



USAID
FROM THE AMERICAN PEOPLE



INSTITUTE
FOR ECONOMIC RESEARCH
AND POLICY CONSULTING

Sectoral Analysis: Machine building industry

September 2024

Authors: Yevhen Angel, Oleksandra Betliy

The analysis is based on the results of the Special Survey of Enterprises "Export in Wartime", which was conducted by the IER in August 2024 (Methodology is presented in the Annexes).

The report and its results do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

This report became possible due to the support of the American People through the United States Agency for International Development (USAID) under the Competitive Economy Program in Ukraine.

Executive summary

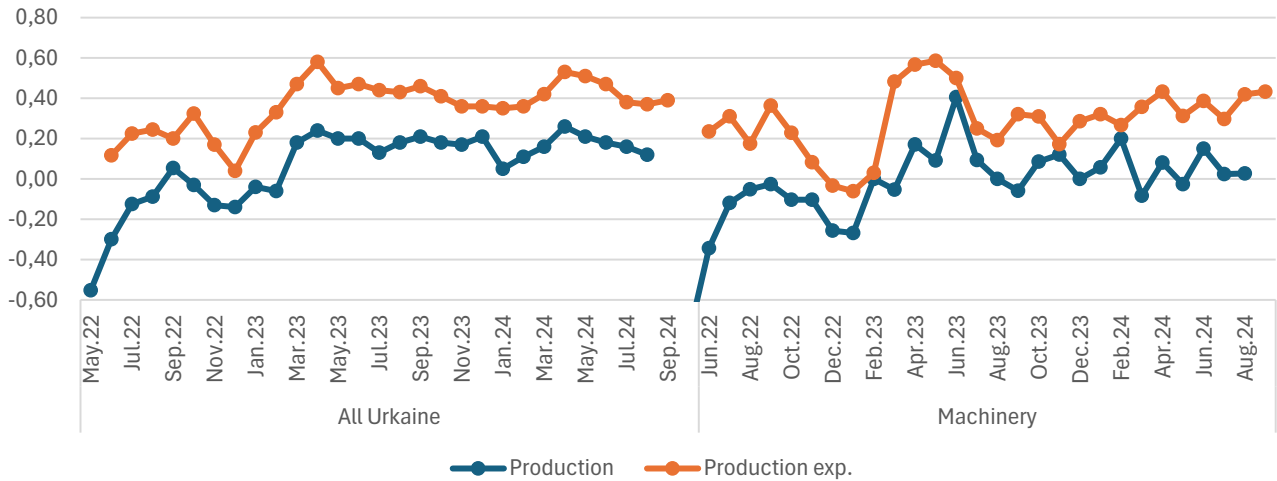
- Since the beginning of the full-scale war, machine building industry has remained one of the problematic industries where there was a low rate of production recovery. According to the State Statistics Service of Ukraine, the machine-building industry reduced production during 2022, and a slight drop was also recorded in early 2024. This is probably due to the fact that machine-building enterprises were unable to provide new markets, in particular, to find a replacement for exports to the CIS countries.
- The main impediments to the activities of machine-building companies, as well as to other industries, are problems with access to electricity. This is one of the reasons for the rather volatile performance of companies in the industry. Other impediments are labor shortages and an unsafe work environment. Another challenge is the lack of long orders.
- An important impediment to the operation of the industry is also the lack of labor. That is why the Skills Alliance program, which the government launched together with international partners, is becoming extremely important. The program is designed to introduce training and retraining for the adult population.
- The level of uncertainty remains high, but machine-building enterprises have positive expectations for certain production indicators (production, sales).
- The industry continues to see a downward trend in exports, although most companies that exported their products before February 2022 continue to do so. Among the main non-tariff barriers to exports are long queues at the border and long waiting times for export clearance.

Production indicators

Production

- **Machine building shows lower production growth rates compared to other industries.** Since the beginning of the war, machine building has remained one of the problematic industries where there was a low rate of production recovery. *The index of production changes* in August 2024 for the machinery industry was 0.03 (0.02 in July, 0.15 in June and -0.03 in May). By comparison, at the country level, the *Index of Production Change decreased* from 0.26 in April to 0.12 in August, while showing a mostly higher result compared to machine building. The share of machine-building enterprises that increased production volumes in August 2024 was 32.4%. At the same time, the share of those who reduced production volumes was 29.7%, and did not change production volumes was 37.8% of industry representatives. Machine building, being in a state of crisis, could feel less power outages, which more significantly affected the growth rate of production in the summer of 2024 in other industries.
- **In machine building, there is no deterioration in expectations for the next three months, in contrast to the situation for the entire processing industry as a whole.** Since October 2023, there has been an upward trend in optimism in the industry (from 0.17 in October 2023 to 0.43 in August 2024). *The Index of Expected Changes in Production* for Machine building is 0.43, one of the highest since the spring of 2023. In August 2024, 50.0% of industry representatives expected an increase in production in the next three months, and only 6.7% (38.2% and 4.8% at the country level, respectively). The result of machine building is slightly higher than at the country level (0.39).

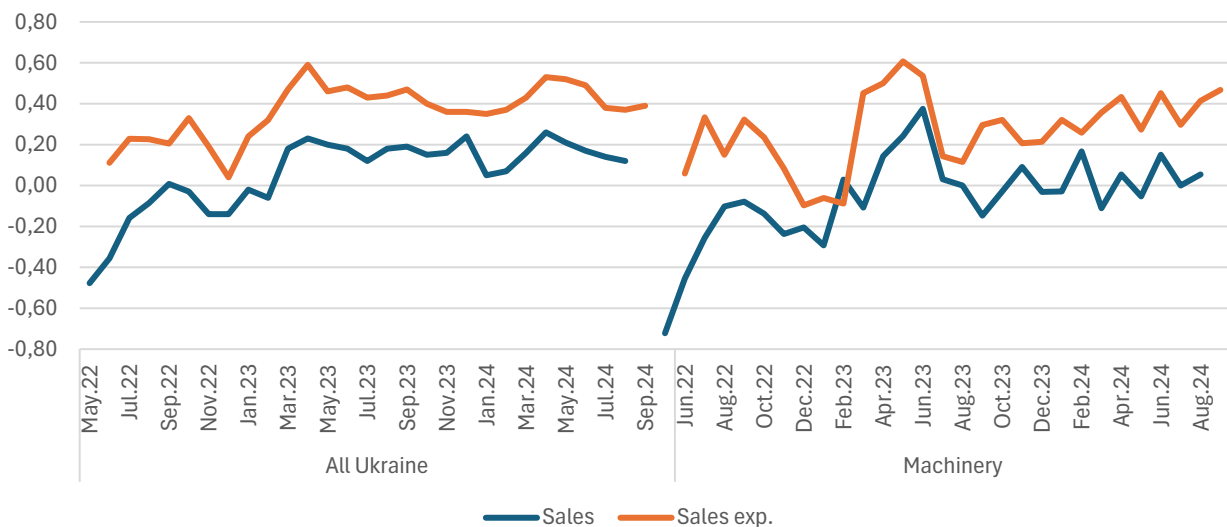
Figure 1. Production Change Index



Demand & Sales

- Estimates of demand among enterprises of the machine-building industry reflect the trends of other production indicators of the industry.** The value of the *Sales Change Index* for machine building is 0.05 (was 0.05 in April, -0.05 in May, 0.15 in June, but 0 in July). By comparison, at the country level, the *Sales Change Index* fell from 0.26 in April to 0.12 in August. That is, in general, machine building showed lower sales growth rates compared to the entire processing industry. The share of industry enterprises that increased sales in August 2024 was 35.1%, while the share of those who reduced production volumes was 29.7%, and 35.1% of industry representatives did not change production volumes.
- The forecasts of entrepreneurs in the region regarding the growth of sales volumes have been gradually improving since the fall of 2023.** The *Index of Expected Sales Changes* for Machine building is 0.47, which is the highest result since the summer of 2023. The result of the machinery industry is higher than the indicator at the country level (0.39). In August 2024, 53.3% of industry representatives expected an increase in production in the next three months, and only 6.7% expected a decrease (39.5% and 6% at the country level, respectively).

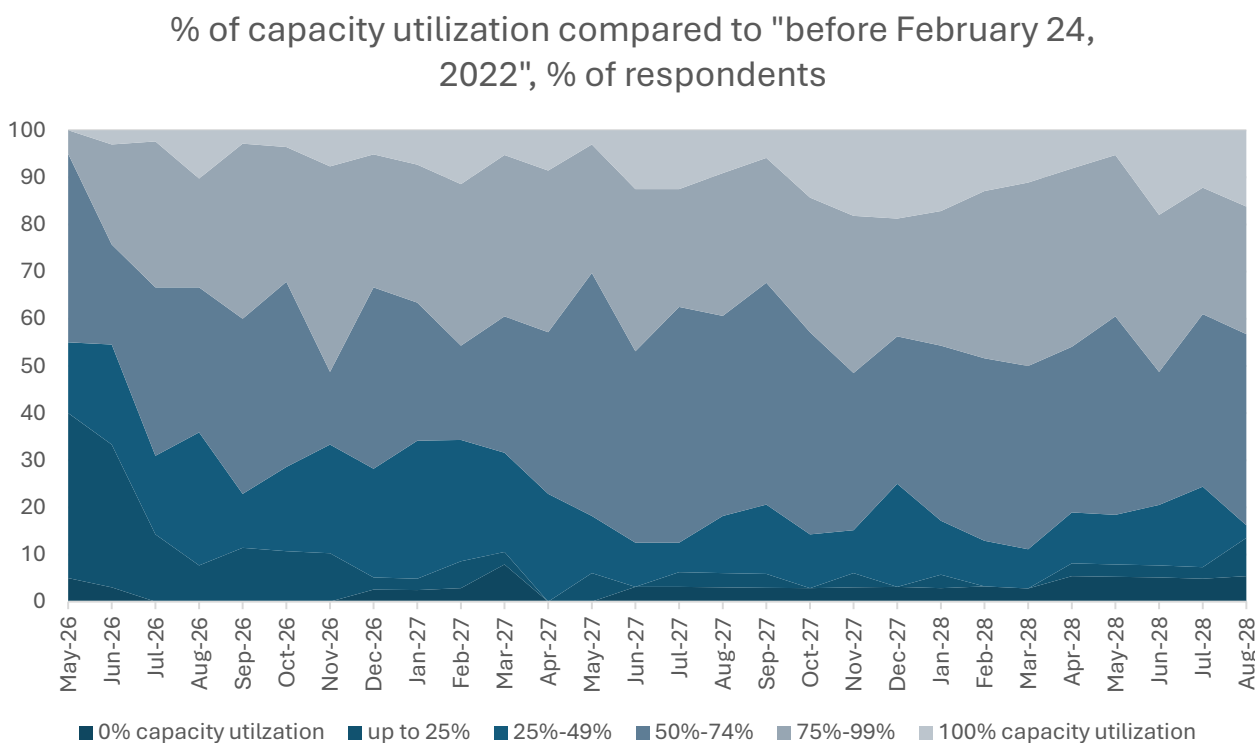
Figure 2. Sales Change Index



Capacity utilization

- In August 2024, machine building demonstrates the level of capacity utilization at the level of the entire processing industry as a whole. In August 2024, 43% of enterprises in the industry operated at almost full, full or even higher capacity compared to the pre-war period (41% at the country level): in particular, 16% at 100% and above (10% at the country level), and 27% at almost full capacity (75% - 99%) (31% at the country level).

Figure 3. The impact of the war on the work of enterprises - % of capacity utilization compared to "before the war" (% of respondents)



- Since the beginning of the war, the industry has mainly experienced a low level of capacity utilization compared to such recovery leaders as the food industry. While other industries reduced workload in the summer of 2024 due to power outages, no significant significant changes were recorded for the machine-building industry. 16% of respondents worked at a capacity utilization level lower than 50% or did not work compared to the pre-war period, which is a low figure compared to other months. For example, in April, the corresponding figure was 19%, in June – 21%, and in July – 24%. That is, there is no possible impact of power outages on the work of machine building.

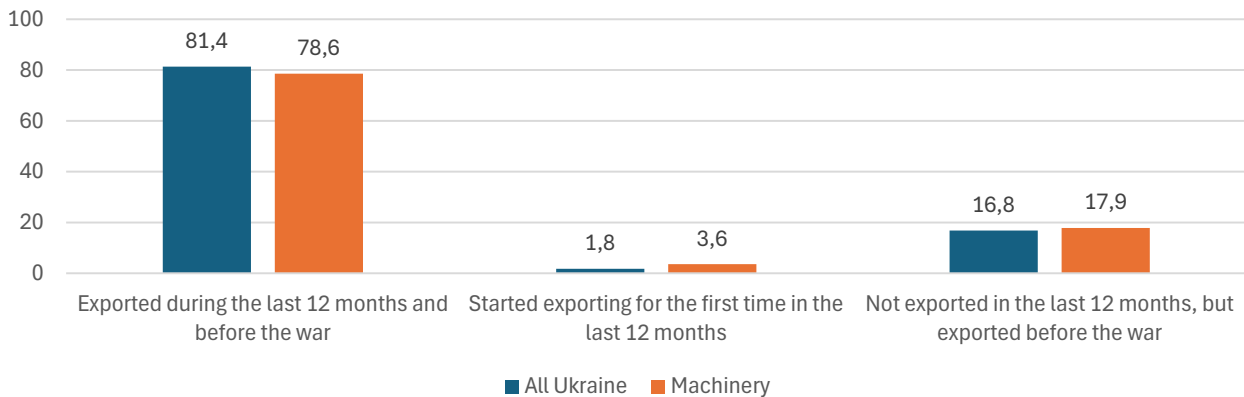
Export of the sector

- In machine building, among those surveyed in August 2024, 75.7% of enterprises (those that were able to answer) were or are exporters (60.9% at the level of Ukraine).¹ That is, among machine-building enterprises, there is a larger share of businesses that either export now or exported before the war.

¹ It should be noted that such a high level of business involvement in export activities also reflects the peculiarities of the sample for the survey, which, first of all, reflects enterprises representing the manufacturing industry.

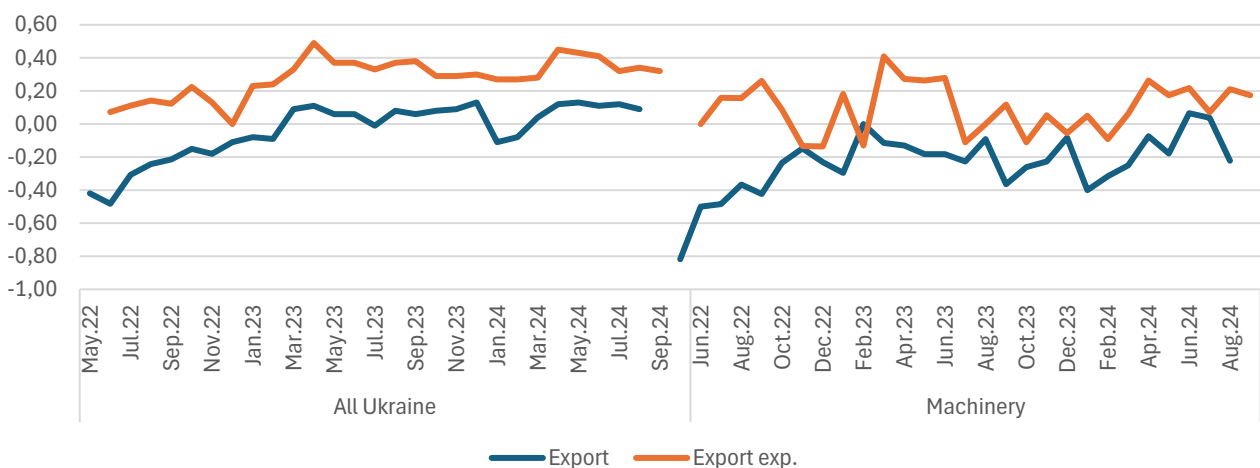
- As of August 2024, most exporters in the industry continued their foreign economic activity over the past year. In particular, 78.6% of enterprises indicated that they exported before the war, and also continued to export over the past 12 months (81.4% at the country level). Another 3.6% started exporting over the past 12 months (1.8% at the country level). 17.9% of enterprises in the industry have not exported over the past 12 months, although they did so before the war (16.8% at the national level). Thus, the situation in the industry as a whole reflects the trends towards the recovery of exports in the country as a whole. Ukrainian business has reached a certain level of resumption of export activities, as some businesses cannot overcome new challenges to resume exports.

Figure 4. Impact on export activities, December 2023 (% of exporters surveyed)



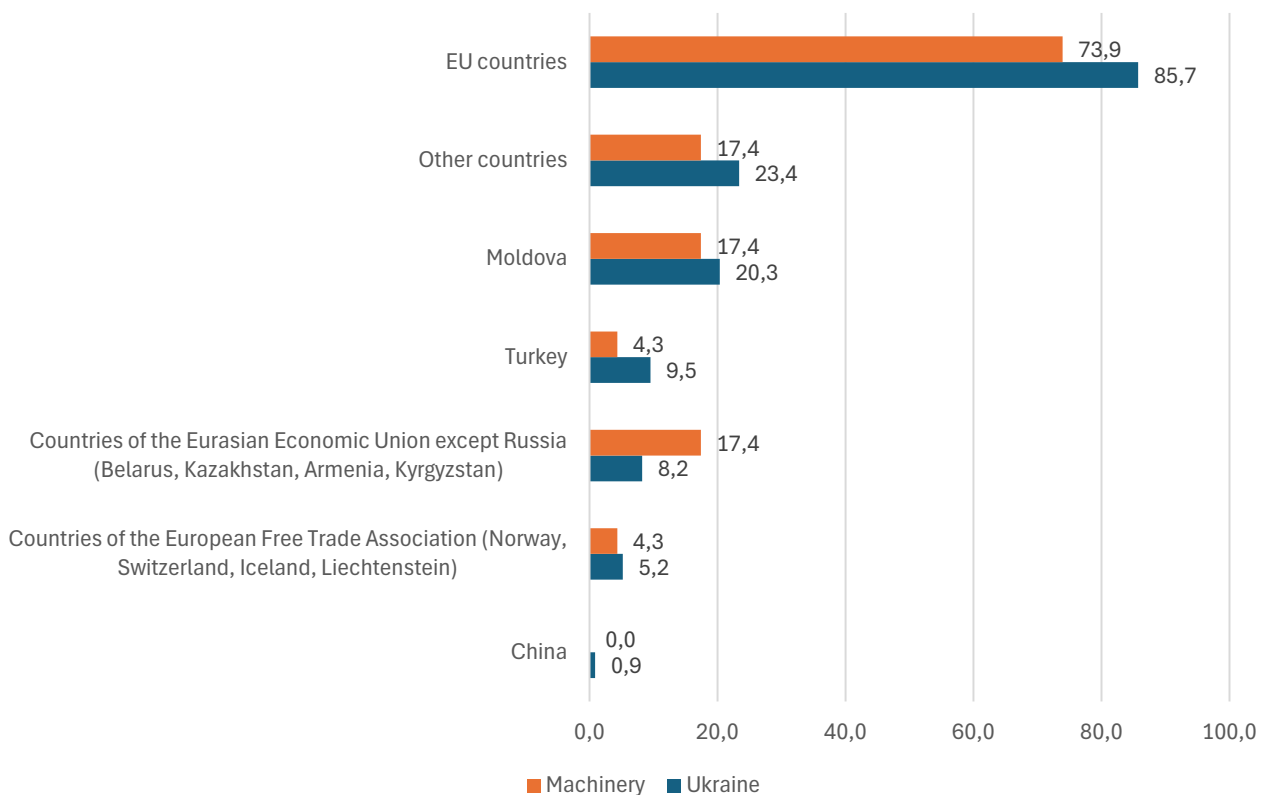
- In August 2024, the decline in exports of the machinery industry continues. In August, the export change index was -0.22 in machine building, while at the country level it was 0.09. At the same time, 18.5% of the region's exporters increased their exports, 40.7% did not change their exports, and as many as 40.7% reduced their exports. Since the beginning of the war, there have been only a few months when the export change index has been above zero. This situation demonstrates the presence of barriers to the resumption of engineering exports. In particular, the problem may be the issue of access to markets through certification to enter the European and other Western markets, because many enterprises in the industry previously focused on the CIS markets, etc.
- Expectations for export growth in the short term remain lower compared to expectations for other manufacturing indicators. In August 2024, the Index of Expected Changes in Exports in the industry is only 0.17 (0.32 at the country level). At the same time, 21.7% of respondents expected a decrease in export volumes, while 39.1% did not expect a change, and 39.1% expected growth.

Figure 5. Export Change Index



- In August 2024, the European Union remained the main export destination for machine-building enterprises, as well as for all industries in general. In particular, 73.9% of machine-building enterprises exported to the EU (85.7% in general among all respondents). In addition, another 4.3% are exported to the countries of the European Free Trade Association (Norway, Switzerland, Iceland, Liechtenstein). Many enterprises in the industry continue to export to the countries of the Eurasian Economic Union (except for Russia and Belarus) – only 17.4% of respondents, which is more than twice as high as for other industries. As mentioned above, this market could be more accessible to Ukrainian machine-building enterprises. Among other important areas for machine building are Moldova (17.4% of respondents), Turkey (4.3%). At the same time, there are no enterprises that export to China.

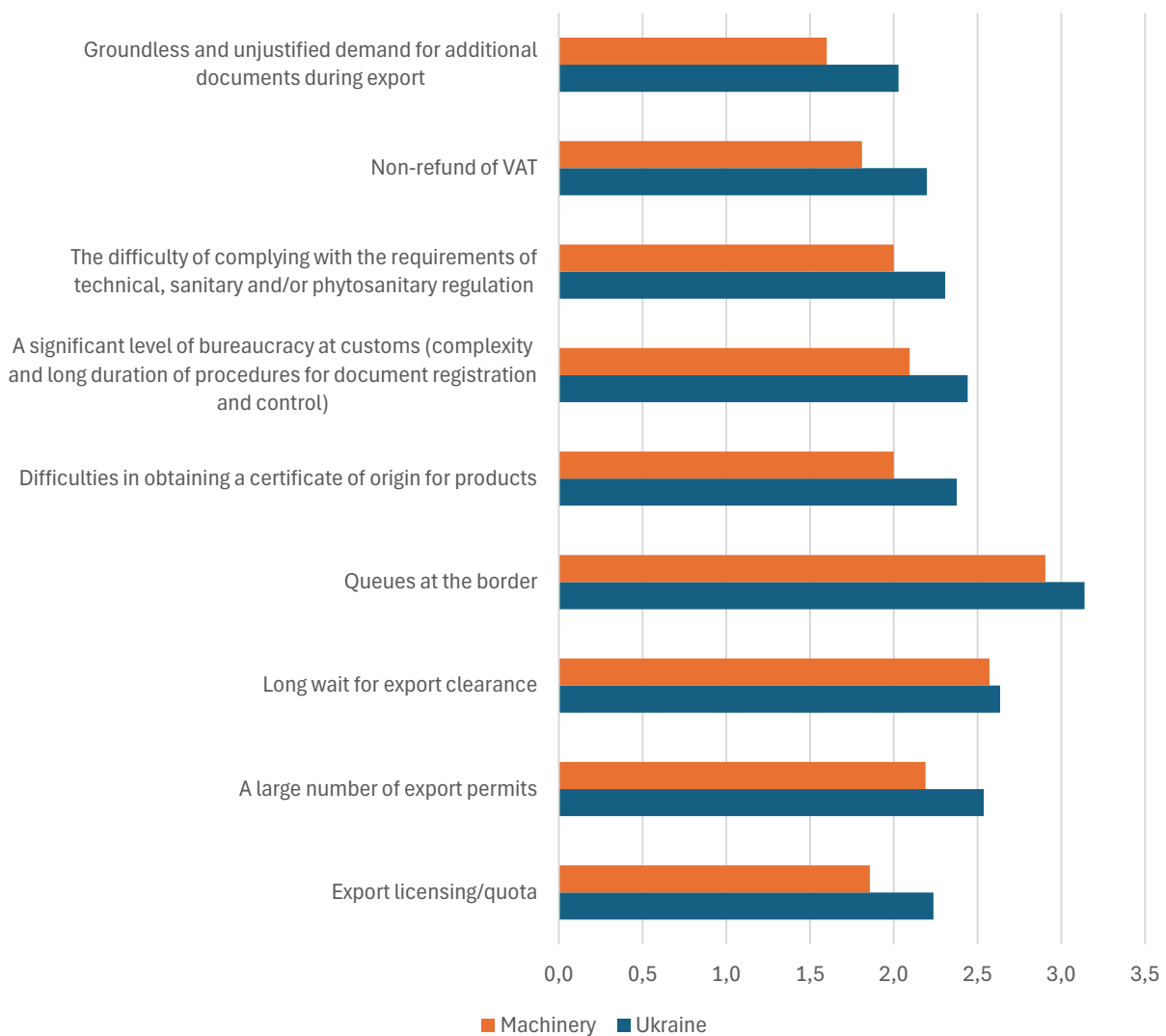
Figure 6. Main export destinations, August 2024 (% of surveyed exporters)



Non-tariff barriers to exports

- The results of the survey of exporters show that, in general, enterprises mostly moderately assess the presence of barriers to exports (9 barriers were proposed for assessment). Most of the barriers that were offered to respondents arise mainly from "sometimes", "rarely", or even "never".
- After recalculation into grades on a 5-point scale, the main impediment for exporters from the machinery industry is queues at the border – 2.9 points (among all exporters, there are also 3.1 points and 1st place). On the second step in terms of distribution, the long wait for export clearance is 2.6 points (2.6 for all enterprises and also 2nd place). On the third step for machine-building enterprises is a large number of permits for export – 2.2 points (2.5 for all exporters). All other barriers have 2 or less points, which indicates their insignificant spread. In particular, the least common problem is the unjustified and unjustified demand for additional documents when exporting – only 1.6 points (2 points among all exporters).

Figure 7. Non-tariff barriers to the export of machine-building enterprises



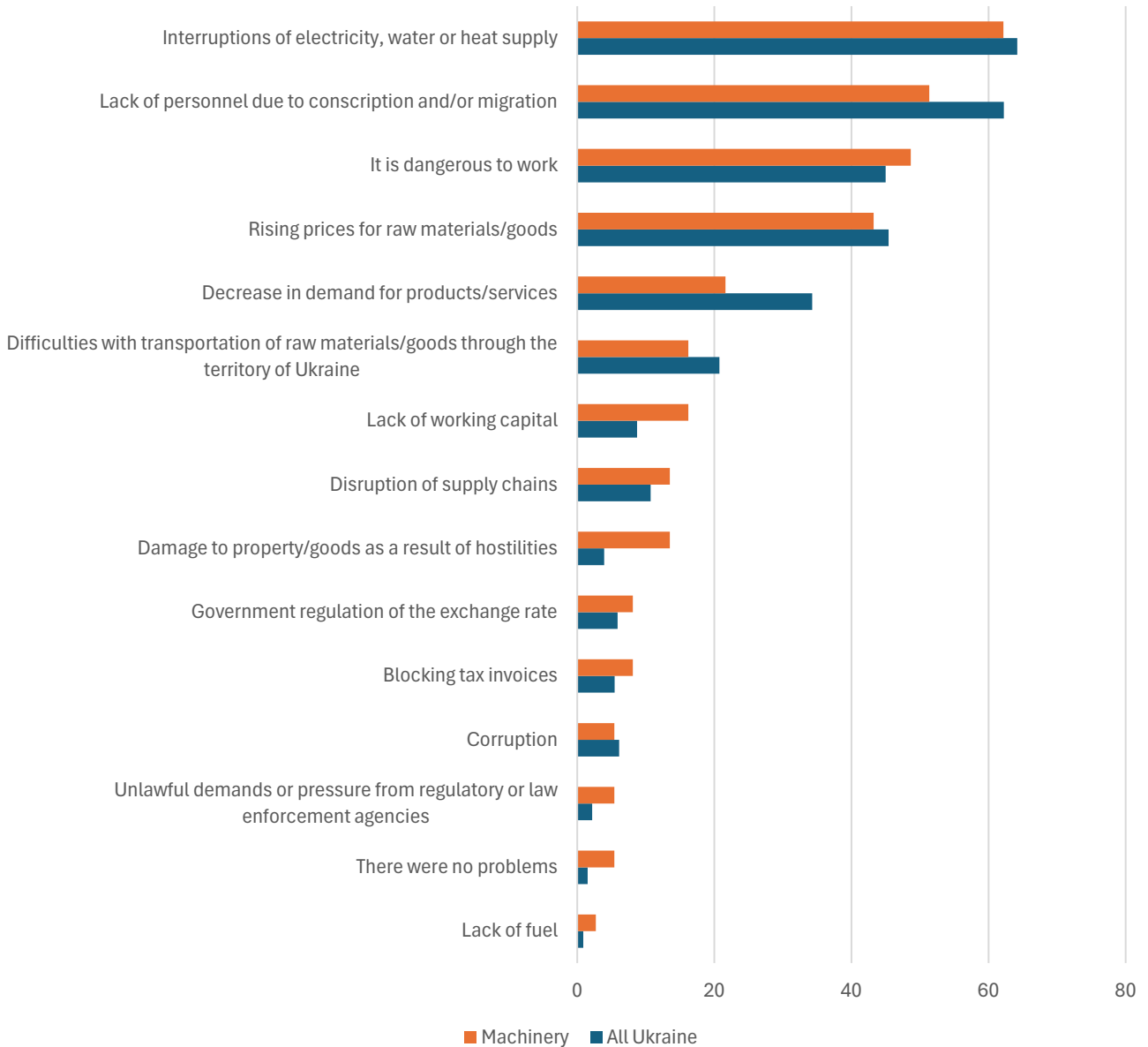
- Companies also had the opportunity to assess their experience of passing customs control during export-import operations over the past 12 months. In particular, 36% of respondents indicated that there were almost no cases when they failed to pass customs control the first time. That is, as a rule, only 36% of machine-building enterprises usually always pass the inspection on the first try, which is less than the average among all exporters (47.2%). Another 48.0% said they rarely failed to pass the control the first time (46.4% for all exporters). In contrast, 16% indicated that over the past 12 months, they often failed to pass the control the first time, which is three times higher than for all respondents (5.8%).

Impediments to Activity

- In August 2024, the main problem for the machine-building industry, as well as for the entire processing industry as a whole, was power outages associated with Russian attacks against Ukrainian energy infrastructure. In particular, this problem was indicated by 62.2% of machine-building enterprises, which is slightly lower than in general among all respondents (64.2%). In July 2024, machine-building enterprises lost 12% of their working time due to power outages, but this is the lowest result among all industries studied.

- Machine building is also experiencing problems with the lack of labor, which is on the 2nd step (51.4% vs. 62.2%). The problem of labor shortage became relevant for all enterprises in 2024 and reached a record result in August – the highest figure in all waves of the survey.
- For machine building, the problem of "dangerous work" is more relevant than for all respondents, which is placed on the 3rd place (48.6% for the industry versus 45.0% for all respondents). Perhaps this may be due to the fears of machine-building enterprises, which may be targets for attacks due to the production of military or dual-use goods.

Figure 8. The most important problems for the surveyed business in machine building, August 2024 (% of respondents)²

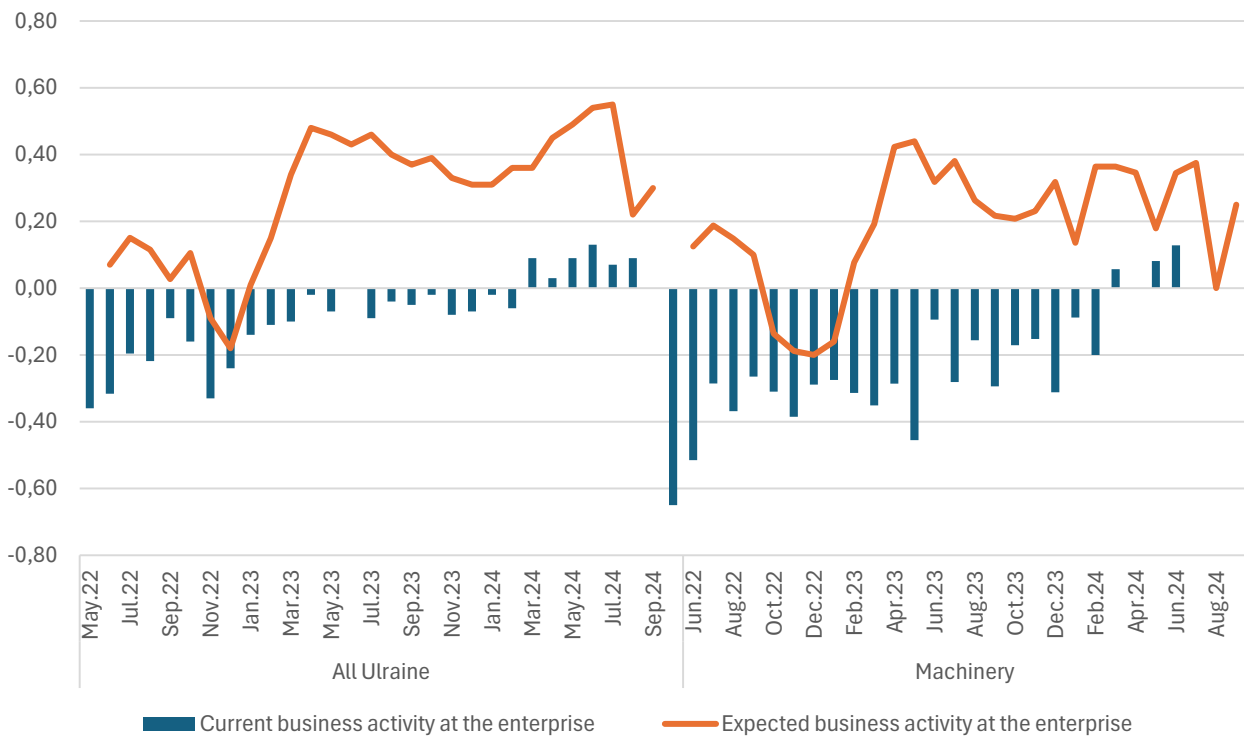


² The sum of the answers may exceed 100 percent, as respondents had the opportunity to choose several options.

Expectations and uncertainty

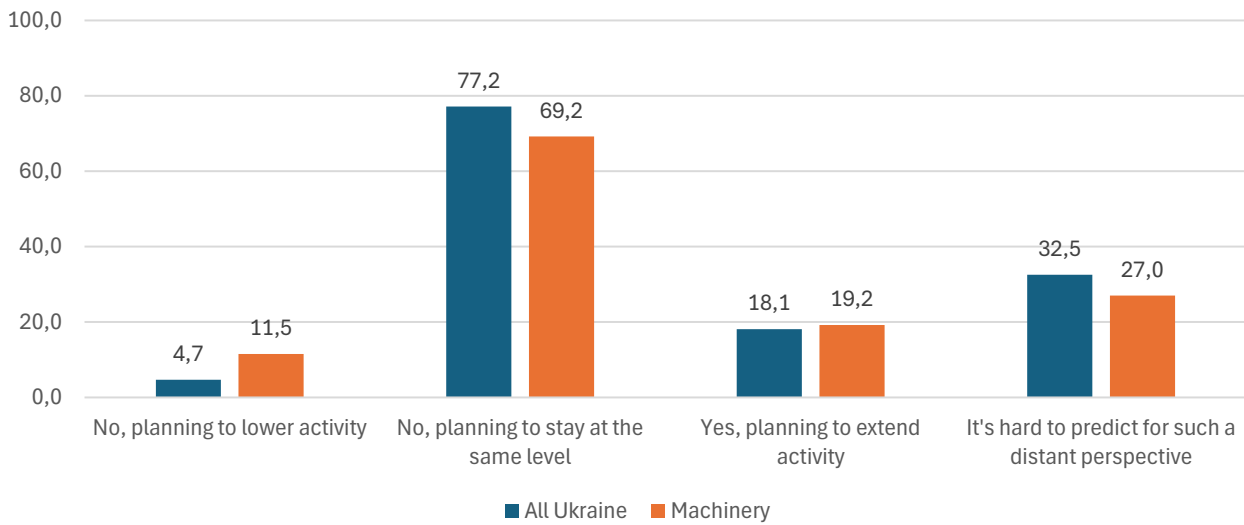
- In August 2024, the average period of provision of new orders for the surveyed enterprises in the machinery industry was only 3.2 months, which is more than half the figure for all respondents (7.1 months). This may be one of the reasons for low production indicators. Most enterprises in the industry have orders for short periods of time. In particular, only 5.9% of respondents have orders for 12 or more months (18.7% among all respondents).
- Assessments of their own financial and economic situation by enterprises of the machine-building industry are slightly lower than the result for all respondents. The index of the current financial and economic situation for machine building in August 2024 is at the level of 0 (0.09 for all respondents). In particular, only 25.7% of representatives of machine building assess the situation as good (19.1% for all respondents), while 48.6% give a satisfactory assessment (64.8% for all). However, 25.7% give a negative assessment (16.1% for all respondents).

Figure 9. Financial and economic situation at the enterprise now and expectations for 6 months, indices



- The forecasts of machine building entrepreneurs for the next six months regarding their own financial and economic conditions remain worse than the all-Ukrainian trends. The value of the index of expected changes in the financial and economic situation at the enterprise for the industry is 0.25, while it was generally at the level of 0 in July. At the country level, this indicator decreased from 0.55 in June to 0.30 in August, but mostly remains above expectations for machine building. Such a situation may confirm the crisis in the industry.
- There is still a high level of uncertainty in the industry – 18.9% of respondents cannot predict the situation for the next 6 months. At the same time, due to power outages for all respondents, the level of uncertainty increased from 15.4% in June to 21.9% in July and 20.3% in August.

Figure 10. Do you plan to expand your company's activities over the next two years?, % of respondents



- There is a high level of uncertainty about long-term plans. In particular, 28.8% of respondents in machine building (32.5% of all respondents) did not indicate that they could not predict the long-term future.
- Among those who can answer this question, the majority (69.2%) indicate that they plan to remain at the current level (77.2% among all respondents). However, as many as 11.5% plan to narrow their activities, which may also indicate serious problems in the industry (4.7% among all). However, 19.2% of respondents foresee the expansion of activities for the next 2 years (18.1% among all respondents). Machine building plans for the next two years are more pessimistic compared to other industries.

Appendices

Survey Methodology

- This report presents the results of the light industry based on a special survey of enterprises "Export in wartime", which the IER conducted in August 2024. The data was collected through a combination of several data collection methods: telephone interviews of business representatives with responses to the online form entered by the interviewers and, in a small number of cases, self-completion of the online form by representatives of enterprises who during the previous telephone contact expressed a desire to enter the data into the online form themselves. All answers – both filled in by the respondents themselves and provided to the interviewers by phone – were collected in one database. At the end of the survey, the IER experts monitored and cleaned the data and analyzed the responses.
- In this survey, in particular, we continue to study the indicators of the business climate and conjuncture that the IER examines in quarterly surveys of industrial enterprises within the framework of the Business Opinion project. These are, in particular, indicators that numerically show changes from month to month of such important business indicators as production and sales volumes, export volumes, stocks of raw materials and supplies, the number of new orders, etc., as well as business expectations for their changes in the next 3 and 6 months.
- Such indices are calculated according to a single methodology. We count the answers as +1 when the company responds that the indicator has increased, 0 if it has not changed, and -1 if it has decreased, and the result is a balance between positive and negative responses. For example, if out of a hundred respondents, twenty indicated an increase in production, fifty respondents indicated a decrease in production, and thirty noted that everything remained unchanged, then the corresponding value of the index will be -0.30. A positive (negative) value of the index means that the share of enterprises where production has increased is larger (smaller) than the number of those where production has decreased. For a more accurate measurement at the microdata level, each response is weighted taking into account the size of the enterprise in terms of the number of employees. With the help of such indices, it is possible to track the dynamics of changes in these indicators, compare them over time and quickly assess the general direction of changes in the conditions for doing business and the situation at enterprises.
- For the purposes of writing sectoral reports, the IER also included a set of special questions on the significance of non-tariff barriers for exporters.
- The field phase of the survey lasted from August 14 to August 30, 2024.

Sample

- A total of 458 companies were interviewed. They are located in Vinnytsia, Volyn, Dnipropetrovsk, Zakarpattia, Zaporizhzhia, Zhytomyr, Ivano-Frankivsk, Kyiv, Kirovohrad, Lviv, Odesa, Poltava, Rivne, Sumy, Ternopil, Kharkiv, Khmelnytskyi, Cherkasy, Chernivtsi, Chernihiv regions and in the city of Kyiv. In each of these regions, from 4 to 36 enterprises were interviewed³.
- The majority of the sample was made up of industrial enterprises – 406 enterprises or 88.6% of the sample. Among them, food (125 units or 27.3%), light industry (40 units or 8.7%) and machine building (37 units or 8.1%) prevail.
- Among the surveyed companies are enterprises of various sizes, which are determined by the number of employees. Of these, micro-enterprises (up to 10 employees inclusive) – 65 or 14.2% of the sample, small

³ The survey indicated the region in which the company was located at the time of the survey.

(from 11 to 50 employees) – 135 or 29.5% of the sample, medium (from 51 to 250 employees) – 152 or 33.2% of the sample, and large (more than 250 employees) – 106 or 23.1% of the sample.

Performance indicators of enterprises and the business environment

Performance indicators of enterprises and the business environment, change indices (August 2024)

	All Ukraine	Machine building
Production	0.12	0.03
Expected changes in production	0.39	0.43
Sales	0.12	0.05
Expected Sales Changes	0.39	0.47
Export	0.09	-0.22
Expected changes in exports	0.32	0.17
Accounts receivable	-0.10	-0.21
Expected changes in accounts receivable	-0.08	-0.03
Accounts payable	-0.10	-0.06
Expected changes in accounts payable	-0.16	-0.03
Tax arrears	-0.19	-0.26
Expected changes in tax arrears	-0.17	-0.13
Raw material stocks	0.12	0.11
Expected changes in raw material stocks	0.26	0.16
Stocks of finished products	0.00	0.13
Expected changes in inventories of finished goods	0.08	0.18
New orders	0.05	-0.08
Expected changes in new orders	0.34	0.37
Prices for raw materials and supplies	0.29	0.30
Raw Material and Material Prices Expectations	0.34	0.39
Prices for finished products (selling prices)	0.24	0.11
Prices for finished products (selling prices) expectations	0.32	0.28
Number of employees	-0.02	-0.16
Expected changes in the number of employees	0.07	-0.19
Number of employees on forced vacations	0.01	0.00
Expected changes in the number of employees on forced leave	0.01	0.04
Skilled Workers	0.49	0.63
Unskilled workers	0.33	0.50
Assessment of the financial and economic situation	0.09	0.00
Expected changes in the financial and economic situation	0.30	0.25
Assessment of the business environment	0.04	-0.08
Expected changes in the business environment	0.26	0.16
Do you plan to expand your business in the next two years?	0.15	0.08
How do you assess the financial and economic situation of your company in the current month, compared to the same period in 2021?	0.15	0.09