduction. After gaining independence, positive expectations in terms of prospects of Ukraine economic development and ensuring the high level of citizens’ welfare prevailed in the Ukrainian society. Herewith, special hopes relied upon the availability of rich economic resources, foremost, raw materials and production facilities for their primary processing. The only obstacle to their effective use was considered to be the rudiments of command and administrative economics with its inherent monopoly, economic freedom and the imperfection of motivational mechanism. As a result, the course for the implementation of market transformations and building of democratic institutions was declared.
However, almost thirty years in the modern history of Ukraine were marked by modest economic and social outcomes. Extremely low rates of economic growth, price and exchange rate instability, technological backwardness of the majority of domestic enterprises, their mass closing, degradation of production and social infrastructure, as well as human capital, low incomes of the vast majority of the population and their significant differentiation, deformations in the work of democratic mechanisms led to the need to revise the existing paradigm of socio-economic development. There was a need for studying and generalizing the experience of other countries, which, like Ukraine, in due time, relied on natural resources as their main factor (so-called “resource economics”) and failed.

**Research analysis and problem statement.**

In the 1950s and 60s, most economists considered rich natural resources in the country as an important factor in economic growth and the conditions for its development [1-2]. However, in the second half of the twentieth century, the accumulated empirical material allowed to conclude that the countries, which were oriented towards the creation of national wealth exclusively through the intensive sale of their natural resources, demonstrated, in the long term, the lag in economic development, stagnation, falling incomes, social imbalances, rising crime, inflation, abuse of power, wastefulness of the state and environmental problems.

As a founder of the Organization of Petroleum Exporting Countries (OPEC), Venezuelan Pablo Peres Alfonso pointed out in 1975: “You think we are lucky. I do not think so. We are dying of indigestion … I call the oil “excrements of the devil”. It brings trouble. Look around you. Look at these waste, corruption, consumption … Our public services are falling. And the debt. We will be in debt for many years. We condemn our grandsons to debts” [3, p.18].

The unjustified hopes of countries that hold significant oil and gas reserves that they can achieve a high level of prosperity and economic development at their expense have not been justified, which made it even possible to talk about the “resource curse” that persecutes them. D. Sachs and A.M. Warner (Sachs, Warner, 1995) pointed out: “One of the surprising features of today's economic growth is that countries with a large amount of natural resources tend to slower growth than economics that do not have these resources” [4].

One of the first explanations for such a paradox belongs to W. Corden and J. Neary (Corden, Neary, 1995). They even used the term “Dutch disease” to refer to the countries where commodity exports hamper economic growth (as happened after the discovery of hydrocarbon deposits in the Netherlands in 1959). This effect was explained by the influx of foreign currency into the country that causes a revaluation of its own currency, and, consequently, the decline in the competitiveness of products in foreign markets, the reduction of net exports, and, therefore, the aggregate expenditures and GDP [5-6].

In addition, the rapid development of extractive industries leads to an increase in the relative value of labour force and prices there, causing the movement of real and human capital there. It reduces the economic potential of processing industries and leads to their decline and slowdown of economic growth in the long run. This fact, in particular, is indirectly proved by the theorem of the English economist T. Rybczynski (Rybczynski, 2006) [7].

It should be noted that the economic basis as a country’s resource wealth stipulates the appearance of a corresponding superstructure. Fierce competition among certain social groups for the appropriation and use of resources is inherent for resource economics (Tornell, Lane, 1999) [8]. It creates the corresponding political and legal structure of society, which eliminates incentives for entrepreneurship (Deacon, 2011) [9]. Ownership of resources is permissive (although formally guaranteed by law); their redistribution is not in the free market, but in corruption schemes.

The main objective of the political struggle in such a country is the access to resource rent and its protection from competitors, which is invested with a significant part of the received income (Lane, 1996; Gylfason, 2001) [10-11]. Such forms of competition for resources lead to the corrosion of property rights and the rejection of law rule (Hodler, 2006) [12], corruption (Norman, 2009; Papyrakis, Gerlagh, 2004) [13-14], election fraud, bribery of voters and political rivals [15]. As a result, institutes of democracy and institutional development potential are destroyed (Acemoglu, 2008; Ahmadov, 2014) [16-17].
Concerning Ukraine, the generally accepted approach is one according to which the main reason for its economic backwardness is the inconsistency of implementing social and economic reforms after gaining independence. However, the underlying causes of such inconsistency, the reasons for the emergence of a social and political system that makes impossible the successful implementation of these reforms, are still not sufficiently investigated in both foreign and domestic economic literature.

The scientific hypothesis underlying this work is the thesis that in Ukraine, a national model of a resource economics has been formed and developed, the functioning of which in many respects determines not only the nature of macroeconomic processes in the commodity and money markets, but also the peculiarities of equilibrium formation in the foreign exchange market and the balance of the state financial resources.

The purpose of the research is to study the theoretical and practical features of forming and functioning of national model of resource economics. To provide the complex nature of the investigation, it is conducted on the basis of data that characterize both the natural volumes of resource production and the cost form of export.

Research results.

Global commodity markets are physical or virtual markets where sales or trading of natural resources take place, which include about 50 major world resource markets, although world trade is carried out over 100 kinds of resources. There are two main types of global commodities: 1) hard and 2) soft, the first of which are always associated with extractive industry, and the second ones — with agricultural production. Each country with national model of resource economics is characterized by the predominance of some or other resources in the structure of commodity export.

According to the current goods classification of goods of foreign economic activity, hard resources are represented by the following groups of goods “V. Mineral products” and “XV. Non-precious metals and their products”, and soft, respectively, by the groups “I. Living animals. Products of animal origin”, “II. Products of vegetable origin” and “III. Fats and oils of animal and vegetable origin”.

Table 1 shows the dynamics of key indicators that determine the main characteristics of the national model of Ukraine economics.

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP (mln.USD)</th>
<th>Exports</th>
<th>Hard Commodity Exports</th>
<th>Hard Commodity Imports</th>
<th>Soft Commodity Exports</th>
<th>Soft Commodity Imports</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>38,0</td>
<td>16,3</td>
<td>8,47</td>
<td>7,55</td>
<td>1,37</td>
<td>0,53</td>
</tr>
<tr>
<td>2002</td>
<td>42,4</td>
<td>18,0</td>
<td>9,37</td>
<td>7,86</td>
<td>1,84</td>
<td>0,47</td>
</tr>
<tr>
<td>2003</td>
<td>50,1</td>
<td>23,1</td>
<td>12,00</td>
<td>9,68</td>
<td>1,82</td>
<td>1,08</td>
</tr>
<tr>
<td>2004</td>
<td>64,9</td>
<td>32,7</td>
<td>17,37</td>
<td>12,60</td>
<td>2,33</td>
<td>0,90</td>
</tr>
<tr>
<td>2005</td>
<td>86,2</td>
<td>34,4</td>
<td>18,76</td>
<td>14,04</td>
<td>3,01</td>
<td>1,23</td>
</tr>
<tr>
<td>2006</td>
<td>107,8</td>
<td>38,4</td>
<td>20,29</td>
<td>16,83</td>
<td>3,32</td>
<td>1,51</td>
</tr>
<tr>
<td>2007</td>
<td>142,7</td>
<td>49,2</td>
<td>25,06</td>
<td>22,02</td>
<td>4,22</td>
<td>2,02</td>
</tr>
<tr>
<td>2008</td>
<td>180,0</td>
<td>67,0</td>
<td>34,64</td>
<td>31,83</td>
<td>8,30</td>
<td>3,78</td>
</tr>
<tr>
<td>2009</td>
<td>117,2</td>
<td>39,7</td>
<td>16,72</td>
<td>18,37</td>
<td>7,43</td>
<td>2,90</td>
</tr>
<tr>
<td>2010</td>
<td>136,0</td>
<td>51,4</td>
<td>24,06</td>
<td>25,26</td>
<td>7,36</td>
<td>3,26</td>
</tr>
<tr>
<td>2011</td>
<td>163,2</td>
<td>68,4</td>
<td>32,36</td>
<td>35,73</td>
<td>9,86</td>
<td>3,32</td>
</tr>
<tr>
<td>2012</td>
<td>175,8</td>
<td>68,8</td>
<td>26,54</td>
<td>32,78</td>
<td>14,39</td>
<td>4,56</td>
</tr>
<tr>
<td>2013</td>
<td>183,3</td>
<td>63,3</td>
<td>25,07</td>
<td>27,37</td>
<td>13,46</td>
<td>4,96</td>
</tr>
<tr>
<td>2014</td>
<td>133,5</td>
<td>53,9</td>
<td>21,33</td>
<td>19,42</td>
<td>13,57</td>
<td>3,45</td>
</tr>
<tr>
<td>2015</td>
<td>91,0</td>
<td>38,1</td>
<td>12,57</td>
<td>13,69</td>
<td>12,09</td>
<td>1,88</td>
</tr>
<tr>
<td>2016</td>
<td>93,3</td>
<td>36,4</td>
<td>11,07</td>
<td>10,80</td>
<td>12,84</td>
<td>2,13</td>
</tr>
<tr>
<td>2017</td>
<td>105,0</td>
<td>43,3</td>
<td>14,07</td>
<td>15,52</td>
<td>14,93</td>
<td>2,36</td>
</tr>
</tbody>
</table>

Source: State Statistics Service of Ukraine (www.ukrstat.gov.ua)
Analysis of the data in Table 1 allows us to conclude that there are various tendencies in changing the balance of foreign trade with hard and soft commodities. If the export and import of hard commodities are almost balanced, with changing the balance results almost every year; the export of soft commodities far exceeds their import, moreover, there is a strong tendency to increase the imbalance. In 2001, the export of soft resources predominated import by 2.57 times; and the corresponding ratio was already 6.31 times according to the data of 2016.

The following methodological approaches are used to assess the nature and peculiarities of resource economics functioning:

1) the determination of the share of economic sectors that are related to the production of soft and hard commodities in national GDP or commodity exports; it allows to identify the national economics as a resource one;

2) the identification of dependence nature of national GDP, exports and other key macroeconomic indicators of the commodity market on production and export-import of resources; it allows to investigate and determine the formed causal relationships that characterize the impact of global resource markets on the macroeconomic equilibrium in the domestic commodity market;

3) the identification of dependence nature of exchange rate, the volumes of gold reserves on resource prices and production; it allows us to investigate and study the formed causal relationships characterizing the impact of global resource markets on the macroeconomic equilibrium in the currency market of Ukraine.

When applying the first approach, the theoretical thresholds values are often used, accounting for 10% of GDP, 40% of commodity exports that allows identifying the national economic model as a resource one. Figure 1 shows the results of the author’s calculations of the share of resource export in commodity export and GDP.

![Commodity Exports in 2001—2017 (%)](image)

Source: constructed by the authors according to Table 1

The analysis of data in Figure 1 allows to identify the national economic model of Ukraine as a resource economics, within which the export of resources as a share of GDP fluctuated within the range of 20—30%, but as a share of commodity export — within the range of 57—65%, with the second indicator characterized by the real long-term trend to increase.

Ukraine is a special type of resource economics where both export and import of resources have a significant impact on the macroeconomic equilibrium [18]. It is worth pointing out that Ukraine actively exports both hard and soft resources. The traditional view concerning the development peculiarities of the Ukrainian type of resource economics is that the main resource is the production of ferrous metallurgy. Moreover, the dynamics of the national GDP is statistically determined by the dynamics of steel production characterized by high correlation and described by a statistically adequate regression equation [19, p. 38]. Indeed, with a fairly high potential for iron ore extraction and the necessary capacity for its primary processing and smelting of steel and cast...
The problem of further development of the national model of resource economy is that steel production in Ukraine has been decreasing in recent years, and this process began long before the occupation of the Autonomous Republic of Crimea and certain territories of Donetsk and Luhansk regions. The analysis of data in Table 1 allows us to make an interim conclusion that the share of Ukraine in the world steel production is characterized by a long-term tendency to decrease from 5.8% in 1992 to 1.3% in 2016. Having reached an absolute maximum in steel production in 2007, it was further characterized by a medium-term decline trend, which, taking into account the current dependence of GDP on steel production, had a significant impact on the entire Ukrainian economy. The “Golden Age” of the accelerated development of Ukrainian ferrous metallurgy was during the period of recovery economic growth, which lasted from 2000 to 2007. After that, as a result of the global financial crisis and the gradual increase in the global supply due to the construction of new capacities in the PRC, steel production in Ukraine decreases, which is accompanied by the decrease of the country’s share in total steel output in the CIS and the world [20]. The global steel market reached its absolute peak in 2014, being in the stage of stagnation after that, unlike the global oil market. Thus, there is no longer an external factor for market growth that would contribute to
extensive economic growth in Ukraine, as it was observed during the period from 2000 to 2007, when the recovery of Ukraine's economy was accompanied by the increase of steel production by 58.6%, from 850 million tons to 1.348 million tons, having an influence on the dynamics of domestic GDP. Moreover, even under these favourable conditions, Ukraine’s share in the world steel output declined from 3.7% to 3.2%. Thus, the long-established dependence of the national GDP dynamics on steel production plays a part of not the engine of economic growth, but, on the contrary, its brakes.

Due to the global financial crisis and the revealed tendency towards a gradual reduction of Ukraine’s share in the world steel production, there are new trends in the functioning of the national resource economics model. The relative indicators of hard and soft resources export as a share of total exports can be seen in Fig. 2.

![Graph showing soft and hard commodity exports as a percentage of total exports.](image)

Fig. 2: Soft and Hard Commodity exports (% of total exports)
Source: constructed by the authors according to Table 1

Analyzing the data of Fig. 2, we can conclude that there is a long-term trend in the structure of commodity export to the replacement of hard resources export by the export of soft resources, and the calculated correlation coefficient is 0.95.

The peculiarities of functioning of the Ukraine resource economy as a result of the study of cost indicators can be characterized by the following issues:

1) the export of soft and hard resources constitutes a rather high share in both the total commodity exports, from 57.6% to 64.5%, and in relation to GDP, from 20.0% to 29.3%, which serves as a clear indicator of the formation of a national resource economics model;

2) the share of hard resources in national exports and GDP is relatively constant with the current long-term tendency to their reduction;

3) there is an effect of replacing the export of hard resources with the export of soft ones, which results in a gradual change in the structure of commodity exports.

We focus on the dynamics of real GDP, steel and grain production in 1992-2016 on the basis of natural indicators. Although the gross domestic product is calculated at current prices and has a cost form, the methodological peculiarities of calculating real GDP by eliminating the influence of price factors make it possible to compare it with the natural indices of steel and grain production, the dynamics of which is measured by millions of tons and is shown in Figure 3.

Analysis of data in Figure 3 allows us to point out that there is high dependence of Ukrainian GDP on steel production, but it should be noted that since 2014 a tendency to exceed the relative indicator of real GDP over the corresponding indicator of steel production has been formed, and annually, it continues to increase, to 15 in 2016. Instead, the relative indicator of grain production has grown much faster than GDP since 2008. Thus, the pace of its growth was 171.5%
compared to 1992. We think, the dynamics of real GDP in Ukraine will no longer be determined only by changes in steel production in the future, and this trend will continue to increase.

![Graph showing GDP, Crude Steel, and Grain production in Ukraine (1992-2016)](Image)

**Fig. 3: Crude steel production, grain production and GDP in Ukraine in 1992—2016 (1992=100%)**

Source: constructed by the authors according to State Statistics Service of Ukraine (www.ukrstat.gov.ua)

In the medium-term perspective, it is agrarian production that can become a new engine of economic growth in Ukraine, with bright prospects for building up production potential. However, these facts will not change the status of the national economic model as a resource one, only transforming the mechanisms of its influence on the dynamics of GDP.

**Conclusions.**

The study of theoretical positions of resource economics functioning and the determination of the national model peculiarities help us to draw the following conclusions.

1. For quite a long period, Ukraine export and GDP are highly dependent on the production and export of hard and soft resources, with the latter replacing the former. However, the dependence of Ukraine GDP on the national production of ferrous metallurgy is still maintained, with its share decreasing both in the world output and in the total production of post-soviet countries. The high statistical dependence can be used to predict the main macroeconomic indicators of the commodity market, on the one hand, and on the other hand, the development of the national economic model and its ability to move to the stage of self-sustaining economic growth will be marked by a decrease in the share of export resources in commodity export and national GDP.

2. In recent years, there have been positive trends towards a gradual increase in the gross production of grain, including through the increased productivity of production and labour, which will facilitate medium-term economic growth. Ukraine has all the prospects for increasing its share in the global markets for grain and other types of light resources. The absence of a free agricultural land market and a relatively low level of labour productivity and capital intensity of production can now be an additional stimulus to economic growth in the medium term, but subject to mandatory reforms in the near future.

3. At the same time, the transformation of internal mechanisms for functioning of the national model of resource economics does not mean a qualitative change in the organization system of economic relations in Ukraine, where the dynamics of domestic GDP is determined by the production and export of hard and soft resources. The creation of a modern model of competitive economics can help to catch up the level of social and economic development of the leading countries of the world. However, in the medium term, the reform of the national economic model with minimal transformation costs is possible only under the conditions of further development, primarily, of agrarian production, which will act as a medium-term development driver and at the same time will ensure certain macroeconomic stability.


