



Section "Economic Development in Conditions of Multifaceted Uncertainty"

Monitoring of export-import activities of economic entities of the state sector of the economy in the conditions of military times

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According to estimates of well-known domestic scientists, losses in the economy of Ukraine amount to: from 22% to 46% of GDP, industrial production - about 50%, export revenues - 48%, capital investments - 45%

In the conditions of the war in Ukraine, the structure of the balance of payments was disrupted, there was a decrease in export revenues, and the domestic demand for currency increased rapidly. A third of the country's industrial potential remains idle due to high risks, disruption of production and transport chains, loss of access to resources (both raw and human), etc. To reduce the loss of endogenic potential of the regions of Ukraine and increase the efficiency of its use,

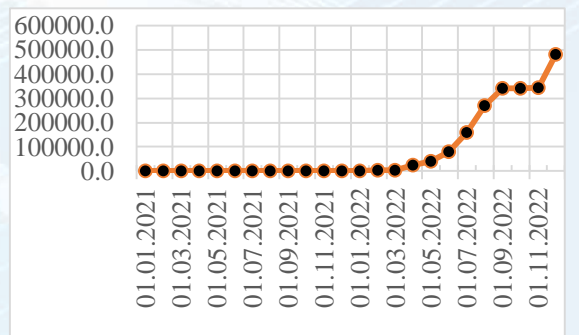
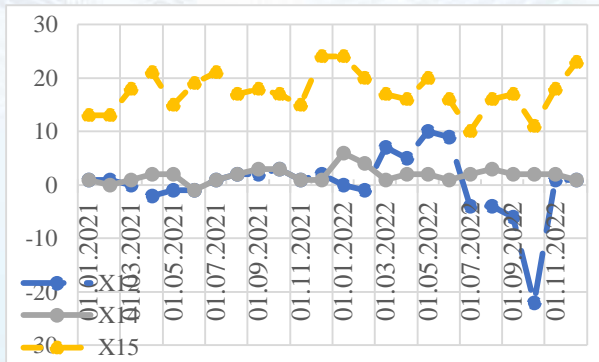
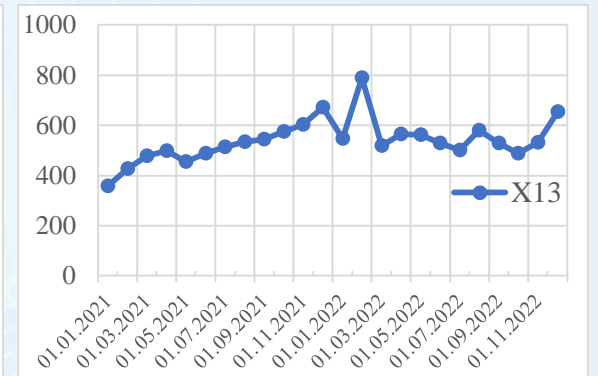
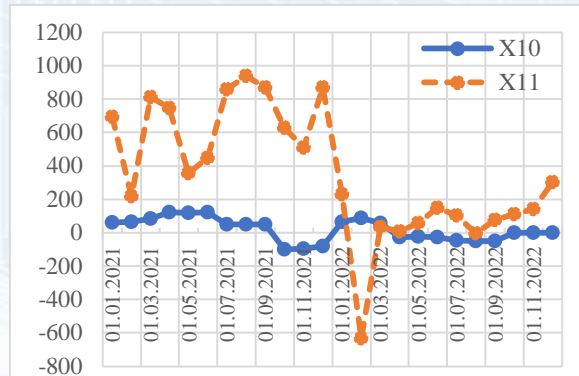
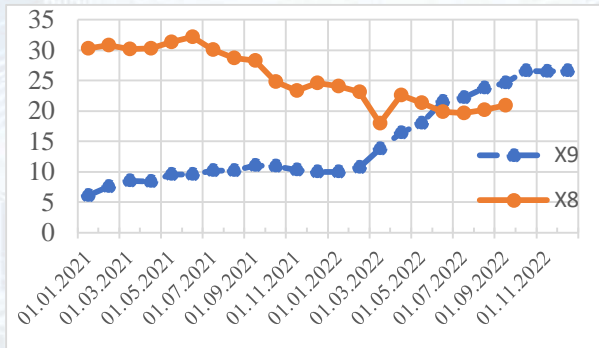
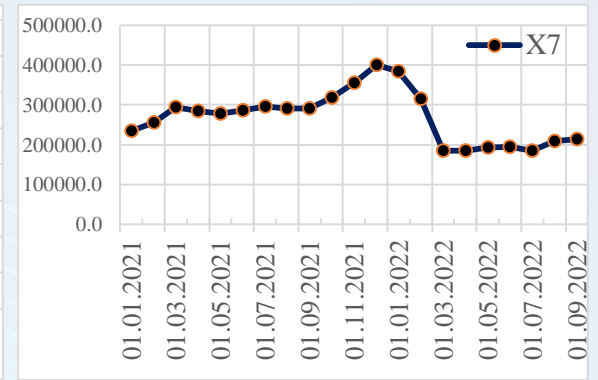
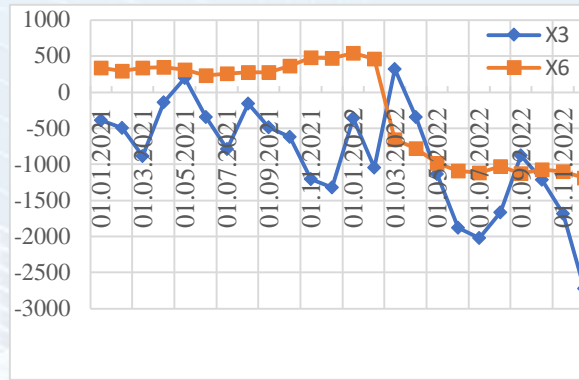
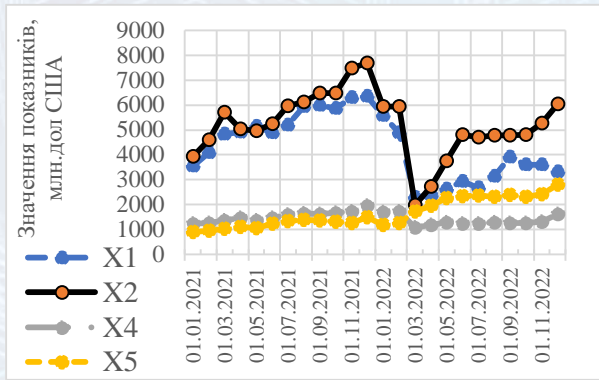
- Domestic products should be promoted to foreign markets, new export opportunities should be sought;
- To activate public-private partnerships; monitor the movement of persons in the country;
- To facilitate the relocation of the business to the territory where hostilities are not taking place;
- To reduce the administrative and tax burden on business;
- To liberalize labor relations;
- To implement multi-disciplinary educational and consulting programs.

There is a ration of the domestic economy, which continues to collapse, requires new unconventional approaches to management. Therefore, to determine the strategic direction of the restoration of the national economy and its further development, it is necessary to carefully monitor the export and import activities of economic entities of the state sector of the economy.

The state of export-import activity of economic entities of the state sector of the economy is determined by a system of indicators that reflect the factors influencing it. Many scientists such as Grynko P.O., Dunska A., Lipych L.G., Fatenok-Tkachuk A.O., Mazaraki A.A., Melnyk T.M., Otenko I.P., Ponomarenko V. S., Piddubna L. I., Chalapko (Kalnyk) L. D., Peretyatko L. A., Kozak S. I. and many other scientists believe that it is appropriate to determine the state of export-import activity by such indicators as:

- volumes of export of goods (x_1 , million US dollars);
- import of goods (x_2 , million US dollars);
- balance of export-import of goods (x_3 , million US dollars);
- volumes of export of services (x_4 , million US dollars);
- import of services (x_5 , million US dollars);
- balance of export-import of services (x_6 , million US dollars);
- sales volume of industrial products in Ukraine (x_7 , mln. hryvnias);
- volume of sales of industrial products of Ukraine abroad (x_8 , %);
- consumer price index (up to the corresponding month of the previous year, x_9 , %);
- direct investment: assets (x_{10} , million US dollars);
- direct investment: liabilities (x_{11} , млн. дол. США);
- volume of telecommunication services (x_{13} , million US dollars);
- volume of information services (x_{14} , million US dollars);
- volume of scientific and research and development services (x_{15} , million US dollars);
- State budget revenues from the European Union, foreign governments, international organizations, donor institutions (x_{16} , mln. Hryvnias).
- volumes of sales of industrial products in Ukraine abroad (x_8 , %),

For monitoring, the trend of the time series of each individual indicator should be analyzed



Dynamics of indicators of the state of export-import activity in Ukraine on a monthly basis during 2021-2022.

Table shows the numerical characteristics of the laws of distribution of the values of the specified factors, where \bar{x} – mean of the indicator; M_e – median; σ – standard deviation of the indicator; V – coefficient of variation; x_{\min} – the minimum value of the indicator; x_{\max} – the maximum value of the indicator; Δ – range; *Stndsk* – standardized coefficient of asymmetry; *Stnd. krt* – standardized coefficient of kurtosis.

Indicator	\bar{x}	M_e	σ	V	x_{\min}	x_{\max}	Δ	<i>Stndsk</i>	<i>Stnd. krt</i>
x_1	4335,67	4461	1317,46	0,303866	2293	6365	4072	-0,014	-1,340
x_2	5222,46	5142,5	1316,33	0,252052	1976	7689	5713	-0,930	0,874
x_3	-886,792	-832	740,096	-0,83458	-2725	317	3042	-1,231	0,202
x_4	1439,88	1371,5	228,449	0,158659	1073	1954	881	0,980	-0,739
x_5	1655,63	1367,5	587,748	0,355001	906	2800	1894	0,933	-1,354
x_6	-215,75	264,5	701,791	-3,2528	-1184	539	1723	-0,785	-1,885
x_7	264051	266651	62530,1	0,236811	184324	399626	215302	1,072	-0,413
x_8	24,9153	23,7	4,54259	0,182322	18	32,2	14,2	0,543	-1,516
x_9	14,6958	10,8	6,99916	0,476268	6,1	26,6	20,5	1,412	-1,154
x_{10}	17,5417	24,5	68,2196	3,889	-101	122	223	-0,274	-1,065
x_{11}	355,25	266	387,841	1,09174	-633	940	1573	-0,598	0,138
x_{12}	0,208333	1	6,04317	29,0072	-22	10	32	-3,986	7,713
x_{13}	539,167	530,5	85,2631	0,158139	358	788	430	1,687	2,617
x_{14}	1,83333	2	1,37261	0,748696	-1	6	7	1,973	3,065
x_{15}	17,4583	17	3,69464	0,211626	10	24	14	-0,085	-0,186
x_{16}	87351,2	1054,22	148503	1,70007	0	481091	481091	3,105	1,062

To determine the relationship between indicators, it is recommended to calculate a multivariate factor analysis. Since the rearelin early dependent indicators in the specified system of factors, we will remove them and leave only linearly independent ones. It is advis able to form the rating of the interrelationship of factors based on the weighting coefficients of the first latent factor, which explains 44.322% of the variability of the initial system of indicators:

$$F = 0,829x_3 + 0,725x_6 + 0,302x_7 + 0,661x_8 - 0,835x_9 + 0,726x_{10} + +0,15x_{11} + 0,155x_{12} - 0,358x_{13} + 0,108x_{14} - 0,006x_{15} + 0,779x_{16}.$$

Further, monitoring should be continued by assessing the interrelationship of trends of the seindicators over a long period of time. Since the identified cause of a change in the trend of one indicatoris highly likely to cause a change in the trend of another indicator that is co-integrated with it. To establish a real causal relationship between the levels of two or more time series, their cointegration is determined, provided that their linear combination is a stationary time series.

The advantages of the presented scientific and practical approach to monitoring the export-import activity of economic entities of the state sector of the economy are its objectivity and effectiveness. Analytical support for monitoring should include an analysis of trends in the values of indicators of the state of export-import activity, which is recommended to be carried out using descriptive statistics tools. In monitoring technology, it is important to determine the inter relationship of trends in the values of partial indicators with the help of time series cointegration tools.

THANK YOU FOR YOUR ATTENTION