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Research Report

The effects of the war on the Ukraine economy: The situation at the end of 2022

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BOFIT Policy Brief 2023 No. 1

Lauri Heinonen and Iikka Korhonen

The effects of the war on the Ukraine
economy: The situation at the end of 2022



Bank of Finland, BOFIT
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The opinions expressed in this paper are those of the authors and do not necessarily reflect the views of the Bank of Finland.

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Lauri Heinonen and Iikka Korhonen

The effects of the war on the Ukraine economy: The situation at the end of 2022¹

Abstract

This brief presents an overview of Ukraine's economy before and during the first ten months of the Russo-Ukraine war, as well as some preliminary considerations for the post-war economy. Although Ukraine's economic growth trailed many of its peers in the years leading up to the invasion, the country possesses certain economic and institutional strengths over most countries at a similar level of development. While these strengths should make reconstruction less difficult, the situation remains fraught with difficulties. Many of the activities that make the largest economic contributions, particularly to exports, take place in the eastern regions of Ukraine or in the Kyiv capital region. These areas have either been temporarily occupied by Russia or face a greater military threat by Russia than the poorer, more peaceful, western parts of the country. The country's public finances are deeply in deficit, so restoring strong export revenues is critical to Ukraine's economic recovery. As long as the war continues, Ukraine's public finances and military efforts must largely be financed by foreign partners.

Keywords: Ukraine, recovery, war, Russia

¹ Cut-off date for the data was December 4, 2022.

1. Introduction

Russia's brutal, illegal attack on Ukraine on February 24, 2022 changed the global economy and geopolitical order, but, without question, Ukraine has been hardest hit by the war. This brief summarizes the state of Ukraine's economy over the first eight years of "frozen" war that started with the annexation of Crimea and occupation of the Donbas region, as well as the subsequent economic dislocation caused by Russia's invasion in February 2022.²

Ukraine is a middle-income country with relatively large industrial and agricultural sectors. While its GDP per capita is lower than in neighboring countries, it has fared quite well in many spheres of social development. Ukraine notably pivoted its foreign trade away from Russia with the signing of a comprehensive free-trade arrangement with the European Union in 2014. The trade reorientation process gained momentum in July 2022 when Ukraine started exporting electricity to the EU. The Black Sea, however, remains the country's most important and efficient export route, particularly for bulk goods.

Geographically, Ukraine's economic activities are distributed quite unevenly. Much of the economic activity, including export businesses, is concentrated in the eastern regions of the country or in and around the capital Kyiv. As many of the country's economically significant regions became war zones or were occupied by Russia, economic activity collapsed in the first half of 2022. While there has been some stabilization and recovery in the economy, the situation remains fragile.

Ukraine's fiscal situation is particularly precarious. Russia's invasion has meant a drastic decline in public sector revenue and a sharp increase in spending on military and social outlays e.g. to help displaced persons and repair damaged infrastructure. While foreign countries and international financial institutions have provided financial assistance in the forms of grants and concessional loans, the National Bank of Ukraine (NBU) has been the most important single financier of the budget deficit in 2022. Ukraine urgently needs additional financial and military assistance.

Ukraine's reconstruction will begin as soon as the war ends. Given the scale of destruction, this process will take years even under the best circumstances and require immense monetary resources. Discussions about reconstruction are already underway, but many issues remain open, including the possible use of confiscated Russian assets to pay for reconstruction. It is still unclear how reconstruction might be administered, but Ukraine's status as an EU member candidate should help in this regard.

This brief is structured as follows. Sections 2 and 3 depict the structure of Ukraine's economy before the war, paying special attention to regional distribution of activities. Section 4 gives a wide overview of the effects of Russia's invasion on Ukraine's economy, including costs to the budget and infrastructure. The final section concludes with policy recommendations.

² Unless otherwise mentioned, the analysis, graphs and tables exclude occupied areas in Crimea, Luhansk and Donetsk.

2. Overview of the economic situation in Ukraine before the war

2.1. Ukraine's economic structure

The largest sectors of Ukraine's gross domestic product in 2021 were wholesale and retail sales (14 %), agriculture (10 %) and manufacturing (10 %).³ The Ukrainian economy is well integrated with global value chains (GVCs), particularly in certain subsectors of agriculture and industry. Major industrial sectors within GVCs include steel production, steel products, neon gas used in production of semiconductors, ignition wiring for vehicles and industries that use titanium in production.

Ukraine is globally important as a producer of certain commodities and products from heavy industry. It accounts for 15 % of the world's iron ore production, 18 % of the world's ferrosilicon manganese, 70 % of neon gas used to produce semiconductors, and, together with Russia, over 50 % of global pig iron production. Ukraine is the fifth largest producer of titanium in the world. Ukraine is regionally important as a producer of aluminum oxide (6 % of the world's production), mostly for the Russian market, and ignition cables for vehicles (4 %), mostly for the European market.⁴ Ukraine is a major agricultural producer and exporter. It accounts for almost 10 % of global wheat exports, as well as 13 % of corn (maize) and 36 % of sunflower oil.⁵ Over 36 countries, many in Africa and the Middle East, import over 50 % of their wheat from Ukraine and Russia.⁶ Ukraine ICT sector has extensive connections within GVCs.

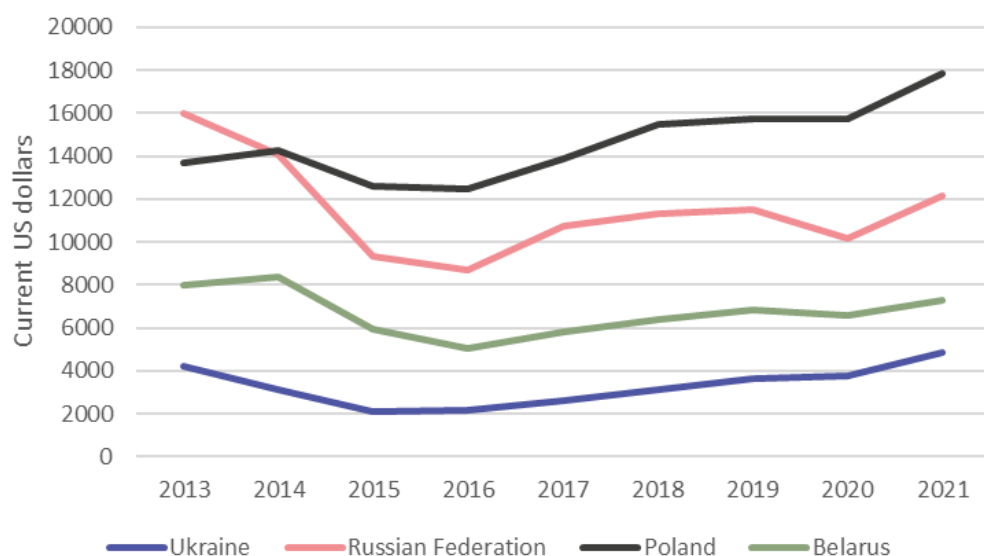
Gross domestic product at market exchange rates is relatively small. The GDP of Ukraine was 5.46 trillion hryvnia (UAH). Using the average annual exchange rate of the National Bank of Ukraine, that translates to about 200 billion dollars (USD) in 2021. Figure 1 shows Ukraine lags most of its neighbors in terms of nominal GDP per capita. Ukraine's low price level, however, makes its purchasing power parity (PPP)-adjusted GDP per capita much higher (Figure 2). While PPP adjustment does not narrow Ukraine's gap with Belarus, which had a nominal GDP per capita of 66 % in 2021 and 66 % in PPP-adjusted terms, it does narrow the gap with Poland and Russia. Ukraine's nominal GDP per capita in 2021 was 27 % of Polish GDP per capita, but its PPP-adjusted GDP was 38 % of the Polish level. Similar figures for Russia were 40 % and 43 %, respectively.

³ State Statistics Service of Ukraine dataset: "Валовий внутрішній продукт у фактичних цінах у 2021 році".

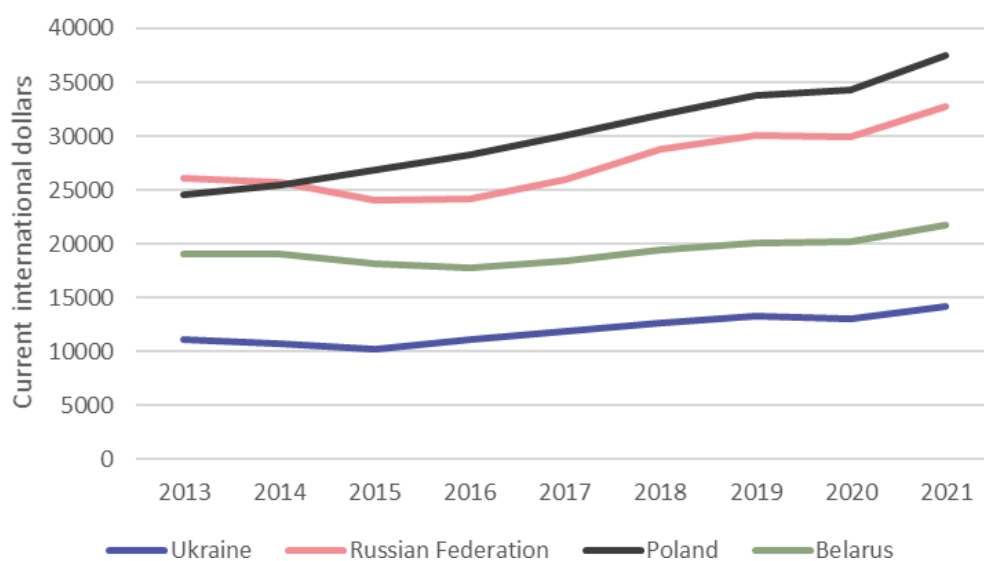
⁴ World Bank (2022). Article by J-C Maur, "Effects on Ukraine's key (non-food) exports and specific GVC" in WB Report *The Impact of the War in Ukraine on Global Trade and Investment*. <https://openknowledge.worldbank.org/handle/10986/37359>.

⁵ UNCTAD (2022). *The Impact on Trade and Development of the War in Ukraine*. https://unctad.org/system/files/official-document/osginf2022d1_en.pdf.

⁶ UN (2022). Global Impact of war in Ukraine on food, energy and finance systems. <https://news.un.org/pages/wp-content/uploads/2022/04/UN-GCRG-Brief-1.pdf>.

Figure 1. Nominal GDP per capita 2013–2021.

Source: World Bank Development Indicators Database, accessed July 27, 2022.

Figure 2. PPP-adjusted GDP per capita 2013–2021.

Source: World Bank Development Indicators Database, accessed July 27, 2022.

2.1.1. Industry and agriculture

As shown in Table 1, the top five industries by sales in 2021 were the energy sector (22 %), food industry (19 %), basic metals and metal products (18 %), mining and quarrying (16 %) and manufacturing of rubber, plastics and other non-metallic mineral products (6 %).⁷ The relative shares of higher valued-added sectors such as machine-building, electronics and pharmaceuticals are smaller, which partly accounts for the lower level of GDP per capita compared to neighboring countries. Ukraine's industrial structure barely changed in recent years.⁸

Table 1. Structure of Ukraine's industry in 2021.

| USD million | Share, % | |
|--------------|-------------|---|
| 13156 | 100 | Total |
| 2113 | 16.1 | Mining and quarrying |
| 8065 | 61.3 | Manufacturing |
| 2491 | 18.9 | Production of foodstuffs, beverages and tobacco products |
| 42 | 0.3 | Manufacture of textiles |
| 432 | 3.3 | Manufacture of products of wood, manufacture of paper and printing |
| 380 | 2.9 | Manufacture of coke and refined petroleum products |
| 385 | 2.9 | Manufacture of chemicals and chemical products |
| 180 | 1.4 | Manufacture of basic pharmaceutical products and pharmaceutical preparations |
| 752 | 5.7 | Manufacture of rubber and plastic products, manufacture of other non-metallic mineral products |
| 2347 | 17.8 | Manufacture of basic metals, manufacture of fabricated metal products, except machinery and equipment |
| 55 | 0.4 | Manufacture of computer, electronic and optical products |
| 149 | 1.1 | Manufacture of electrical equipment |
| 263 | 2.0 | Manufacture of machinery and equipment n.e.c. |
| 285 | 2.2 | Manufacture of motor vehicles, trailers and semi-trailers and other transport equipment |
| 245 | 1.9 | Manufacture of furniture and other manufacturing; repair and installation of machinery and equipment |
| 2830 | 21.5 | Electricity, gas, steam and air conditioning supply |
| 148 | 1.1 | Water supply; sewerage, waste management and remediation activities |

Notes: The decomposition is calculated differently (through volume of sales) than in in section 2.1., and not fully comparable.

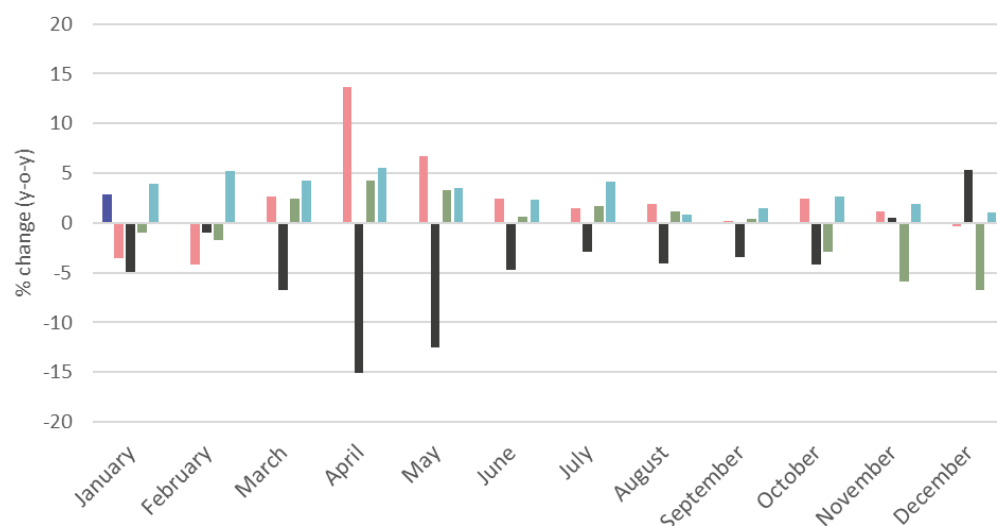
Sources: State Statistics Service of Ukraine and National Bank of Ukraine.

⁷ State Statistics Service of Ukraine dataset: “Обсяг реалізованої промислової продукції за видами діяльності у 2021 році”.

⁸ State Statistics Service of Ukraine dataset: “Обсяг реалізованої промислової продукції (товарів, послуг) за видами економічної діяльності у 2010–2020 роках”.

Figure 3 shows the on-year change in Ukraine's industrial output. Industrial activity was severely disrupted by the first wave of the COVID-19 pandemic in spring 2020, but recovered in 2021. Industrial output recovered to pre-pandemic levels by January 2022.

Figure 3. Change in Ukraine's industrial output.

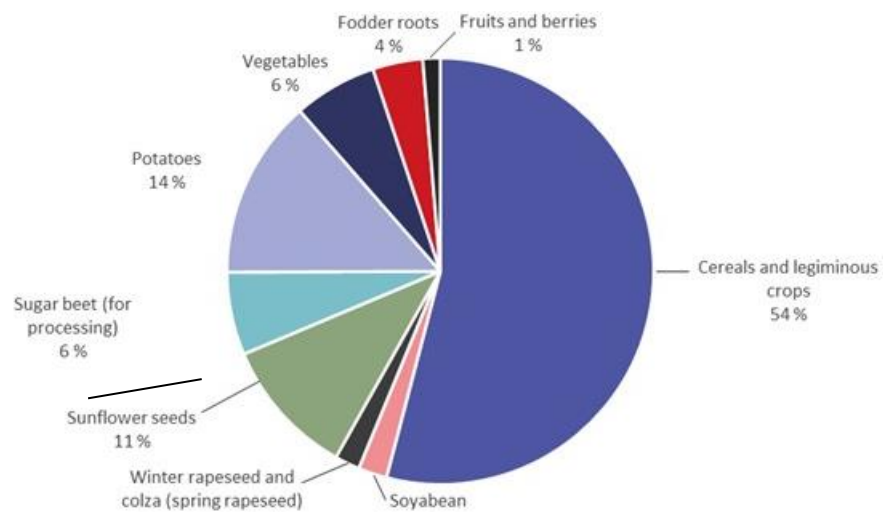


Source: State Statistics Service of Ukraine.

Agriculture is central to Ukraine's exports. Agricultural goods accounted for 41 % of total exports in 2021.⁹ Certain crops, particularly grains and vegetable oils, are grown for the world market, while other agricultural items such as fruits and vegetables are largely produced for the domestic market. Figure 4 shows Ukraine's most important crops in 2021 were cereals, leguminous crops and oil seed crops such as sunflower and rapeseed.¹⁰

⁹ State Statistics Service of Ukraine dataset: "Товарна структура зовнішньої торгівлі у 2021 році".

¹⁰ In 2020, president Volodymyr Zelenskyy introduced a reform in 2020 liberalize by 2024 the right to buy, sell and own land to a limited degree. Prior to the reform, it was impossible to trade agricultural land legally and freely. The reform prevents foreigners (individuals or organizations) from buying land in Ukraine. Source: OSW, Centre for Eastern Studies (2021), "The breadbasket of the world? Agricultural development in Ukraine".

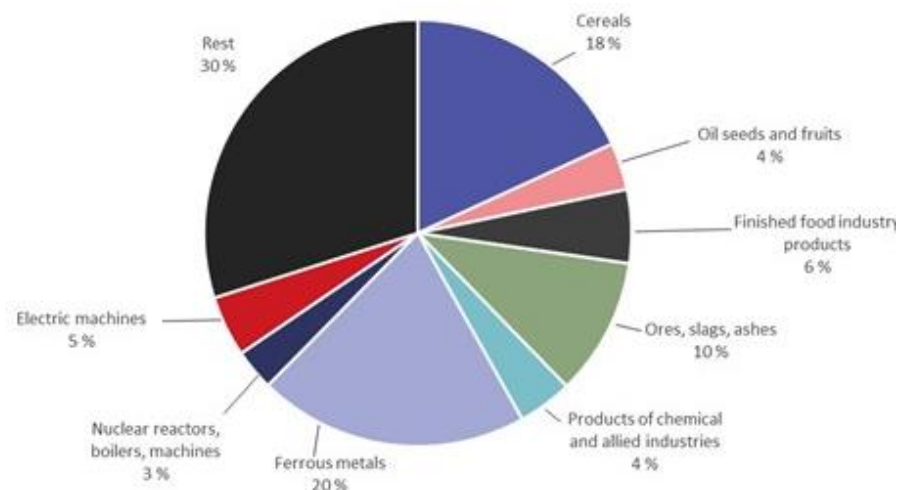
Figure 4. Ukraine's crop production in 1M-11M 2021.

Source: State Statistics Service of Ukraine.

2.1.2. Foreign trade and trade routes

Ukraine mainly exports low value-added products (Figure 5). Ukraine's main export articles are agricultural products and raw materials from mining industry. Ferrous metals accounted for 20 % of Ukraine's exports in 2021, cereals 18 % and mineral ores 10 %. Exports of machinery and electrical machines constituted less 10 % of the exports.

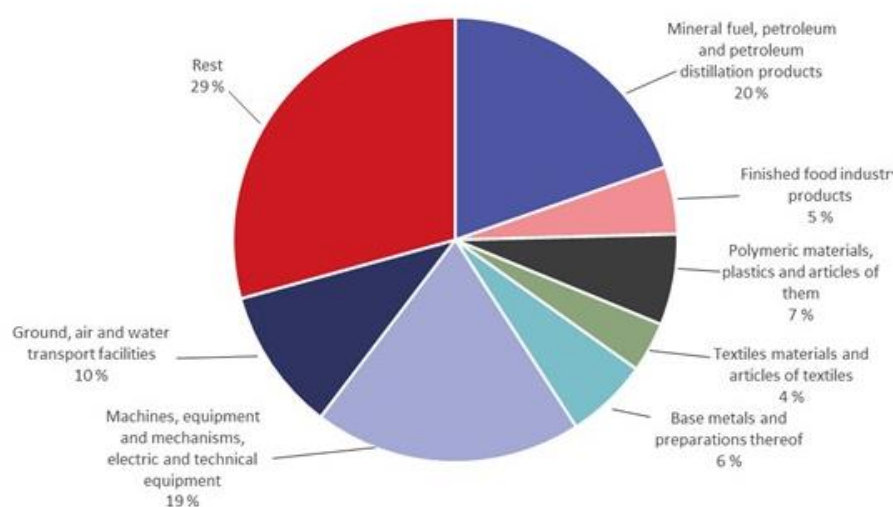
Figure 5. Structure of exports in 2021.



Source: State Statistics Service of Ukraine.

Ukraine imports products with higher added value than it exports (Figure 6). In 2021, machinery and equipment constituted 20 % of imports and vehicles 10 % of imports. Ukraine also imports a considerable amounts of mineral fuels (20 % of imports).

Figure 6. Structure of imports in 2021.

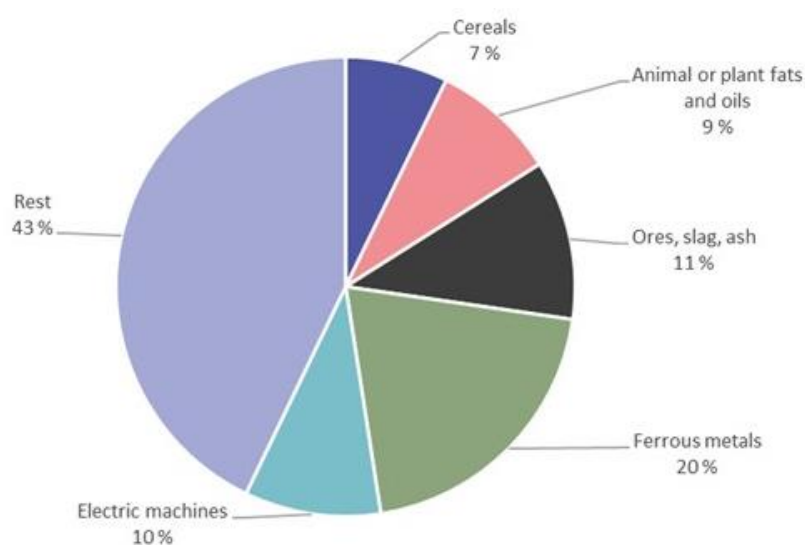


Source: State Statistics Service of Ukraine.

The European Union is Ukraine's most important trading partner, accounting for 40 % (USD 27 billion) of Ukraine's exports in 2021 and 40 % (USD 29 billion) of Ukraine's imports in 2021.¹¹ Trade between Ukraine and the EU has increased since the signing of the Deep and Comprehensive Free Trade Agreement (DCFTA) in 2014. The DCFTA, which took effect in 2016, will ultimately eliminate tariffs on 95 % of Ukrainian products entering the EU. It is also scheduled to get rid of 96 % of tariffs on EU products entering Ukraine in 2023, when the DCFTA transition period ends.¹²

The most important Ukrainian export items for the EU in 2021 were ferrous metals (20 % of total), plant products such as cereals and seed oils (14 % combined), as well as ores, slag and ash (11%) as shown in Figure 7.¹³

Figure 7. Structure of exports to the European Union in 2021.



Source: State Statistics Service of Ukraine.

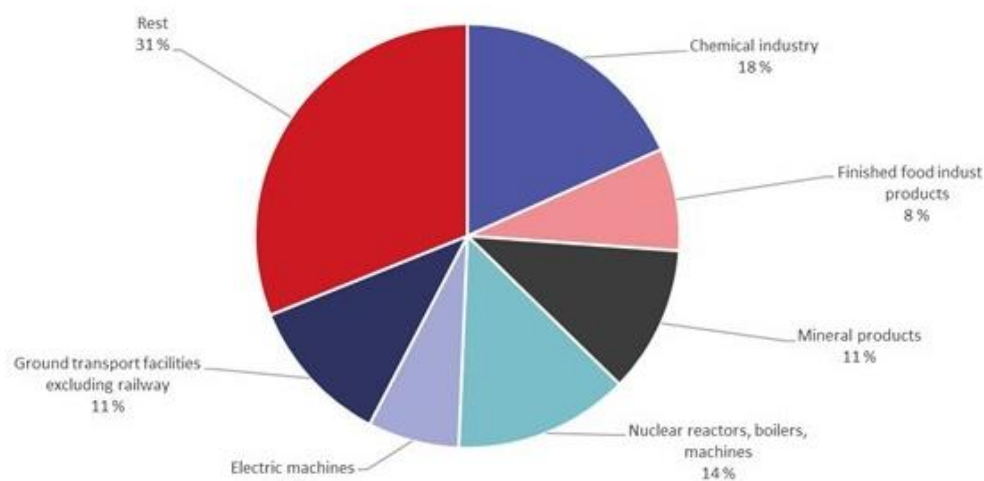
¹¹ State Statistics Service of Ukraine datasets: “Товарна структура зовнішньої торгівлі з країнами ЄС у 2021 році” and “Країни за товарною структурою зовнішньої торгівлі України за січень-грудень 2021 року”.

¹² European Commission. Access to markets page for EU-Ukraine Deep and Comprehensive Free Trade Area. <https://trade.ec.europa.eu/access-to-markets/en/content/eu-ukraine-deep-and-comprehensive-free-trade-area>.

¹³ State Statistics service of Ukraine dataset: “Товарна структура зовнішньої торгівлі з країнами ЄС у 2021 році”.

The most important import items from the EU were products of chemical industries (18 %), machinery (13 %) and land transport vehicles other than railway (11 %) as shown in Figure 8.¹⁴

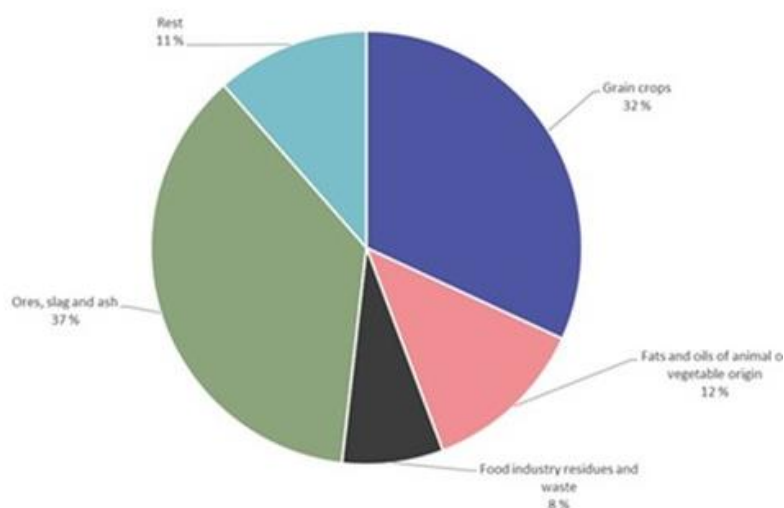
Figure 8. Structure of imports from the European Union in 2021.



Source: State Statistics Service of Ukraine.

The three most important individual trade partner countries for Ukraine in 2021 were China (total volume of trade, both exports and imports, USD 19 billion or 14 % of the total), Poland (USD 10 billion or 7 % of the total and included in trade with the EU) and Russia (USD 10 billion or 7 %).¹⁵ As shown in Figure 9, grains constituted 32 % of exports to China in 2021. Next came ores, slag and ash at 37 % and vegetable and animal fats at 12 %.¹⁶

Figure 9. Structure of exports to China in 2021.



Source: State Statistics Service of Ukraine.

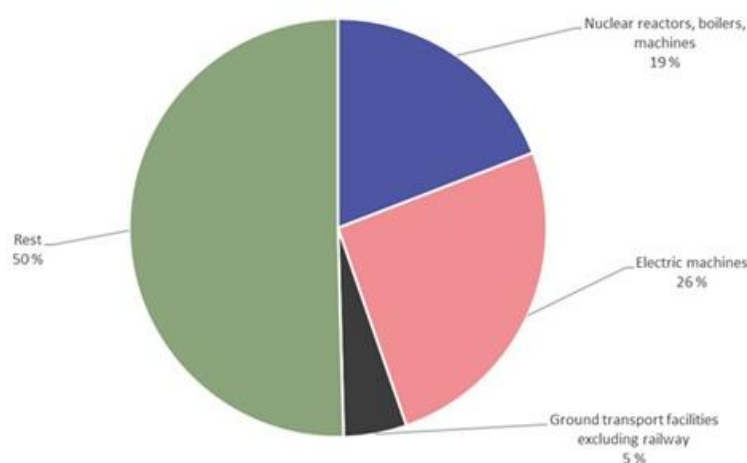
¹⁴ State Statistics Service of Ukraine dataset: “Товарна структура зовнішньої торгівлі з країнами ЄС у 2021 році”.

¹⁵ State Statistics Service of Ukraine dataset: “Країни за товарною структурою зовнішньої торгівлі України за січень-грудень 2021 року.”

¹⁶ State Statistics Service of Ukraine dataset: “Країни за товарною структурою зовнішньої торгівлі України за січень-грудень 2021 року”.

Figure 10 shows that imports from China tend to have high added value. The most important import items from China were electrical machines (26 %), machinery (19 %) and land transport vehicles other than railway (5 %).¹⁷

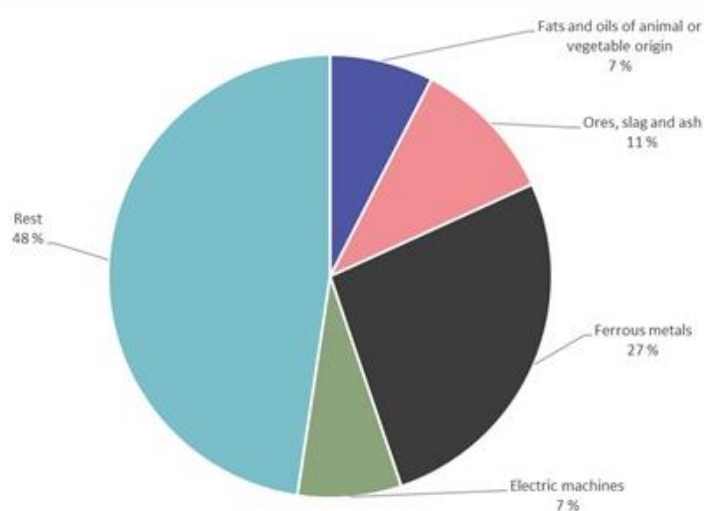
Figure 10. Structure of imports from China in 2021.



Source: State Statistics Service of Ukraine.

Figure 11 shows that Ukraine's exports to Poland were more diversified than its exports to China. The most important export item, ferrous metals, constituted only 27 % of the exports. The other top export items to Poland were ores, slag and ash (11 %), electrical machines (8 %) and fats and oils of animal or vegetable origin (8 %).¹⁸

Figure 11. Structure of exports to Poland in 2021.



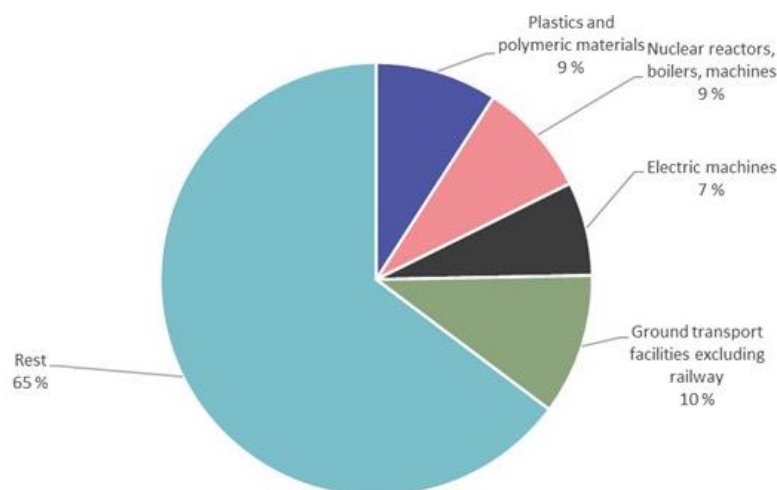
Source: State Statistics Service of Ukraine.

¹⁷ State Statistics Service of Ukraine dataset: "Країни за товарною структурою зовнішньої торгівлі України за січень-грудень 2021 року".

¹⁸ State Statistics Service of Ukraine dataset: "Країни за товарною структурою зовнішньої торгівлі України за січень-грудень 2021 року".

As with exports, imports from Poland were quite diversified. The top categories shown in Figure 12 were non-rail land transport vehicles (10 %), plastics and polymeric materials (9 %) and machinery (9 %).¹⁹

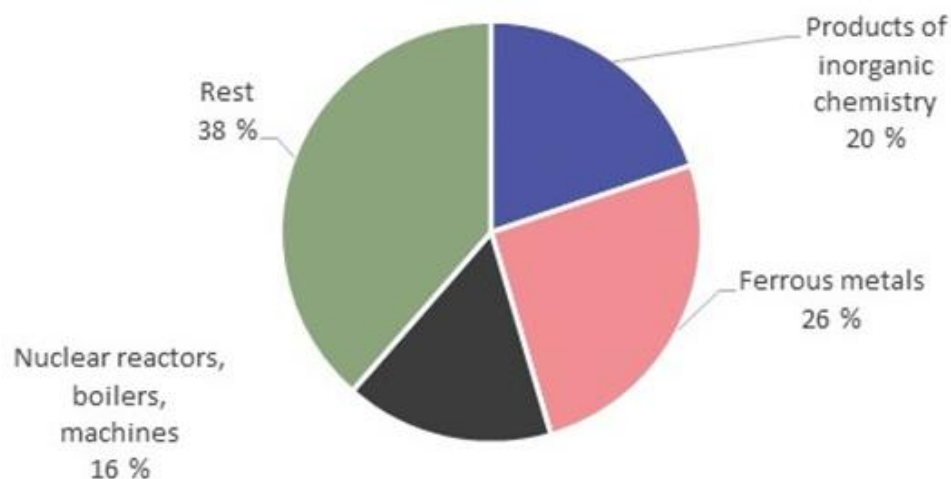
Figure 12. Structure of imports from Poland in 2021.



Source: State Statistics Service of Ukraine.

Figure 13 shows that the categories with the highest value added in exports to Russia in 2021 were ferrous metals (26 %), products of inorganic chemistry (20 %) and machinery (16 %).²⁰

Figure 13. Structure of exports to Russia in 2021.



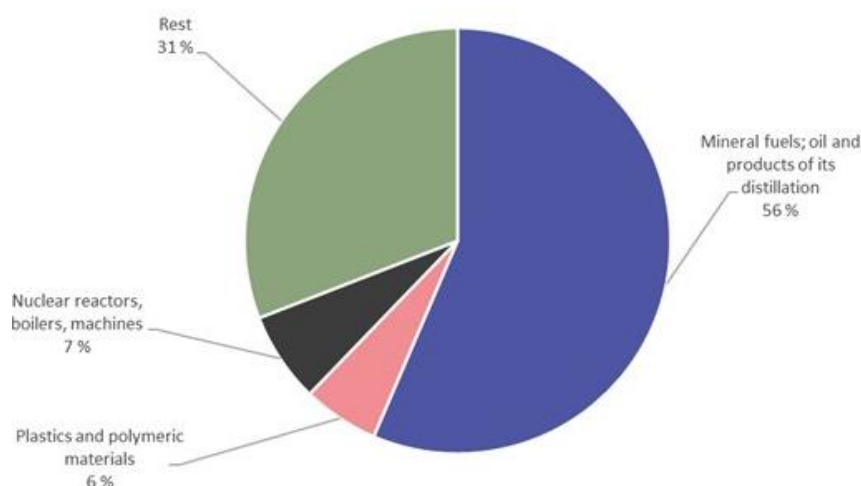
Source: State Statistics Service of Ukraine.

¹⁹ State Statistics Service of Ukraine dataset: “Країни за товарною структурою зовнішньої торгівлі України за січень-грудень 2021 року”.

²⁰ State Statistics Service of Ukraine: data set “Країни за товарною структурою зовнішньої торгівлі України за січень-грудень 2021 року”.

Figure 14 shows that imports from Russia were rather homogeneous, with oil and gas together accounting for 56 % of total imports. The other two of the top three import items, machinery (7 %) and plastics and polymeric materials (5 %), constituted just 11 % of the total imports from Russia to Ukraine in 2021.²¹

Figure 14. Structure of imports from Russia in 2021.



Source: State Statistics Service of Ukraine.

Prior to the February 2022 invasion, the most important routes of trade for Ukraine were its Black Sea ports, through which about 70 % of Ukraine's exports traveled.²² The importance of Ukraine's Black Sea ports is underscored by the fact that over 90 % of Ukraine's grain and oilseed exports, some of the country's main export articles, went through them before the war.²³ Foreign trade through sea was blocked in the early phases of the war, and the situation for trade infrastructure still looked bad in July, when the National Council for the Recovery of Ukraine from the Consequences of the War (Національна рада з відновлення України від наслідків війни) wrote that the railway system of Ukraine had a cargo capacity for grain transport that was just 20–25 % of the blocked sea traffic (one million metric tons versus four or five million tons a month).²⁴ Road transportation also lacked the capacity to replace the lost capacity of ports during the early months war of 2022.²⁵

The situation has improved in recent months. The Centre for Economic Strategy estimates that total exports of cereals and oil plants have recovered to pre-war levels. The Grain Initiative of Ukraine, Russia, the United Nations and Turkey signed in July 2022 helped maritime exports of cereals and plant oils recover to around 70 % of their prewar level by October 2022. Agricultural exports collapsed to almost zero in March, but started to come back already in April. While rail

²¹ State Statistics Service of Ukraine dataset: "Країни за товарною структурою зовнішньої торгівлі України за січень-грудень 2021 року".

²² National Council for the Recovery of Ukraine from the Consequences of the War (2022). Draft Ukraine Recovery Plan, Materials of the "Recovery and development of infrastructure" working group. <https://www.kmu.gov.ua/diyalnist/nacionalna-rada-z-vidnovlennya-ukrayini-vid-naslidkiv-vijni/robochi-grupi>.

²³ "European Commission (2022). Press release "Commission to establish Solidarity Lanes to help Ukraine export agricultural goods". https://ec.europa.eu/commission/presscorner/detail/en/IP_22_3002. Accessed on July 29, 2022.

²⁴ National Council for the Recovery of Ukraine from the Consequences of the War (2022). Draft Ukraine Recovery Plan, Materials of the "Recovery and development of infrastructure" working group. <https://www.kmu.gov.ua/diyalnist/nacionalna-rada-z-vidnovlennya-ukrayini-vid-naslidkiv-vijni/robochi-grupi>. Accessed on July 29, 2022.

²⁵ Centre for Economic Strategy (2022). Ukrainian economy in war times: Facing new reality, May 2022. https://ces.org.ua/en/?post_type=post&p=20015.

became the primary alternative means of shipping agricultural exports in April, river transport was able to handle the majority of trade in May through July. Total agricultural exports were only 40 % of the February 2022 level in July 2022, but the Grain Initiative allowed agricultural exports to reach 60 % of the February level by August 2022 and exceed the February level in both September and October. Around a half of agricultural exports were shipped by sea in August 2022, and the clear majority of agricultural exports went by sea in September. Other trade routes (river, railway and truck transport) were used for around 40 % of exports of cereals and oilseed crops in September and October 2022. Rail transport has constituted the second most important shipping mode for agricultural exports since August.²⁶

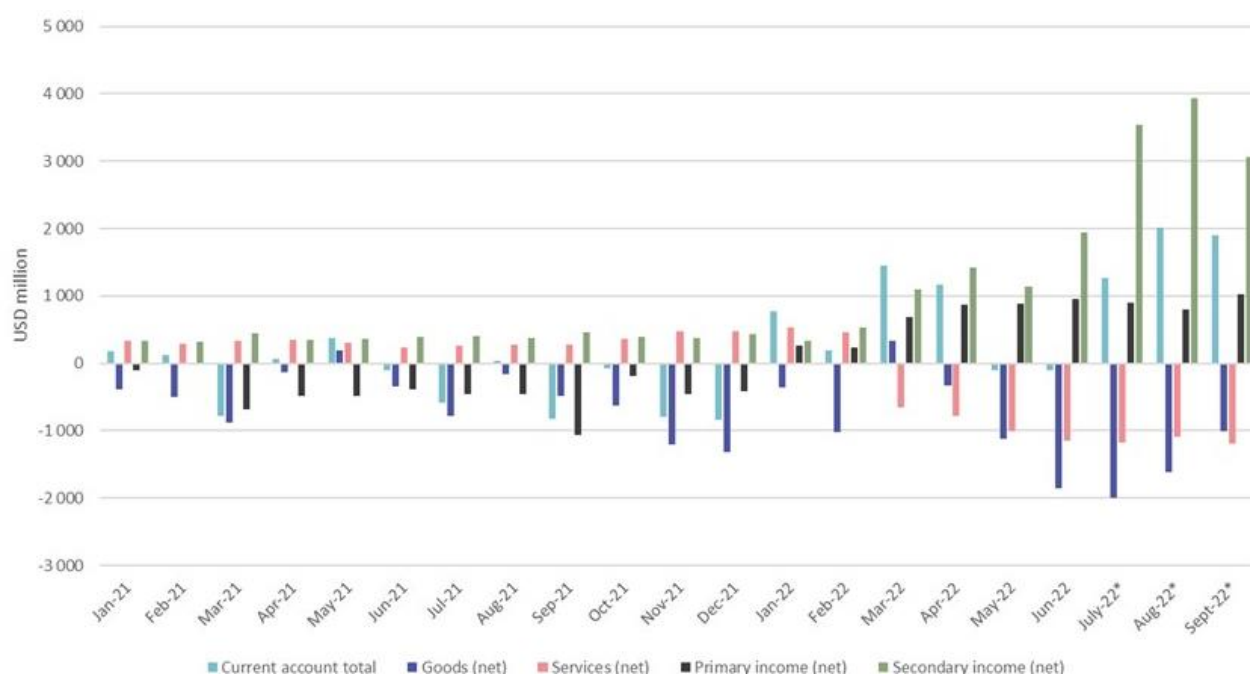
²⁶ Centre for Economic Strategy (2022). Економіка України під час війни. Листопад 2022 (the version of the report in Ukrainian). <https://ces.org.ua/ukrainian-economy-in-war-times-november/>.

2.1.3. Current account

The structure of Ukraine's foreign trade is visible also in the country's current account (Figure 15). The balance on goods trade has often been negative. However, after the start of the war on February 24, the balance on goods was initially positive due to diminished imports. Following the increase in imports of goods after April 2022, it again became negative. The balance of services has been negative since the start of the war due to reduced service exports and increased service imports.

While Ukraine's primary income account has generally been negative, the war and capital controls established by the authorities have reduced outward investment such that the primary income account is currently positive. The current account has increasingly improved during the war because the country has received monetary support from international partners ("secondary income"). The support from Ukraine's international partners increased considerably during the summer of 2022, raising the secondary income surplus to almost USD 3.5 billion in July, USD 3.9 billion in August and USD 3.1 billion in September. Secondary income and, to a smaller extent, primary income have helped offset a larger-than-usual trade deficit. Despite seven months of war, the current account of Ukraine showed a surplus of around USD 2 billion in September 2022.

Figure 15. Ukraine's current account of Ukraine and components (1M21–9M22).



Note: July, August and September 2022 preliminary.

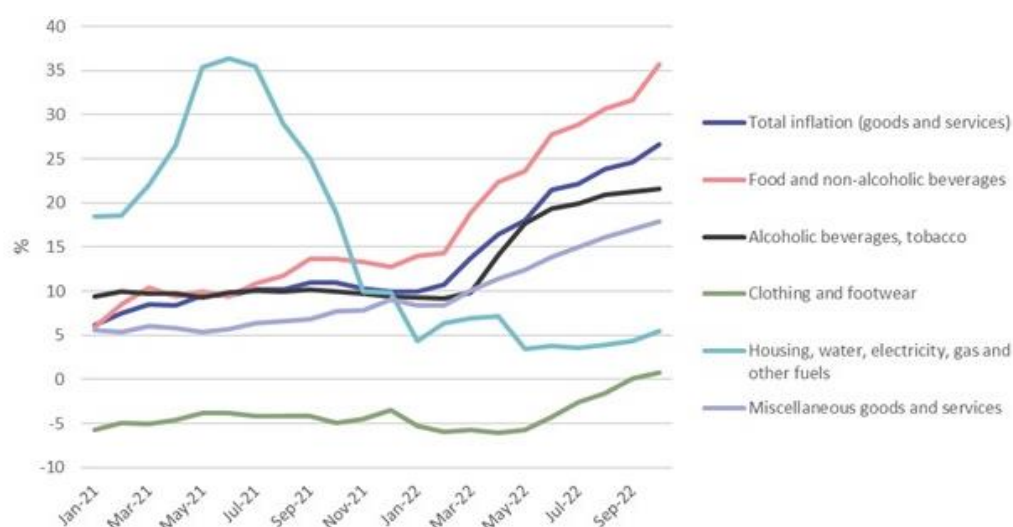
Source: National Bank of Ukraine

2.1.4. Inflation and monetary policy

As seen from Figures 16 and 17, inflation in Ukraine was already high before the invasion. The main reason for 12-month inflation running at 6–11 % in 2021 was high commodity prices, which soared by around 10–20 % a month depending on category. Inflation was further boosted by high energy and housing prices in summer 2021. Inflation again accelerated after the start of the war in February 2022. Between February and October 2022, 12-month inflation went from 11 % to 27 %.

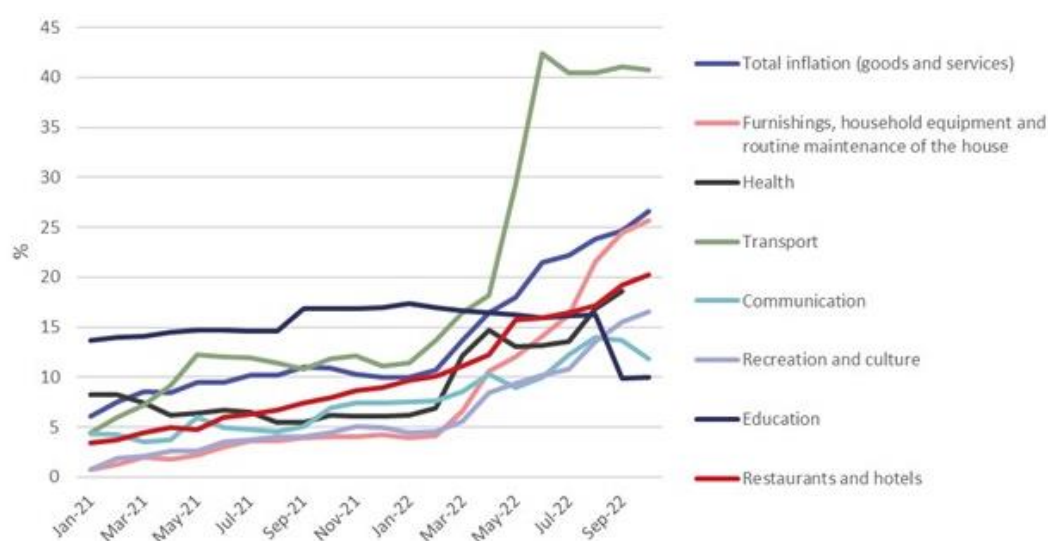
Inflation has accelerated in recent months in all statistical categories except education. Prices of food and beverages has been a big driver of goods inflation during the war. Transportation prices have been the biggest driver of rising prices for services.

Figure 16. Inflation for goods (1M21–10M22).



Source: State Statistics Service of Ukraine.

Figure 17. Inflation for services (1M21–10M22).



Source: State Statistics Service of Ukraine.

Russia's invasion and war obviously complicate the conduct of monetary policy. Measures introduced by the National Bank of Ukraine to protect monetary and financial stability in February 2022 included pegging the hryvnia to the dollar. The peg was impossible to sustain, however, and the hryvnia's official exchange rate was lowered from 0.034 UAH/USD during the first five months of the war to 0.027 UAH/USD on July 21. While the downward adjustment of exchange rate was needed to maintain the NBU's foreign exchange reserves, the peg made crucial imports more expensive. Another inflationary policy risk facing the NBU is reliance on funding the government budget deficit with the issue of government war bonds. The NBU has financed the state budget by itself purchasing government bonds worth over USD 10.6 billion, which is equivalent to about 27 % of the value of all domestic and foreign financial aid that the government received between late February 2022 and late October 2022.²⁷ Thus, Ukraine likely needs several billions of dollars in monetary support from abroad every month until the war ceases and government revenues return to normal levels.

The NBU cut its key interest rate several times during the initial phase of the COVID-19 pandemic to support the economy. The key interest rate, which was set at 6 % in June 2020, was maintained at that level until January 2021. It was subsequently raised several times until the key rate reached 10 % in January 2022.²⁸ The central bank board pointed to several factors in its rate decisions, including the rise in global inflationary pressures in 2021.²⁹ Heightened geopolitical tensions with Russia also forced the NBU to hike its key rate in late 2021.³⁰ The NBU waited until June 2022 to again raise its key rate to 25 % as it wanted to signal in the early months of the war that no raise was needed. By summer, however, the need for a rate hike to maintain attractiveness of hryvnia assets, support the fixed exchange rate and support the foreign exchange reserves was undeniable.³¹ At the time of this writing, the key rate remains at 25 %.

²⁷ Centre for Economic Strategy (2022). Presentation material "Фінансування Державного бюджету: 2022 та 2023 роки" (Financing of Government Budget: years 2022 and 2023). <https://ces.org.ua/state-budget-draft-2023/>.

²⁸ National Bank of Ukraine (2021). Press release "NBU Raises Key Policy Rate to 10 %". <https://bank.gov.ua/en/news/all/natsionalniy-bank-ukrayini-pidvischiv-oblikovu-stavku-do-10>.

²⁹ National Bank of Ukraine (2021). Press release "NBU Raises Key Policy Rate to 8 %". <https://bank.gov.ua/en/news/all/natsionalniy-bank-ukrayini-pidvischiv-oblikovu-stavku-do-8>.

³⁰ National Bank of Ukraine (2021). Press release "NBU Raises Key Policy Rate to 9%". <https://bank.gov.ua/en/news/all/natsionalniy-bank-ukrayini-pidvischiv-oblikovu-stavku-do-9>.

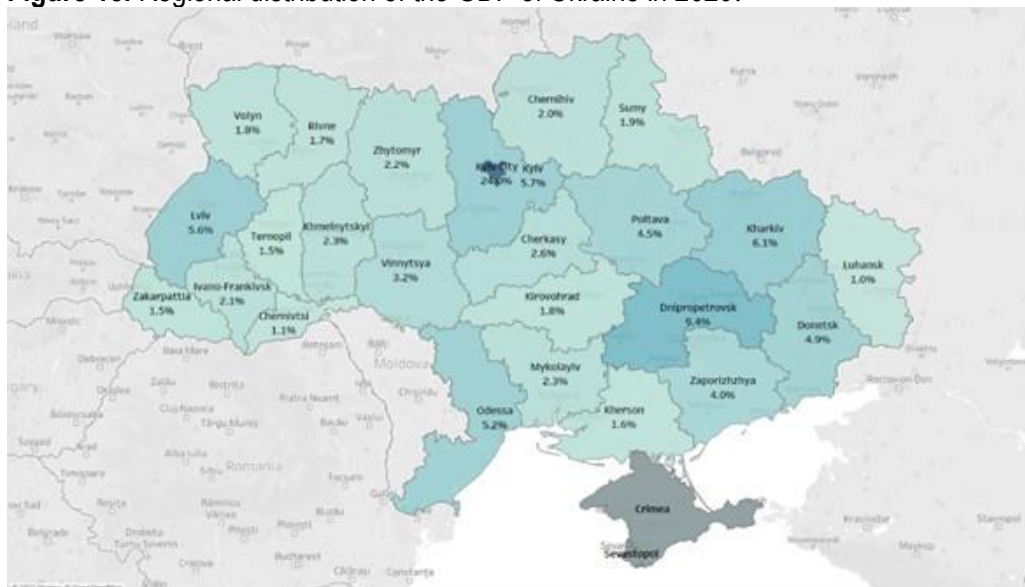
³¹ National Bank of Ukraine (2022). Press release "NBU Raises Key Policy Rate to 25 %". <https://bank.gov.ua/en/news/all/natsionalniy-bank-ukrayini-pidvischiv-oblikovu-stavku-do-25>.

2.2. Structure of the economy at regional level

2.2.1. GDP and industry of regions

The latest regional GDP data available for the Ukrainian economy is for 2020. Figure 18 shows how the capital city of Kyiv and several oblasts in the east of Ukraine contribute the most to the country's overall economy. The importance of the city of Kyiv and the east of the country can be explained by their major economic roles in industry and agriculture.

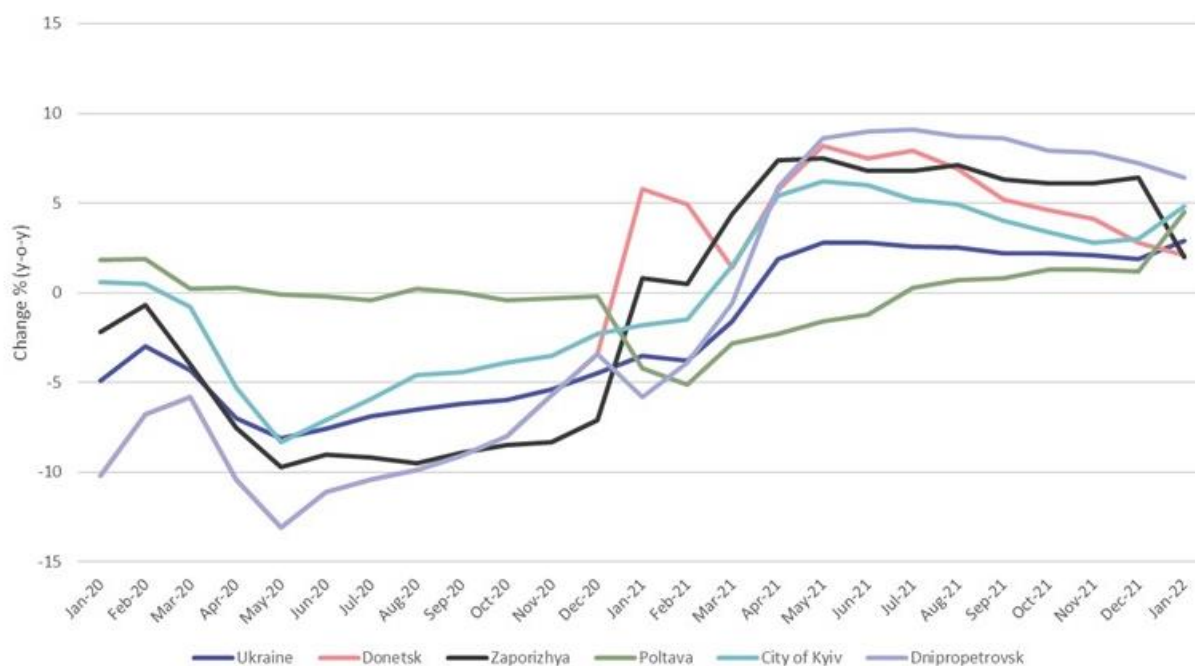
Figure 18. Regional distribution of the GDP of Ukraine in 2020.



Source: State Statistics Service of Ukraine.

As shown in Figure 19 below, Ukraine's top 5 industrial regions in 2021 were Dnipropetrovsk, Kyiv city, Donetsk, Zaporizhzhya and Poltava. These top 5 industrial regions accounted for 58 % of all industrial output in 2021.³² On-year growth of industrial output was 2 % for the whole country in 2021. Figure 19 also shows the industrial output trend for all of Ukraine and the top 5 industrial regions in 2020, 2021 and 2022. The largest drops to industrial production came in spring 2020, when the first wave of the COVID-19 pandemic arrived. Some regions also suffered in January 2021. Industrial output was weak in 2020 with negative growth rates in many months. However, industrial growth resumed in 2021 and remained positive for the year overall.

³² State Statistics Service of Ukraine dataset: "Обсяг реалізованої промислової продукції по регіонах у 2021 році".

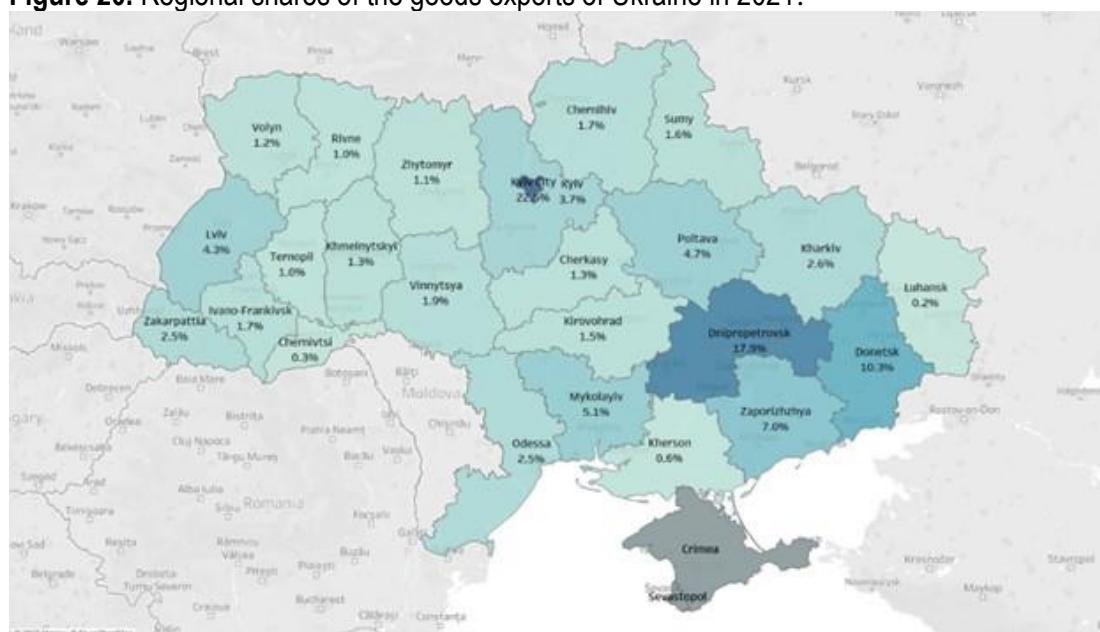
Figure 19. Ukraine's industrial output (1M20–1M22).

Source: State Statistics Service of Ukraine.

2.2.2. Foreign trade of regions

Ukraine's foreign trade on goods is heavily concentrated in the city of Kyiv and regions that form the important economic hubs for industry. The top 3 goods export regions in 2021 were the city of Kyiv (23 %), Dnipropetrovsk (18 %) and Donetsk (10 %), while the top 3 goods import regions were the city of Kyiv (43 %), Dnipropetrovsk (8 %) and Kyiv oblast (8 %). Even though the war has limited exports and imports in 2022, the relative importance of Ukraine's regions for foreign trade generally not shifted much – with the exception of the war-torn Donetsk oblast. The top 3 goods export regions in the period from January 2022 to September 2022 were the city of Kyiv (22 %), Dnipropetrovsk (16 %) and Zaporizhzhya (9 %), while the top 3 goods import regions in the same period were the city of Kyiv (39 %), Lviv (9 %) and Dnipropetrovsk (7 %).³³ Figure 20 and Figures 36–39 in the Appendices illustrate the importance of various regions in Ukraine's foreign trade.

Figure 20. Regional shares of the goods exports of Ukraine in 2021.



Source: State Statistics Service of Ukraine.

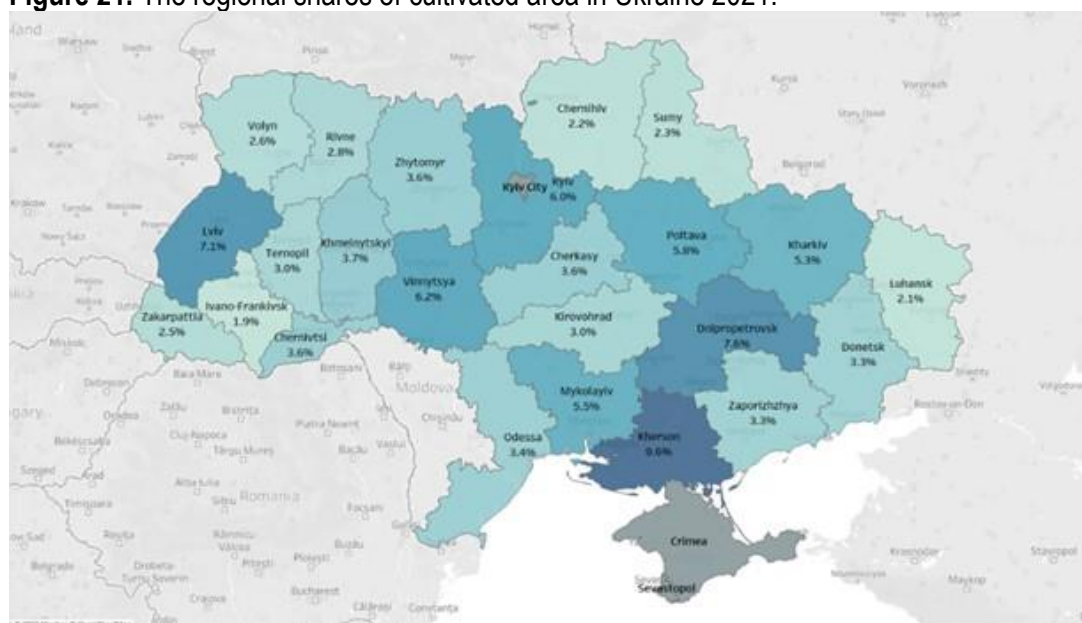
³³ State Statistics Service of Ukraine datasets: “Регіональні обсяги зовнішньої торгівлі товарами у 2021 році” and “Регіональні обсяги зовнішньої торгівлі товарами за 9 місяців 2022 року”.

2.2.3. Regional agriculture

The total output of cultivated crops in Ukraine was 147 million tons in 2021.³⁴ Agriculture plays an important economic role as export-oriented crops account for almost a half of Ukraine's exports. The most important export-oriented crops are wheat, sunflower oil and sunflower seeds. The total output of export-oriented crops in Ukraine was 107 million tons or 73 % of total crop output in 2021.³⁵

As Figures 21 and 22 show, most farming takes place in the east where the Russo-Ukraine war has caused the most destruction and disruption. The situation is particularly bad for the export crops such as cereals, legumes and oil plants (e.g. sunflower and soybean). Around 60 % of area for cultivation of Ukraine's export-oriented crops occurs in or next to oblasts where active hostilities are taking place. This share rises to around 70 % when the oblasts in the north that experienced active hostilities last spring are included.

Figure 21. The regional shares of cultivated area in Ukraine 2021.



Source: State Statistics Service of Ukraine.

³⁴ State Statistics Service of Ukraine dataset: “Збір урожаю культур зернових і зернобобових на 01 грудня 2021 року”.

³⁵ State Statistics Service of Ukraine dataset: “Збір урожаю культур зернових і зернобобових на 01 грудня 2021 року”.

Figure 22. Regional contributions in cultivation of export-oriented crops in 2021.

Notes: Export orientated crops include cereals, legumes and oil plants such as sunflower and soybean.
Source: State Statistics Service of Ukraine.

3. Standard of living and social development in Ukraine

3.1. Overview at national level

3.1.1. Economic indicators of well-being

As shown in Figure 1, Ukraine's GDP per capita was just 4,836 dollars in 2021. As such, Ukraine has one of the lowest GDP per capita figures in the region the IMF defines as "emerging market economies of Europe". Purchasing power parity adjusted (PPP-adjusted) GDP per capita, however, was much higher at 14,220 current international dollars in 2021. For comparison, the average 2021 nominal GDP per capita in the European Union was 38,214 dollars, while PPP-adjusted GDP per capita in the EU amounted to 48,436 current international dollars.³⁶

Other indicators also suggest a relatively low level of socio-economic development in Ukraine relative to other countries in Europe. Ukraine ranked 77th among 191 countries and territories in the 2021 Human Development Index (HDI)³⁷ of the UNDP. Ukraine's rating was significantly lower than that of Poland (34th), Russia (52nd) or Belarus (60th).³⁸ Ukraine's performance was particularly poor in the HDI indicators for life expectancy and GDP per capita. In 2021, the average life expectancy in Ukraine was 71.6 years and GDP per capita was 13,256 PPP\$. The similar figures for Poland were 76.5 years and 33,034 constant PPP\$. Notably, Ukraine's performance was more on par with its regional neighbors in terms of years of schooling. For example, the mean for years of schooling was 11.4 years for Ukraine and 13.2 years for Poland.

Despite Ukraine's weaker well-being indicators relative to its neighbors, it is still fairly strong among global emerging lower-middle and low income economies. For example, the World Development Indicators data of the World Bank show that only 2.5 % of the Ukrainian population lived below the global poverty threshold of less than \$5.50 a day in 2020. Among transition economies, Ukraine was particularly successful in the in the early 2000s in reducing poverty.³⁹ The ongoing war, however, has altered the situation. The UNDP estimated in the early phases of the war that the war will push poverty rate in Ukraine up to around 4–28 % depending on the four scenarios or the duration and severity of the war. The share of population at risk for impoverishment could rise from the prewar level of around 43 % to around 63 %.⁴⁰

Ukraine's low level of GDP per capita limits consumption possibilities of the population. Households spend almost a half of their income on food (see Figure 23). For comparison, the average share of food in consumption of population was 32 % in Russia in 2021.⁴¹ The average share of

³⁶ World Bank (2022). World Development Indicators database. <https://databank.worldbank.org/source/world-development-indicators>.

³⁷ The HDI considers three dimensions of human existence. The long and healthy life dimension uses life expectancy at birth as indicator to derive a life expectancy index. The knowledge dimension looks at expected years of schooling and mean years of schooling to create an education index. The decent standard of living dimension uses GNI per capita (PPP \$) to formulate a GNI index.

³⁸ UNDP (2022). Data Centre for Human Development Index (for HDI 2021). <https://hdr.undp.org/data-center/human-development-index#/indicies/HDI>.

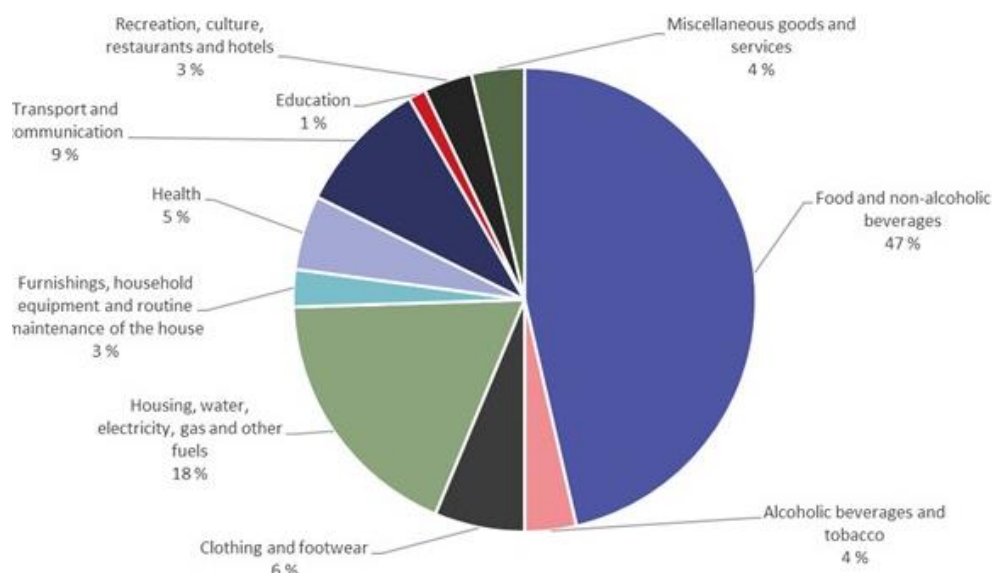
³⁹ World Bank (2007). Ukraine Poverty Update. <https://openknowledge.worldbank.org/handle/10986/19244>.

⁴⁰ UNDP (2022). Impact of the War in Ukraine: Initial Projections. <https://www.undp.org/publications/development-impact-war-ukraine-initial-projections>.

⁴¹ Rosstat (2022). Data set "Доходы и расходы домашних хозяйств на потребление - Уровень и структура потребительских расходов домашних хозяйств".

household income going to buying food was 14 % in the EU in 2021.⁴² The consumption possibilities of population are clearly more limited in Ukraine than in advanced economies as a larger share of household income goes to basic necessities.

Figure 23. Breakdown of Ukrainian household consumption by category, Q4 of 2021.



Source: State Statistics Service of Ukraine.

3.1.2. Corruption and informal economy

Corruption is a significant factor in Ukraine's social development. The country ranked 122nd among 180 countries and regions surveyed for Transparency International's Corruption Perceptions Index (CPI) in 2021.⁴³ Other surveys point to the same direction. The survey "Корупція в Україні 2020: розуміння, сприйняття, поширеність" (Corruption in Ukraine 2020: Understanding, Perception and Prevalence) found that most Ukrainians have encountered corruption when accessing public healthcare services. A 34 % share of respondents had been asked for "voluntary" charitable contributions, 24 % said personnel hinted that they could get better services for unofficial fees or contributions, 15 % relied on personal contacts to access care and 15 % offered bribes at their own initiative. Another example of the severe corruption were schools. About 55 % of respondents said that they had been solicited by educational employees at kindergartens, comprehensive or secondary schools for contributions e.g. to fix up the school. The survey also suggests that the population's experiences with corruption had increased in Ukraine between 2017 and 2020 in contact with the judiciary, patrolling police officers and energy firms. A sign of the severity of corruption in Ukraine is that the respondents of the survey considered the National Agency on Corruption Prevention, the

⁴² Eurostat (2022). Statistics explained article "Household consumption by purpose".
https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Household_consumption_by_purpose#Analysis_of_EU_aggregates.

⁴³ Transparency International (2021). Corruption Perceptions Index of 2021.
<https://www.transparency.org/en/cpi/2021/index/ukr>.

institution that co-published the survey, to itself be a highly corrupt institution with a rating of 3.95 out of 5.⁴⁴

The large share of informal economy in Ukraine contributes to current and future issues of social development. According to the Labour Force Survey of Ukraine for 2020, around 3.2 million people or 20 % of the employed population worked in the informal economy.⁴⁵ Even so, the level of informal employment had dropped from around 3.7 million people (23 % of the employed) in 2017. Other issues of the labor market include failures to declare income and low employment levels. These are three major reasons for low coverage of pension contributions. The Pension Fund of Ukraine estimated several years ago that the low coverage of pension contributions could lead to a situation where only 40 % of the population over 65 years is covered by the state old-age pension system in 2040.⁴⁶

According to the labor force survey of Ukraine for 2020, informal employment is most common in agriculture (44 % of the informally employed), construction (17 %) and wholesale and retail trade (16 %). Agriculture was the most important field of informal employment for women (53 %), with only 38 % of informally employed men working in agriculture. Wholesale and retail sales were also more important for women (21 % for women compared to 13 % for men). It was more common for men to work informally in construction (38 % of all informally employed males) than for women (1.5% of all informally employed females). Informal work can also be divided between informal employment in the formal sector and wholly informal sector of the economy. Agriculture dominated employment in the informal sector (66 % of all persons employed in the informal sector) for both women (81 %) and men (56 %). Informal employment in the formal sector was most concentrated in wholesale and retail trade (36 %), construction (18 %) and manufacturing (12 % of the informally employed in the formal sector in 2020).⁴⁷

A reason for Ukraine's large informal economy is the possibility to earn higher income in the informal sector. A 2019 study by the Razumkov Centre found that the average monthly salary in "fully formal" sector was 7,360 hryvnia among respondents surveyed. At the same time, the average monthly salary in the "fully informal" sector was 7,920 hryvnia. The highest monthly salaries, 8,600 hryvnia on average, were found in the "partially informal" sector, i.e. working under a formal employment contract but receiving a share of compensation under the table.⁴⁸ The survey results suggest the average monthly salary in the fully informal sector was around 8 % higher than in the formal sector a few years ago. The average monthly salary in the partially informal sector was 17 % higher than in the fully formal sector.

⁴⁴ National Agency on Corruption Prevention. Presentation "Corruption in Ukraine 2020: understanding, perception, prevalence" (Національне агентство з питань запобігання корупції. Презентація "Корупція в Україні 2020: розуміння, сприйняття, поширеність"). <https://nazk.gov.ua/uk/doslidzhennya-koruptsiyi/>.

⁴⁵ State Statistics Service of Ukraine (2021). Labour Force Survey of Ukraine for 2020. (Державна служба статистики України (2021). Статистичний збірник "Робоча сила України 2020"). https://ukrstat.gov.ua/druk/publicat/kat_u/2021/zb/07/zb_r_s_2020.pdf.

⁴⁶ ILO (2019). Future of the Ukrainian Pension System. Adequacy, Coverage and Sustainability. https://www.ilo.org/budapest/what-we-do/publications/WCMS_735152/lang-en/index.htm.

⁴⁷ State Statistics Service of Ukraine (2021). Labour Force Survey of Ukraine for 2020.

⁴⁸ Razumkov Centre (2019). Study "Інституційне середовище неформальних трудових відносин в Україні: масштаби, динаміка, наслідки" (Institutional environment of informal work relationships in Ukraine: scope, dynamics, consequences). https://razumkov.org.ua/uploads/article/2019_Zaynat.pdf.

3.1.3. Access to banking and remittances

Ukrainians enjoy relatively good access to banking services in light of their overall level of development. The World Bank categorizes Ukraine as a lower middle-income country. The average bank account ownership rate for such economies was 62 % in 2021, but the level was 84 % for Ukraine. Even so, access to a bank account is less common in Ukraine than in most neighboring countries. About 90 % of the population in Russia (an upper-middle income country) and about 96 % of the population in Poland (a high-income country) had access to a bank account in 2021. Use of digital payments is somewhat less common in Ukraine than in neighboring countries. About 76 % of the population made a digital payment in Ukraine in 2021, while the figure was 82 % for Russia and 91 % for Poland. Nonetheless, Ukraine is ahead of other countries in its reference income group in use of digital payments as only 30 % of the population in lower middle-income countries made a digital payment in 2021.⁴⁹

Remittances play a relatively large role in the Ukrainian economy. While World Bank data show that on average 12 % of the population in lower middle-income countries received domestic remittances or remittances from relatives or friends living in the same country in 2021, Ukraine's share was 19 %. In 2021, about 22 % of Ukrainians had sent domestic remittances, double the 11 % average for lower middle-income countries. Part of this reflects the relatively sophisticated level financial intermediation in Ukraine, which e.g. allowed Ukrainians to send 92 % of their domestic remittances to bank accounts and only 8 % of the domestic remittances through money transfer services. The averages for low middle-income countries were 81 % for bank account transfers and 19 % for transfers through money transfer services.⁵⁰ For comparison, 12 % of Poles received domestic remittances through a bank account and just 1 % percent via a money transfer service (13 % in total) in 2021. 25 % of Russians received domestic remittances through a bank account and 4 % through money transfer services (29 % in total) in 2021.⁵¹

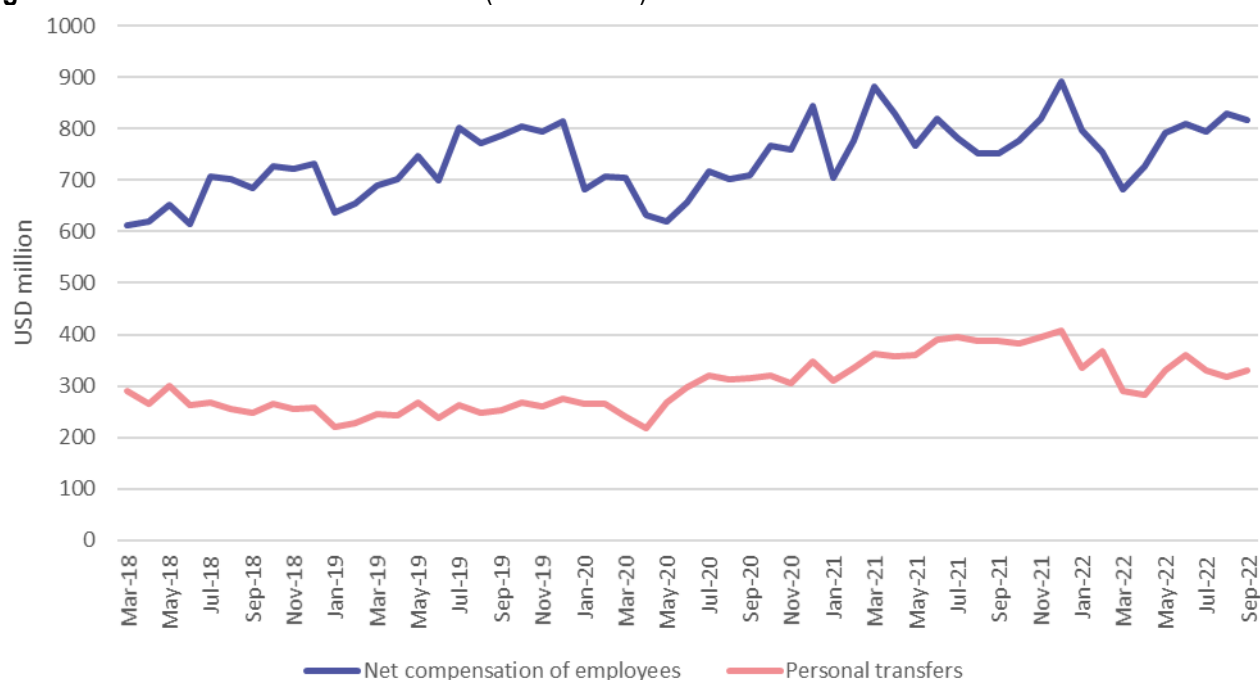
Ukrainians working temporarily less than a year abroad send the most of cross-border remittances back to Ukraine. As shown in Figure 24, USD 700–800 million or around 70–80 % of cross-border monthly remittances have been net compensation of employees. The National Bank of Ukraine defines this category as remittances sent by Ukrainians working temporarily abroad. Personal transfers or remittances from Ukrainians living permanently abroad amount to USD 200–300 million a month or 20–30 % of all cross-border remittances. Preliminary estimates for the months of war in 2022 suggest that the overall level or structure of remittances has not changed much during the war. The total remittances to Ukraine from abroad were USD 12 billion in 2020 and USD 14 billion in 2021. Remittances to Ukraine from abroad amounted to USD 8.6 billion from January 2020 to September 2020, which was lower than USD 10.3 billion in the same period in 2021 and USD 10.0 billion in the same in 2022.⁵²

⁴⁹ World Bank (2021). The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19. <https://www.worldbank.org/en/publication/globalfindex/Data>.

⁵⁰ World Bank (2021). The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19.

⁵¹ World Bank (2021). The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19.

⁵² National Bank of Ukraine (2022). Dataset “Remittances in Ukraine, monthly data”. <https://bank.gov.ua/en/statistic/sector-external>.

Figure 24. Value of remittances to Ukraine (3M18–9M22).

Source: National Bank of Ukraine.

The five most important source countries for remittances to Ukraine in 2021 were Poland, the US, the UK, the Czech Republic and Russia. The total value of remittances from Poland was USD 4.6 billion, as well as USD 1.5 billion for the US, USD 990 million for the UK, USD 880 million for the Czech Republic and USD 780 million for Russia. The share of the EU member states was USD 8.6 billion or 61 % of the total international remittances of USD 14 billion to Ukraine in 2021.⁵³

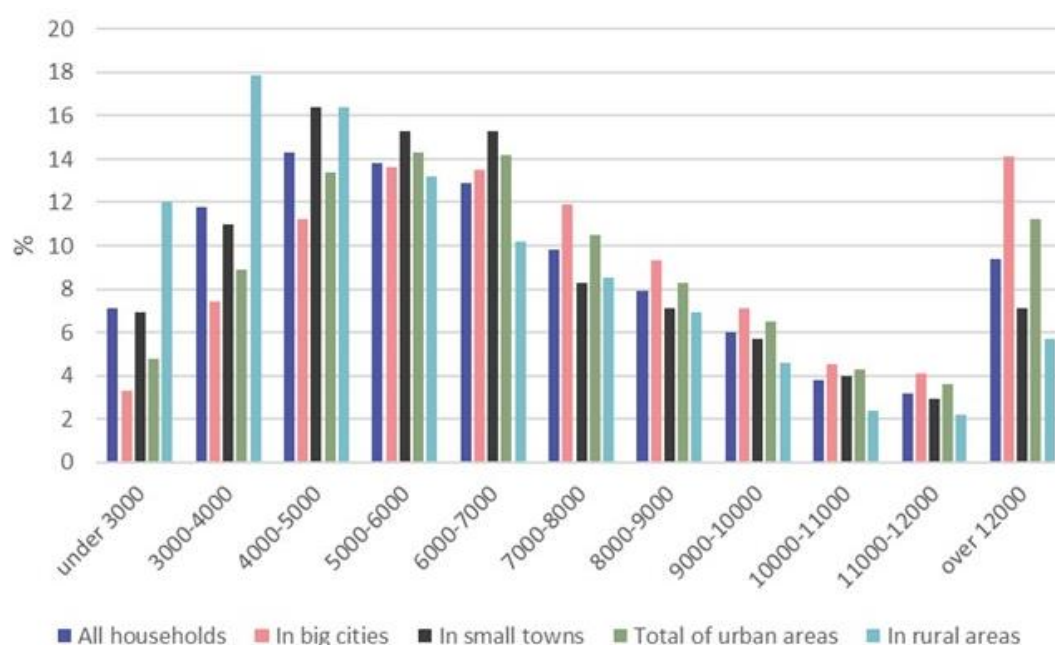
⁵³ National Bank of Ukraine (2022). Dataset “Remittances in Ukraine, quarterly data.” <https://bank.gov.ua/en/statistic/sector-external>.

3.2. Overview of regional living conditions

3.2.1. Rural development and its issues

Ukraine's rural areas face the most acute socio-economic challenges. As shown in Figure 25, the State Statistics Service of Ukraine suggests that in the fourth quarter of 2021 over 46 % of rural households fell in one of the three lowest income classes, while less than 30 % of urban households fell into these low-income categories. Kravchuk et al. (2021) report that most of Ukraine's rural population lives in the western parts of the country, and that urbanization rates are higher in the east of the country (91 % in Donetsk oblast, 87 % in Luhansk, 84 % in Dnipropetrovsk and 77 % in Zaporizhzhya). The rates are lower in the western regions (63 % in Zakarpattia oblast, 59 % in Chernivtsi, 56 % in Ivano-Frankivsk and 52 % in Rivne).⁵⁴

Figure 25. Percentage of households by money income per month (UAH) in Q4 of 2021.



Source: State Statistics Service of Ukraine.

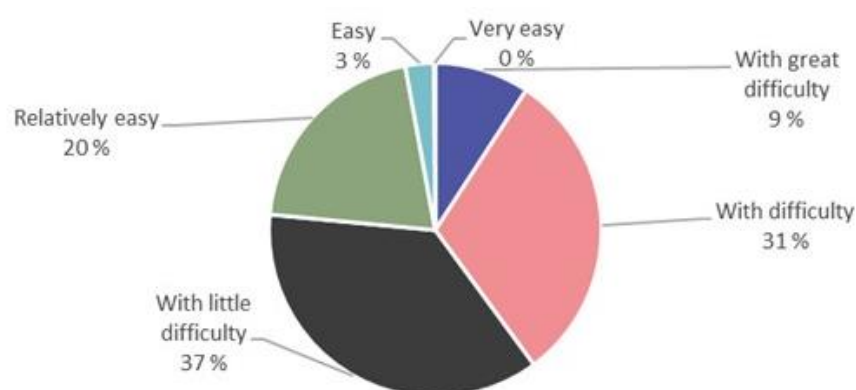
Kravchuk et al. (2021) also provide estimates for the level of infrastructure in urban and rural areas of Ukraine. Their results suggest that the level of infrastructure in Ukraine depends greatly on where people live. For example, water supply systems in 2020 served 99 % of households in big cities, 91 % of households in smaller towns, but only 64 % of village households. The similar figures for sewers were 99 %, 91 % and 65 %, respectively. For hot water supply, 79 %, 44 % and 28 %, and for centralized gas supply 90 %, 85 % and 65 %. The authors claim that low income levels and a low standard of living are contributing to emigration from Ukraine's rural areas, but note that depopulation of rural areas also reflects the poor quality or unavailability of public services such as healthcare and education, as well as the lack of commercial services. While it was not possible to profitably operate certain service industries such as logistics in the Ukrainian countryside in 2020,

⁵⁴ Kravchuk, N., Kilnitska, O., Lavrynenko, S. and Yaremova, M. (2021). Infrastructural support of socio-economic development of rural territories of Ukraine. *Scientific Horizons*, 24(10), 58-71.

the authors identify trade infrastructure as a potential form of infrastructure for generating economic growth in the Ukrainian countryside.⁵⁵

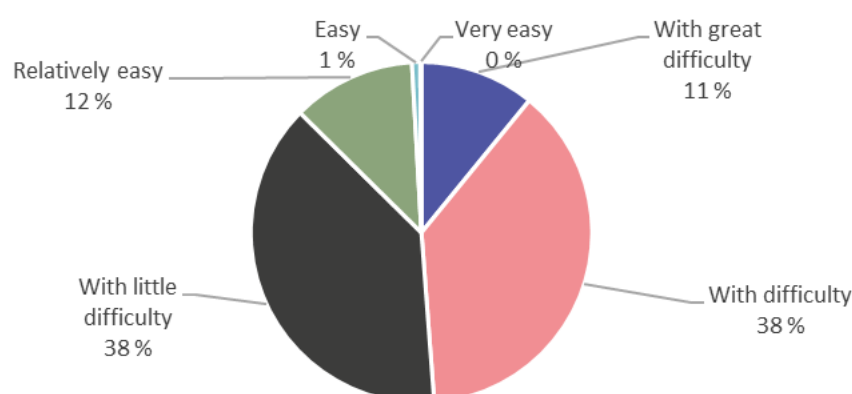
Material challenges are also greater for people living in the countryside. As Figures 26 and 27 show, only 40 % of urban population of Ukraine found it very difficult or difficult in 2021 to meet their usual necessary expenses, while 49 % of the rural population struggled. The financial situation of urban households was clearly better than that of rural households as 24 % of urban households found it “relatively easy”, “easy” or “very easy” to meet their usual necessary expenses in 2021. Only 13 % of the rural households had the same experience.⁵⁶

Figure 26. Ability to meet usual necessary expenses, % of urban population in 2021.



Source: State Statistics Service of Ukraine.

Figure 27. Ability to meet usual necessary expenses, % of rural population in 2021.



Source: State Statistics Service of Ukraine.

⁵⁵ Kravchuk, N., Kilnitska, O., Lavrynenko, S. and Yaremova, M. (2021). Infrastructural support of socio-economic development of rural territories of Ukraine.

⁵⁶ State Statistics Service of Ukraine dataset: “Самооцінка домогосподарствами доступності окремих товарів та послуг у 2021 році”, table “Оцінка рівня можливості сплачувати свої звичайні витрати особами, які проживають у домогосподарствах, залежно від віку та статі”.

3.2.2. Regional economic and human development indicators

Figure 28 shows the regional differences in GDP per capita in USD in Ukraine in 2020. The figure highlights the functions of the capital city region and east of the country as economic hubs. The areas of high GDP per capita in central and eastern Ukraine are also those where most of Russo-Ukraine war has taken place in 2022. This geographic aspect of the war amplifies the economic and social losses it has caused, heightens Ukraine's susceptibility to the effects of war and complicates reconstruction efforts.

Figure 28. Ukraine 2020 regional GDP per capita in USD using the average annual exchange rate of the National Bank of Ukraine.



Source: State Statistics Service of Ukraine.

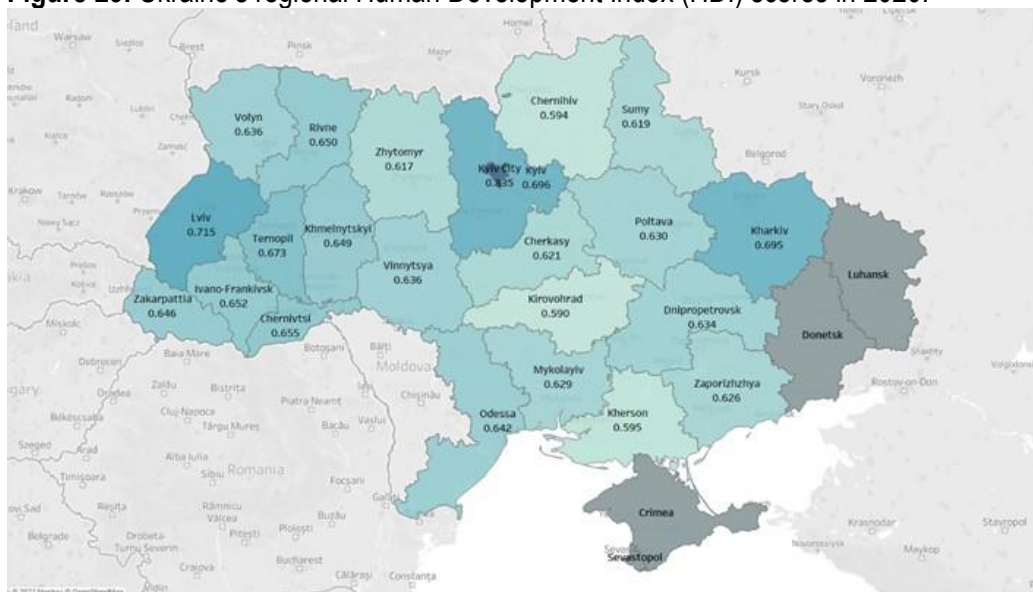
An example of differences in regional consumption are the differences between the city of Kyiv and Vinnytsya oblast in 2020. The data from the State Statistics Service of Ukraine for 2020 show that housing and utilities cost more for residents of Kyiv (20 % of their money expenditure) than for residents of Vinnytsya oblast (14 %). On the other hand, people in Kyiv spent more money on services more readily available in a big city: 3.5 % of their money expenditure went to recreation and culture, 2.0 % to education and 3.5 % to restaurants and hotels. The respective figures for Vinnytsya oblast in 2020 were 1.2 %, 0.6 % and 1.5 %. The share of non-consumer money expenditure, for example giving financial support to relatives or buying assets, was more common in Vinnytsya oblast in 2020 (9.9 %) than in the city of Kyiv (4.3 %).⁵⁷

There are regional differences in levels of social development in Ukraine. Figure 29 illustrates the regional variation in Human Development Index (HDI) in regions in 2020. The city of Kyiv had the highest HDI score (0.84), while Zhytomyr in the north of Ukraine had the lowest regional HDI

⁵⁷ State Statistics Service of Ukraine datasets: “Витрати і ресурси домогосподарств вінницької області у 2020 році” and “витрати і ресурси домогосподарств м. Києва у 2020 році”, and the table “Грошові витрати домогосподарств” of both datasets.

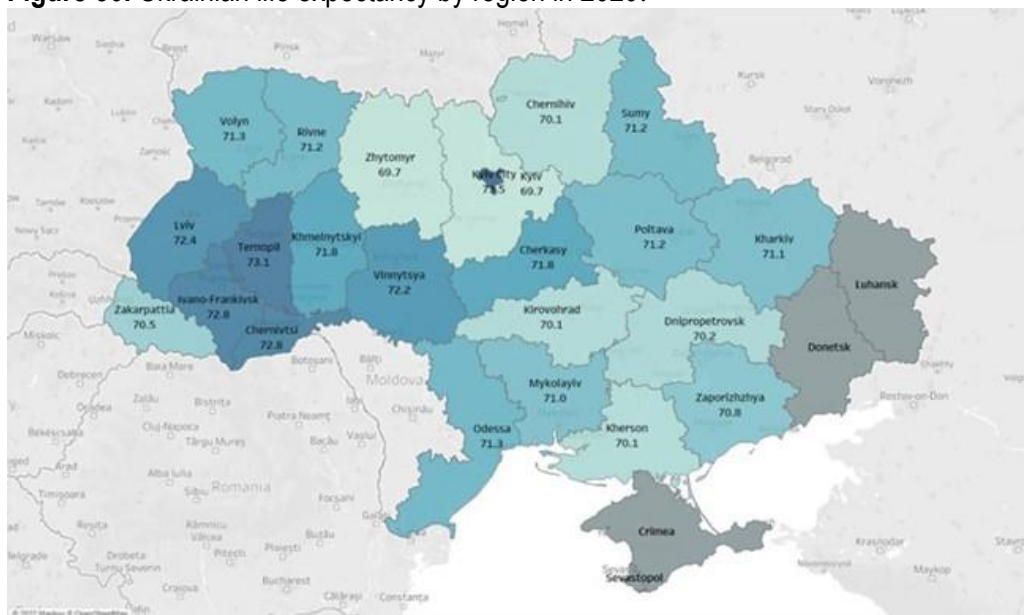
score (0.62) among regions fully under the control of the Ukrainian government.⁵⁸ Many regions in the east have relatively low HDI scores despite relatively high GDP-per-capita figures. Correspondingly, many regions in the west of the country have a relatively high HDI scores despite low GDP-per-capita figures relative to the national average. The regional differences in the life expectancy component of HDI in 2020 are shown in Figure 30.

Figure 29. Ukraine's regional Human Development Index (HDI) scores in 2020.



Source: Ministry of Communities and Territories Development of Ukraine.

Figure 30. Ukrainian life expectancy by region in 2020.



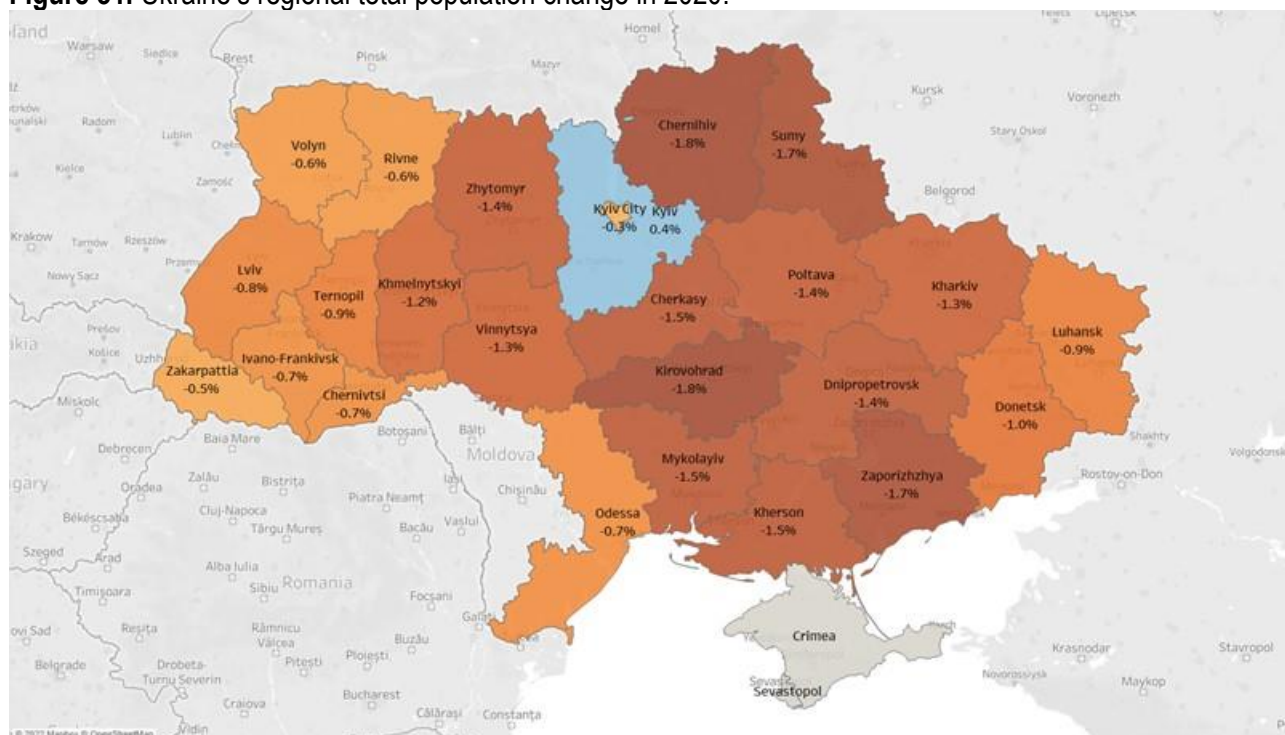
Source: Ministry of Communities and Territories Development of Ukraine.

⁵⁸ Ministry of Development of Communities and Territories of Ukraine (2020). Calculation of the index of regional human development for 2020. (Міністерство розвитку громад та територій України (2020). Розрахунок індексу регіонального людського розвитку за 2020 рік). <https://www.minregion.gov.ua/napryamki-diyalnosti/derzhavna-rehional-na-polityka/monitorynh/monitorynh-monitorynh/rozrahunok-indeksu-regionalnogo-lyudskogo-rozvytku/rozrahunok-indeksu-regionalnogo-lyudskogo-rozvytku-za-2020-rik/>.

3.2.3 Population development in regions

Ukraine's population has declined in recent decades, reaching 41.1 million people in January 2022.⁵⁹ The decline is driven by relatively low life expectancy, a low birth rate and emigration. Death rates have been relatively stable for many years. The largest single contributor to depopulation has been falling birth rates. The birth rate was low between 1991–2002. It improved in 2002–2012 as the relatively large 1980s cohort reached reproductive age, the economic situation in the country stabilized and the government increased financial assistance to families with children. Since 2012, birth rates have decreased. This could partly reflect the reduction in financial assistance to families with small children and the economic destabilization from Russian aggression.⁶⁰ Figure 31 illustrates population change in regions of Ukraine in 2020.

Figure 31. Ukraine's regional total population change in 2020.



Source: Ministry of Communities and Territories Development of Ukraine.

⁵⁹ State Statistics Service of Ukraine dataset: "Чисельність населення по регіонах (за оцінкою) на 1 лютого 2022 року та середня чисельність у січні 2022 року".

⁶⁰ Center for Economic Strategy (2022). Ukraine's resilience to crises: the formation and development of human capital. <https://ces.org.ua/en/ukraines-resilience-to-crises-the-formation-and-development-of-human-capital/>.

4. Effects of the war on Ukraine's economy

4.1. Overview of the economic losses between 2014–2022

Ukraine started to reduce its economic dependence on Russia after the illegal occupation of Crimea and backing of separatist movements in the Donbas region in 2014. According to the report “The Strategic Cost of Russian Aggression for Ukraine’s Economy” by Ukraine’s National Institute for Strategic Studies, various earlier estimates suggest that the cost to Ukraine from Russian occupation and hybrid activity in the Crimea, Luhansk and Donetsk oblasts amounted to around 10–20 % of GDP annually.⁶¹

The report offers a fresh estimate of costs to Ukraine’s economy from Russian aggression prior to February 24, 2022. Russian occupation impaired Ukraine’s energy security as 57 % of the country’s coal mines are situated in areas occupied by Russia prior to February 24, 2022. As a result, Ukraine’s coal production has dropped by almost two-thirds since 2014. Crimea has also extensive gas deposits that could potentially satisfy as much as half of Ukraine’s hydrocarbon requirements. The lost tax revenue from occupation has averaged around 191 billion hryvnia (USD 7 billion) a year.⁶²

The occupation of Crimea and parts of the Luhansk and Donetsk oblasts has also inflicted large losses on heavy industries such as metallurgy, chemicals, coke production and mechanical engineering. Many high value-added industries were focused on serving the Russian market until restrictions on imports from Ukraine started in Russia in 2013. Most have been unsuccessful in finding alternative markets. Some value chains between Ukraine and the occupied territories were maintained up to early 2017.⁶³

4.1.1. Reduction in dependency on Russia: Russian investment and foreign trade

Prior to 2014, the Ukrainian economy was heavily dependent on Russia. In recent years, the role of Russian investment has been small as the Russian FDI stock in Ukraine was only 2 % (USD 834 million) of the total FDI stock (USD 43 billion) in the fourth quarter of 2021. The share of Russian investment of the total investment was largest in Chernivtsi oblast (USD 8.4 million or 13 % of the total of USD 63.6 million) and the city of Kyiv (USD 701 million or 4% of the total of USD 17 billion) but otherwise Russian investment was negligible.⁶⁴

Experts believe that the real volume of Russian investment is probably about twice as large as portrayed in official figures. Russian investors are known to use firms registered in investor-friendly jurisdictions, particularly Cyprus, to disguise the Russian ownership of FDI.

Much of Ukraine’s critical infrastructure in the energy and financial sectors is still tied to Russia. Russia has fought reforms in Ukraine’s fuel and energy sector and Ukraine’s integration into the EU energy space. Russia has also tried to purchase assets in Ukraine’s fuel and energy sector. Ukraine was already vulnerable to Russian aggression in 2014 as 95–100 % of its nuclear fuel, 75 % of its natural gas and 70 % of crude oil came from Russia at the end of 2013. Russian state enterprises also controlled the trunk pipelines carrying natural gas and oil. Despite attempts to reduce the dependency,

⁶¹ National Institute of Strategic Studies (2022). Strategic Cost of Russian Aggression for Ukraine’s Economy. <https://niss.gov.ua/en/publikacii/analitichni-dopovidi/strategic-cost-russian-aggression-ukraines-economy>.

⁶² National Institute of Strategic Studies (2022). Strategic Cost of Russian Aggression for Ukraine’s Economy.

⁶³ National Institute of Strategic Studies (2022). Strategic Cost of Russian Aggression for Ukraine’s Economy.

⁶⁴ National Bank of Ukraine dataset: “Direct investment in Ukraine (Equity and investment fund shares). Positions: Regions by Countries”. <https://bank.gov.ua/en/statistic/sector-external>.

Russia still supplied two thirds of petroleum products consumed by the Ukrainian economy in 2021 either directly or by being the source country of energy resources for imports from other countries.⁶⁵

The above-mentioned report “The Strategic Cost of Russian Aggression for Ukraine’s Economy” suggests that the regional effects of the Russian aggression were already being felt before February 24, 2022. In regions dependent on the Russian market, the role of Russia for exports of oblasts decreased extensively, from around 20–65 % to around 3–30 %, from 2012 to 2016. Most regions dependent on the Russian export market lie in the eastern part of the country. Russian aggression during the eight years leading up to the 2022 invasion induced structural changes in the Ukrainian economy. Machine-building and chemicals, which were industries oriented to the Russian market before 2014, saw their importance to Ukraine’s economy diminish. The share of machine-building in industrial sales decreased from 9 % in 2013 to 4 % in 2020, while the chemical industry’s share decreased from 6 % to 3 %. These industries were unable to boost their market shares in more competitive markets, so the share of low value-added assembly industries such as electrical equipment for cars accounted for an increasing share of Ukraine’s exports. Some of these losses have been offset by increased investment in the metallurgical industry.⁶⁶

In any case, Ukraine began to shift its foreign trade emphasis in 2014. As seen in Tables 2, the value of Ukraine’s foreign trade with Russia dropped from around USD 38 billion (27 % of total foreign trade in 2013) to around USD 10 billion (7 % in 2021), while trade with the EU increased from around USD 42 billion (30 %) to USD 56 billion (40 %). Trade with other countries increased from USD 60 billion (43 % in 2013) to USD 76 billion (54 % in 2021). Russia’s share in Ukraine’s foreign trade decreased by roughly 15–20% for both exports and imports between 2013 and 2021. The EU’s share of exports increased by over a half in relative terms. Trade with the rest of the world, especially imports from the rest of the world, also help compensate for the loss of the Russian market.

Table 2. Comparisons of foreign trade value and markets in 2013 and 2021.

a) Value of Ukraine’s foreign trade (USD billion)

| | 2013 | | | 2021 | | |
|--------|-------------|---------|---------|-------------|---------|---------|
| | Total trade | Exports | Imports | Total trade | Exports | Imports |
| Russia | 38.3 | 15.1 | 23.2 | 9.5 | 3.4 | 6.1 |
| EU | 42.3 | 16.7 | 25.7 | 55.7 | 26.8 | 29.0 |
| Rest | 59.7 | 31.5 | 28.1 | 75.7 | 37.9 | 37.7 |
| Total | 140.3 | 63.3 | 77.0 | 140.9 | 68.1 | 72.8 |

b) Market allocation of Ukraine’s foreign trade (%)

| | 2013 | | | 2021 | | |
|--------|-------------|---------|---------|-------------|---------|---------|
| | Total trade | Exports | Imports | Total trade | Exports | Imports |
| Russia | 27.3 | 23.9 | 30.1 | 6.7 | 5.0 | 8.4 |
| EU | 30.2 | 26.3 | 33.3 | 39.6 | 39.3 | 39.8 |
| Rest | 42.5 | 49.8 | 36.5 | 53.7 | 55.7 | 51.8 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Source: State Statistics Service of Ukraine.

⁶⁵ National Institute of Strategic Studies (2022). Strategic Cost of Russian Aggression for Ukraine’s Economy.

⁶⁶ National Institute of Strategic Studies (2022). Strategic Cost of Russian Aggression for Ukraine’s Economy.

4.1.2. Reduction of dependency on Russia: Western integration and energy

Ukraine began to formalize its economic repositioning in 2014 with the signing of the EU-Ukraine Association Agreement. The agreement provided Ukraine with impetus to modernize its economy as it opened up to the European market. Ukraine also set to integrating its energy production with Europe's electricity and natural gas markets. Ukraine reached an agreement on exchange of electricity with the European Network of Transmission System Operators for Electricity (ENTSO-E). Synchronization of power systems was achieved in March 2022 and electricity trade started in late June 2022.⁶⁷ Ukraine and other Entso-E members agreed in July 2022 to raise the initial total trade capacity of 100 MW to 250 MW in the integrated nets that Ukraine now has with Romania and Slovakia.⁶⁸ A further capacity increase to 300 MW with Ukraine and Moldova, agreed on September 20, 2022, went into effect on September 23, 2022. Entso-E has plans to start electricity trade among Ukraine, Hungary, Moldova and Romania.⁶⁹

Massive missile strikes by Russia in October and November 2022 extensively damaged Ukraine's energy infrastructure, forcing Ukraine to import electricity from Europe rather than export electricity to Europe. Ukraine tested the possibility of importing electricity from Slovakia in October and November to prepare for energy imports during winter.⁷⁰ Ukraine also tested the import of 1 MW of electricity from Romania on November 29, 2022.⁷¹ The Ukrainian government estimated in late November that the country had sufficient natural gas and coal inventories to provide sufficient energy to make it through the coming winter.⁷²

Ukraine is striving to synchronize its gas system with European Network of Transmission System Operators for Gas (ENTSO-G). Ukraine has diversified its suppliers of gas from the European market and is planning co-operation on liquified natural gas (LNG) with Poland and major suppliers such as Qatar, the US and Norway. Ukraine is also co-operating with the American nuclear fuel supplier Westinghouse to increase the share of non-Russian nuclear fuel in its nuclear power plants (NPPs).⁷³

⁶⁷ Entso-E (2022). News "Commercial exchanges of electricity with Ukraine/Moldova to start on 30 June".

<https://www.entsoe.eu/news/2022/06/28/commercial-exchanges-of-electricity-with-ukraine-moldova-to-start-on-30-june/>.

⁶⁸ Entso-E (2022). News item "Transmission System Operators for Electricity of Continental Europe agree to increase the trade capacity with the Ukraine/Moldova power system". <https://www.entsoe.eu/news/2022/07/29/transmission-system-operators-for-electricity-of-continental-europe-agree-to-increase-the-trade-capacity-with-the-ukraine-moldova-power-system/>.

⁶⁹ Entso-E (2022). News item "Further update on the trading capacity with Ukraine/Moldova".

<https://www.entsoe.eu/news/2022/09/22/further-update-on-the-trading-capacity-with-ukraine-moldova/>.

⁷⁰ Ukrainian State Energy Trading Company (АТ «Енергетична компанія України» (АТ «ЕКУ»)), 2022. Press release "Державний енерготрейдер АТ «ЕКУ» здійснив повторну тестову поставку імпорту електроенергії з Європи" (Ukrainian State Energy Company carried out another test on electricity imports from Europe) on 19th November 2022. <https://ecu.gov.ua/press-releases/19-11-2022>.

⁷¹ Ukrainian State Energy Trading Company (АТ «Енергетична компанія України» (АТ «ЕКУ»)), 2022. Press release "Державний енерготрейдер АТ «ЕКУ» імпортував електроенергію з Румунії у тестовому режимі" (Ukrainian State Energy Company did test imports of electricity from Romania) on November 28, 2022. <https://ecu.gov.ua/press-releases/28-11-2022>.

⁷² Ukrainian Cabinet of Ministers. Press release "Енергетичних ресурсів, зокрема пального, в Україні достатньо, щоб стабільно пройти зиму, — Денис Шмигаль" (Ukraine has enough energy resources, especially fuel, to make it through winter in a stable way, says PM Denis Shmigal) on November 29, 2022. <https://www.kmu.gov.ua/news/energetichnih-resursiv-zokrema-palnogo-v-ukrayini-dostatno-shchob-stabilno-projti-zimu-denis-shmigal>.

⁷³ National Institute of Strategic Studies (2022). Strategic Cost of Russian Aggression for Ukraine's Economy.

4.1.3. Fiscal and financial resilience prior to 2022

Ukraine has improved its financial resilience since 2014, for example, by increasing budget transparency and better public financial controls and audits. The new approach has delivered good results. Ukraine was ranked 26th among 117 countries in the 2019 Open Budget Index Survey. Moreover, Ukraine has maintained fiscal prudence despite the pressure on public finances from Russian aggression. Ukraine raised existing taxes and introduced various new taxes in 2014–2015 to help cover increased spending on the military and national defense. Some of the tax reforms were later cancelled. Ukraine, by consistently meeting its obligations to international financiers, saw the resumption of IMF lending under the Extended Fund Facility in 2017. The level of state debt and state-guaranteed debt relative to GDP fell from 81 % in 2016 to 50 % in 2019. With the advent of the COVID-19 pandemic, the government was forced to increase its debt level.⁷⁴

The banking system has also become healthier in recent years as more than a half or over 90 of 180 Ukraine's commercial banks exited the market between 2014 and 2017.⁷⁵ The increased capital and liquidation requirements and stress tests for banks after 2014 further pushed down the number of banks in Ukraine to 71 by December 2021.⁷⁶ These reforms and changes have improved the resilience of the banking system. The number of functioning banks declined further to 68 in the second quarter of 2022.

The dominance of state-owned banks is an important feature of the Ukrainian banking system. The three state-owned banks formally considered state banks (Oschadbank, Ukreximbank and Ukgazbank) held 28 % of banking sector net assets in June 2022. In addition to these three banks, the government of Ukraine owns PrivatBank, which held 22 % of bank assets in June 2022. Systemically important PrivatBank was nationalized in 2016 due to its financial troubles. Together these four banks held 51 % percent of net assets in June 2022. The share of the three state-owned banks was 24 % of deposits, and the share of Privatbank was 35 % of deposits in June 2022. Thus, their combined share was 60 % of deposits, an ever greater share than net assets.⁷⁷ Even so, the banking system of Ukraine is not excessively concentrated. As of June 2022, the ten largest banks held 78 % of net assets and the 20 largest banks held 92 % of net assets. The Herfindahl-Hirschman Index (HHI) measuring concentration in a market was 927 for net assets, 1,116 for total assets and 1,712 for retail deposits in the Ukrainian banking system as of June 2022.⁷⁸ As markets with values under 1,500 are considered competitive and markets with values between 1,500 and 2,500 are considered moderately concentrated, this indicator suggests that the Ukrainian banking system is fairly competitive.

⁷⁴ National Institute of Strategic Studies (2022). Strategic Cost of Russian Aggression for Ukraine's Economy.

⁷⁵ National Institute of Strategic Studies (2022). Strategic Cost of Russian Aggression for Ukraine's Economy.

⁷⁶ Centre for Economic Strategy (2022). The banking sector in times of war: current situation and challenges.

<https://ces.org.ua/en/the-banking-sector-in-times-of-war-current-situation-and-challenges/>.

⁷⁷ National Bank of Ukraine (2022). Banking Sector Review, August 2022. <https://bank.gov.ua/en/news/all/oglyad-bankivskogo-sektoru-serpen-2022-roku>.

⁷⁸ National Bank of Ukraine (2022). Banking Sector Review, August 2022. <https://bank.gov.ua/en/news/all/oglyad-bankivskogo-sektoru-serpen-2022-roku>.

4.2. War and production

4.2.1. Overview

The war has caused a huge financial and other losses, as well as long-term negative effects on the economy and society of Ukraine. Still, Ukrainian society and its economy have proven quite resilient. As one would expect, the February 2022 invasion paralyzed businesses. According to a survey by the European Business Association (EBA)⁷⁹, 17 % of the association's member firms in Ukraine were fully operational in March 2022, while around 29 % of the firms were idle and 44 % operated with restrictions. Business conditions improved during the spring. By May, 47 % of EBA member companies were fully operational and 50 % of the firms worked with restrictions. Only 3 % of the EBA member firms were idle in May.⁸⁰ The situation then further improved over the summer. By August, 49 % of EBA member firms were fully operational and 51 % operating with restrictions. There were no idle EBA firms.⁸¹

Despite the resilience, the economic situation of Ukraine is, of course, fairly dire. The IMF estimated in April 2022 that the economy of Ukraine could contract by 35 % in 2022.⁸² The World Bank estimated in April 2022 that the drop would be 45 %.⁸³ In November, the Consensus Forecast for 2022 GDP change was a shrinking of 35 %, whereas the expected recovery in 2023 was only 5.3 %. The National Bank of Ukraine estimated in October 2022 that the GDP drop would be 32% in 2022.⁸⁴

Realized GDP fell by 15 % in Q1 of 2022,⁸⁵ increasing to around 35 % in Q2 of 2022.⁸⁶ The Ministry of Finance estimated in October that the total GDP drop between January and September 2022 was 30 %.⁸⁷

The NBU's forecast in summer 2022 predicted GDP growth of around 5–6 % per year during 2023 and 2024 if the high security risks of war significantly diminish during 2023 and 2024. There forecast also assumed that Ukraine's Black Sea ports would be fully operational by the beginning of 2023. It did not, however, assume a Marshall Plan equivalent for Ukraine in its prediction that the

⁷⁹ From the EBA website: "Established in 1999, the EBA provides a forum in which members can discuss and find solutions to common problems affecting business in Ukraine. This initiative was initially supported by the European Commission and has grown to become one of the largest and most influential business communities in the country. With more than nine hundred members, the European Business Association (EBA) is the largest premier union of businesses operating in the Ukrainian market." <https://eba.com.ua/en/about-us/>.

⁸⁰ European Business Association EBA (2022). Press release "Almost half of the EBA companies have resumed full operation". <https://eba.com.ua/en/majzhe-polovyna-kompanij-eva-vidnovly-povnotsinnu-robotu/>.

⁸¹ European Business Association EBA (2022). Press release "The financial stability of businesses has improved". <https://eba.com.ua/en/biznes-pokrashhyv-otsinku-vlasnoyi-finansovoyi-stijkosti/>.

⁸² IMF (2022). World Economic Outlook in April 2022. Available at: <https://www.imf.org/en/Publications/WEO/Issues/2022/04/19/world-economic-outlook-april-2022>.

⁸³ World Bank (2022). Press release "Russian Invasion to Shrink Ukraine Economy by 45 Percent This Year". <https://www.worldbank.org/en/news/press-release/2022/04/10/russian-invasion-to-shrink-ukraine-economy-by-45-percent-this-year>.

⁸⁴ National Bank of Ukraine (2022 Inflation Report, October 2022). Available at: <https://bank.gov.ua/en/news/all/inflyatsiyniy-zvit-jovten-2022-roku>.

⁸⁵ Centre for Economic Strategy (2022). Ukrainian economy in war times: stars from the bottom of a well. July 2022.

⁸⁶ National Bank of Ukraine (2022). Inflation to Start Declining and Economy to Return to Growth in 2023 – Inflation Report. <https://bank.gov.ua/en/news/all/u-2023-rotsi-inflyatsiya-pochne-znijuvatsiya-a-ekonomika-povernetsya-do-zrostannya--inflyatsiyniy-zvit>.

⁸⁷ Ministry of Finance of Ukraine (2022). Press release "Падіння ВВП України за 9 місяців 2022 року оцінюється на рівні 30%" (Drop of Ukraine GDP in the first 9 months of 2022 estimated to be around 30%). <https://www.me.gov.ua/News/Detail?lang=uk-UA&id=4725f89d-00a3-4d63-941e-4dac3018ab07&title=PadinniaVvpUkrainiZa9-Misiatsiv2022-RokuOtsiniutsiaNaRivni30->

economy would start to recover in 2023.⁸⁸ Upon reviewing the forecast in October 2022, the NBU lowered its GDP growth forecasts to 4–5 % p.a. in 2023 and 2024. It noted that the main factor boosting recovery would be public demand to finance reconstruction. The biggest challenges to recovery would be reduction in the labor force due to the war, high global energy prices and a massive need for imports for the reconstruction. The latest NBU estimates assume that the security risks from the war would wind down by mid-2023.⁸⁹

4.2.2. Industry and services

The war has caused understandable breaks in official data, so assessing the war's impact on industry and services is somewhat challenging. At the time of writing, January 2022 was the latest data available from the State Statistics Service of Ukraine for industry and services. Nevertheless, secondary sources allow for creation of at least a partial picture of the more recent development in these sectors. Moreover, the National Bank of Ukraine, after a pause from March 2022 to May 2022, resumed publication of its monthly Business Activity Expectations Index (BAEI) in June 2022. A BAEI reading above (below) 50 means a positive (negative) outlook.

The outlook for industry was quite dire immediately after the invasion. It improved in late summer, then turned worse over the autumn. The index for industry showed negative prospects in both June 2022 and July 2022. The value of the industrial index was 43.7 in June and 43.1 in July which means that the prospects of industry have become slightly worse in July from June. The only index readings above 50 in both June and July 2022 were the stocks of finished goods and selling prices.⁹⁰ The industrial index was 46.7 in August, which means that the outlook for industry had improved from June and July. The readings for manufactured goods and new orders for goods were both at the 50 threshold.⁹¹ The outlook of industry further improved in September as the index value for industry was 47.1.⁹² The outlook for industry deteriorated in October and November. The reading for new orders for goods fell below 50 in October. The overall index reading declined to 45.8 in October.⁹³ The index dropped further to 44.1 in November 2022.⁹⁴

The survey for services showed stabilization over the summer but worsened in the autumn. The index reading for services in August hit 41.2, or slightly less than 41.9 in July but more than 37.7 in June. The only reading in the survey for services that was above 50 in both June and July was for selling prices.⁹⁵ It was also the only reading of the survey for services to exceed 50 in August.⁹⁶ The outlook for services further improved in September as the index value for services went up to 43.4.⁹⁷

⁸⁸ National Bank of Ukraine (2022). Inflation to Start Declining and Economy to Return to Growth in 2023 – Inflation Report. <https://bank.gov.ua/en/news/all/u-2023-rotsi-inflyatsiya-pochne-znijuvatisya-a-ekonomika-povernetsya-do-zrostannya--inflyatsiyniy-zvit>.

⁸⁹ National Bank of Ukraine (2022) Inflation Report, October 2022. <https://bank.gov.ua/en/news/all/inflyatsiyniy-zvit-jovten-2022-roku>.

⁹⁰ National Bank of Ukraine (2022). Monthly Business Outlook Survey, July 2022. <https://bank.gov.ua/en/news/all/schomisyachni-opituvannya-pidpriyemstv-ukrayini-lipen-2022-roku>.

⁹¹ National Bank of Ukraine (2022). Monthly Business Outlook Survey, August 2022. <https://bank.gov.ua/en/news/all/schomisyachni-opituvannya-pidpriyemstv-ukrayini-serpen-2022-roku>.

⁹² National Bank of Ukraine (2022). Monthly Business Outlook Survey, September 2022. <https://bank.gov.ua/en/news/all/schomisyachni-opituvannya-pidpriyemstv-ukrayini-veresen-2022-roku>.

⁹³ National Bank of Ukraine (2022). Monthly Business Outlook Survey, October 2022. <https://bank.gov.ua/en/news/all/schomisyachni-opituvannya-pidpriyemstv-ukrayini-jovten-2022-roku>.

⁹⁴ National Bank of Ukraine (2022). Monthly Business Outlook Survey, November 2022. <https://bank.gov.ua/en/news/all/schomisyachni-opituvannya-pidpriyemstv-ukrayini-listopad-2022-roku>.

⁹⁵ National Bank of Ukraine (2022). Monthly Business Outlook Survey, July 2022.

⁹⁶ National Bank of Ukraine (2022). Monthly Business Outlook Survey, August 2022.

⁹⁷ National Bank of Ukraine (2022). Monthly Business Outlook Survey, September 2022.

The overall index reading for services declined to 42.2 in October.⁹⁸ The drop in expectations continued in November to the overall index value of 40.0.⁹⁹ Thus, the initial outlooks for both industry and services initially improved, but have been falling recently.

4.2.3. Agriculture

The harvest of autumn 2022 apparently went well. As of November 10, Ukrainian farmers had harvested 100 % of the farmland cultivated with wheat or barley, 100 % with rapeseed, 93 % with sunflower, 91 % with soybean and 39 % with corn. Compared to 2021, crop yields were down by 11 % for the early crops, up by 1 % for rapeseed, down by 8 % for sunflower, down by 9 % for soybean and down by 15 % for corn. The total harvest of export-oriented cereals and oilseed crops should amount to about 70 million metric tons, a 35 % decrease from the record 2021 harvest. Agricultural exports have largely recovered, as exports of cereals and oilseed crops were down only 3 % y-o-y in October 2022. The total exports of cereals and oilseed crops were down by 23 % y-o-y for the 2022/2023 agricultural marketing year that began on July 1, 2022.¹⁰⁰

The outlook for the winter harvest is more worrying. The sown area for the winter crop harvest in 2023 is expected to decrease by about 40 %. The harvested area will decrease by only 15 % as Ukrainian farmers were unable to harvest about 25 % of the 2022 winter harvest due to the war. Keeping the total output of cereals and oilseed crops at the level of 2022 thus requires a substantial increase in the 2023 spring harvest. Analysis by the Centre for Economic Strategy notes that maritime agricultural exports must continue to recover to generate liquidity for Ukrainian farmers and as a guarantee that they can sell their grain production in 2023. The Grain Initiative signed by Ukraine, Russia, the UN and Turkey needs to be extended to cover other Ukrainian Black Sea ports besides the current ports of Odesa, Chornomorsk and Yuzhne. The Centre for Economic Strategy stressed that the initiative should also be extended for a longer period, say, a year, to replace the current format that requires the parties to agree on 120-day extensions until such time that either Ukraine or Russia gives notice of their intent to terminate or modify the initiative.¹⁰¹

4.3. War and international trade

4.3.1. Effects on exports

The war has had little effect on the structure of Ukraine's exports. Ukraine's most important export items in 2021 were cereals (18 %), ferrous metals (21 %), mineral products (12 %) and fats and oils of animal and plant origin (10 %). Together these items constituted 61 % of exports in 2021.¹⁰² The main export items from January 2022 to September 2022 were cereals (19 %), ferrous metals (12 %), mineral products (11 %) and fats and oils of animal and plant origin (13%). Together these top items constituted 55 % of exports from January 2022 to September 2022.¹⁰³

⁹⁸ National Bank of Ukraine (2022). Monthly Business Outlook Survey, October 2022.

<https://bank.gov.ua/en/news/all/schomisyachni-opituvannya-pidpriyemstv-ukrayini-jovten-2022-roku>.

⁹⁹ National Bank of Ukraine (2022). Monthly Business Outlook Survey, November 2022.

<https://bank.gov.ua/en/news/all/schomisyachni-opituvannya-pidpriyemstv-ukrayini-listopad-2022-roku>.

¹⁰⁰ Centre for Economic Strategy (2022). Ukrainian Economy in War Times. November 2022.

<https://ces.org.ua/en/ukrainian-economy-in-war-times-november-2022/>.

¹⁰¹ Centre for Economic Strategy (2022). Ukrainian Economy in War Times. November 2022.

<https://ces.org.ua/en/ukrainian-economy-in-war-times-november-2022/>.

¹⁰² State Statistics Service of Ukraine dataset: "Товарна структура зовнішньої торгівлі у 2021 році".

¹⁰³ State Statistics Service of Ukraine: dataset: "Товарна структура зовнішньої торгівлі за 9 місяців 2022 року".

However, the war has substantially reduced the volume of Ukraine's exports. The physical volume of exports in March 2022 was 41 % of what it had been a year earlier. Similar on-year declines were seen in subsequent months (41 % in April, 47 % in May, 54 % in June, 51 % in July, 53 % in August and 69 % in September).¹⁰⁴ While the drop in the volume of exports has been large, the situation shows signs of stabilization and improvement as the magnitude of recent monthly on-year drops have become consistently smaller.

4.3.2. Effects on imports

The war has affected not only the volume of Ukraine's exports but also the volume of its imports. The physical volume of imports in March 2022 was only 21% of the volume y-o-y, 36% in April 2022 y-o-y, 50% in May 2022 y-o-y, 55% in June 2022 y-o-y, 52% in July 2022 y-o-y, 50% in August 2022 y-o-y and 51 % in September 2022 y-o-y.¹⁰⁵ Thus, the drop in the volume of imports has been drastic during the war, even more drastic than for exports, but the imports also revived faster than the exports. Recently exports have revived more than imports.

The war has had little impact on the structure of Ukraine's imports. The most important import items in 2021 were mineral fuels (20 %), machines and machinery (20 %) and chemical products (13 %). Together these top items accounted for 53 % of imports in 2021, while other items constituted the remaining 47 %.¹⁰⁶ The main items of imports from January 2022 to September 2022 were mineral fuels (23 %), machines and machinery (16 %) and chemical products (12 %). Together these top items constituted 52 % of Ukraine's imports from January 2022 to September 2022.¹⁰⁷

¹⁰⁴ State Statistics Service of Ukraine datasets: "Індекси фізичного обсягу, середніх цін та умов торгівлі у зовнішній торгівлі України товарами у березні 2022 року", "Індекси фізичного обсягу, середніх цін та умов торгівлі у зовнішній торгівлі України товарами у квітні 2022 року", "Індекси фізичного обсягу, середніх цін та умов торгівлі у зовнішній торгівлі України товарами у травні 2022 року", "Індекси фізичного обсягу, середніх цін та умов торгівлі у зовнішній торгівлі України товарами у червні 2022 року", "Індекси фізичного обсягу, середніх цін та умов торгівлі у зовнішній торгівлі України товарами у липні 2022 року", "Індекси фізичного обсягу, середніх цін та умов торгівлі у зовнішній торгівлі України товарами у серпні 2022 року" and "Індекси фізичного обсягу, середніх цін та умов торгівлі у зовнішній торгівлі України товарами у вересні 2022 року".

¹⁰⁵ State Statistics Service of Ukraine datasets: "Індекси фізичного обсягу, середніх цін та умов торгівлі у зовнішній торгівлі України товарами у березні 2022 року", "Індекси фізичного обсягу, середніх цін та умов торгівлі у зовнішній торгівлі України товарами у квітні 2022 року", "Індекси фізичного обсягу, середніх цін та умов торгівлі у зовнішній торгівлі України товарами у травні 2022 року", "Індекси фізичного обсягу, середніх цін та умов торгівлі у зовнішній торгівлі України товарами у червні 2022 року", "Індекси фізичного обсягу, середніх цін та умов торгівлі у зовнішній торгівлі України товарами у липні 2022 року", "Індекси фізичного обсягу, середніх цін та умов торгівлі у зовнішній торгівлі України товарами у серпні 2022 року" and "Індекси фізичного обсягу, середніх цін та умов торгівлі у зовнішній торгівлі України товарами у вересні 2022 року".

¹⁰⁶ State Statistics Service of Ukraine dataset: "Товарна структура зовнішньої торгівлі у 2021 році".

¹⁰⁷ State Statistics Service of Ukraine dataset: "Товарна структура зовнішньої торгівлі за 9 місяців 2022 року".

Recovery from the COVID-19 pandemic

Drastic lockdown measures caused Ukraine to take its worst economic hit from the COVID-19 pandemic in the second quarter of 2020. Output fell by 11.2 % in Q2. As covid measures eased, the economy recovered quite briskly in the second half of 2020, with the result that the on-year decline in output in 2020 was only 0.5 %. In the same period (2020), EU countries experienced a drop in GDP of 6.2 %.¹⁰⁸ Ukraine's Ministry of Finance speculated that, in addition to Ukraine's low degree of integration with the global economy, the minor drop in GDP could be attributed to the country's large shadow economy, its undeveloped tourism sector, and the relatively large contributions of agriculture and heavy industry to economic output. In any case, the economy was supported by consumer demand, which was boosted by a positive development in nominal incomes driven by social policy measures such as a legislated hike in minimum wage levels.

The State Statistics Service of Ukraine reports that GDP growth for 2021 was 3.4 % overall, with growth accelerating towards the end of the year. Looking at 2021 on a quarterly basis, Ukraine's economy shrank by 2.2 % in Q1, and grew by 6.0 % in Q2, 2.8 % in Q3 and 6.1 % in Q4. The highest growth rates were in financial services and accommodation and restaurant services, up 14.2 % and 12.7 % for the year, respectively.¹⁰⁹ The growth numbers, of course, partly reflect recovery from the harsh effects of the first wave of the COVID-19 pandemic.

This is not to say that Ukraine escaped the COVID-19 pandemic unscathed. The WHO estimates suggest that in both 2020 and 2021, the pandemic caused a monthly excess mortality ranging from 43,000 to 53,000 people in Ukraine. Russia, one of the countries hit hardest by the pandemic, experienced a monthly excess mortality that ranged between 140,000 and 152,000 during the same period. Considering that the 2021 population of Ukraine was about 43.5 million and that Russia's 2021 population was about 145.9 million, the annual rates of excess mortality were quite similar: 1.3 % for Ukraine and 1.2 % for Russia. Ukraine's total estimated excess mortality was 585,000 in 2020 and 578,000 in 2021.¹¹⁰

¹⁰⁸ Ministry of Economic Development, Trade and Agriculture of Ukraine (2021). Impact of COVID-19 on the country's economy and society: Results of 2020 and challenges and threats to post-pandemic development. (Міністерство розвитку економіки, торгівлі та сільського господарства України, (2021). Вплив COVID-19 на економіку і суспільство країни: Підсумки 2020 року та виклики і загрози постпандемічного розвитку). <https://www.unicef.org/ukraine/documents/consensus-forecast>.

¹⁰⁹ State Statistics Service of Ukraine, the table "Зміна обсягу валового внутрішнього продукту за 2021 рік".

¹¹⁰ WHO (2022). Global excess deaths associated with COVID-19 (modelled estimates), World Health Organization (WHO). <https://www.who.int/data/sets/global-excess-deaths-associated-with-covid-19-modelled-estimates>.

4.4. War and public finances

4.4.1. Effect on fiscal expenditure

The central government expenditure was around 1.3 trillion hryvnia or 47 billion USD in 2021 if official transfers such as transfers to the local government are excluded. If official transfers are included, the central expenditure budget was 1.5 trillion hryvnia or 54 billion USD in 2021.¹¹¹ The 2020 and 2021 central government budgets emphasized social protection and health in the face of fallout from the COVID-19 pandemic. A main difference between the pandemic years and pre-pandemic 2019 was that health expenditure increased from 3 % of the government budget to 10 % in 2020 and 11 % in 2021. The share of budget funds going to social protection and social care rose from 17 % in 2019 to 25 % in 2020 and 23 % in 2021. Otherwise, the central government budget was rather evenly distributed among government functions such as administration, support for economic activities, transfers to local governments and law and order. The largest groups of expenditure in 2020 were social protection and social care (25 %), economic activity (13 %) and government functions and administration (13 %). The largest items of expenditure in 2021 were social protection and social care (23 %), government functions and administration (14 %), and transfers to local governments to finance public services (14 %). The funding shares for other central government functions were nearly as large.¹¹²

The role of the central government is important in Ukraine. The central government comprised around 70 % of the total public sector in 2021. However, when transfers from the central government to local governments are taken into consideration, the central government's role increased to around 80 % in 2021 and the contributions of local governments fell from 30 % to around 20 % of the public sector. When transfers from the central government to the local government are taken into consideration, the share of non-central government public sector fell from 16 % in January 2022 to just 12 % in October 2022. The share of non-central government of the total public sector has been even lower during the war, e.g. 9 % in August 2022.¹¹³

The central government is fully responsible for defense spending (100 % of public expenditure in 2021), and the lion's share of spending on public order and safety (99 %), government functions and administration (82 %), social protection (92 %) and healthcare (84 %). The main responsibilities of local governments involve spending on housing and communal services (100 % in 2021), education (80 %) and culture, sports and media (63 %).¹¹⁴

Figure 32 presents the structure of the Ukrainian central government budget from January 2020 to October 2022. Obviously, Russia's invasion in February 2022 has changed budget priorities drastically. Military expenditure was roughly 7–8 % of the government budget before the war. Its share increased to 31 % in March 2022 and has ranged between 36–57 % in the months from April to October 2022. The flip side of new spending priorities is a large drop in spending on government functions and administration (down from 13 % in January 2022 to 5 % in October 2022) and transfers to local government (down from 17 % in January 2022 to 4 % in October 2022). The most important classes of central government expenditure in October 2022 were defense (49 %), public order and safety (16 %) and social protection and social care (15 %). The war effort, safety of citizens and

¹¹¹ Calculations based on National Bank of Ukraine datasets “Державний бюджет України”.

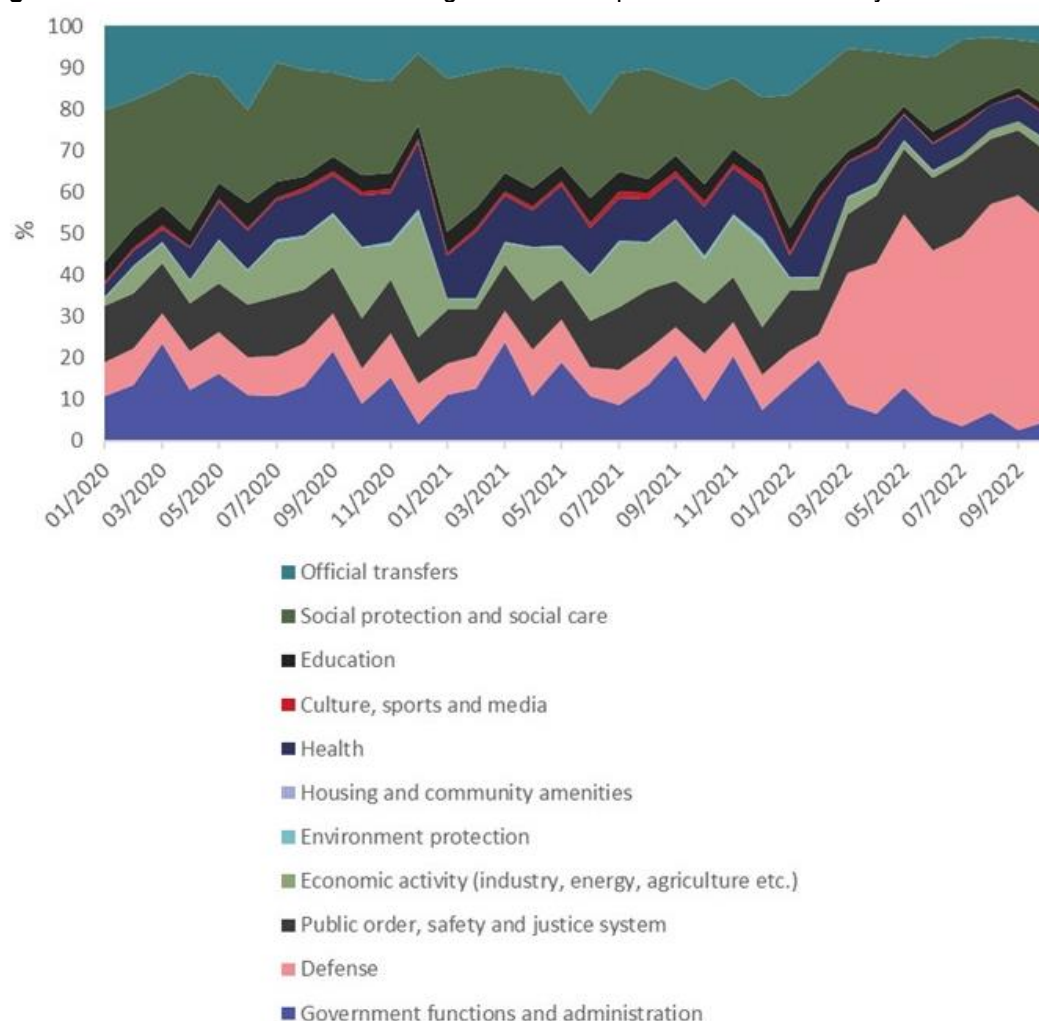
¹¹² Calculations based on National Bank of Ukraine datasets “Державний бюджет України”.

¹¹³ Calculations based on National Bank of Ukraine datasets “Державний бюджет України” and “Зведений бюджет України”.

¹¹⁴ Calculations based on National Bank of Ukraine datasets “Державний бюджет України” and “Зведений бюджет України”.

economic and social support to citizens have thus become the main priorities of Ukraine's government during the war.¹¹⁵

Figure 32. Structure of Ukraine central government expenditure from January 2020 to October 2022.



Notes: source data had an error where the cumulative values for economy activity in April and May 2022 had changed places as the cumulative value was smaller for May than it had been for April. The values were changed with each other for analysis. The total sum of expenditure was adjusted for April, May and June 2022 as the calculation of their monthly financial data from the cumulative annual source data was affected by the error.

Source: National Bank of Ukraine.

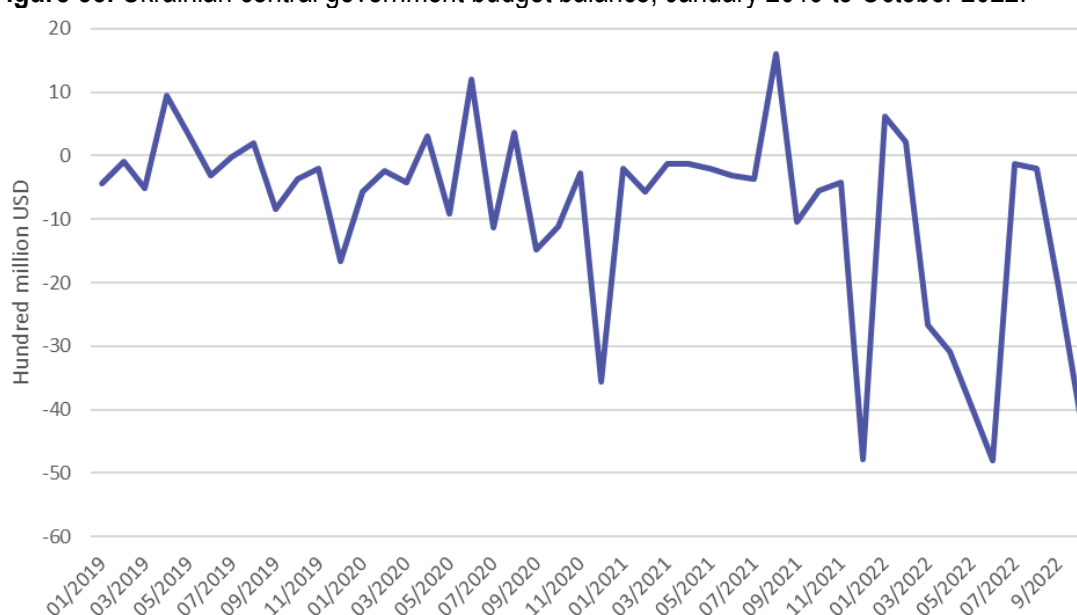
The war has caused the public expenditures to increase considerably. The nominal on-year increase in the central government expenditure was 21 % in February 2022, 78 % in March, 62 % in April, 82 % in May and 103 % in June, 85 % in July, 141 % in August, 124 % in September and 113 % in October. In real terms, central government expenditure increased by 9 % y-o-y in February 2022, 57 % in March, 39 % in April, 54 % in May, 67 % in June, 52 % in July, 95 % in August, 80 % in September and 68 % in October. During the war, the budget has experienced real month-over-month

¹¹⁵ Calculations based on National Bank of Ukraine dataset: “Державний бюджет України”.

growth in all months except for April, July and October. The real central government expenditure in October was 100 % (nominally 117 %) of the expenditure in March 2022 and 124 % (nominally 127 %) of expenditure in September 2022.

The only months during the war when nominal central government expenditure has dropped from the previous month were April, July and October. The drops largely reflect the soaring government deficit shown as shown in Figure 33. The drop of expenditure in July was at least partially caused by the massive USD 4.8 billion deficit in June. Issues in revenue were the main reasons behind the drops in April and October. Nominal central government revenue was 30 % lower in April than it was in March 2022. Nominal revenue in October was 61 % lower than in September 2022. The April drop was caused mainly by a decline in revenues from personal and corporate income taxes and non-tax income. The October decrease was caused mainly by a drop in support from international partners (i.e. international financial organizations, the EU and the US).

Figure 33. Ukrainian central government budget balance, January 2019 to October 2022.



Source: National Bank of Ukraine.

The total sum of the central government budget for 2023 is 2.6 trillion hryvnia, or USD 70.6 billion at the current official fixed UAH/USD rate of the National bank of Ukraine (this rate is used for all dollar sums in this paragraph). The budget allocates the biggest chunks of financing to the Ministry of Defence, Ministry of Finance, Ministry of Social Policy and Ministry of Internal Affairs. The Ministry of Defence is set to receive 858 billion hryvnia or USD 23.5 billion (33 % of the budget). While the operating budget of the Ministry of Finance is small, it oversees substantial funding to deal with government spending and lending. The biggest spending item is servicing government debt: 326 billion hryvnia or USD 8.9 billion (13 % of the budget). The Ministry of Social Policy is set to get 445 billion hryvnia or USD 12.2 billion (17 % of the budget), while the Ministry of Internal Affairs is allocated 210 billion hryvnia or USD 5.7 billion (8 % of the budget).¹¹⁶ The government budget for 2023 shows that national defense, public order and safety and social and economic support to citizens will remain the priorities to the Ukrainian government next year as they have through the first year of war.

¹¹⁶ Verkhovna Rada of Ukraine (2022). The 2023 budget law “Закон України – Про Державний бюджет України на 2023 рік” and attachments 1–8. <https://zakon.rada.gov.ua/laws/show/2710-IX#n172>.

4.4.2 Effect on tax and other revenue

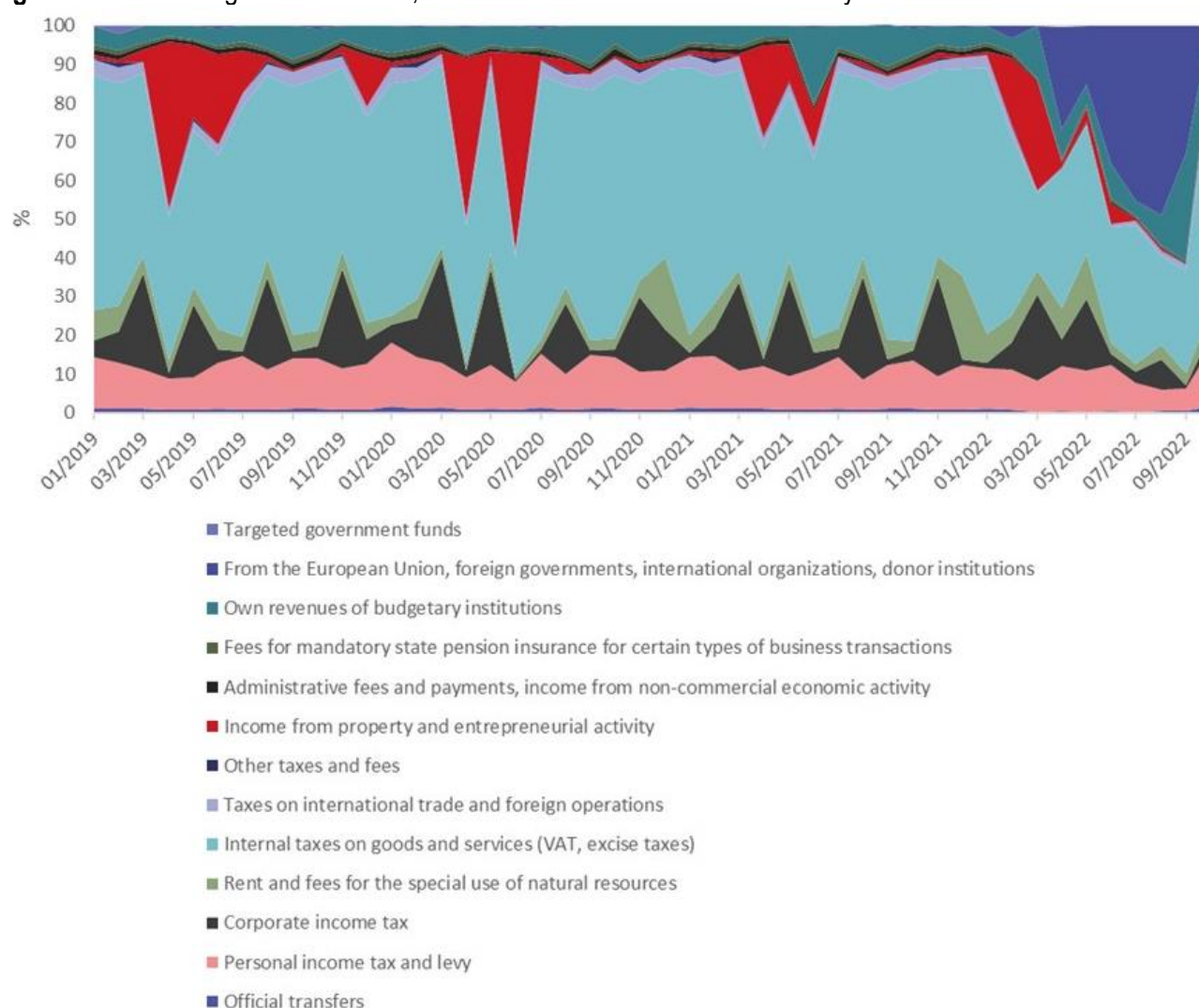
The central government's tax revenues amounted to 1.1 trillion hryvnia or USD 41 billion in 2021, while non-tax income was 175 billion hryvnia or 6.4 billion USD and other forms of income were 1.8 billion hryvnia or 67 million USD. Thus, total revenue was slightly less than 1.3 trillion hryvnia or USD 47 billion in 2021 when official transfers are excluded. When official transfers are included, the total tax, non-tax and other revenue of the government was 1.3 trillion hryvnia or USD 48 billion in 2021. Value-added taxes (VAT) and excise taxes accounted for 70 % of the government's income streams before the 2022 invasion. Other relatively important sources of income included personal income tax (around 9–12% per month) and the corporate income tax (its contribution varied from 4 % to 26 % depending on the month). The most important source of non-tax income was income from property and economic activity such as dividends from state-owned firms.

The war twice caused large drops in Ukrainian government income during 2022. Revenue first collapsed in April 2022, and only recovered to its pre-war level in July 2022. Total revenue again collapsed in October 2022, resulting in a month-on-month decline from September to October of 60 %. The April collapse was due to decreases personal and corporate income taxes and in non-tax income such as reduced dividends from state-owned enterprises. The government turned to emergency funding in March by extracting exceptionally large contributions from state-owned enterprises (28 % of total March revenues). The share of state enterprise dividends represents only a few percent of total revenue in most months. The share of personal and corporate income taxes ranged between 7–30 % a month of total revenue during the war. The other big sources of revenue were VAT and excise taxes, which accounted for 20–35% of total monthly revenues from March to September 2022.¹¹⁷

However, the most important funding for Ukraine during most months of the war has been support from international partners such as international financial organizations, the EU and the US. Although the share of support from international partners was just 0.1 % in March, it picked up rather quickly. The share of support from international partners of the total revenue was 26 % in April, 15 % in May, 35 % in June, 45 % in July, 49 % in August and 33 % in September 2022. The sudden drop in direct international help in October, which excludes loans given to Ukraine in October, reflects the fact that share of other revenue increased substantially. There was no change in the absolute amount of other revenue. The share of VAT and excise taxes in total government revenue rose to 60 % in October 2022, even though the absolute amount of these taxes dropped slightly.¹¹⁸ Figure 34 shows the structure of the Ukrainian central government revenue from January 2019 to October 2022.

¹¹⁷ Calculations based on National Bank of Ukraine dataset: “Державний бюджет України”.

¹¹⁸ Calculations based on National Bank of Ukraine dataset: “Державний бюджет України”.

Figure 34. Ukrainian government's tax, non-tax and other income from January 2019 to October 2022.

Source: National Bank of Ukraine.

In any case, international support came through other channels in October 2022. The cumulative funding given to Ukraine as net loans by international organisations almost doubled from September to October. The net monthly lending of international financial organizations to Ukraine between April and September 2022 was often at least 17.9 billion hryvnia or USD 491 million. International financial organizations increased their net lending to Ukraine in October by 151 billion hryvnia or USD 4.1 billion month-over-month. The lending boost made up for the temporary halt in other international financial support. NBU data suggest that the net lending of individual countries has been fairly small since the spike in lending in June 2022,¹¹⁹ However, many countries channel much of their support to Ukraine through international financial institutions. For example, the US promised a USD 4.5 billion grant to Ukraine in August 2022 through the World Bank.¹²⁰

The most important single supporters to Ukraine during the war have been the National Bank of Ukraine, the United States, Ukrainian local government bodies and the European Union. The NBU

¹¹⁹ Calculations based on National Bank of Ukraine dataset “Державний бюджет України”.

¹²⁰ World Bank (2022). Press release “World Bank Mobilizes \$4.5 billion in Additional Financing for Vital Support to Ukraine”. <https://www.worldbank.org/en/news/press-release/2022/08/08/world-bank-mobilizes-4-5-billion-in-additional-financing-for-vital-support-to-ukraine>.

has financed the state budget through government bonds worth over USD 10.6 billion, which is equivalent to around 27 % of all domestic and foreign financial aid that the government received between late February 2022 to October 26, 2022. As of end October, the US had provided USD 8.5 billion, or 22 % of the total support from Ukraine and abroad. The local government bodies in Ukraine had financed the war efforts through bonds in the amount of USD 5.4 billion, or 14 % of total support. The EU had provided USD 4.8 billion, or 12 % of total support. These big supporters of the Ukrainian central government accounted for contributions of USD 29 billion, or 75 % of the total domestic and foreign financial support as of October 26, 2022. Notably, some promised international assistance had yet to be disbursed. The US had disbursed only 65 % of its commitments to Ukraine as of October 26, 2022. The European Union had made good on just 42 % of its promised financial support.¹²¹

International partners have given Ukraine support for different purposes and through different means. According to Kiel University's "Ukraine Support Tracker", the US was the largest foreign provider of support as of October 3, 2022. It had committed military support worth USD 27.6 billion, humanitarian support worth USD 9.5 billion and financial aid worth USD 15.2 billion. EU institutions constituted the second most important supporter group, committing to USD 2.5 billion in military aid, USD 1.4 billion in humanitarian aid and USD 12.3 billion in financial aid. The largest in-kind military aid came from the US (USD 15.2 billion), Poland (USD 1.8 billion) and the UK (USD 1.5 billion). Again, these countries had yet to make good on some of their commitments.¹²²

Ukraine's international partners need to be prepared to continue their support of Ukraine in the coming years. The government budget for 2023 assumes that the government deficit will reach 1.3 trillion hryvnia (over USD 35 billion at the current fixed official rate), which amounts to around 20 % of forecast 2023 GDP. By some estimates, Ukraine needs to finance half of its deficit with international financing.¹²³

¹²¹ Centre for Economic Strategy (2022). Presentation material "Фінансування Державного бюджету: 2022 та 2023 роки" (Financing of Government Budget: years 2022 and 2023). <https://ces.org.ua/state-budget-draft-2023/>.

¹²² Kiel University Institute for the World Economy (2022). Ukraine Support Tracker – A Database of Military, Financial and Humanitarian Aid to Ukraine by Kiel University Institute for the Global Economy. <https://www.ifw-kiel.de/topics/war-against-ukraine/ukraine-support-tracker/>.

¹²³ Centre for Economic Strategy (2022). Presentation material "Фінансування Державного бюджету: 2022 та 2023 роки" (Financing of Government Budget: years 2022 and 2023). Available at: <https://ces.org.ua/state-budget-draft-2023/>.

4.5. Damage to infrastructure and the cost of rebuilding

4.5.1. Estimates of damage

The World Bank estimated in August 2022 that the total reconstruction and recovery needs of Ukraine had reached USD 349 billion as of June 1, 2022, with USD 97 billion allocated to damages and USD 252 billion to losses.¹²⁴ Based on the economic assessment of the joint “Russia Will Pay” project,¹²⁵ the Centre for Economic Strategy suggests that as of October 5, 2022 41 % (USD 54 billion) of the total direct war damage of USD 130 billion had affected residential buildings, about 27 % (USD 36 billion) had affected infrastructure, and 30 % (USD 40 billion) other kinds of assets. Indirect losses of USD 162 billion were distributed more evenly between categories of assets and functions. Around 21 % (USD 34 billion) was allocated to impacted agricultural businesses and land resources, while 19 % (USD 30 billion) went to affected corporate and industrial assets. The third sector with large indirect losses was retail trade with a share of 15 % (USD 24 billion) as of October 5, 2022. The recovery needs of Ukraine, USD 234 billion, were mostly distributed among residential buildings, infrastructure, agribusiness, corporate assets and other asset categories. The share of recovery needs was 33 % (USD 77 billion) for residential buildings, 22 % (USD 51 billion) for infrastructure, 10 % (USD 23 billion) for agribusiness and land resources, 9 % USD (20 billion) for corporate assets and the remaining 27 % (USD 63 billion) to other asset categories. With Russia’s massive missile strikes carried out on Ukraine during October and November 2022, these estimates understate the actual total war damage.¹²⁶ Estimates are presented in Tables 3a and 3b.

¹²⁴ World Bank (2022). Ukraine rapid damage and needs assessment. August 2022.

<https://www.worldbank.org/en/news/press-release/2022/09/09/ukraine-recovery-and-reconstruction-needs-estimated-349-billion>.

¹²⁵ The “Russia Will Pay” project is a joint initiative by the Kyiv School of Economy, the Office of the President of Ukraine and the Ministry of Economy of Ukraine. It provides a framework for economists to calculate the monetary damage and loss incurred by Ukraine as a result of Russian aggression.

¹²⁶ Centre for Economic Strategy (2022). Ukrainian Economy in War Times. November 2022.
<https://ces.org.ua/en/ukrainian-economy-in-war-times-november-2022/>.

Table 3. Ukraine's estimated war damage and reconstruction costs by asset type as of October 5, 2022.

a) Valuation of war damage (USD)

| Category | Damage, USD bn | Losses, USD bn | Recovery needs, USD bn |
|--------------------------------|----------------|----------------|------------------------|
| Residential buildings | 53.5 | 7.6 | 76.9 |
| Infrastructure | 35.6 | 14.8 | 51.3 |
| Agribusiness and land resource | 6.6 | 34.1 | 23.4 |
| Corporate assets, industry | 10.1 | 30.6 | 20.2 |
| Education | 8.2 | 2.1 | 9.8 |
| Mine clearance | | 8.6 | 8.6 |
| Energy | 3.6 | 11.6 | 7.3 |
| Social protection | 0.2 | 6.4 | 6.6 |
| Financial sector | 0.1 | 6.0 | 5.9 |
| Culture, tourism, sport | 2.1 | 8.1 | 5.8 |
| Vehicles | 2.7 | 0.4 | 5.1 |
| Retail trade | 2.4 | 24.4 | 4.4 |
| Public utilities | 2.3 | 3.5 | 3.7 |
| Health | 1.7 | 2.7 | 2.6 |
| Administrative buildings | 0.8 | 0.1 | 1.2 |
| Digital infrastructure | 0.6 | 1.1 | 1.0 |
| Environment | 1.5 | | |
| Total | 129.7 | 162.6 | 234.3 |

b) Share of total damage (%)

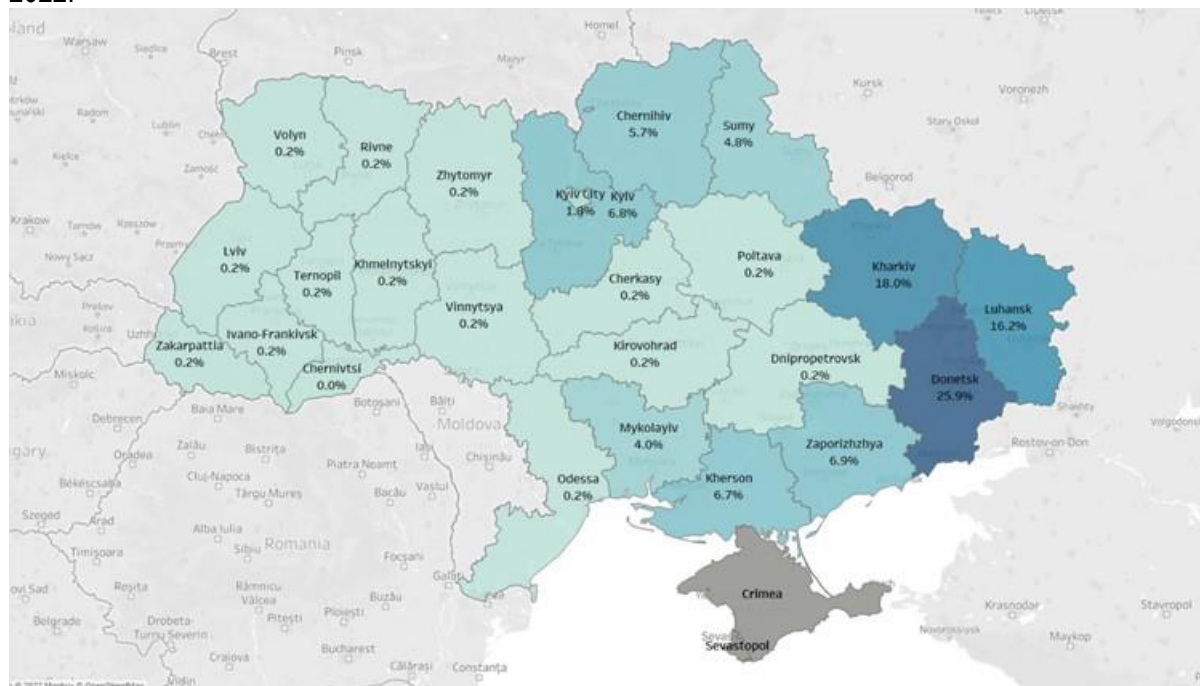
| Category | Share of damage | Share of losses | Share of recovery needs |
|--------------------------------|-----------------|-----------------|-------------------------|
| Residential buildings | 41.2 | 4.7 | 32.8 |
| Infrastructure | 27.4 | 9.1 | 21.9 |
| Agribusiness and land resource | 5.1 | 21.0 | 10.0 |
| Corporate assets, industry | 7.8 | 18.8 | 8.6 |
| Education | 6.3 | 1.3 | 4.2 |
| Mine clearance | | 5.3 | 3.7 |
| Energy | 2.8 | 7.1 | 3.1 |
| Social protection | 0.2 | 3.9 | 2.8 |
| Financial sector | 0.1 | 3.7 | 2.5 |
| Culture, tourism, sport | 1.6 | 5.0 | 2.5 |
| Vehicles | 2.1 | 0.2 | 2.2 |
| Retail trade | 1.9 | 15.0 | 1.9 |
| Public utilities | 1.8 | 2.2 | 1.6 |
| Health | 1.3 | 1.7 | 1.1 |
| Administrative buildings | 0.6 | 0.1 | 0.5 |
| Digital infrastructure | 0.5 | 0.7 | 0.4 |
| Environment | 1.2 | | |
| Total | 100.0 | 100.0 | 100.0 |

Source: Centre for Economic Strategy (Центр економічної стратегії) calculations based on information produced by the joint "Russia Will Pay" project.

Even with the recent missile strikes across Ukraine focused on taking out the country's electrical grid and other infrastructure, most fighting has taken place in the east of Ukraine. This is apparent from the geographical distribution of war damage in the earlier phases of the war. As Figure 35 below shows, around 60 % of direct war damage to real estate and infrastructure as of June 2022 had occurred in the oblasts of Donetsk, Luhansk or Kharkiv. Another 17.6 % of the damage had taken place in the southern oblasts of Zaporizhzhya, Kherson and Mykolayiv, while 19 % had been inflicted in the northern oblasts of Sumy, Chernihiv, Kyiv and the city of Kyiv. Damage in all other oblasts was negligible, averaging less than 0.2 % of total war damage. Chernivtsi is the only oblast under the

control of the Ukrainian government prior to the 2022 invasion that had not suffered any direct war damage to its real estate or infrastructure.

Figure 35. Geographic distribution of direct war damage to real estate and infrastructure in Ukraine as of June 2022.



Notes: Oblasts with the value “0.2%” do not reflect the actual share of damage of the oblast, but the rough average for all oblasts with a value of “0.2%”.

Source: Calculations of the Centre for Economic Strategy (Центр економічної стратегії) based on data from the “Russia Will Pay” project.

4.5.2. Timetable, costs and institutions for reconstruction

The National Council for the Recovery of Ukraine from the Consequences of the War (Національна рада з відновлення України від наслідків війни) has drafted a plan for the economic recovery and development of Ukraine. The July 2022 version of the plan optimistically assumes that the war only lasts until the end of 2022. The first phase of the recovery mostly entails staunching damage to the economy, for example, by keeping inflationary pressures under control and protecting jobs. The medium-term phase from 2023 to 2025 includes the initial aspects of an economic recovery and focuses on such matters as export development, improving employment and foreign investment, harmonization with European economic legislation and increasing the knowledge-intensity of production. The third phase from 2026 to 2032 involves making the jump from transition to developing economy. Goals in this phase include shrinking the shadow economy, moving ahead on a green transition, improving the health and welfare of the population and full-fledged EU membership.¹²⁷

The National Council for the Recovery suggested in July 2022 that Ukraine’s total funding needs would exceed USD 750 billion, with Ukraine’s partners providing about two-thirds of that amount in the form of grants, debt or equity. The council estimates that Ukraine has an acute funding need of USD 60–65 billion to finish out 2022. Ukraine would use the money on defense, security and

¹²⁷ National Council for the Recovery of Ukraine from the Consequences of the War (2022). Draft Ukraine Recovery Plan, Materials of the “Economic Recovery and Development” working group. Accessed on July 29, 2022.

macro-financial stability. Ukraine would use most of its funding during the 2023–2025 recovery phase, over USD 300 billion in total, in the pursuit of energy independence and the goals of the European Green Deal Initiative, ensuring competitive access to funding, macro-financial stability, logistics and modernization of regions and housing. Ukraine would use the rest of the funding, over USD 400 billion, during the period of modernization from 2026 to 2032. The most important funding needs in this period would be energy independence, Green Deal programs, logistics, as well as modernization of regions, housing and social infrastructure.¹²⁸

The European Union has actively supported Ukraine. The European Commission presented a plan in November 2022 to use a new Macro-Financial Assistance + (MFA+) instrument. The mechanism would provide Ukraine with up to EUR 18 billion paid out in installments during 2023. This would mean an average support of EUR 1.5 billion a month. The support package covers 40–50 % of Ukraine's short-term need for financing in 2023 or EUR 3–4 billion a month. The mechanism would include the specific reforms Ukraine must make in preparation for EU accession.¹²⁹ The EU will assist Ukraine through other channels such as the European Neighbourhood Instrument and the Neighbourhood, Development and International Cooperation Instrument. Between 2014 and 2022, these mechanisms supported Ukraine's reform efforts and investment. The support of these mechanisms was reoriented after February 2022 to emphasize emergency assistance and rehabilitation of damaged national and municipal infrastructure and housing. The EU also supports the Ukrainian armed forces through its European Peace Facility, as well as humanitarian assistance through the EU Civil Protection Mechanism.¹³⁰

The EU is also considering its long-term support for rebuilding Ukraine. In its communication "Ukraine relief and reconstruction" in May 2022, the European Commission stated that the EU should take an active role in the reconstruction of Ukraine. The European Union wants to organize Ukraine assistance through a "Ukraine Reconstruction Platform" mechanism. Ukraine and the EU would lead in use of the facility. The EU expects its international partners such as the G7 and G20, bilateral and multilateral partners and international financial institutions to contribute to the Ukraine Reconstruction Platform. The help from the EU would be channelled through a "RebuildUkraine" facility with funding from the EU budget, EU member states, as well as loans and grants. Other channels for mobilization of EU assistance would include existing EU spending instruments such as the Neighbourhood, Development and International Cooperation Instrument. The EU noted in May 2022 that the overall needs for reconstruction of Ukraine and the duration of the reconstruction cannot be yet precisely estimated, so reconstruction must have medium-term and long-term time horizons.¹³¹ No information about progress on the proposed mechanism has been released since May 2022.

¹²⁸ National Council for the Recovery of Ukraine from the Consequences of the War (2022). Presentation "Ukraine's National Recovery Plan" at the Ukraine Recovery Conference in Lugano, Switzerland, on July 4 and 5, 2022. <https://www.urc2022.com/urc2022-recovery-plan>.

¹²⁹ European Commission (2022). Press release "Commission proposes stable and predictable support package for Ukraine for 2023 of up to €18 billion" from November 9, 2022. https://ec.europa.eu/commission/presscorner/detail/en/ip_22_6699.

¹³⁰ European Commission (2022). Document "Proposal for a Regulation of the European Parliament and of the Council establishing an Instrument for providing support to Ukraine for 2023 (macro-financial assistance +)". https://economy-finance.ec.europa.eu/international-economic-relations/candidate-and-neighbouring-countries/neighbouring-countries-eu/neighbourhood-countries/ukraine_en.

¹³¹ European Commission (2022). Communication "Ukraine relief and reconstruction" to the European Economic and Social Committee and the Committee of the Regions. https://ec.europa.eu/info/files/ukraine-relief-and-reconstruction_en.

5. Conclusions

While Ukraine has been poor relative to its neighbors over recent decades, it boasts numerous features in its social and human development policies that make it much more advanced than indicated by official GDP statistics.

Russia's invasion has inflicted severe damage to Ukraine's economy, not to speak of the tremendous human suffering. Ukraine's economic situation is further complicated by the fact that much of the economic activity and export routes are situated in areas occupied or threatened by Russia at the moment.

Nevertheless, Ukraine has shown surprising resilience during the war. Economic activity rebounded after the initial shock in late February 2022 and March 2022. Current forecasts expect Ukraine's GDP to fall by over 30 % in 2022. As a result of economic collapse and a surge in spending related to the war, Ukraine's public sector has been in deficit since the start of the war. This deficit has been financed to a large extent by the central bank and foreign partners. As long as the war continues, the role of foreign funding remains crucial.

To tackle some of the problems discussed in this brief, the following policy objectives can be identified:

- **Black Sea shipping needs to be restored.** This is critical to Ukraine's foreign trade and its economy. Restoring freight traffic at the Black Sea under the Grain Initiative represents an important first step. Beyond keeping the initiative in place, efforts should be made to negotiate better terms for Ukraine before the next extension of the deal takes place in March 2023.
- **Long-term support needs to be full spectrum.** Most financial support provided so far has gone to stabilizing Ukraine's public finances. The National Bank of Ukraine, the main financier of Ukraine's war efforts, cannot continue to finance the government's war efforts without the risk of a surge in inflation and worsening economic conditions. Ukraine's international partners, including the EU and the US, need to formulate policies that assure a smooth flow of their committed assistance to Ukraine and consider its wider economic needs.
- **Overly optimistic estimates of Ukraine's reconstruction should be avoided.** Even if the war ends in mid-2023 as recent Ukrainian projections suggest, the reconstruction of Ukraine and its integration with the EU is going to take a long time. The estimated timetable of Ukraine becoming a full-fledged member of the EU by 2032 is not perhaps fully realistic at this point. Nevertheless, the EU and Ukraine's other international partners must continue their cooperation with Ukraine and help Ukraine in its integration efforts and national rebuilding.

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State Statistics Service of Ukraine dataset: “Обсяг реалізованої промислової продукції за видами діяльності у 2021 році”.

State Statistics Service of Ukraine dataset: “Обсяг реалізованої промислової продукції (товарів, послуг) за видами економічної діяльності у 2010–2020 роках”.

State Statistics Service of Ukraine dataset: “Обсяг реалізованої промислової продукції по регіонах у 2021 році”.

State Statistics Service of Ukraine datasets: “Регіональні обсяги зовнішньої торгівлі товарами у 2021 році” and “Регіональні обсяги зовнішньої торгівлі товарами за 9 місяців 2022 року”.

State Statistics Service of Ukraine dataset: “Товарна структура зовнішньої торгівлі у 2021 році”.

State Statistics Service of Ukraine dataset: “Товарна структура зовнішньої торгівлі з країнами ЄС у 2021 році”.

State Statistics Service of Ukraine datasets: “Товарна структура зовнішньої торгівлі з країнами ЄС у 2021 році” and “Країни за товарною структурою зовнішньої торгівлі України за січень-грудень 2021 року”.

State Statistics Service of Ukraine dataset: “Товарна структура зовнішньої торгівлі у 2021 році”.

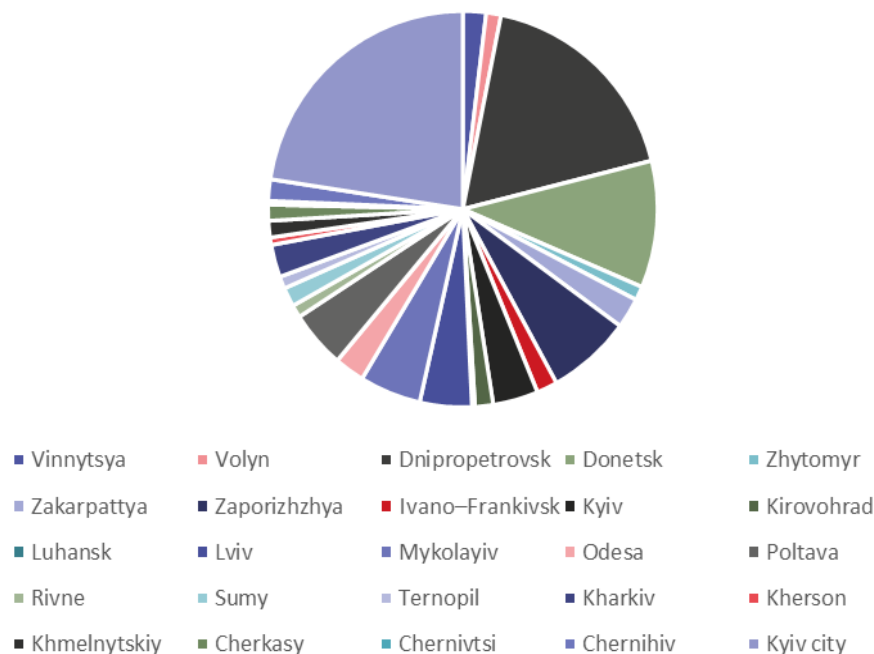
State Statistics Service of Ukraine dataset: “Товарна структура зовнішньої торгівлі за 9 місяців 2022 року”.

State Statistics Service of Ukraine dataset: “Самооцінка домогосподарствами доступності окремих товарів та послуг у 2021 році”, table “Оцінка рівня можливості сплачувати свої звичайні витрати особами, які проживають у домогосподарствах, залежно від віку та статі”.

State Statistics Service of Ukraine dataset: “Чисельність населення по регіонах (за оцінкою) на 1 лютого 2022 року та середня чисельність у січні 2022 року”.

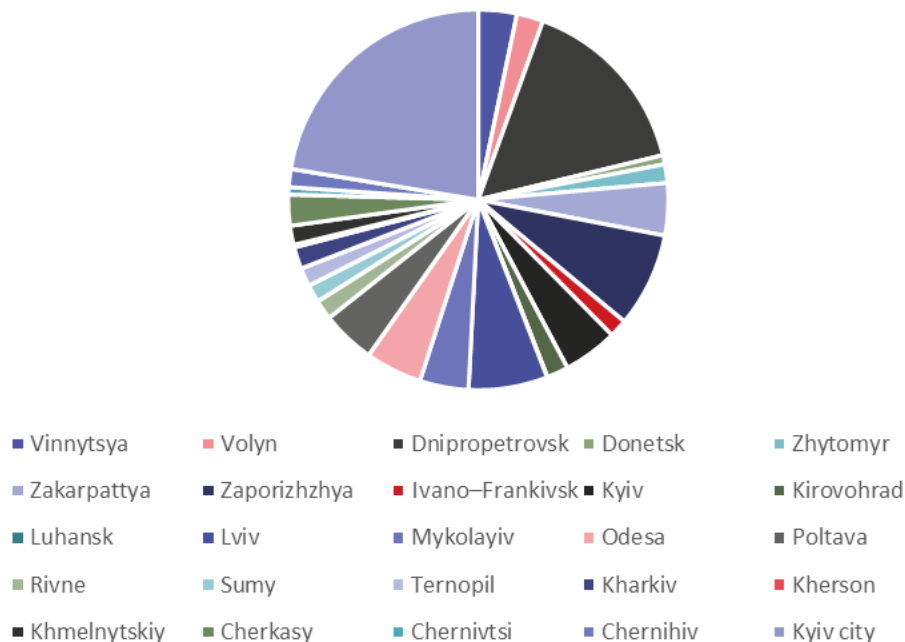
Appendix 1. Graphs

Figure 36. Export contributions of Ukraine's regions (oblasts) in 2021.

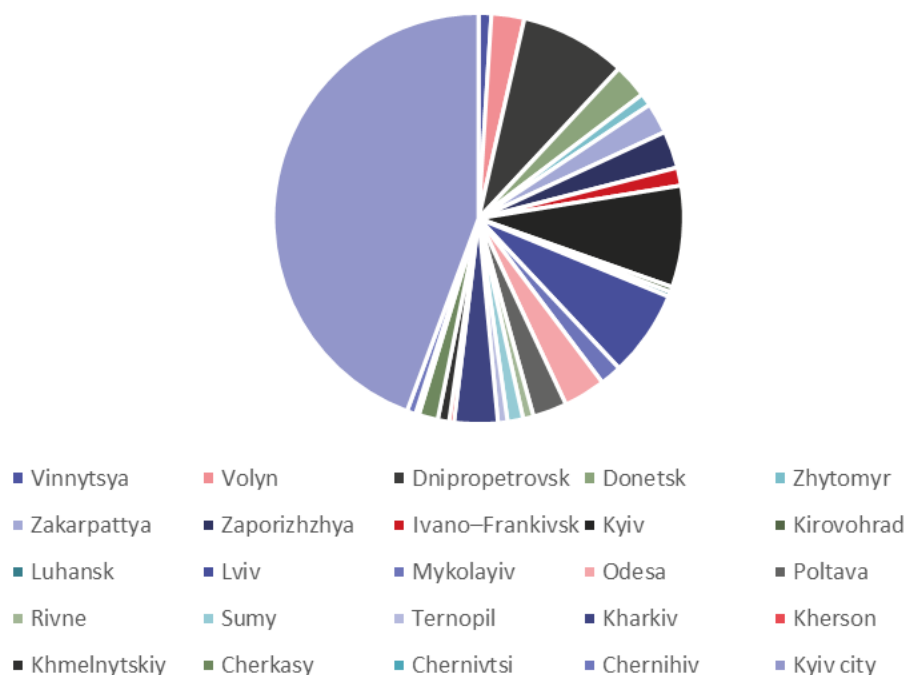


Source: State Statistics Service of Ukraine.

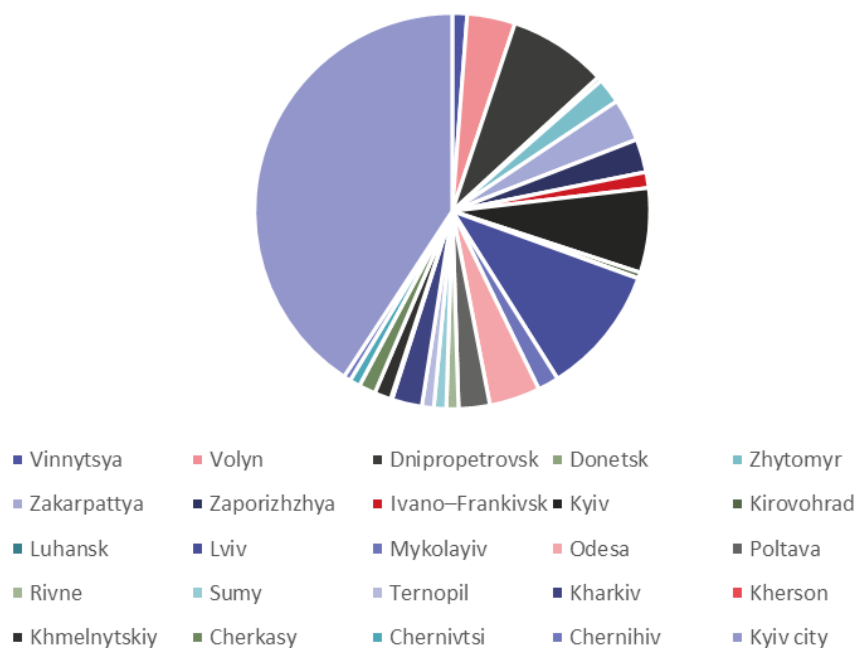
Figure 37. Export contributions of Ukraine's regions (oblasts), January 2022–September 2022.



Source: State Statistics Service of Ukraine.

Figure 38. Import contributions of Ukraine's regions (oblasts) in 2021.

Source: State Statistics Service of Ukraine.

Figure 39. Import contributions of Ukraine's regions (oblasts), January 2022–September 2022.

Source: State Statistics Service of Ukraine.

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