



Outlier or not?

The Ukrainian economy's preparedness for EU accession

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Contents

Key findings	6
Key messages for EU policymakers	8
Introduction	9
Quantifying Ukraine's economy: Would it really be a game-changer for the EU to absorb Ukraine?	12
Macroeconomic stability	15
Institutional and regulatory environment	21
Functioning of the financial market	23
Functioning of the labour market	27
The capacity to cope with competitive pressure and market forces within the EU	34
Economic structure	39
Existing economic integration with the EU	42
Public finances	45
Policy recommendations for the EU	47
References	52
Appendix: Summary of the main indicators	55
Figures and Table	58

Key findings

1. Economic size and wealth comparison

- Based on the economic Copenhagen Criteria for accession to the EU, Ukraine is a fairly typical case when compared to EU-CEE (Central and Eastern European) countries at the time of their application, accession or both:
- In terms of economic size, Ukraine resembles Hungary or Romania as a share of the EU economy at the time of their accession.
- Relative to the EU, Ukraine is comparable in terms of wealth with Latvia, Lithuania and Romania when they submitted their membership applications.

2. Impact on EU GDP and population

- If Ukraine were to join the EU today, it would increase the bloc's GDP by around 1 percent and its population by around 9 percent, similar to Poland's impact in 2004.
- Ukraine's real GDP grew more strongly than that of the EU in 2000–2008, 2010–2013 and 2016–2019. This suggests it is capable of strong catch-up growth with the EU in the same way as most of the 2004–2013 joiners when the war ends, especially if it gets more access to EU resources and markets in the coming years.

3. Macroeconomic position, inflation and exchange rate dynamics

- Before the full-scale Russian invasion of 2022, Ukraine's macro-financial position was generally sound.
- Ukraine generally posts higher inflation than most current and previous accession countries, and it suffers from greater depreciation pressure on its currency than most peers. However, the real exchange rate has been quite stable over time.

4. Competitive industries and potential

- Some Ukrainian industries are already internationally competitive, including parts or all of its agriculture, metals and IT (information technology) industries.
- Ukraine has already established itself as a globally competitive supplier of some agricultural products, with yields in some commodities on a par with or above those of some EU member states. The excellent soil quality is a major advantage for Ukraine. Especially in agriculture, the problem is not going to be that these industries will be a burden for the EU, but rather that they could be too competitive.

5. Trade relations and agreements

- The EU-Ukraine Deep and Comprehensive Free Trade Agreement (DCFTA) is one of the most advanced trade agreements that the EU has with any country.
- Owing to its enhanced integration in several areas (e.g. labour markets and energy) as a result of the war, Ukraine is already far along on its path to being prepared for the single market for a country right at the beginning of its EU accession process.
- However, Ukraine's share of trade with the EU is less than that of most of its peers in Central, Eastern and South-Eastern Europe (CESEE), which reflects a combination of large sales of commodities outside the EU and its currently weak competitive position in relation to the EU market in quite a wide range of industries (with agriculture and IT being notable exceptions).

6. Labour market integration, wage levels and potential growth

- Ukrainians' access to EU labour markets is already more advanced than anyone else's has been at this stage of accession, thanks both to large-scale Ukrainian emigration to the EU pre-2022, but especially because of the Temporary Protection Directive, which allows Ukrainians to work and access public services across the EU.
- Any deeper labour market integration would be in the EU's interests, as it would benefit EU countries suffering labour shortages.
- Wages in Ukraine are around 14 percent of the German level, which is likely to help to attract FDI (Foreign Direct Investment) once the security situation improves.
- However, many EU-CEE countries first applied to join the EU with a much bigger wage deficit versus Germany than Ukraine has now. Ukraine has the potential for strong wage growth if productivity picks up as it did in previous joiners, such as Poland and Romania.

7. Productivity and key weaknesses

- Ukraine's currently low productivity levels reflect a combination of weakness in education (the education system overall), training, innovation overall, R&D and infrastructure.
- Only in the case of infrastructure does Ukraine appear to be a clear negative outlier in the CESEE context. In education and digitalisation, Ukraine compares well with the weakest EU member states of the region, which should help to drive productivity growth as part of the EU accession process.

8. Demographic challenges and reconstruction

- Ukraine's greatest weakness is its demographic profile, and the existing long-term structural challenges are being dramatically compounded by the loss of millions of its citizens due to the invasion.
- Under any feasible scenario, Ukraine is facing a monumental demographic shock that is likely to slow down the reconstruction process.
- Due to the war, certain regions have been heavily depopulated in addition to having a large part of

their infrastructure and housing stock destroyed. It will be very hard for them to recover even if the war ends and reconstruction starts soon.

9. Economic structure and FDI

- Ukraine's economic activity is skewed relatively more towards agriculture and mining, and less towards manufacturing, than that of most of its EU-CEE peers. However, this was also and especially the case for Romania before it joined the EU, and it is likely that Ukraine's economic structure will also shift as it advances in the accession process.
- Relative to its GDP, Ukraine's inward FDI stock is lower than that of any previous or current accession country in the years before membership, which testifies to its long-standing struggle to attract foreign investors.
- For Ukraine to achieve a higher level of economic development, it will need to follow the EU-CEE growth model based on FDI from Western Europe.
- However, Ukraine has a long-standing weakness in attracting FDI, and the war is making this all the harder now.

10. Institutional challenges

- Part of the struggle to attract higher levels of FDI is linked to weak institutions. Ukraine is currently far from the institutional standards of even the weakest EU-CEE countries at the time of their accession, but roughly comparable with Bulgaria and Romania when they applied to join the EU in the 1990s.
- To reach the institutional level of Romania relative to the EU in 2007, Ukraine still needs to make a lot of progress in its efforts to combat corruption and anchor the rule of law.
- Based on the pace of reforms of previous joiners, Ukraine will be institutionally ready for EU accession in about 10 years.
- However, Ukraine's strong civil society, the clear consensus regarding the desirability of joining the EU, the likely heavy involvement of donor countries during reconstruction and the continued fight against corruption since the invasion inspire optimism that reforms could move more quickly.

Key messages for EU policymakers

Our findings show that with EU support and the anchor of the accession process, it is more than feasible that Ukraine will be able to follow the EU-CEE development path of strong catch-up growth driven by FDI inflows, productivity spillovers, and access to EU financial and technical resources. While this model has its critics, it has delivered impressive rates of economic convergence across large parts of EU-CEE during the past two decades and especially in some of the countries that Ukraine has the best chance of emulating, such as Poland and Romania. However, Ukraine's integration should not aim to only replicate existing EU-CEE industrial specialisations, such as in the automotive industry, but rather to take advantage of growth in new sectors where we have shown that the economy has major potential. Ukraine's EU integration should be focused on the "twin" green and digital transition.

The EU must take the lead in aligning reconstruction efforts with the EU accession process and especially in addressing the areas of identified weakness in which Ukraine has the most work to do to ensure the existence of a functioning market economy as well as the capacity to cope with competitive pressure and market forces within the EU.

First, the EU should: help Ukraine to mitigate its demographic disaster as much as possible by encouraging refugee returns when this becomes possible; increase circular migration schemes, virtual mobility and student exchanges; fund relocation and housing support; and support the reinvigoration of the labour market through measures such as business start-up support and vocational training schemes.

Second, the EU should help Ukraine to overcome its long-standing weakness in FDI attraction by using the accession process as a means to drive institutional improvements, upgrade Ukraine's infrastructure connectivity with the EU, modernise its port infra-

structure, and set up a war risk insurance scheme. The EU should also work with Ukraine to encourage its government to develop a model of FDI attraction that goes beyond a race to the bottom on wages, with a focus on improving labour productivity by exchanging best practices on education and training as well as upgrading institutions and infrastructure.

Third, the EU should work with Ukraine to further develop its industrial policy. The EU and Ukraine should tailor reconstruction to build on the strengths and promising niches that the Ukrainian economy already has so as to make a broader section of Ukrainian industry ready for the demands of the single market. The most promising sectors are agriculture, information and communications technology (ICT), renewable energy, critical minerals, automotive parts manufacturing and the military industry.

Fourth, the EU should continue to increase Ukraine's access to the EU market in order to foster: greater and faster regulatory alignment; more Ukrainian involvement in EU forums, initiatives related to trade standards, and the EU Green Deal; digital market integration; and transport connectivity. The EU should make as many of the temporary liberalisation measures as possible permanent and support the expansion of the Export Credit Agency of Ukraine.

Fifth, the EU should help Ukraine to tailor regional and infrastructure policy in a way that recognises the huge and geographically unequal destruction that the war has wrought on the country and therefore also the very different needs of particular regions in getting ready for the EU market.

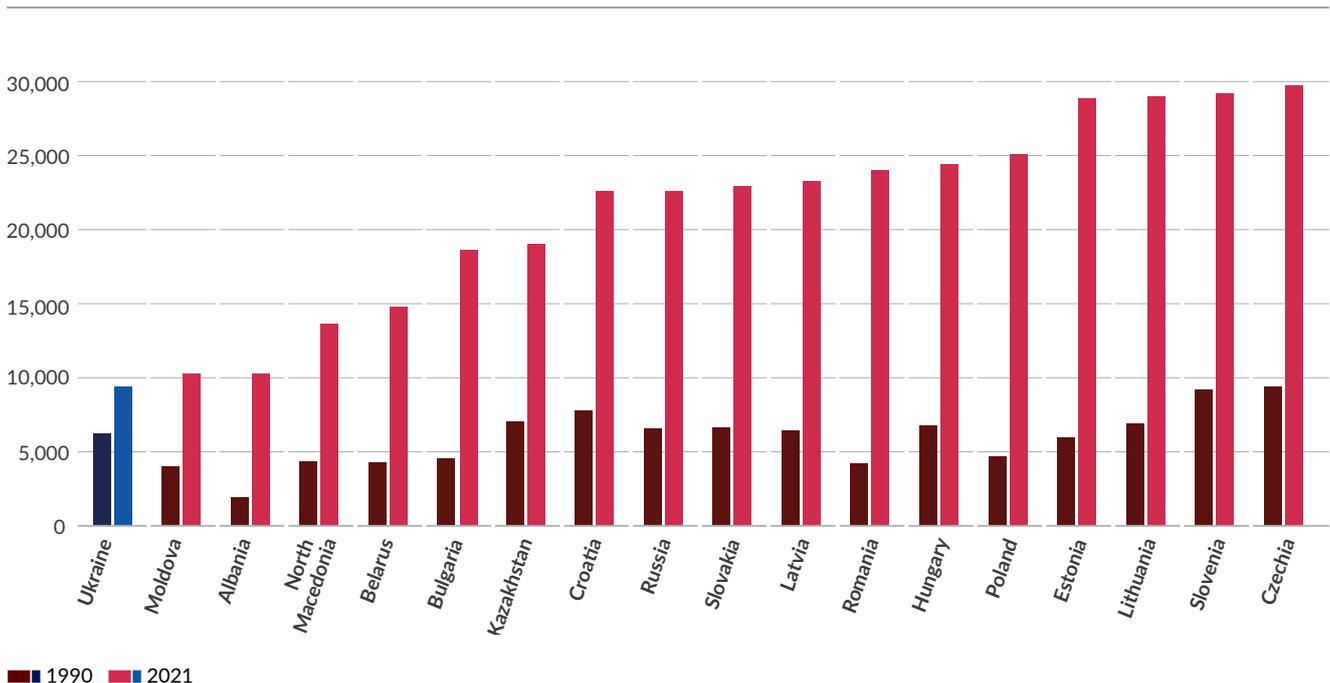
Introduction

The war in Ukraine is the first war in Europe since the 1990s and the biggest conflict on the continent for almost 80 years. The self-described “geopolitical” von der Leyen Commission has responded in previously unthinkable ways, sending weapons and emergency humanitarian assistance to a country that borders four EU member states. There has also been a consensus that Ukraine should be offered a “European perspective” (European Council 2022), as can be seen by the decision to make it a candidate country in 2022 and the possible opening of accession negotiations in 2023. The EU’s most successful instrument for stabilising its neighbouring countries as well as for driving economic, social and political progress has been its

enlargement policy, and this will apply more than ever in the case of Ukraine.

While the war and the desire to support Ukraine have catalysed the accession process, doubts about enlargement have crystallised more concretely in the case of Ukraine owing to the supposedly unique challenges of taking in a large, poor, corrupt country with a big agricultural sector. Ukraine has a long-standing reputation as something of an economic basket case, having posted a uniquely disastrous post-Communist economic convergence performance (Figure 1), with the comparison to the success of neighbouring Poland being particularly stark (Gylfason, Hochreiter and Kow-

FIGURE 1: **Ukraine’s per capita GDP grew by much less than that of any other CESEE country between 1990 and 2021**



Note: Data show per capita GDP in EUR at purchasing power parity.
Sources: Eurostat, national sources, wiiw.

alski 2022). Ukraine is seen as having unique economic challenges even in the CESEE context, linked to factors such as weak institutions, high levels of corruption, and the prevalence of the oligarchic class. Moreover, many feel that the EU itself is not ready for Ukrainian membership; that reforming the EU's current budget allocation, its institutional set-up and its decision-making processes is already long overdue; and that it simply could not cope with new members, especially a country like Ukraine (Toygür and Bergmann 2023). If and when Ukraine joins the EU, there is a fear that it will suck away all the EU funds from the EU's poorest regions and turn the EU-CEE countries into net contributors to the EU budget (Fleming and Foy 2023).

Our goal in this paper is to investigate whether these fears are really justified. We do not dispute that the war and reconstruction needs create particular challenges, nor that there are elements of the Ukrainian economy that make it different from other previous and current candidate countries. The impact of the war and the reconstruction needs will clearly require the mobilisation of huge resources (World Bank 2023). But our hypothesis is that, measured against the economic Copenhagen Criteria for EU accession, Ukraine is not an unique case, nor is it beyond the capabilities of the EU to absorb it in the way that it has absorbed previous countries from CESEE.

To join the EU, Ukraine will need to meet the Copenhagen Criteria for accession (EUR-Lex 1995). Economically, this means it will have to have two things: a functioning market economy and the capacity to cope with competitive pressure and market forces within the Union (European Commission n.d.). However, unlike accession to the euro area (of EU member states that have adopted the euro as their currency), these criteria are not quantified. To deal with this lack of quantification, we take the following approach: Using the relevant indicators from the standardised annual Commission enlargement package reports (European Commission 2022b), we will compare Ukraine now with EU-CEE countries ahead of their accession as well as with the Republic of Moldova¹ and the Western Balkan candidate countries. Our goal is not to replicate the Commission enlargement

package reports, but rather to ask – when it comes to the economic aspects of accession – whether there are really factors about Ukraine that make it a unique challenge in terms of its EU integration and accession in the context of all the countries that have come before it or are currently in the process. We stay away from areas that deal purely with policy, as it is difficult to quantify and compare with other countries across time, focusing instead on what can be quantified and compared.

There are aspects related to economics in all clusters, but our goal is to focus primarily on Cluster 1: the fundamentals of the accession process. This cluster includes most of the indicators that are quantifiable across time and that can then be compared with previous joiners and other accession hopefuls. It includes standard macroeconomic, fiscal, trade, financial and labour market indicators in order to assess an economy's performance and potential vulnerabilities, the extent of corruption and judicial efficiency (and how this maps onto the economy), and the ability to cope with competitive pressure and market forces inside the EU single market. Other clusters focus more on policy measures, which we will generally avoid for the reason stated above. However, we will also include indicators from other clusters where relevant and possible.

In each case, we have to make a decision on whether to use data from 2021 or 2022. The data from 2022 does show us the reality of the current situation, but the massive impact of the war (e.g. on GDP) can badly distort the picture and obscure what we are trying to understand – namely, not the initial shock of the war, but the underlying fundamentals of the economy and its ability to cope with the pressures of EU membership. We therefore proceed case by case, sometimes using both years, and always justifying why we have used one, the other or both.

We also address the institutional part in so far as it relates to the business environment part of the Commission enlargement reports. The business environment is an important element of how the Commission assesses candidate countries' readiness for membership in its enlargement reports. The best quantifiable data we can rely on in that respect are the World Governance Indicators (WGI), which cover over 200 countries and territories over the 1996–2021

¹ From now on, for simplicity, we will refer to the Republic of Moldova in the text, tables and charts simply as Moldova.

period for several dimensions of governance (Kaufmann and Kraay 2023), including government effectiveness, regulatory quality, rule of law, and control of corruption. Although these dimensions do not map perfectly onto the Copenhagen Criteria for EU accession, they do provide a reasonable indication of the quality of a country's business environment, which is key for being able to manage the demands of the single market. What's more, they allow us to compare Ukraine with previous joiners in a fully comparable and standardised way.

For the purposes of our study, we acknowledge the entire territory of Ukraine as the subject of our analysis, within its internationally recognised borders of 1991.

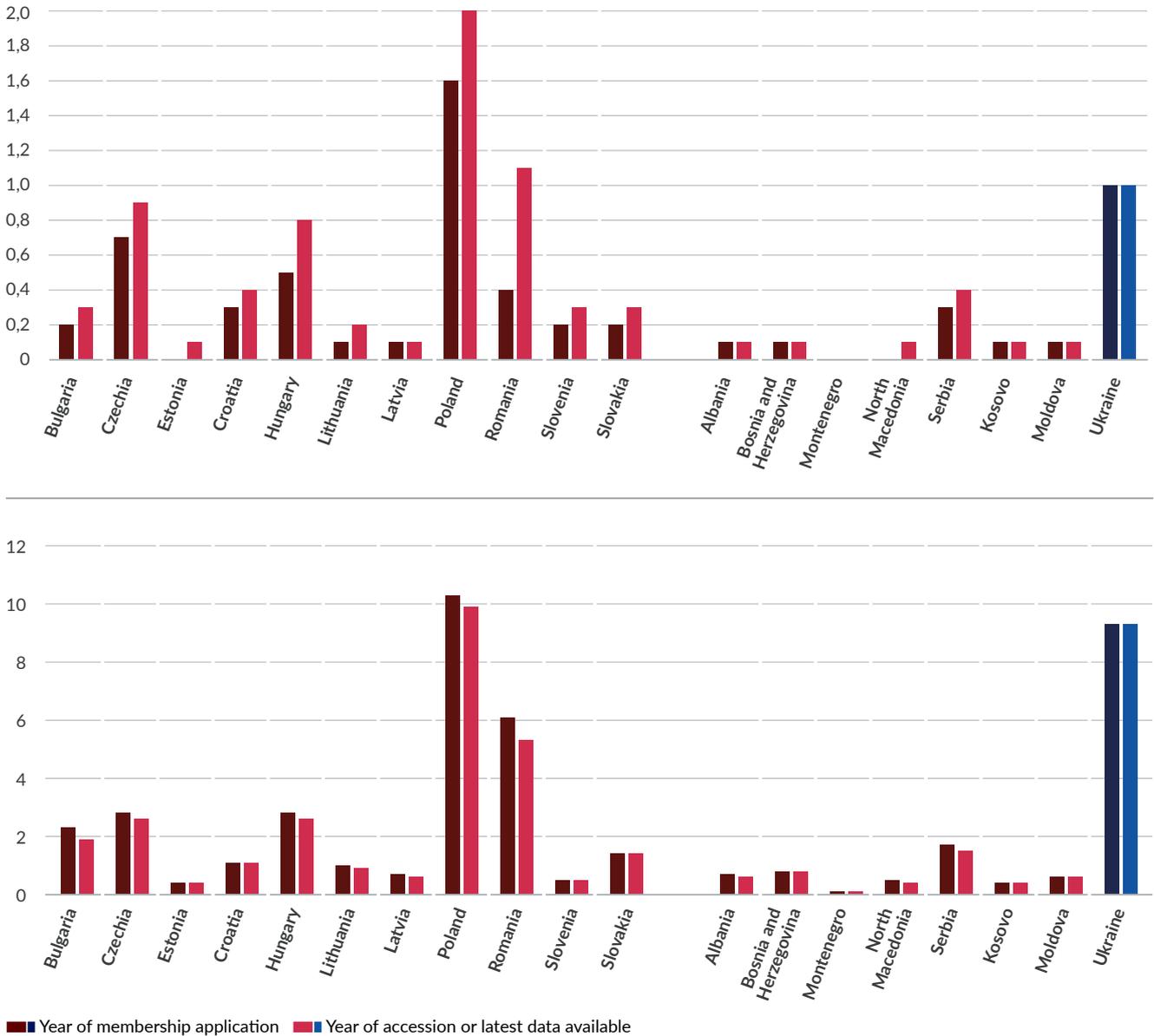
Quantifying Ukraine's economy: Would it really be a game-changer for the EU to absorb Ukraine?

In terms of the sizes of both its economy and population, Ukraine is quite comparable with EU-CEE countries when they joined the EU. Ukraine's economy is about 1 percent of the size of the EU-27 economy, which is roughly the equivalent of Hungary's or Romania's economy relative to the then-EU-15 before they joined the EU in 2004 (Figure 2). Meanwhile Ukraine's population is about 9 percent of the EU-27, whereas Poland's population was 10 percent of the EU-15 on the eve of its accession. The idea of taking in another Poland in population terms is certainly not insignificant. Yet this is manageable and, given EU labour shortages, even highly advantageous from an EU perspective.

In terms of wealth (measured in per capita GDP at purchasing power parity), Ukraine at the time of its membership application is at the level of the very poorest previous Central, East and South-eastern Europe (CESEE) joiners (e.g. Latvia and Romania) when they applied to join in the mid-1990s relative to the then-EU (Figure 3). However, Ukraine is much poorer than any country at the time of its accession thus far, and it is also much poorer than any other current accession hopefuls aside from Kosovo and Moldova. Nevertheless, given the opportunity of huge capital inflows as part of reconstruction and Ukraine's potential in various areas (which we will highlight below), Ukraine has a good chance of closing a large part of the development gap quite quickly in the coming years and ahead of EU accession.

The indicators in this section suggest that Ukraine is in several ways comparable with Romania before its accession, which is a positive sign. From a low starting point, Romania has been one of the true success stories of economic convergence in the EU (Figure 4). This naturally does not guarantee anything for Ukraine, but it does suggest one possible positive future. For a country at a low level of economic development relative to the EU (as Romania was in 2007), the combination of catch-up gains due to a large initial income differential with EU resources and technical assistance can be a very powerful one.

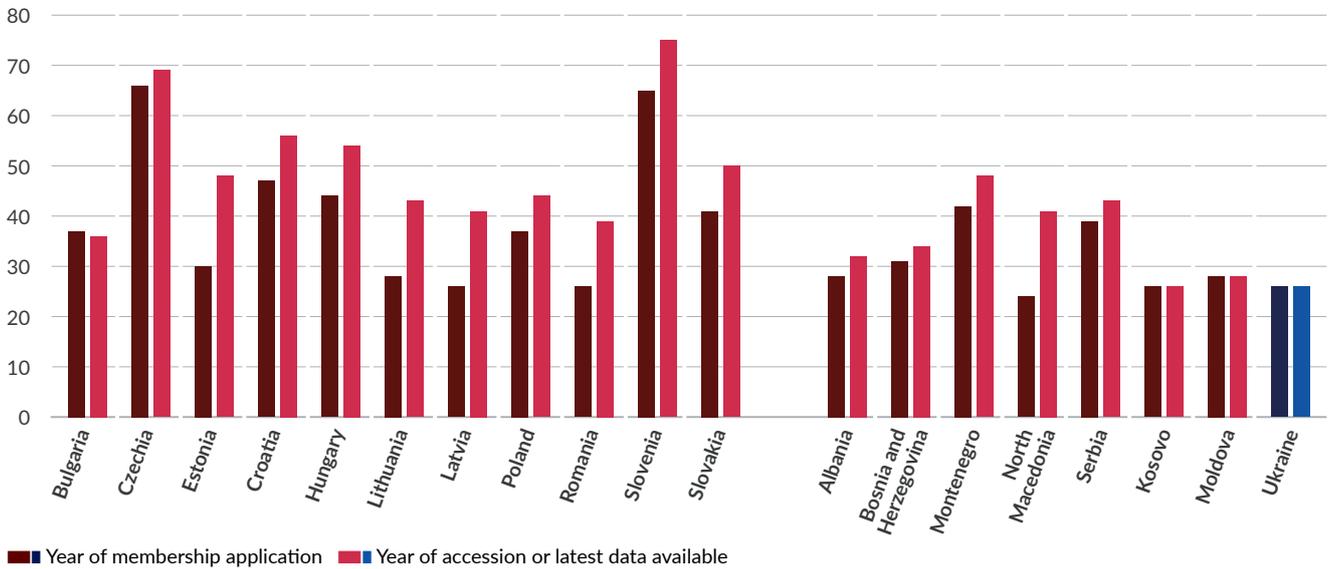
FIGURE 2: **Ukrainian EU accession would be comparable to that of Hungary or Romania in economic size (top) and to that of Poland in population terms (bottom)**



Note: Data show nominal GDP as a percentage of the EU's GDP (top) and population as a percentage of the EU's population (bottom). For EU-CEE countries, the comparison for both membership application and accession years is the EU-15. For non-member states, the comparison for both membership application and accession years is the EU-27 and the accession year is the latest available data, meaning 2022 for economic size and 2021 for population size.

Sources: Eurostat, national sources, wiiw.

FIGURE 3: Ukraine has a very low level of economic development, but several EU-CEE countries were equally poor relative to the EU average at the time of their membership application in the 1990s

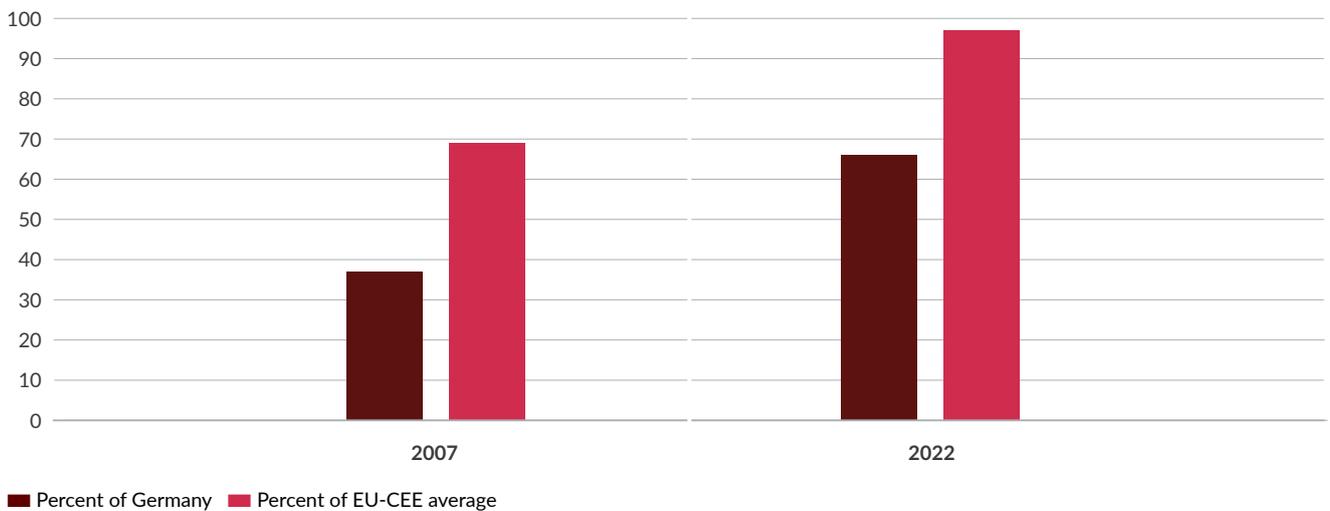


Note: Data show per capita GDP at purchasing power parity (PPP), as a percentage of the EU's GDP. For EU-CEE countries, the comparison for both membership application and accession years is the EU-15. For non-member states, the comparison for both membership application and accession years is the EU-27, and the accession year is the latest available data (i. e. 2022).

Sources: Eurostat, national sources, wiiw.

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FIGURE 4: Like Ukraine now, Romania was very poor relative to the EU average when it joined in 2007. But it has thrived within the bloc, converging rapidly with richer countries



Note: Romanian per capita GDP at PPP, as a percentage of Germany's GDP and the EU-CEE average in 2007 and 2022. EU-CEE average = simple average.

Sources: National sources, Eurostat, wiiw.

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Macroeconomic stability

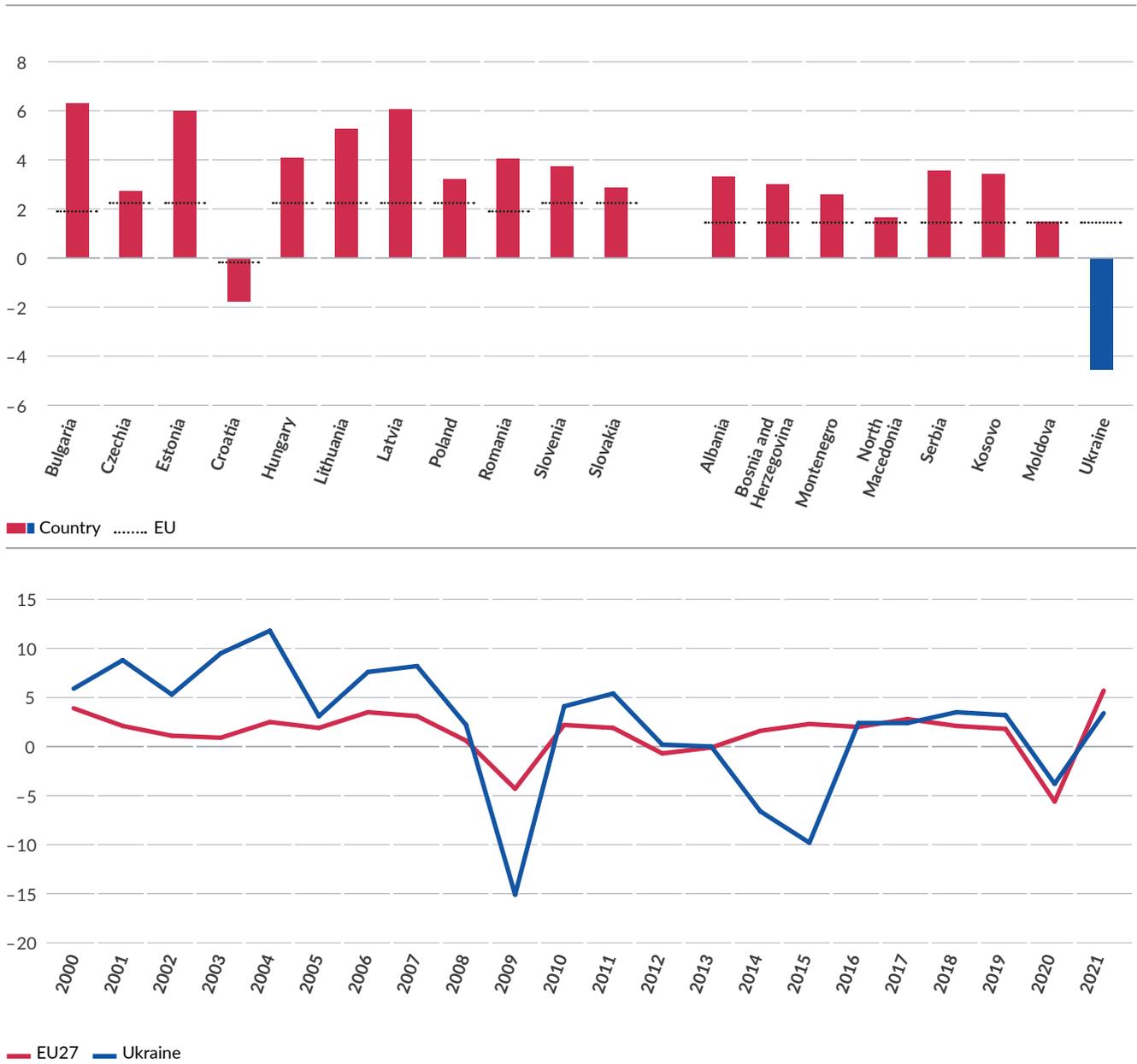
In terms of real GDP growth, Ukraine is naturally a negative outlier relative to its peers, but this only reflects the impact of the invasion in 2022 and the precipitous fall in GDP that it triggered. In the five years leading up to 2022, Ukraine's economy contracted by an average of 4.6 percent, compared with a growth rate of 1.4 percent over the same period for the EU (Figure 5, top). With the exception of Croatia, all EU-CEE countries grew more quickly than the EU in the five years before accession, indicating that they were on a sustained convergence path. The same is mostly true of the accession hopefuls in the years leading up to 2022. However, if we remove the years when Ukraine has most been affected by Russian invasion and other major shocks such as the global financial crisis and the pandemic, the country has generally outperformed the EU (Figure 5, bottom). This shows that, when not fighting a war on its territory or facing other major shocks, Ukraine is capable of achieving strong economic catch-up with the EU in line with previous CESEE joiners.

Even excluding 2022 due to the invasion, we cannot fully remove the impact of Russian aggression on the Ukrainian economy owing to the lingering effects of the original invasion in 2014. This left part of Ukraine's territory (Crimea) occupied and a conflict in another part (some of the Donbas) between the Ukrainian army and Russian-backed separatists. Havlik et al. (2020) have identified large and lasting negative effects of the conflict, especially in Donetsk and Luhansk, but also for the country as a whole. At least initially, higher exports to the EU did not offset the precipitous drop in trade with Russia, and the coal mining and metals industries saw sharp declines in output. The commodities that the rest of Ukraine had previously imported from separatist-controlled areas could be replaced by imports, but often at a higher cost.

Ukraine has tended to run a higher rate of inflation than its peers, and this was the case even before the war, which could pose risks for macroeconomic stability and competitiveness. Ukraine starts its EU accession process with a higher level of inflation relative to the EU than any comparable country (Figure 6). However, both the level and difference versus the EU is comparable to those of Hungary, Slovenia and Slovakia in the years leading up to 2004. However, when compared with the other accession hopefuls, Ukraine had a substantially higher rate of inflation on average between 2017 and 2021.

The Ukrainian hryvnia tends to depreciate more than the currencies of peer countries and EU-CEE countries did ahead of their accession owing to high inflation, a generally quite large current account deficit, and Ukraine's struggles to attract large foreign capital inflows (Figure 7). Although depreciatory pressures have increased since the 2022 invasion, this was also the case before the war. Many countries, including EU-CEE and accession hopefuls, have pegged their currencies to the euro or operate a currency board arrangement, while most other EU-CEE countries saw either mild depreciation (Croatia, Latvia, Poland, Romania) or appreciation (Czechia, Lithuania, Slovakia) ahead of accession. The only country in the sample with a bigger depreciation than Ukraine over the period was Slovenia, which saw the value of its then currency decline by almost one-quarter between 1999 and 2004. However, given its much higher starting point in terms of economic development, Slovenia is not a relevant example for Ukraine to follow.

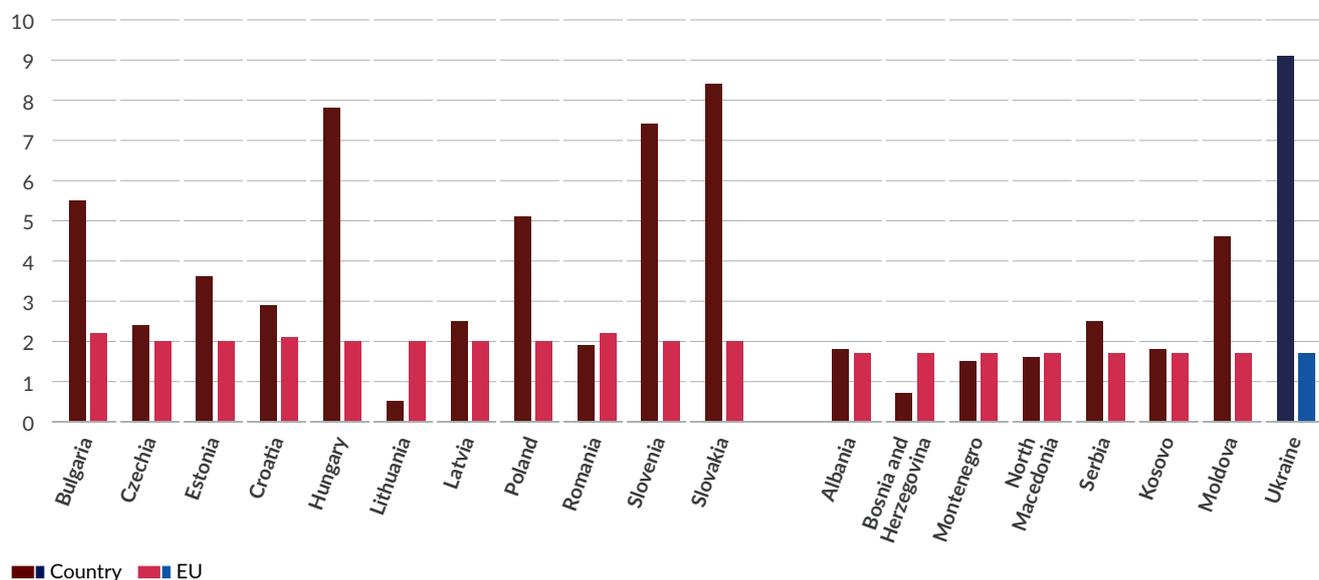
FIGURE 5: Ukraine's economy badly underperformed that of the EU in the last five years (top), but in the absence of external shocks it has mostly converged with the EU since 2000 (bottom)



Note: Data show real GDP growth, percentage per year, as a five-year average (top) and real GDP growth, percentage per year (bottom). On the figure above, for EU-CEE countries, the five years are those before (but not including) the accession year. For non-EU member states, the five years are 2018–2022, and the EU comparison is for the EU-27 over the same period.

Sources: Eurostat, national sources, wiiw

FIGURE 6: **Even before the invasion, Ukraine had a substantially higher level of inflation than any other accession hopeful, but it is comparable with that of some EU-CEE countries ahead of their membership**

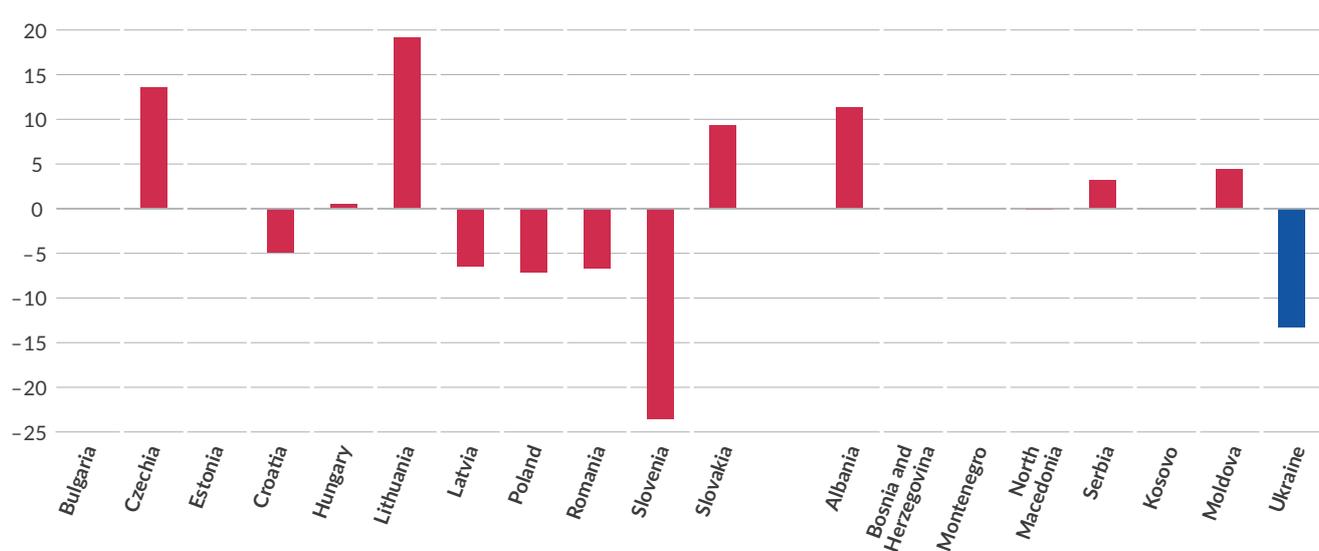


Note: Data show consumer price inflation, percentage per year, as a five-year average, compared with that of the EU. A positive value indicates a higher rate than the EU's. For EU-CEE countries, the five years are those before (but not including) the accession year, and the EU comparison is for the euro area as it was then constituted over the same period. For non-EU member states, the five years are 2017–2021, and the EU comparison is for the EU-27 over the same period.

Sources: National sources, wiiw.

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FIGURE 7: **Ukraine's currency tends to face much stronger depreciatory pressures than those of almost all its CESEE peers**

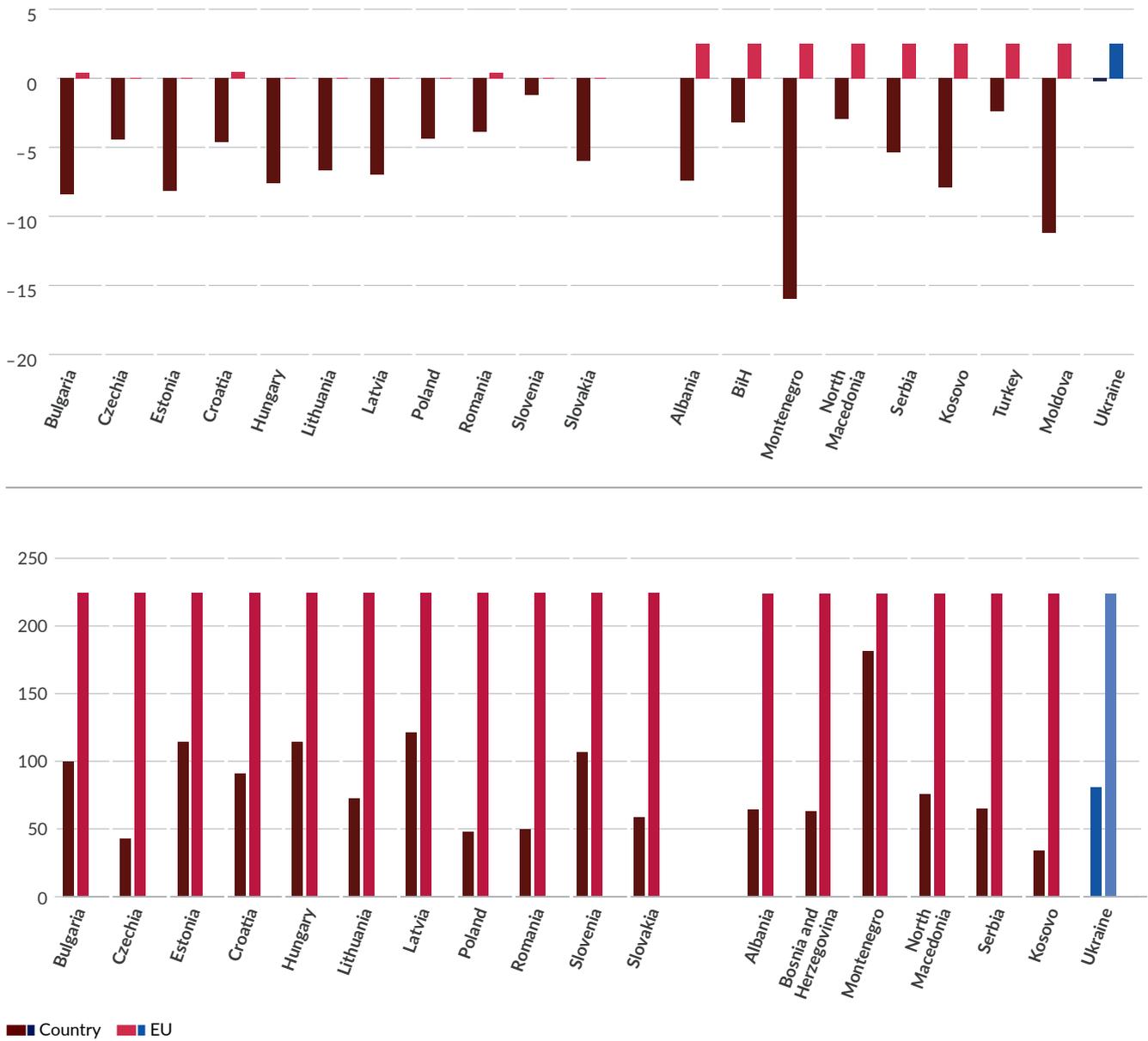


Note: Data show the change in the value of the national currency versus the euro, in percent, in the five years before accession (EU-CEE countries) or up to 2022 (non-EU member states).

Sources: National sources, wiiw.

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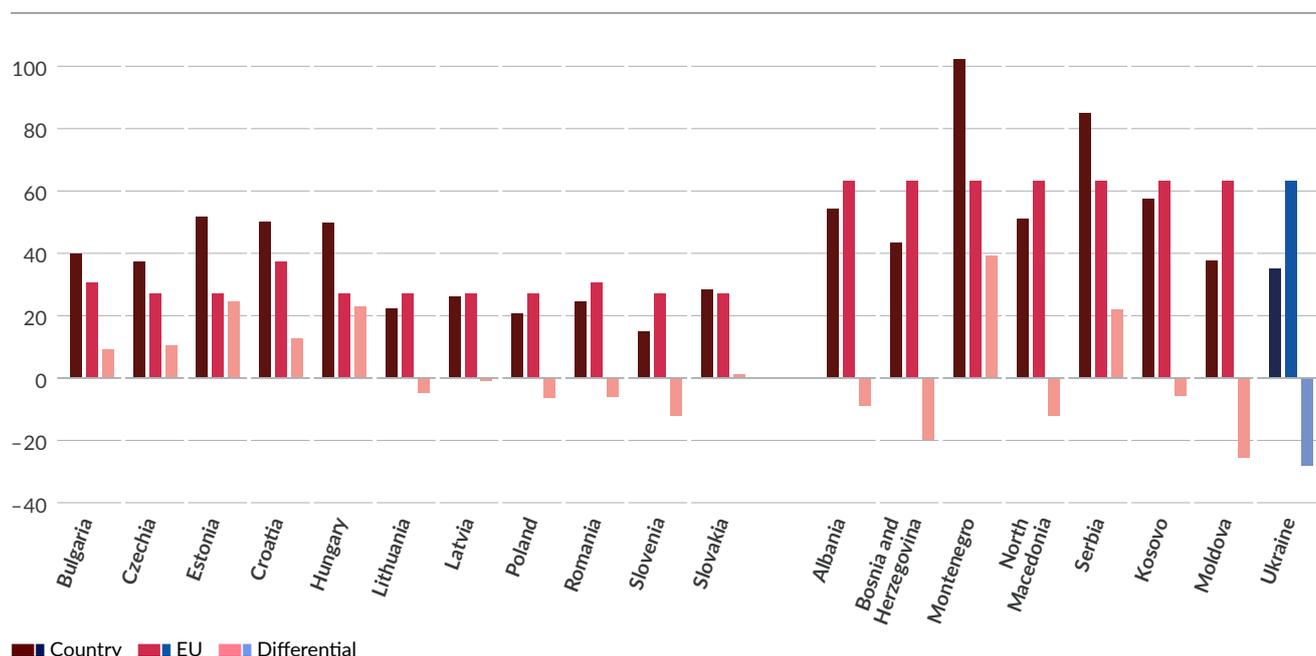
FIGURE 8: Ukraine's current account deficit is smaller than that of any other CESEE country in the years leading up to accession (top), and its external debt is not especially high (bottom)



Note: Data show current account balances, as percentage of GDP, on a five-year average. For EU-CEE countries, the five years are those before (but not including) the accession year, and the EU comparison is for the EU-15 over the same period. For non-EU member states, the five years are 2018–2022, and the EU comparison is for the EU-27 over the same period.

Sources: National sources, wiiw.

FIGURE 9: Relative to the EU, Ukraine's inward FDI stock is the lowest of any previous or current accession country in the years before accession

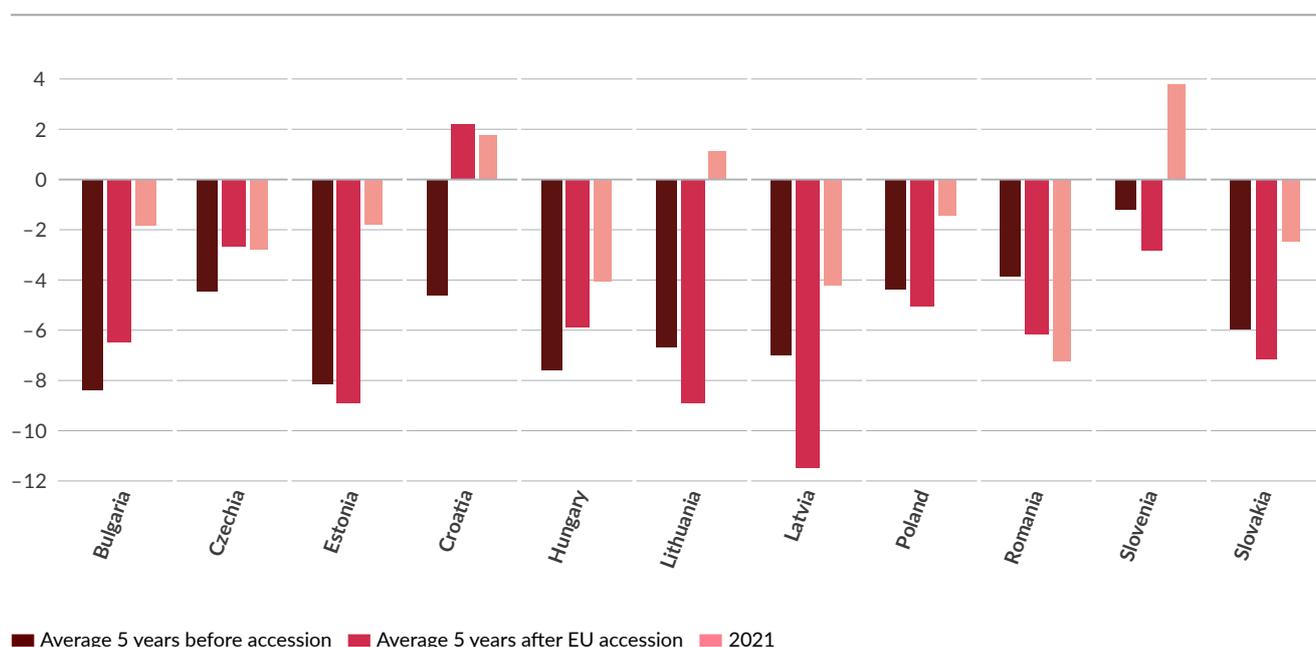


Note: Data show inward FDI stock, as a percentage of GDP, on a five-year average. For EU-CEE countries, the five years are those before (but not including) the accession year, and the EU comparison is for the EU-15 over the same period. For non-EU member states, the five years are 2017–2021, and the EU comparison is for the EU-27 over the same period.

Sources: National sources, wiiw.

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FIGURE 10: In the five years after accession, the current account deficits of many EU-CEE countries widened, although by 2021 most were running small deficits or even surpluses as export capacity increased and external competitiveness improved



Note: Data show current account deficit as a percentage of GDP.

Sources: National sources, wiiw.

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At least before the war, Ukraine did not seem to have major external vulnerabilities relative to its CESEE peers. Its current account, on average, has been in deficit in the last five years, but not dramatically so and to a much lesser extent than that of most other accession hopefuls (Figure 8, top). A contained current account deficit can reflect a decent level of external competitiveness, but this is probably not the reason in the case of Ukraine. Instead, Ukraine's lack of a bigger current account deficit likely points to the country's struggles to attract the large-scale foreign capital inflows that could enable it to finance a bigger current account deficit. Meanwhile, as a share of GDP, Ukraine's external debt is somewhat higher than those of other accession hopefuls except Montenegro (which is a severe negative outlier on this metric; Figure 8, bottom). But it is lower than those of the EU and some EU-CEE countries in the run-up to their accession. Relative to the EU, Ukraine's inward FDI stock is the lowest of any previous or current accession country in the years before accession (Figure 9), which testifies to the country's long-standing difficulties in attracting foreign capital (Adarov et al. 2015).

On its way to accession, Ukraine should not expect its current account deficit to close quickly. Before the energy price spike of 2022, the 2004–2013 EU joiners mostly ran much smaller deficits than they had around the time of their accession, and some had by that time even moved into surplus. But this did not happen immediately after accession, and many had bigger shortfalls in the five years after accession than before (Figure 10). Many factors played a part here, and for all except Croatia, the five years after accession included the 2008 global financial crisis.² Yet the increase in the deficit in the first years of membership for many EU-CEE countries at least partly reflects struggles to cope in the EU internal market in the early years. Later, as they built up export capacity (thanks to FDI), they became more externally competitive, they were able to make better use of the advantage of full access to the EU market, and their deficits narrowed or went into surplus. They also started to trade much more with each other and, as we have found in a previous study (Ghodsi et al. 2022), this had much to do with access to the EU budget. This provides two lessons for Ukraine as well as other potential joiners: First, FDI

and its impact on trade and international production integration is essential. And, second, access to EU funds can be an important driver of economic development and regional economic integration.

² Croatia joined in 2013. So for all EU-CEE countries joining between 2004 and 2007, our five-year comparison includes 2008, which skews all the data because it was a once-in-a-century event in economic terms.

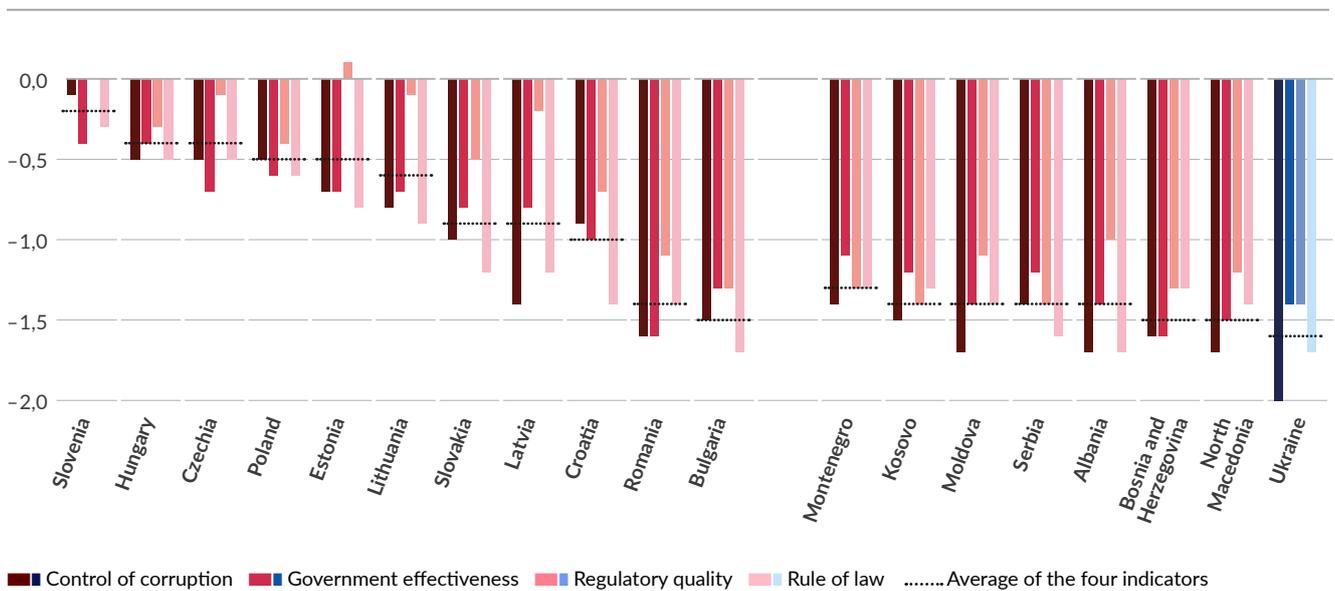
Institutional and regulatory environment

Ukraine has an extensive reform agenda ahead of it if it is to meet the institutional standards of EU accession, and it is currently far from the institutional standards of even the weakest EU-CEE countries at the time of their accession. Based on World Bank indicators, reaching even the level of Romania and Bulgaria at the time of their accession in 2007 (itself highly problematic to this day, given that both remain under special monitoring procedures) will take some time (European Commission 2023).

However, when Romania and Bulgaria applied to join the EU in the 1990s, their levels of institutional quality relative to the EU were comparable to that of Ukraine now (Figure 11). Admittedly, at the time of their application, no past or current accession hopeful from CESEE has had lower institutional scores relative

to the EU than Ukraine. However, on average for the four selected indicators, Ukraine scores 1.6 points below the average of France, Germany and Italy at the time of its application, which is not a dramatic difference to Bulgaria (-1.5) and Romania (-1.4) among previous joiners or Bosnia and Herzegovina and North Macedonia (both -1.5) as well as Albania, Kosovo, Moldova and Serbia (all -1.4) among current hopefuls. There is little in these data to suggest that Ukraine is a significant negative outlier, albeit it starts its accession process on a par with the institutionally weakest EU-CEE countries (i.e. Romania and Bulgaria) and is therefore likely to require the concentrated, hands-on reform-supporting approach from EU institutions that those two countries have required and, to a certain extent, still require.

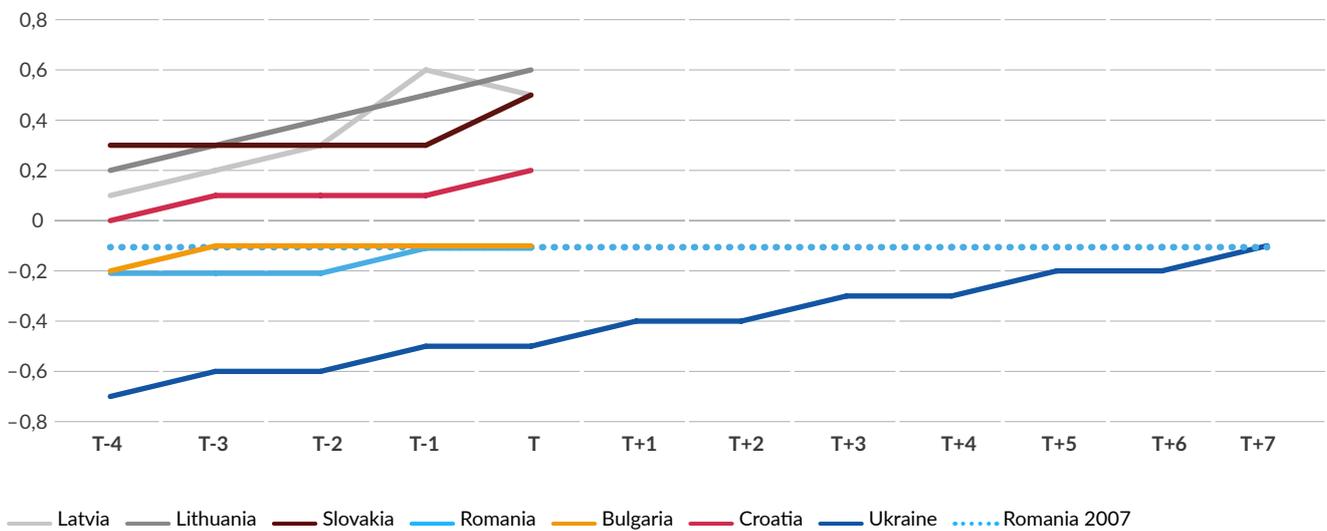
FIGURE 11: Ukraine is weak but not an outlier in terms of institutional quality relative to some of its peers at the time of their membership applications



Note: World Bank Worldwide Governance Indicators relative to the average of France, Germany and Italy at the time of each CESEE country's application to join the EU. For those that applied in 2022, 2021 data are used (latest available).

Source: World Bank.

FIGURE 12: **Ukraine will need at least 10 years to prepare for EU accession, if it reforms at the same speed as EU-CEE countries**



Note: World Bank Worldwide Governance Indicators, rule-of-law estimate. T = year of EU accession except for Ukraine, for which T-4 = 2021 (latest available data). T-4 data for Latvia, Lithuania and Slovakia is 1998 (actually T-5 because the World Bank only released WGI every two years until 2000).

Source: World Bank Worldwide Governance Indicators, own calculations.

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To meet the minimum requirements for EU accession in the next few years, Ukraine will have to make reform progress on the rule of law significantly quicker than its EU-CEE peers did (Figure 12). The EU’s 2007 and 2013 joiners, plus the three institutionally weakest 2004 joiners (Latvia, Lithuania, Slovakia), improved their rule-of-law score by an average of 0.05 per year in the four years leading up to accession. At the start of those years, they were at a significantly higher level than Ukraine. Assuming a similar rate of progress, Ukraine will not reach the theoretically minimal level (i.e. that of Romania in 2007) until 2032. This indicates that Ukraine has a lot of work ahead, but it also underlines the strong role that EU institutions will need to play in providing technical assistance and monitoring reform progress.

optimism that reforms can be achieved more quickly, but the troublesome effects of the large-scale war on demographics will need to be factored in. This underlines the importance of modernisation, as the economic state of Ukraine must be such that Ukrainian families may decide to reunite in Ukraine once the war is over.

For most EU-CEE countries, the time between application and accession was around 10 years, which further underlines the likelihood that accession is at least a decade away for Ukraine unless the EU and Ukraine can find effective ways to speed up the reform process. Under normal circumstances, Ukraine’s strong and active civil society would have been cause for

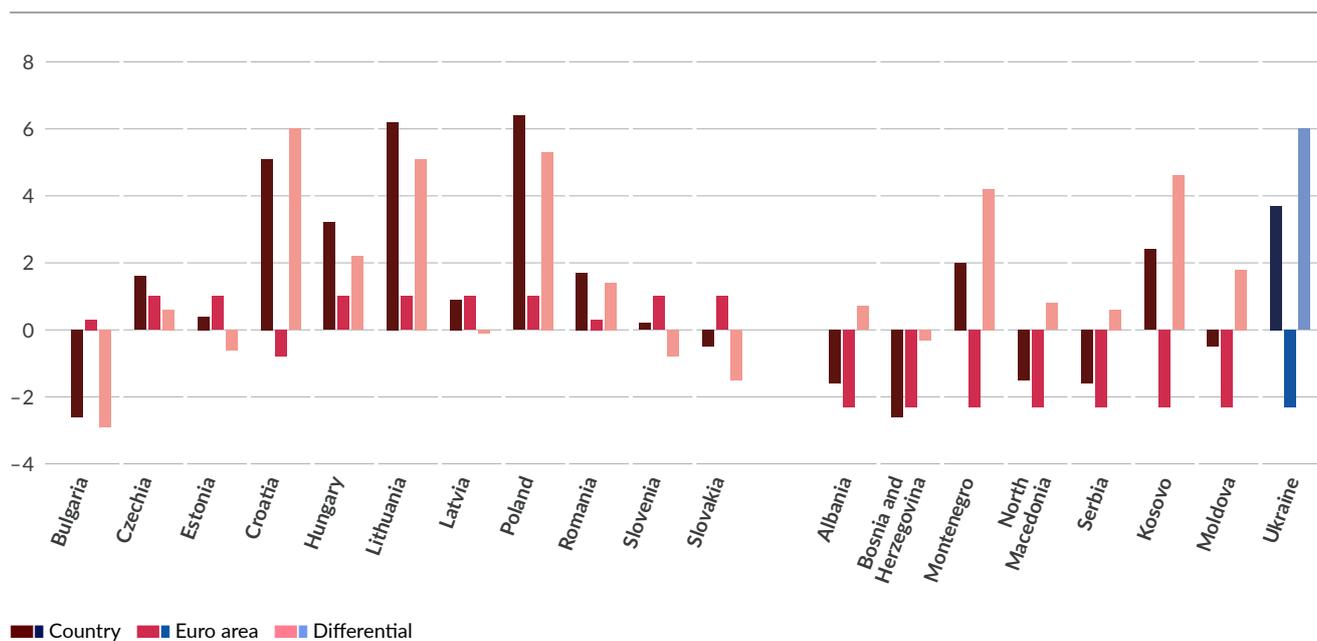
Functioning of the financial market

Ukraine's central bank is independent and has price stability as its main objective, in keeping with international best practice. The bank targets a medium-term inflation rate of 5 percent, which is above the ECB's target of just below 2 percent but not unreasonable for an economy at Ukraine's level of development. The target is the same as that of the Moldovan central bank, but higher than those of Serbia and Albania (both 3 percent), both of which have a higher level of economic development at this time. A higher rate of inflation than the EU's is consistent with Ukraine's currently low level of economic development and aspiration to converge economically with wealthier parts of Europe, and Ukraine's inflation target is not out of line with those of the EU-CEE countries before

they joined the EU. The Czech National Bank targeted inflation of between 3 and 5 percent in January 2002, decreasing this to between 2 and 4 percent by the end of 2005, after the country had joined the EU. In 2005, Romania's inflation target was 7.5 percent, but this fell to 4 percent in 2007, the year it joined the EU. Hungary's inflation target in December 2002 was 4.5 percent and fell to 3.5 percent in December 2004, its year of EU accession.

Ukraine's real interest rates are also very high in the context of other accession hopefuls and relative to the EU, but not incomparable with several EU-CEE countries ahead of accession, such as Croatia, Lithuania and Poland (Figure 13). High real interest rates are neces-

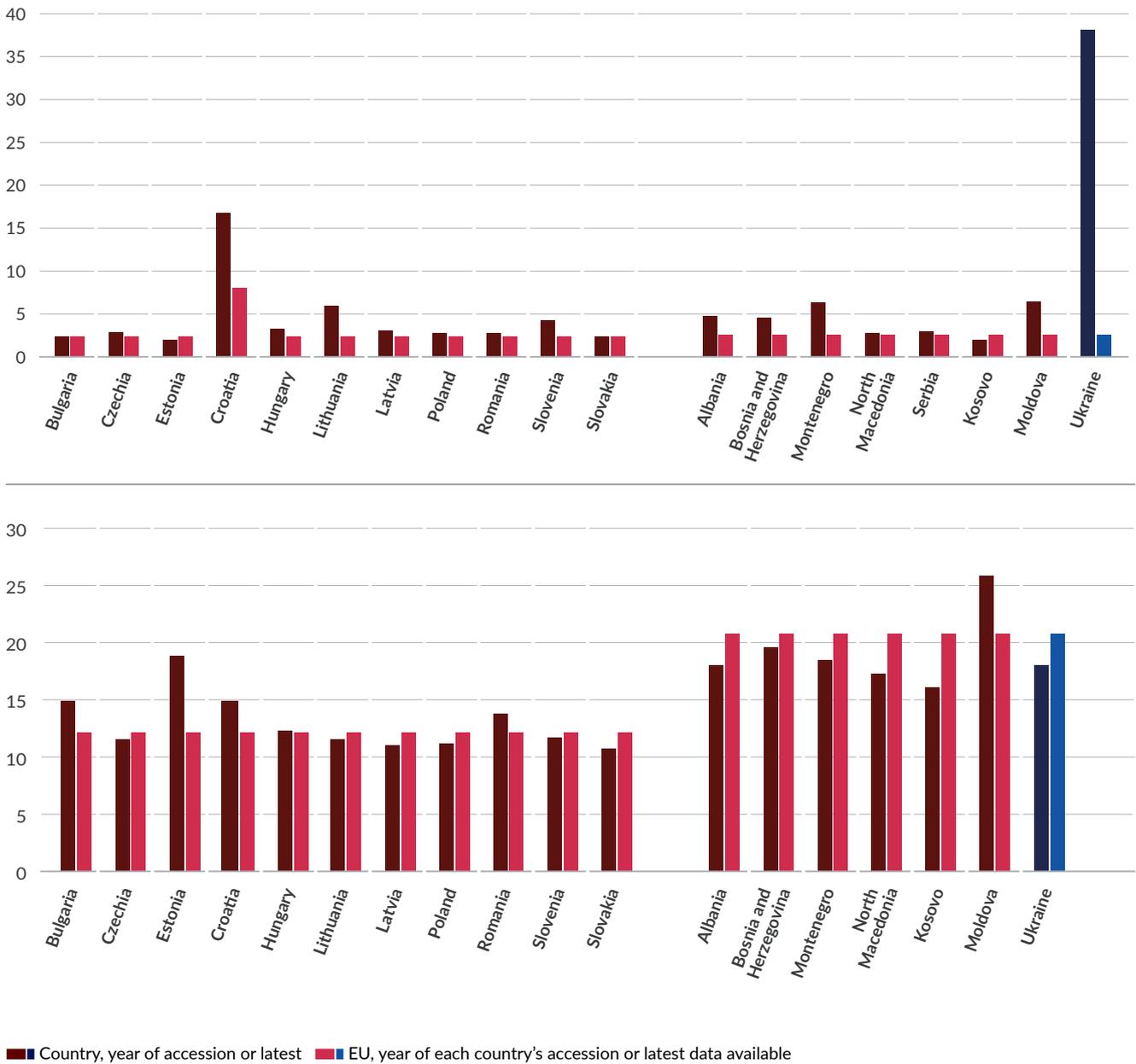
FIGURE 13: Ukraine's real interest rates relative to the EU's are high but comparable with those of Croatia, Lithuania and Poland before their accession



Note: Data show real interest rates, Consumer Price Index (CPI)-deflated, in percentage as a five-year average. For EU-CEE countries, the five years are those before (but not including) the accession year, and the EU comparison is for the euro area as it was then constituted over the same period. For non-EU member states, the five years are 2018–2022, and the EU comparison is for the euro area over the same period.

Sources: ECB, national sources, wiiw.

FIGURE 14: Non-performing loans in the Ukrainian banking sector are substantially higher than in any other peer country (top), but the capital adequacy ratio is more in line with those of the rest of the region (bottom)



Note: Data show the percentage of non-performing loans as a share of total loans (top) and the capital adequacy ratio of the banking sector (bottom). For EU-CEE countries except Croatia, 2008 is treated as the accession year, as this is the first year for which full data are available, and the EU comparison is for the EU-15 in the same period. For non-EU member states, the latest available data is 2022 for non-performing loans and 2021 for the capital adequacy ratio, and the comparison is with the EU-27 in the same year. The capital adequacy ratio for Serbia are not available.

Sources: National sources, wiiw.

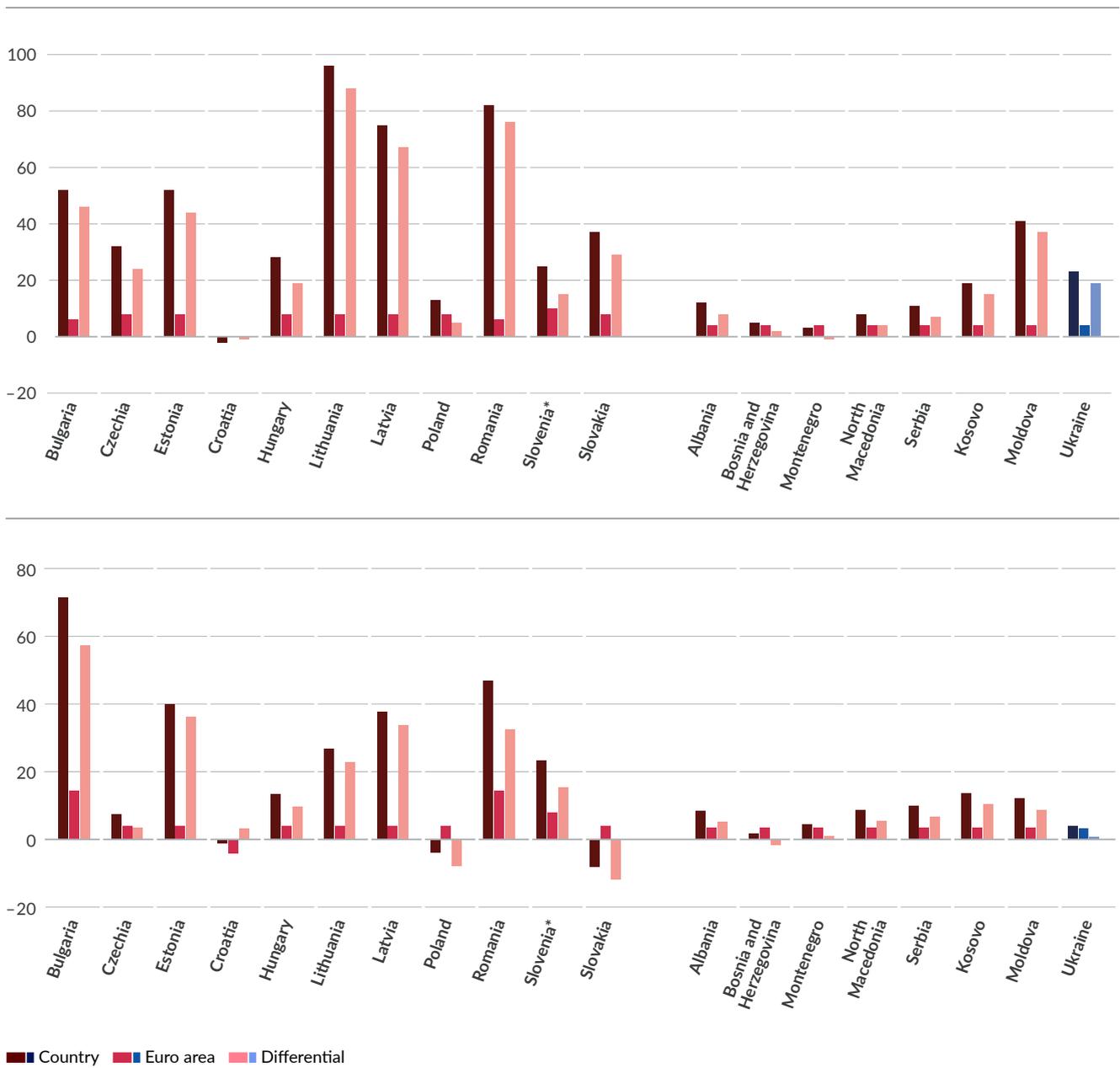
sary to keep a lid on inflation, attract capital flows and protect the value of the domestic currency. Although this will be a challenge for convergence during the EU accession process, it is nothing that the above-mentioned EU-CEE countries did not manage to deal with. Given Ukraine's currently low level of development and therefore potential for catch-up growth, plus the expected major EU financial and institutional support for economic development, the need to keep real interest rates high will not necessarily hold Ukraine back. In the case of Lithuania and Poland, high real interest rates relative to the EU's did not prevent them being convergence success stories.

Ukraine's financial soundness indicators do not compare well with peer countries, indicating potentially serious challenges in the EU accession process. But, in recent years, there have been major improvements. Non-performing loans as a share of the total are much higher than in any peer country (Figure 14, top). Financial stability has been a serious problem for the Ukrainian economy during the past decade, as demonstrated most prominently by the PrivatBank scandal in 2016, when Ukraine's biggest bank was declared insolvent and nationalised. The government had to spend nearly 5 percent of GDP to recapitalise the lender and ensure financial stability (NBU 2017). However, since 2015, the authorities have made major strides in improving the monitoring of the financial sector, with significant International Monetary Fund (IMF) support as well as with stricter and more thorough asset quality reviews and stress testing (in fact, to a large extent, it was because of this more rigorous approach that the problems at PrivatBank came to light in the first place). The Ukrainian banking sector's capital adequacy ratio is broadly in line with those of other accession hopefuls and higher than those of almost all EU-CEE countries around the time of their accession (Figure 14, bottom).

When it comes to access to finance, Ukraine – and, indeed, most accession hopefuls – are not undertaking their accession process with anything like the kind of credit booms seen in many of the EU-CEE joiners around the time of their accession, both in absolute terms and relative to the euro area (Figure 15). This partly reflects the very different times, as the 2004 and 2007 joiners completed their EU accession process in the credit-boom years that immediately preceded the 2008 global financial crisis. Yet, as

Figure 15 shows, even by the standards of those times, the 2004–2007 joiners experienced massive credit growth relative to the euro area benchmark. This suggests that Ukraine (as well as the other accession hopefuls) will not be joining the EU with the kind of credit-driven imbalances that would cause huge financial, economic and social problems, as was the case in parts of EU-CEE in the aftermath of the 2008 crisis.

FIGURE 15: Credit growth in Ukraine is much weaker than it was in most EU-CEE countries when they joined the EU



Note: Data show credit growth to households (top) and firms (bottom) as a percentage change relative to the previous year. For EU-CEE countries, the year is the year of accession. For non-members, the year is 2021. Although 2022 data are available, those for Ukraine are badly distorted by the impacts of the war. Data for Slovenia only available from 2005 onwards.

Sources: Bank for International Settlements, wiiv.

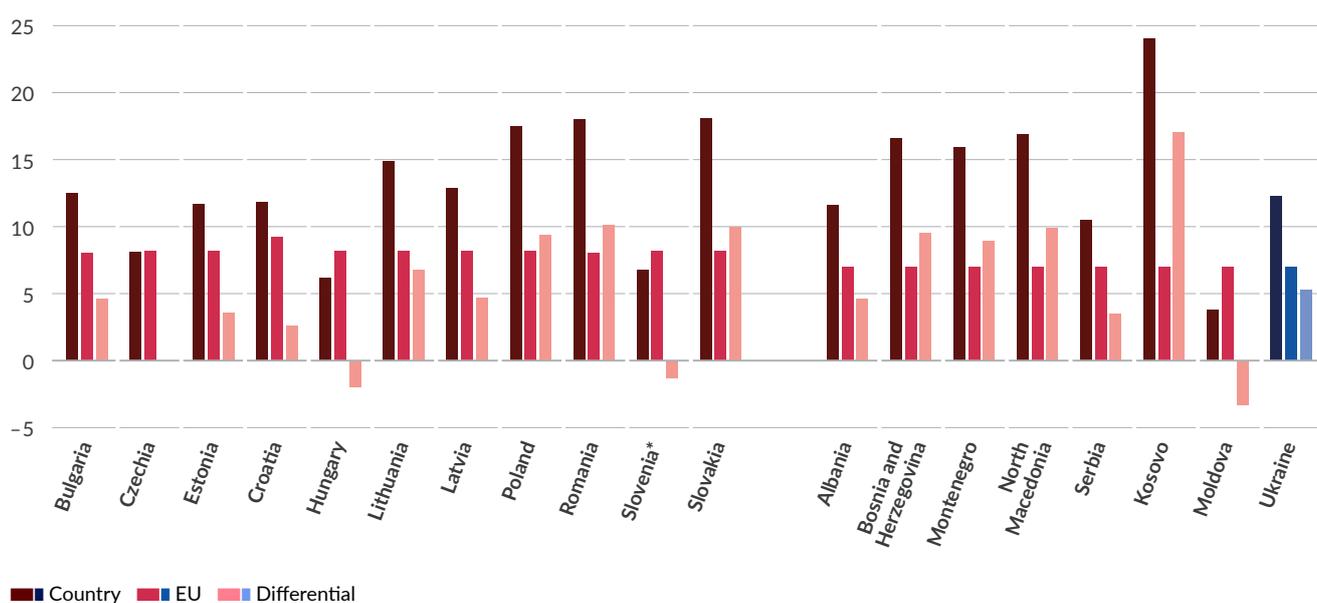
Functioning of the labour market

Ukraine had a slightly higher unemployment rate than the EU during the 2018–2022 period, but actually one of the lowest among accession hopefuls (Figure 16). Compared with those of the 2004 joiners, Ukraine’s unemployment rate relative to the EU’s ahead of accession is comparable to that of Czechia and considerably lower than those of the Baltic states, Poland and Slovakia. This is notable especially because Ukraine’s unemployment rate jumped to 25 percent in 2022 as a result of the war and severe recession, from an average of 9.1 percent in the previous four years. In addition to the relatively low unemployment rate, Ukraine also has relatively high rates of employment and activity in the regional context. Before the war, a relatively high share of the Ukrainian population

was economically active and employed in comparison to the EU-CEE countries at the time of their accession, the EU and most other accession hopefuls (Figure 17).

These data – low unemployment rate along with high activity and employment rates – would appear to suggest a relatively healthy labour market, at least before the war. However, the reality is unfortunately less rosy. The low unemployment rate at least partly reflects structural demographic challenges and the large outflow of labour to the EU. In other words, the labour market is tight because of a low birth rate and the fact that so many people leave rather than because of healthy economic growth (Tverdstup 2023). At the same time, the high activity and employ-

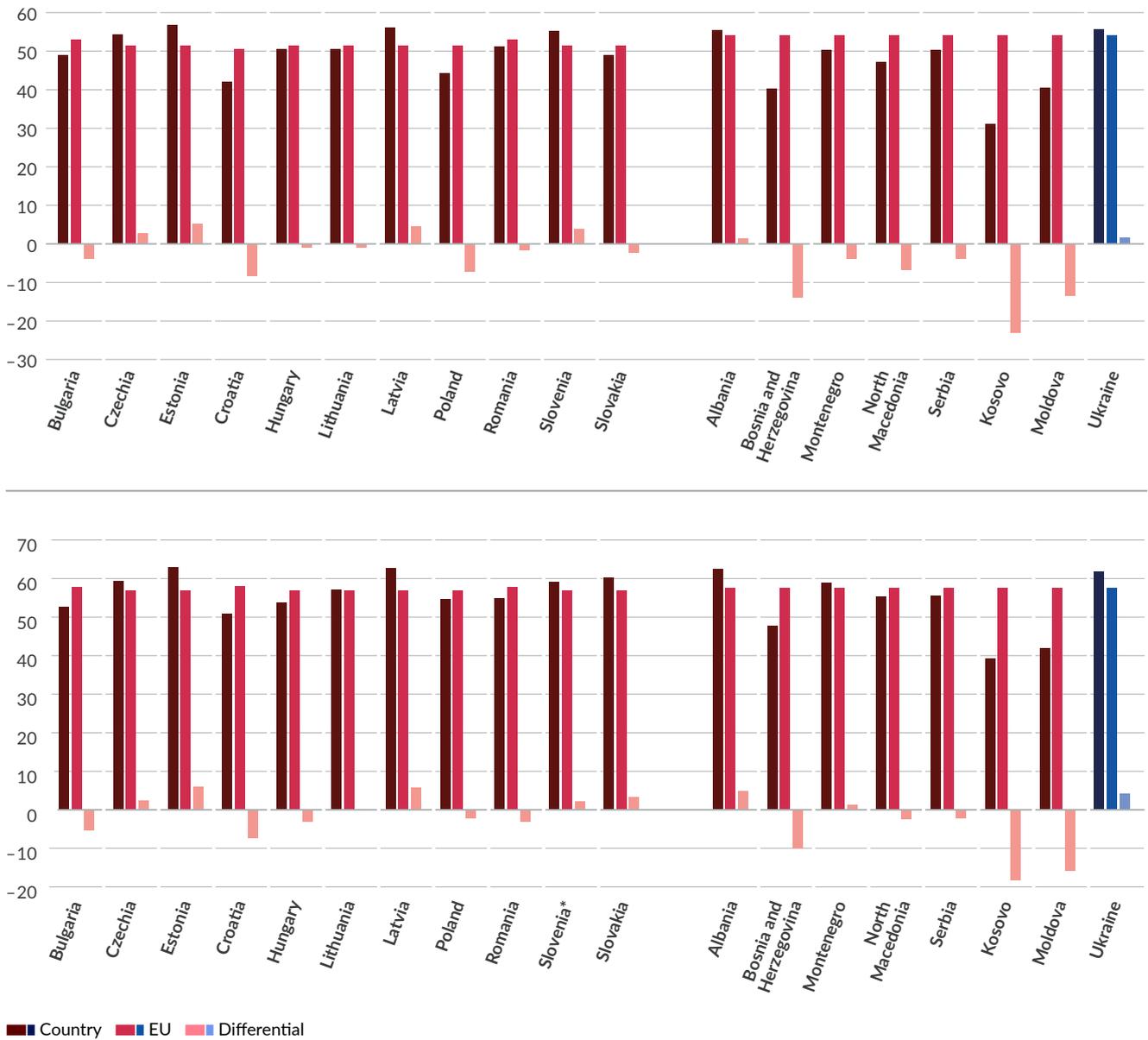
FIGURE 16: **Ukraine’s unemployment rate relative to the EU’s is considerably lower than those of many EU-CEE countries and current accession hopefuls**



Note: Data show the five-year average unemployment rate as a percentage. For EU-CEE countries, the five years are those before (but not including) the accession year, and the EU comparison is for the EU-15 over the same period. For non-EU member states, the five years are 2018–2022, and the EU comparison is for the EU-27 over the same period.

Sources: National sources, wiiw.

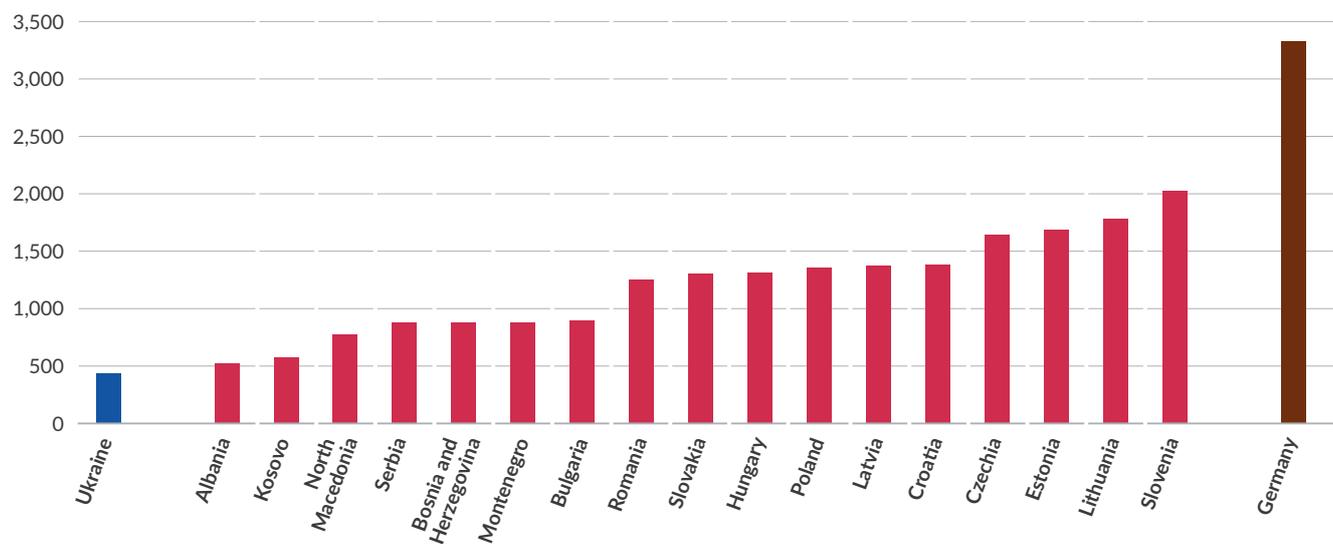
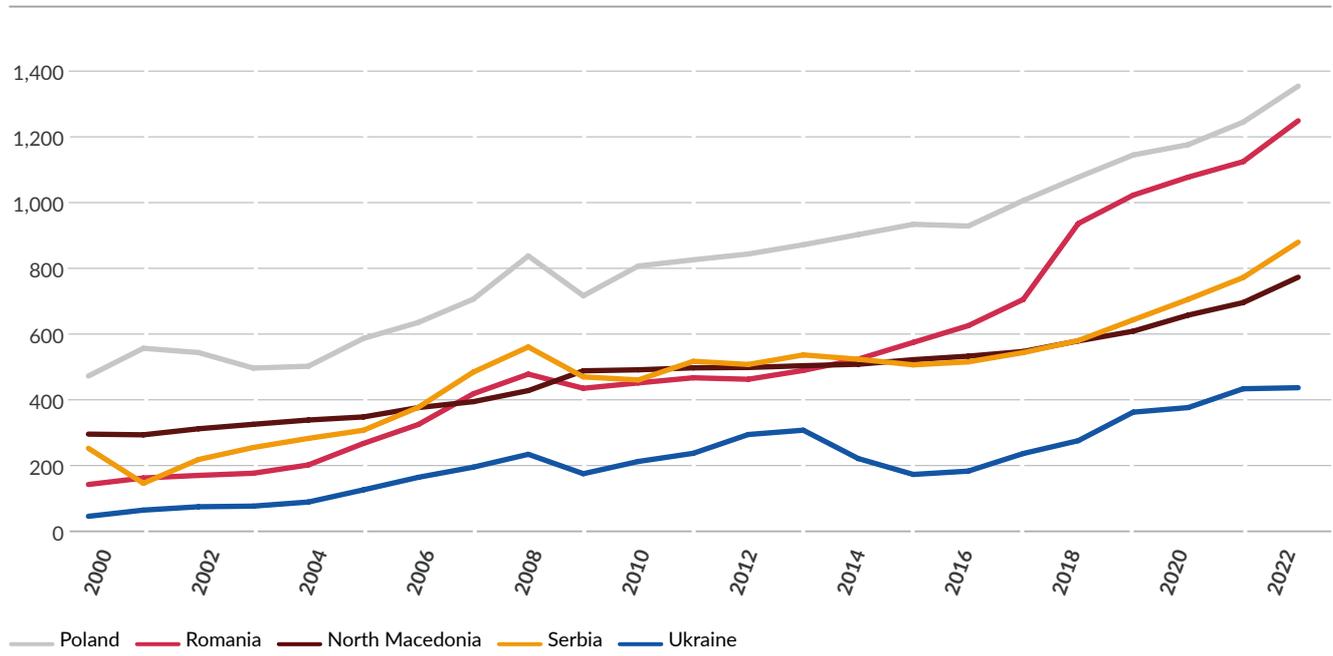
FIGURE 17: The share of Ukraine's population that is employed (top) and economically active (bottom) is slightly higher than that of the EU and higher than those of many EU-CEE countries at the time of their accession



Note: Data show the employment rate (top) and activity rate (bottom) percentages. For EU-CEE countries, data are for the accession year, and the EU comparison is for the EU-15. For non-EU member states, the data are for 2022, except Ukraine and Kosovo where 2021 is the latest available, and the EU comparison is for the EU-27.

Sources: Eurostat, national sources, wiiw.

FIGURE 18: Wage levels in Ukraine are very low by the standards of the wider region, although they have risen since 2016



Note: Average monthly gross wages, total economy, in EUR. Data in the figure below are for 2022.

Sources: Eurostat, national sources, wiiw.

ment rates likely have several causes, including very limited unemployment benefits, which force people to take whatever job they can get.

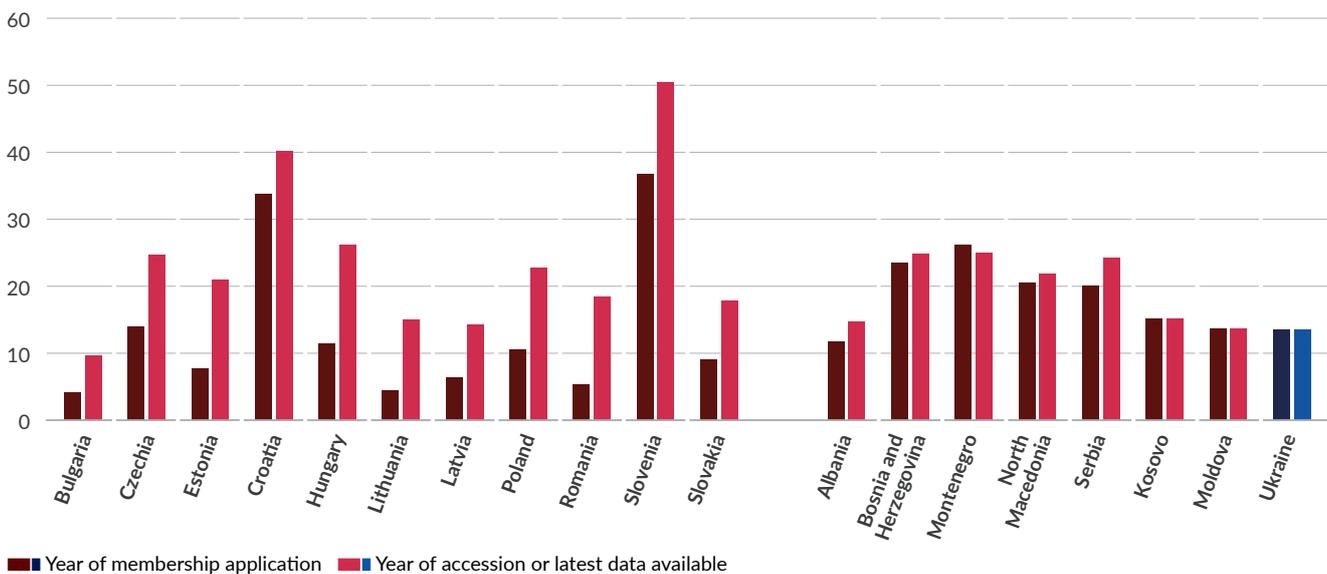
Even before the war, Ukraine's demographic challenges were almost uniquely problematic in the CESEE context (ibid.). This was already straining the labour market, holding back the development of promising areas of the economy, and capping overall growth potential. During the last three decades, Ukraine's population fell by almost 20 percent, substantially more than in comparator countries. Among all the challenges that Ukraine will face during the course of its EU accession and reconstruction, the most difficult may very well be overcoming these demographic hurdles.

Tverdostup (2023) outlines several reasons for Ukraine's particularly negative demographic trends even before the war, all of which mark out the country as something of a negative outlier even within CESEE, and all of which are relevant for EU accession and post-war reconstruction planning. First, although women on average give birth at a younger age than in peer countries, Ukraine has a particularly low birth rate by CESEE standards. Second, even before the war,

Ukraine had a particularly low level of life expectancy by CESEE standards owing above all to health issues, especially among men. Third, Ukraine has experienced much more net outward migration over the past three decades than its CESEE peers, and this has intensified sharply since the first Russian invasion, in 2014. Fourth, the Ukrainian population has undergone drastic ageing over the past three decades, meaning that the decline in the working-age population (i.e. the key for reconstruction) has been even bigger than that of the population as a whole. The share of the population aged 65 and above in the total population increased from 12 percent in 1990 to almost 18 percent in 2021, whereas the share of the population aged under 14 (an indicator of the future workforce) dropped from 21 percent in 1990 to 15 percent in 2021.

As a result of the war, the demographic outlook is even more bleak. Even in the best-case scenario (i.e. that the war ends soon and without a major escalation), the population will never return to 2021 levels and, in 2040, will stand at around 36 million, which is 17 percent lower than before the war (ibid.). The working-age population (aged 18 to 60) will shrink to 19.8 million, or by 22.6 percent compared to 2021.

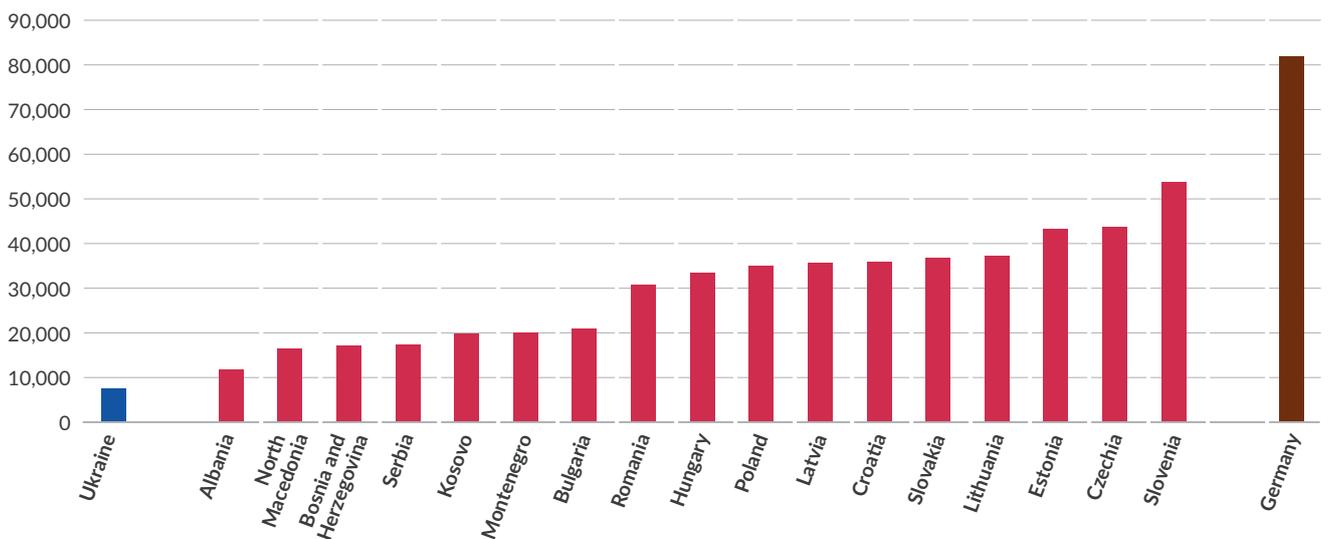
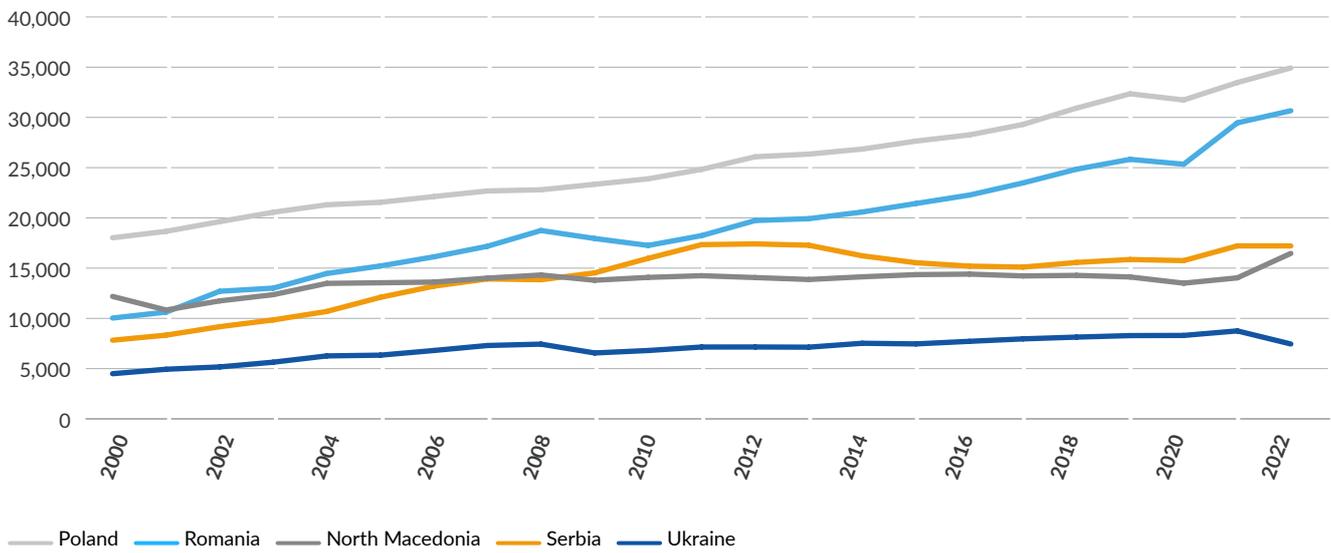
FIGURE 19: **Ukraine's wage levels are very low compared to that of Germany, but higher than those of many EU-CEE countries at the time of their application**



Note: Data show nominal wages as a percentage of the German level. For non-member states, the accession year is 2022.

Sources: Eurostat, national sources, wiiw.

FIGURE 20: Ukraine’s labour productivity has only grown slightly over the last two decades and is by far the lowest among EU members and other accession hopefuls



Note: Labour productivity, in millions of EUR. Real GDP based on EUR 2019 prices, divided by LFS employment. Data in the figure at the bottom are for 2022.

Sources: Eurostat, national sources, wiiw.

Even in this best-case scenario, the cumulative number of refugees fleeing Ukraine will be 8.3 million by the end of 2023.

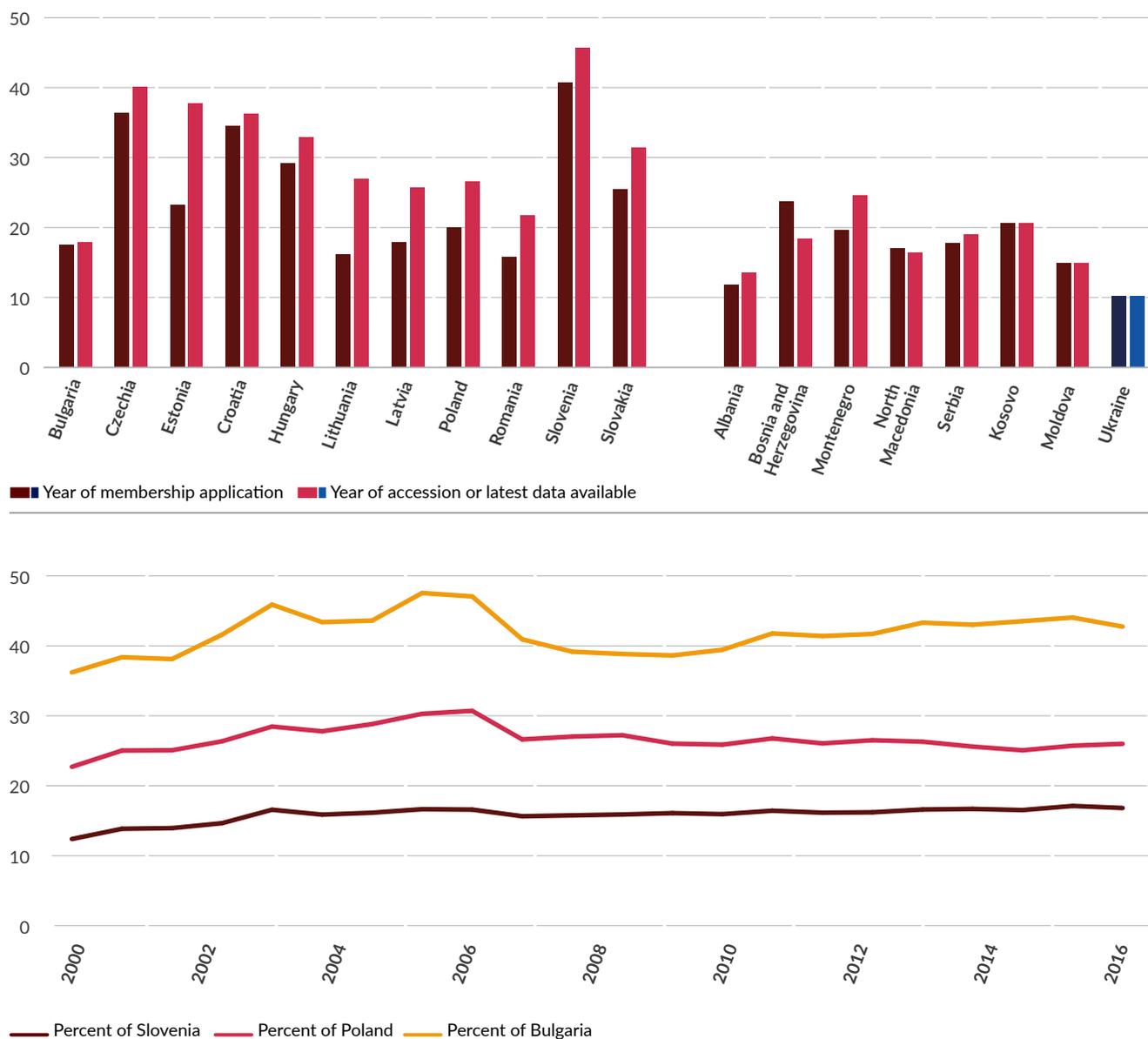
One of the reasons that Ukraine saw such strong outward migration even before the war was the low level of wages. As of 2022, the average wage levels in Ukraine are the lowest among all CESEE countries (Figure 18). They are around 14 percent of those of Germany, but comparable with the level of some EU-CEE countries, relative to Germany, at the time of their accession (Figure 19). Bulgaria joined the EU with wages at only around 10 percent of the German level, while Lithuania (15 percent) and Latvia (14 percent) had levels (relative to Germany) similar to that of Ukraine today. At the time of their application, only Croatia and Slovenia had higher wages relative to Germany than Ukraine does now (also shown in Figure 31). Many EU-CEE countries first applied to the EU with nominal wages relative to Germany substantially lower than Ukraine's now.

These data also make clear that the labour cost differential for Ukraine versus Germany is at a level where it proved to be highly attractive for German (and other EU) firms to outsource production to CESEE countries during previous accession rounds. Ukraine can also feasibly take this route on its way to EU accession, provided that other Ukraine-specific policies are in place, most notably war risk insurance.

Figure 18 also shows that many of Ukraine's CESEE peers experienced phases (especially recently) of very fast wage growth, but this has not been the case with Ukraine. This can be interpreted in two ways. First, low wage growth is in line with stagnant productivity (Figure 20 and Figure 21), which indicates that the economy cannot afford higher wages. Ukraine's labour productivity seems to be very low compared to those of all comparator countries, at only around 10 percent of the German level (Figure 21). It is also well below the level of EU-CEE countries when they joined the bloc, although not significantly below those of Romania and Bulgaria at the time of their membership applications. This indicates a clear area of weakness for Ukraine and one that will have to be addressed during the accession process to make the country able to compete in the single market and not to rely purely on low wages.

However, a second and more optimistic interpretation is that there is a lot of potential for wage growth if productivity growth picks up as it did in EU-CEE countries, such as Poland and Romania (and as it should if Ukraine starts on a credible EU accession path with the associated reforms and higher FDI inflows). Fast wage growth will not negatively impact trade performance if accompanied by commensurate productivity improvements, as happened in most EU-CEE countries.

FIGURE 21: Ukraine’s labour productivity is only about 10 percent of the German level and well below the levels of previous joiners, and it has barely improved versus EU-CEE countries over the past two decades



Note: Data show labour productivity, measured as gross value added divided by the number of people employed, as a percentage of the German level (top) and those of selected EU-CEE countries (bottom). For non-member states, the accession year is the latest available data (i.e. 2021). Although Poland and Hungary applied in 1994, the membership year here is taken as 1995, as no earlier data are available. Romania applied in 1995, but 1996 is the first year of available data. North Macedonia applied to join in 2004, but 2010 is the first year of available data. Data for Ukraine are available from 2000 onwards.

Sources: National sources, wiiw.

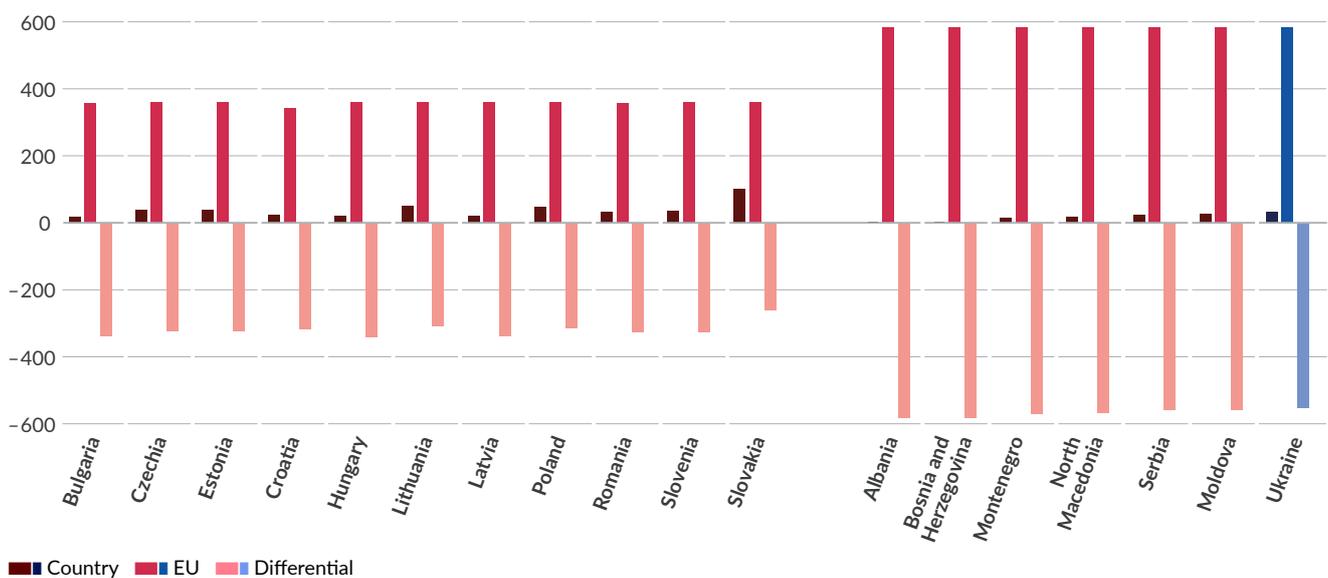
The capacity to cope with competitive pressure and market forces within the EU

Like any developing country, Ukraine's low level of labour productivity reflects a combination of weaknesses in education, innovation, training, Research and Development (R&D) and infrastructure. Ukraine has a lot of work to do to improve in all these areas. However, as was the case with most indicators discussed above, Ukraine is generally not a significant outlier relative to the EU-CEE countries and other accession hopefuls at the time of their membership applications.

When it comes to innovation, Ukraine compares very poorly with the EU on the standard indicators, but in this sense is typical of CESEE as a whole. In terms

of patent registrations per 1 million people, Ukraine's average is 32 per year in the five years leading up to 2021, which is actually higher than any other accession hopeful but only a fraction of the EU's 583 over the same period (Figure 22). In this sense, Ukraine and all accession hopefuls are an extreme version of the EU-CEE countries, which also joined with a huge innovation deficit (at least when measured by patents) versus the EU. Although there is evidence of some innovation catch-up for the most advanced EU-CEE countries (e.g. Slovenia), overall there is still a big innovation gap between the region and the top performers of Northwest Europe. As of 2021, only Estonia and

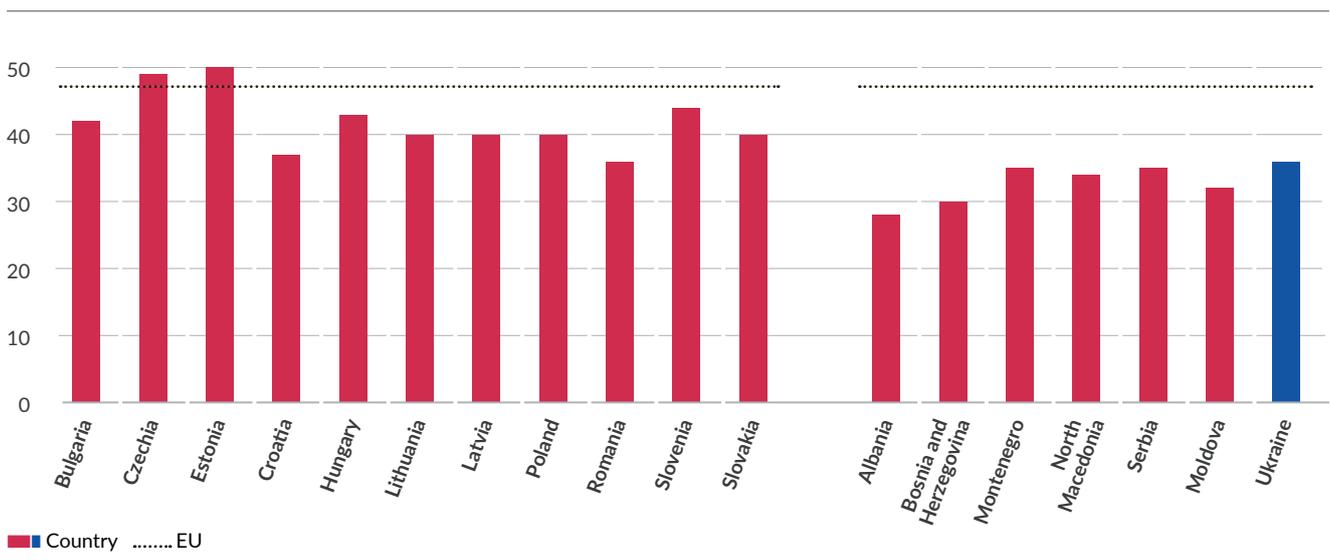
FIGURE 22: Ukraine's innovation performance measured by patent registrations is very weak compared with that of the EU, but in this sense Ukraine is a typical CESEE country



Note: Data show patents granted per 1 million people, five year averages. For EU-CEE countries, the five years are those immediately preceding, but not including, EU accession. For non-EU member states, the five years are 2017–2021. 2022 data are not available.

Source: WIPO.

FIGURE 23: **Almost all CESEE countries are below the EU average for innovation, but Ukraine had the highest score among the accession hopefuls in 2021**

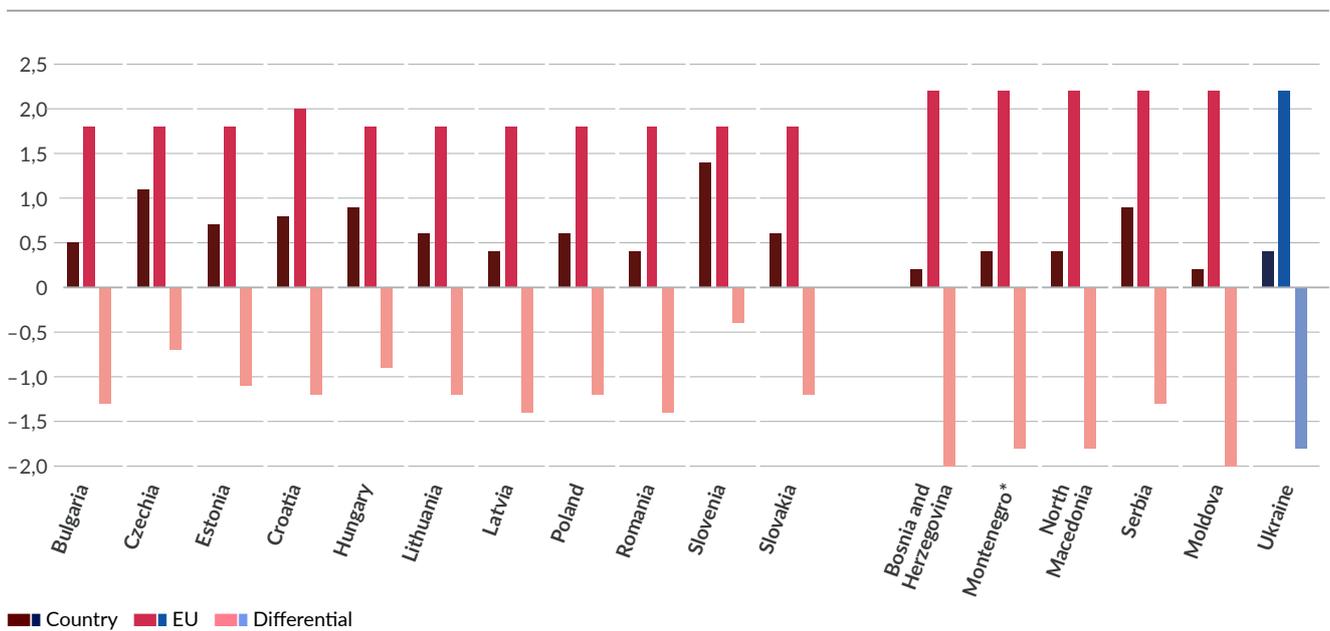


Note: WIPO Global Innovation Index scores for 2021.

Source: WIPO.

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FIGURE 24: **Ukraine spends very little on R&D as a share of its GDP, both in relation to previous joiners and the EU**

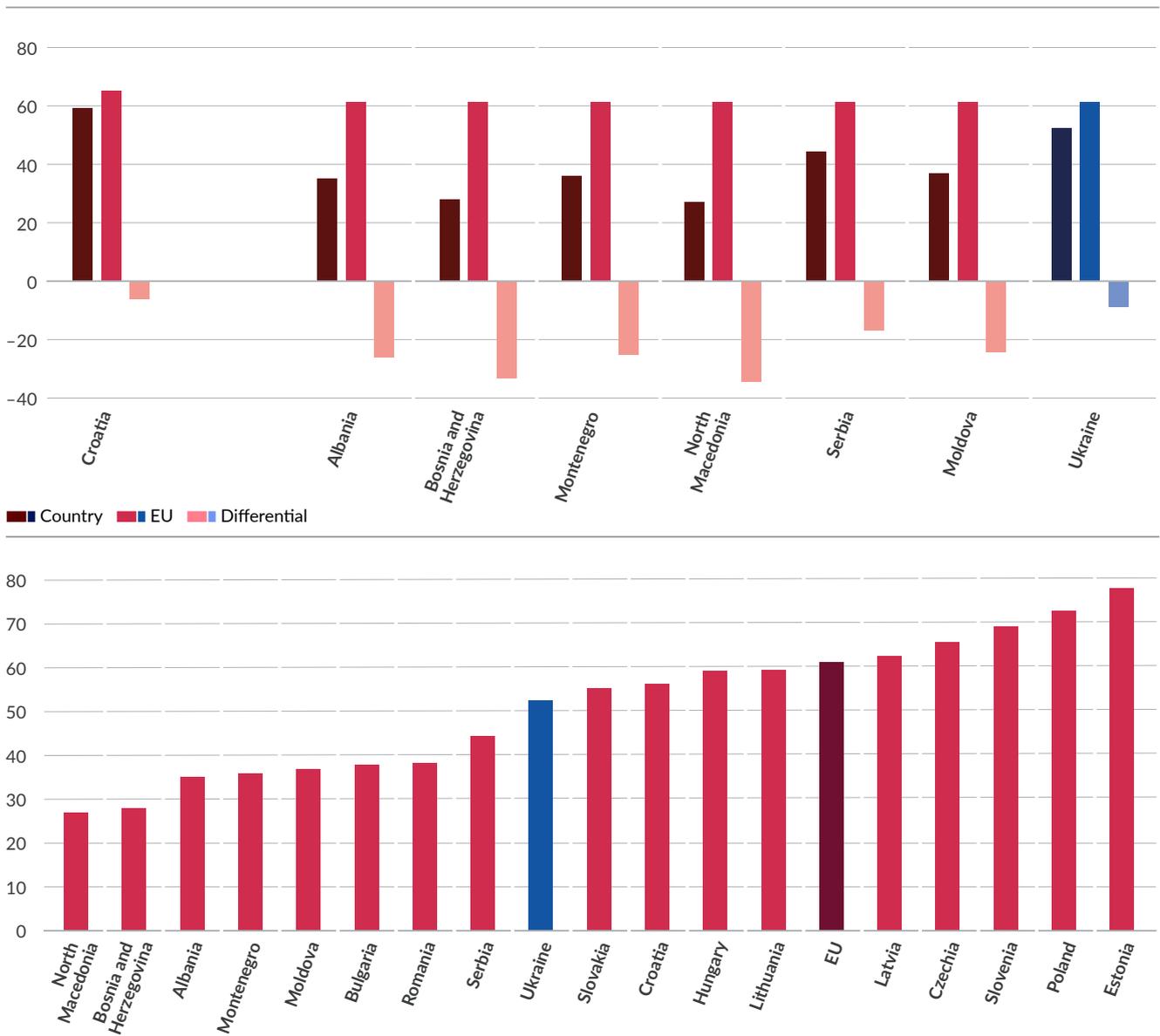


Note: Data show R&D spending as a share of GDP, as five-year averages. For EU-CEE countries, the years are the five years leading up to (but not including) accession. For non-EU-members, the data are for the 2016-2020 period, the last five years for which data are available. Montenegro data are for the 2015-2019 period, the latest available. Data for Albania and Kosovo not available.

Source: World Bank.

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FIGURE 25: **Ukraine's PISA scores are lower than the EU average, but easily the best among the accession hopefuls and higher than those of some EU member states**



Note: Data on the top show PISA scales in reading, maths and science, calculated by the WIPO, as of 2013 (Croatia) and 2022 (all other countries), and the difference versus the EU for the relevant year. Data at the bottom show PISA scales in reading, maths and science, calculated by the WIPO, as of 2022.

Source: WIPO.

Czechia reached the EU average in the WIPO Global Innovation Index (Figure 23). Of the non-EU member states of CESEE covered here, Ukraine's score of 36 was actually the highest.

The innovation situation as measured by patents is linked to the fact that Ukraine spends relatively little on R&D as a share of its GDP, again in line with its CESEE peers. On average, Ukraine spent 0.4 percent of GDP on R&D in the 2016–2020 period, which is mostly in line with other accession hopefuls but less than a quarter of the EU's 2.2 percent average over the same period (Figure 24). This points to a substantial innovation gap that will pose a challenge to Ukraine's economic convergence and must be addressed during reconstruction and recovery.

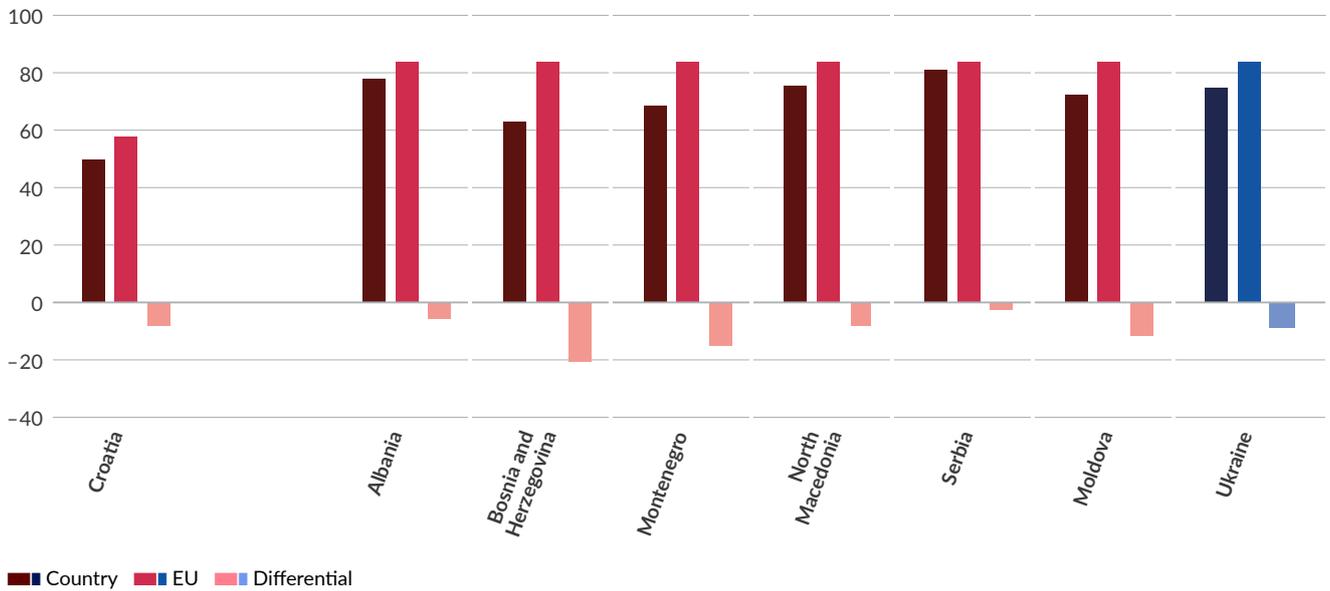
On education, Ukraine seems to be quite a strong performer in the regional context. Historical data for PISA scores only go back to 2013, meaning that of the EU-CEE countries only Croatia is available for comparison at the time of its entry. The data show that Ukraine does have an education deficit versus the EU, but one that is comparable with that of Croatia at the time of its accession and much smaller than those of all other accession hopefuls (Figure 25, top). As of 2022, Ukraine's PISA score was actually higher than some EU member states (Figure 25, bottom). According to the European Centre for the Development of Vocational Training (CEDEFOP), Ukraine is comparable on the PISA metric, depending on the subject, with EU member states Croatia, Greece, Italy, Luxembourg, Malta and Slovakia, which is a very healthy position for a country that is just starting its EU accession process (CEDEFOP 2022).

Ukraine's level of digitalisation also seems to be reasonable in the regional context. The World Intellectual Property Organisation (WIPO) ICT infrastructure score for Ukraine in 2022 was 74.9, which is 8.8 points below the EU average and very similar to that of Croatia when it joined the EU in 2013 with a score on the same index that was 8.2 points below the EU average (Figure 26). Ukraine's score is lower than those of some of the Western Balkan countries, especially Serbia, which at 81.1 in 2022 almost reached the EU average (83.7). Nevertheless, there is little to suggest here that Ukraine is a significant outlier in a negative sense. While the war has caused some short-term difficulties for its digital infrastructure, the country's

IT sector overall is in good health, having undergone rapid growth in the pre-war years (see next section for more details), albeit running up against labour shortages. The government has also organised a strong response to tackle the digital challenges of the war (OECD 2022).

Relative to the EU and most of the rest of CESEE, Ukraine's transport infrastructure is weak, as shown by the World Bank's Logistics Performance Index (Figure 27). This is a further factor holding back the economy's productivity. Across most modes of transport, Ukraine's transport infrastructure density is very low compared to those of both the EU and its non-EU peers in CESEE (Kosse 2023). The only exception to this is railways, where Ukraine's infrastructure density (measured in kilometres per 1 million inhabitants) is comparable to those of Poland and Romania. Ukraine's economy is very energy-intensive, often two to three times the level of some EU-CEE countries, such as Poland and Romania (*ibid.*). This is partly because saving energy has been discouraged by low energy prices; as of 2021, household energy prices were considerably lower than for regional EU and non-EU peers. The war has resulted in a sharp increase in energy integration between Ukraine and the EU (*ibid.*).

FIGURE 26: **Ukraine's level of IT infrastructure is weaker than that of the EU, but comparable with that of Croatia in 2013 and above average compared with other accession hopefuls**

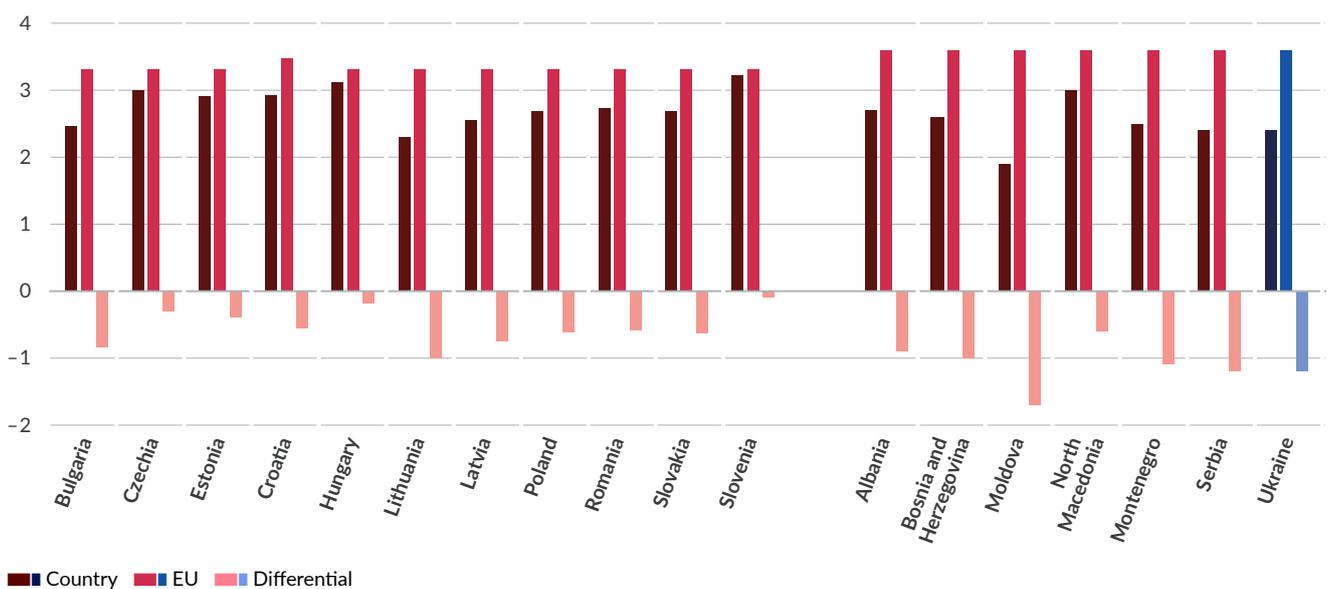


Note: Data show the ICT infrastructure index, calculated by the World Intellectual Property Organisation (WIPO), as of 2013 (Croatia) and 2022 (all other countries), and the difference versus the EU for the relevant year.

Source: WIPO.

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FIGURE 27: **Ukraine's trade- and transport-related infrastructure is among the weakest in CESEE and further from the EU level than most EU-CEE countries were in 2007**



Note: Data show the World Bank's Logistics Performance Index. For EU-CEE countries, the year shown is 2007 (earliest available) except for Croatia (2014; no data for 2013). For non-EU member states, the year shown is 2022. For all countries, the comparison is with the World Bank's EU aggregate. 1 = worst, 5 = best.

Sources: National sources, wiiw.

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Economic structure

Compared with peer countries Poland and Romania, Ukraine's economic structure is skewed relatively more towards agriculture and mining and less towards manufacturing (Figure 28, top). In 2021, agriculture gross value added accounted for 11 percent of GDP in Ukraine, compared with 5 percent in Romania and only 2 percent in Poland. Meanwhile the value added of Ukraine's mining and quarrying sector was equivalent to 6 percent of GDP, compared with around 1 percent for both Poland and Romania. By contrast, the gross value added of the manufacturing sectors of Poland and Romania accounted for around 17 percent of GDP, compared with 10 percent in Ukraine. As outlined elsewhere in this report, it is feasible that Ukraine will follow the EU-CEE model of FDI inflows into manufacturing as the main driver of convergence, and therefore that the share of the agricultural sector in overall GDP will shrink, as has been the case for Poland and Romania (Figure 28, bottom). However, Ukraine's particular comparative advantages in agriculture may lead it to follow a somewhat different path.

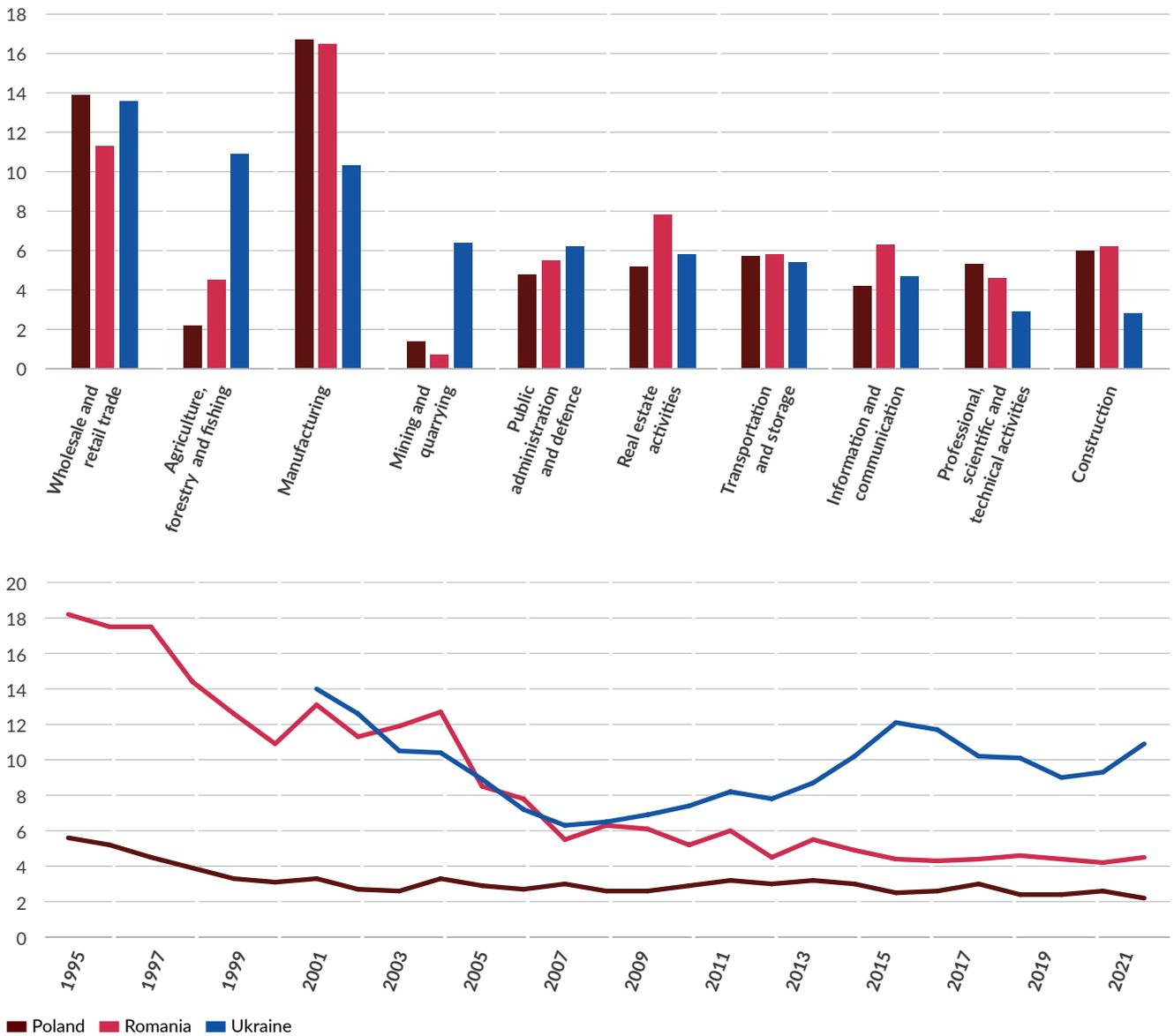
There is a big difference in terms of productivity and external competitiveness between Ukraine's main economic sectors. The agricultural and IT industries in Ukraine show relatively high levels of productivity, while the manufacturing industry and other services lag behind. In agriculture, labour productivity levels in Ukraine reach close to 50 percent of the levels in Poland and Romania and close to 80 percent of that in Serbia (Figure 29), while manufacturing productivity levels are much lower (about 20 percent of those in Poland and Romania, and 50 percent of those in Serbia). Among tradable services, there is also a big divergence, with productivity in the IT industry being much higher relative to peers than in professional, scientific and technical services. Therefore, given the very low wage level in the economy as a whole, some industries – especially agriculture and IT – are currently very competitive as regards relative labour unit costs, and this is reflected in their strong export performance.

Again, we can interpret this in two ways: Either the differentiation across industries reflects comparative advantages in certain sectors of the economy that will persist over time. Or, more optimistically, the currently more competitive industries (i. e. agriculture and ICT) point to what might also be possible in other industries.

Thanks primarily to the DCFTA (Deep and Comprehensive Free Trade Area), Ukraine's deeper integration with the EU economy over the last decade has helped to drive serious improvements in the standards of its products. Before the war, Ukraine had already established itself as a competitive global supplier of some agricultural products, with yields in some commodities being on a par with or even above those of EU member states. The excellent quality of Ukraine's soil gives it a major comparative advantage. A quarter of the Earth's "chernozem" – a rich, black soil that is among the most fertile in the world – is located in Ukraine (TRT World 2022).

A recent sharp increase in demand for Ukrainian IT services from the US points to the quality of Ukraine's product. Advanced and successful IT clusters have been established in several cities, and Ukraine has the highest share of digitally delivered services exports in CESEE. This is on the back of decent maths and IT education as well as a tax system that incentivises this kind of activity. Several major foreign firms (e. g. Apple, Microsoft, Boeing and Siemens) have set up R&D activities in Ukraine. On the technical but important issue of non-tariff barriers to trade, Ukraine has meanwhile done much in terms of quality controls and has thereby overcome barriers to trade, which is linked above all to the association agreement (AA) and the DCFTA.

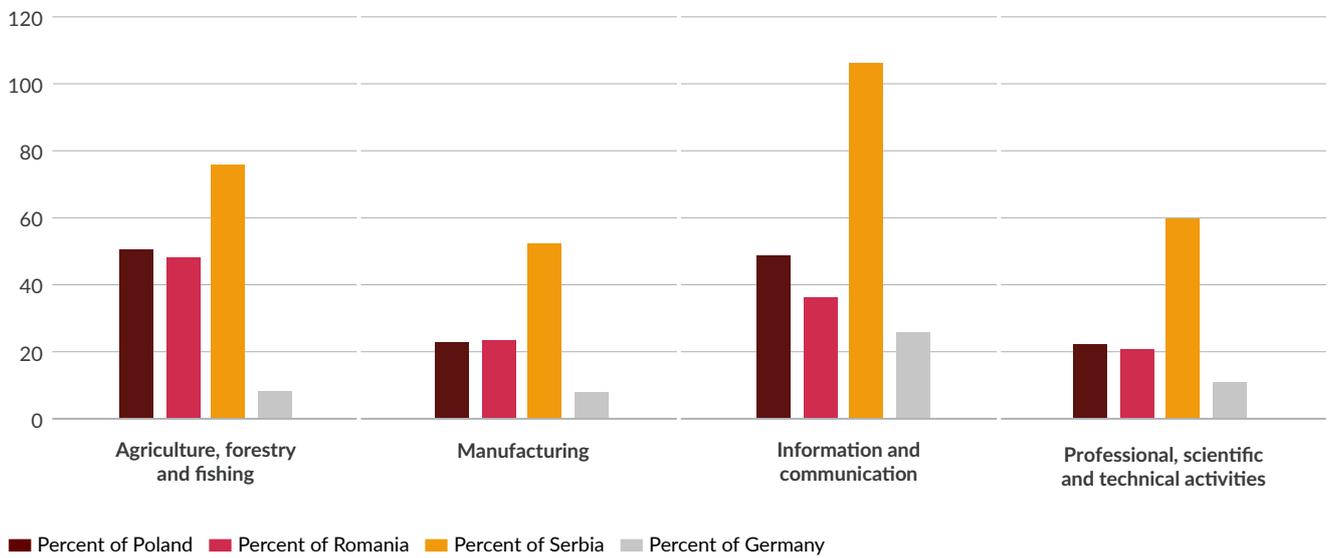
FIGURE 28: **Agriculture and mining play a bigger role in Ukraine than in EU-CEE peers, while manufacturing is less important. In the course of EU accession, EU-CEE countries' agricultural sectors have tended to become less important for overall GDP**



Note: Data show gross value added by selected sector as a percentage of GDP in 2021 (bottom) and gross value added in agriculture as a share of GDP over time (top). Selected sectors are those where the gross value added is equivalent to 5 percent of GDP or more in at least one of the three countries.

Sources: Eurostat, national sources, wiiw.

FIGURE 29: **Ukraine's relative labour-productivity strengths lie in ICT and agriculture**



Note: Ukraine's relative labour productivity in 2022 – percentage of selected peers.

Sources: National sources, wiiw.

Existing economic integration with the EU

In its “Opinion on Ukraine’s application for EU membership of 17 June 2022” (European Commission 2022a), the Commission highlighted that the AA/DCFTA “already capture an unprecedented amount of the EU acquis. Ukraine has gradually approximated to substantial elements of the EU acquis for some chapters.” Movchan and Pindyuk (forthcoming) found that thanks to these agreements with the EU, Ukraine has strongly redirected trade towards the bloc, thereby allowing easier access to superior inputs and incentivising production of higher quality. In addition to being more ambitious than the current EU agreements with most West Balkan countries, the EU-Ukraine DCFTA is even more ambitious than those with Poland and Bulgaria at the time when they joined the bloc along with a number of other countries (in 2004 and 2007, respectively). Using the methodology of Dür, Baccini and Elsig (2014), the Ukraine-EU DCFTA is assigned a depth index of 7,³ similar to EU Stabilisation and Association Agreements (SAAs) with Albania and Serbia, which are the most advanced among the Western Balkan countries. The AA/DCFTA framework can be built upon and deepened in the run-up to Ukraine’s accession (Rabinovych 2022).

Despite these strengths, Ukraine’s integration into global value chains is fairly limited and skewed towards less sophisticated exports, such as food and metals. To the extent that Ukraine is integrated into global value chains, it is primarily through the EU. According to the UNCTAD-Eora Global Value Chain

database,⁴ the EU accounted for more than half of the sum of the country’s backward and forward trade linkages in 2019, putting Ukraine ahead of Serbia and Montenegro but behind Albania, North Macedonia and especially Bosnia and Herzegovina (where the EU share exceeds 80 percent). Similar to Western Balkan countries, the bulk of Ukraine’s value chain integration with the EU is represented by forward linkages. In other words, it is primarily Ukraine that supplies raw materials and intermediate inputs to the EU rather than the other way around. Ukraine’s exports to the EU are traditionally largely composed of metals and food. In 2021, 30 percent were manufactured goods classified chiefly by material (which includes iron and steel), 20 percent non-energy crude materials, and 14 percent food.⁵ However, the impact of the war has caused a relative decline in metals exports and a relative increase in food sales to the EU.

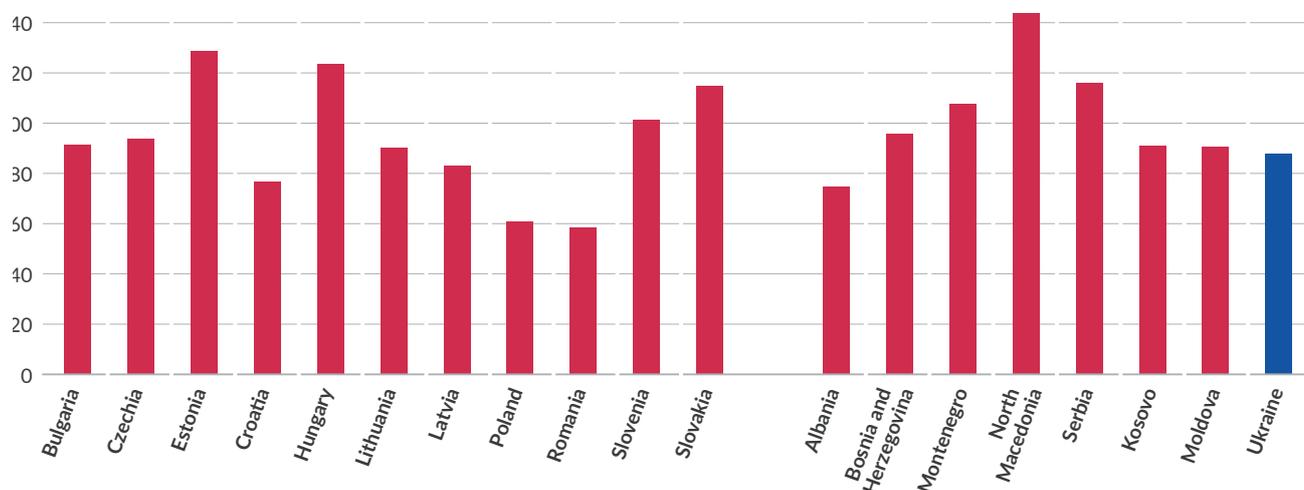
In terms of its trade openness ahead of accession, Ukraine is a fairly typical case in the CESEE context (Figure 30). Exports and imports of goods and services accounted for almost 90 percent of GDP on average in the 2018–2022 period, below the 101 percent average for the accession hopefuls as a whole over this period but fairly close to the EU-CEE average (93 percent) in the years leading up to their accession. This implies that Ukraine’s degree of international economic integration is not at a level where it will prove a barrier to accession (on the other hand, this openness is relative to a very low level of GDP considering the size of the population).

3 The depth index is a simple additive index of seven key elements that can be part of an FTA: tariff reduction, intellectual property rights protection, government purchases, technical barriers to trade, services, investments and competition. An index value can vary between 0 (no key element is covered by the FTA) and 7 (all key statements are covered), with higher values indicating a deeper FTA.

4 The UNCTAD-Eora Global Value Chain (GVC) database offers global coverage (189 countries and a “Rest of World” region) and a time series from 1990 to 2018, reporting on key GVC indicators.

5 For details on the standard international trade classification (SITC), see Eurostat (2023).

FIGURE 30: **Ukraine's trade openness is only slightly below the CESEE average in the years leading up to accession**

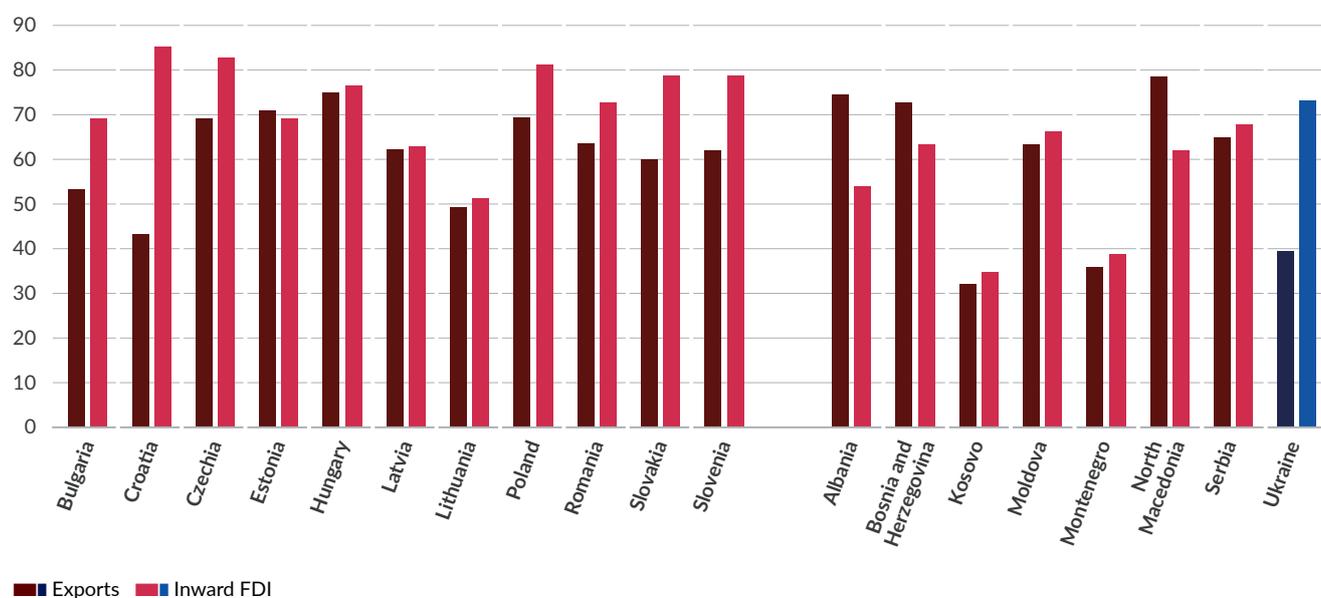


Note: Data show total trade in goods and services (exports and imports) as a percentage of GDP, averaged over five years. For EU-CEE countries, the five years are those before (but not including) the accession year, and the EU comparison is for the EU-15 over the same period. For non-EU member states, the five years are 2018–2022, and the EU comparison is for the EU-27 over the same period.

Sources: National sources, wiiw.

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FIGURE 31: **Ukraine trades less with the EU as a share of its total than most CESEE countries, but its share of FDI from the EU is in line with those of its peers**

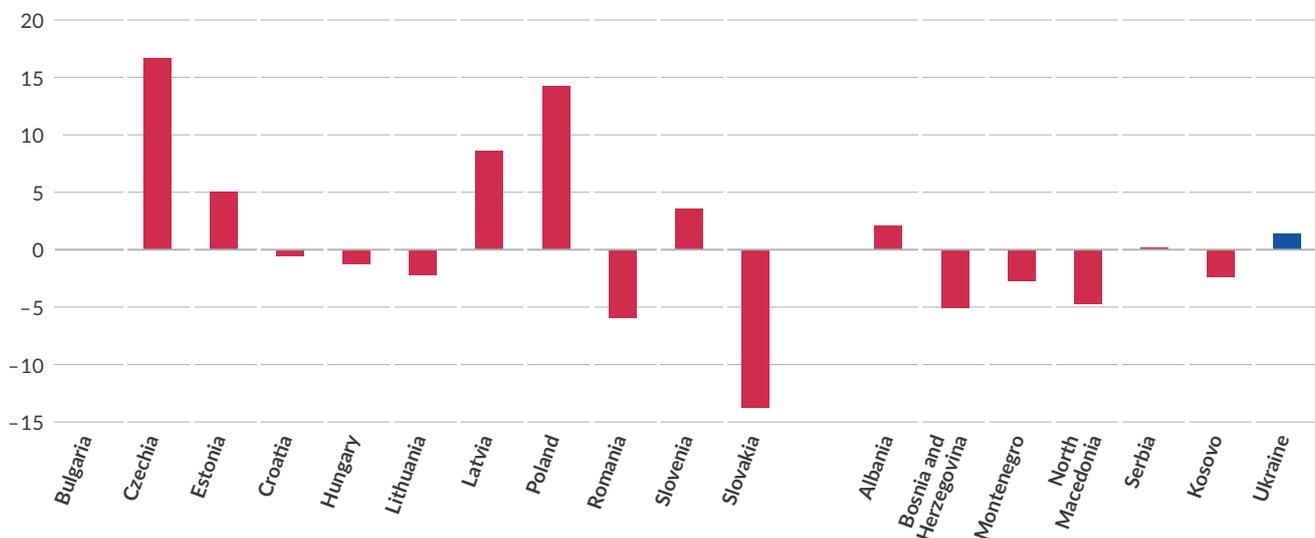


Note: Data show exports to the EU, and inward FDI stock originating from the EU, as a percentage of total exports and inward FDI, averaged over five years. For EU-CEE countries, the five years are those before (but not including) the accession year, and the EU comparison is for the EU-15 over the same period. For non-EU member states, the five years are 2018–2022 (or latest available), and the EU comparison is for the EU-27 over the same period.

Sources: National sources, wiiw.

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FIGURE 32: **Ukraine has not experienced the strong real exchange rate appreciation that several EU-CEE countries did before their accession**



Note: Data show real exchange rates versus the EUR, CPI-deflated, percentage change over a five-year period (positive = appreciation, negative = depreciation). For EU-CEE countries, the five years are those leading up to (but not including) the accession year. For non-EU-members, the five years used are 2018–2022. Data for Moldova are not available.

Sources: Eurostat, national sources, wiiw.

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Ukraine trades less with the EU than most of its non-EU peers and also much less than EU-CEE countries did with the then-EU-15 before their accession (Figure 31). This reflects both Ukraine’s export structure, which features a higher share of commodities that are often sold outside Europe, but also its weak competitiveness relative to the EU market. Again, this can be read in two ways: as a sign of weakness, but also as a signal of major potential for the economy if the right policies are in place. Meanwhile, to the extent that Ukraine attracts FDI, its share from the EU is in line with those of its regional peers.

eral EU-CEE countries (e.g. Czechia, Poland and Slovakia) ahead of their accession, all of which recorded real appreciation or depreciation of over 10 percent versus the euro in the 1999–2003 period.

Ukraine suffered quite sharp currency depreciation during 2022 as a result of the war, but its real exchange rate (CPI-adjusted) versus the euro was actually fairly stable in the five years leading up to the end of 2022, recording a mild appreciation of 1.4 percent over the period (Figure 32). This means that the nominal depreciation of the hryvnia versus the euro was almost exactly offset by higher inflation versus the euro area, keeping the exchange rate roughly balanced in real terms. The Ukrainian hryvnia’s relative real stability versus the euro in the 2018–2022 period stands in stark contrast to the much stronger volatility in sev-

Public finances

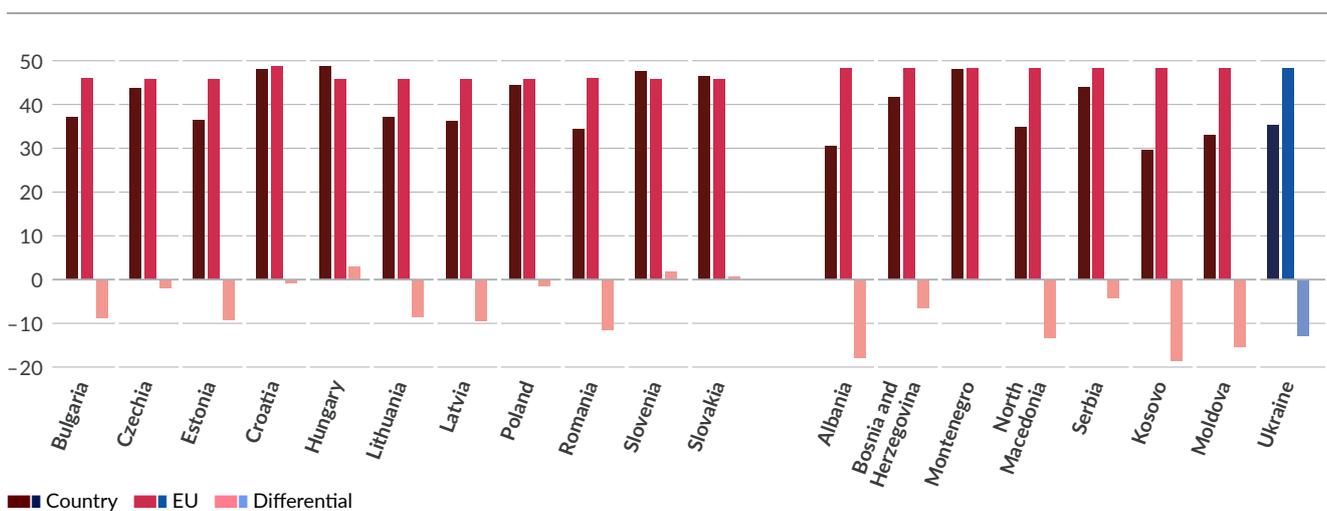
Before the war, the role of the state in the Ukrainian economy was relatively small, with government expenditure as a share of GDP being around 13 percentage points below the EU average in the five years leading up to 2021 (Figure 33). However, this is by no means unusual by the standards of other accession hopefuls and also comparable with some previous joiners, such as Romania and the Baltic states. At the same time, the importance of the Ukrainian state has naturally increased dramatically since the invasion, and government spending in 2022 was equivalent to almost 59 percent of GDP, which is well above the EU average of around 50 percent.

Ukraine's fiscal position is very difficult because of the war, but the trend of the last five years does not imply that the country has serious structural fiscal imbalances, nor was public debt at a worrying level. Even including 2022, Ukraine's average budget deficit in the last five

years was equivalent to 5.8 percent of GDP. This was 2.6 percentage points higher than the EU budget deficit over the same period. But in the five years before their accession, Czechia, Hungary, Poland and Slovakia all had bigger budget deficits relative to the EU (Figure 34).

Meanwhile, even taking into account the sharp increase in 2022, Ukraine's public debt as a share of GDP is significantly lower than the EU's average and seems to be in line with those of its regional peers and the 2004–2013 joiners over the last five years. However, this may change now as the costs of the war cause debt to increase rapidly, although a large part of this is concessional and therefore does not imply big financing risks. The war and its impact provide a major caveat to all of this, given the strain that it has placed on Ukraine's budget. But this should be dealt with by the EU, US and others to minimise the impact (Bogdan and Jovanović 2023).

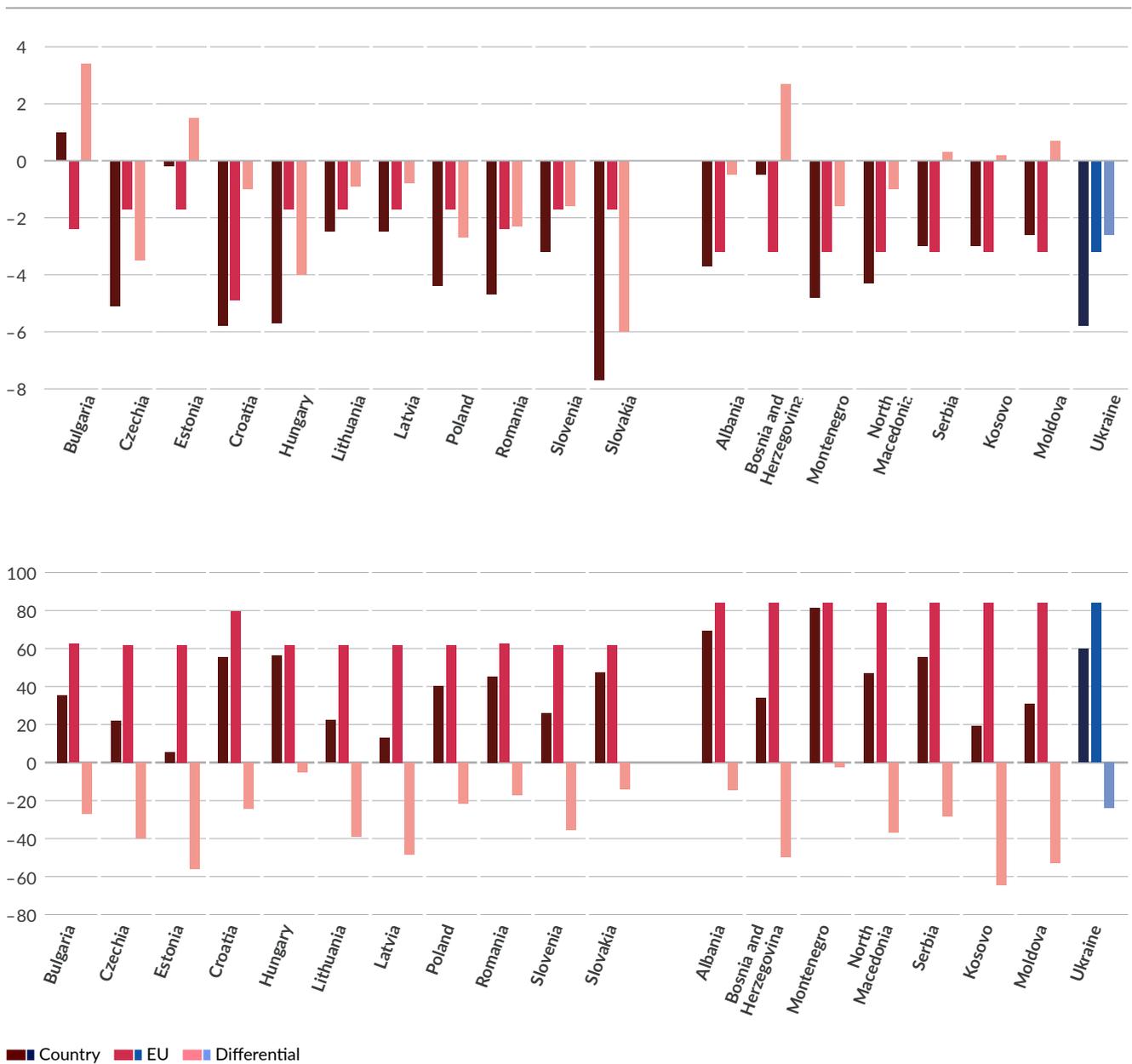
FIGURE 33: The share of government spending in GDP has generally been low in Ukraine compared to the EU, but this changed dramatically in 2022 due to the demands of the war



Note: Data show general government spending as a percentage of GDP, five-year averages. For EU-CEE countries, the five years are those immediately preceding (but not including) EU accession. For non-EU member states the five years are 2017–2021. We do not include 2022 data as this was an extreme outlier for Ukraine.

Sources: Eurostat, national sources, wiiw.

FIGURE 34: Ukraine's government budget deficit is higher than those of other accession hopefuls, but it is comparable to those of most EU-CEE countries ahead of their accession (top). At the same time, Ukraine's public debt is not especially high relative to those in the EU or by regional standards (bottom)



Note: Data show five-year averages for the government budget balance as a share of GDP (top) and public debt as a share of GDP (bottom). For EU-CEE countries, the five years are those before (but not including) the accession year, and the EU comparison is for the EU-15 over the same period. For non-EU member states, the five years are 2018–2022 (or latest available), and the EU comparison is for the EU-27 over the same period.

Sources: National sources, wiiw.

Policy recommendations for the EU

Our results show that Ukraine is not an outlier on most metrics relevant to the economic Copenhagen Criteria in the CESEE context, but that it will face some unique challenges as a result of the war. Therefore, it will be very important, first, to use the reconstruction money and support (e.g. technical assistance) to steer Ukraine's recovery in a way that dovetails with getting its economy ready for the EU single market and, second, to work especially on the Copenhagen Criteria-related weaknesses that we have identified so that Ukraine can handle the single market once it has entered it. We find that this is all economically feasible and therefore primarily a question of the political will of Ukraine and the EU to tackle this challenge and to set the appropriate course. On the Ukrainian side, much more work clearly needs to be done to systematically tackle corruption and improve the rule of law, among other things. For the EU, a reform of the Common Agricultural Policy (CAP) and changes to its decision-making processes so as to prepare itself for the addition of new member states will also be important.

In this context, and following on from the main areas of Ukrainian weakness identified in this paper, we outline in this section five areas where the EU should target its support to Ukraine in the coming years as a means to help the country meet the Copenhagen Criteria while recovering and reconstructing itself after the war.

Policy 1: Assist Ukraine in efforts to mitigate its demographic disaster

The most fundamental condition for a swift return of the population is security guarantees, without which many or even most refugees will not return. In addition, to mitigate Ukraine's demographic decline, credible incentives need to be created to encourage refugees and pre-2022 labour emigrants to return to Ukraine. The EU should either make Ukrainians eligible

for Assisted Voluntary Return (AVR) programmes or establish new ones specifically for Ukrainians, as outlined in Bogdan and Jovanović (2023). This would provide pre-departure assistance as well as financial and practical support for travel arrangements. The EU should set up formal communication channels with Ukrainian authorities to exchange information on the profiles and needs of those returning, which would help Ukrainian authorities to prepare for arrivals and to allocate resources more effectively. A joint EU-Ukrainian approach could develop and broaden circular migration schemes and create incentives for EU firms to employ Ukrainians in Ukraine via "virtual mobility". The EU should support return programmes for Ukrainians, fund relocation back to Ukraine, and direct housing support for returnees.

The reinvigoration of the Ukrainian labour market as part of reconstruction will be key (Tverdostup 2023). Any measures that allow business activity and the labour market to recover quickly in Ukraine – accompanied by active labour market policies that support mobility within the country as well as training and re-training programmes to adapt the labour force to the new conditions of strongly changed structures of economic activity – would provide support and incentives to returnees. In all these areas, EU support measures and technical assistance will be important.

The EU has and will continue to benefit from the inflow of often very highly qualified and skilled Ukrainian workers, who are helping to mitigate EU labour shortages. Even after the war ends, the EU's "pull" on Ukrainian workers will be very strong, and this will pose additional challenges when it comes to enticing workers to come back to and stay in Ukraine. As EU-CEE countries have in the past, Ukraine will most likely experience some more outward migration as it gets closer to EU membership and the free movement of labour. Yet a continuation or even intensification of the model whereby many of the best brains and

most skilled workers of Ukraine stay in the EU for the long term, often working below their qualification level (so-called “brain waste”), is highly unsatisfactory for a country trying to get back up on its feet. As Ukraine’s EU integration deepens, there is further danger of migration pressure due to traditional economic incentive factors (e.g. income/wage level gaps, prospects for the labour market).

Ukraine and the EU can take inspiration from other EU-CEE countries in which net immigration has turned positive in the last decade or so as well as from those that are managing to attract back young people who have been educated elsewhere in the EU. Many EU-CEE countries are now recording net immigration, which reflects the rising income levels that both encourage previous emigrants to return and attract immigrants from other places (often including Ukraine). Even countries in the Western Balkans (e.g. Montenegro, North Macedonia and Serbia) have experienced “brain gain” – that is, net immigration of highly educated people – since 2010, chiefly due to students returning home after studying abroad (Leitner 2021). Ukrainian policymakers should study this experience to understand what can be done to attract students back to their country, while the EU should deepen higher education cooperation to make sure as many Ukrainian students as possible can take advantage of the opportunities available to train at the EU’s best universities. A further expansion of the Erasmus+ programme for Ukraine would be an important step in this direction (EU NEIGHBOURS east 2023).

Policy 2: Help Ukraine to overcome its longstanding weakness in FDI attraction

The most viable path to sustained economic convergence for Ukraine is to follow the EU-CEE model of attracting Western FDI so as to drive the upgrading of productivity in its economy. Attracting FDI will also counteract the strong balance-of-payments pressures that Ukraine will likely face. Increasing the amount of FDI that Ukraine can attract will be a challenge – partly because of the war but also due to the existing obstacles outlined above – but there are also reasons to be positive. Ukraine already has several of the features that have made countries like Poland and Romania so attractive to Western investors over the last couple of decades. Its combination of very low wage levels, a well-educated population, and strong

potential for technological and productivity catch-up already make it a potentially attractive destination for foreign investors, many of whom have benefitted from exactly these kinds of conditions in EU-CEE over the last 20 years. In addition, Ukraine is well positioned geographically, in that some of its neighbouring countries (e.g. Poland and Romania) have already successfully integrated into European value chains. Over the last two decades, these countries have managed to (re)develop important branches of their manufacturing industries, upgrade the quality of their products, and follow a path of strong productivity catch-up, which in turn has led to significant export growth and the closing of earlier trade imbalances. This potential exists for Ukraine, too, although its integration into European value chains will occur in a different regional and integration context in addition to being influenced by the EU Green Deal and the bloc’s developing industrial policy agenda.

The main difference for Ukraine is of course the war, which will make many investors wary – and this is especially where the EU should help Ukraine. Along with the already-mentioned security guarantees, the EU should engage with businesses that are considering new investments in CESEE to find out which kinds of support they would need to invest in Ukraine and what the major barriers to doing so are. The EU should then react to this feedback by tailoring its support with a range of options, including industrial parks, training facilities, specific forms of infrastructure upgrading, and improvements to transport connections. Supporting improvements to transport infrastructure will be crucial, as well, including establishing new railway lines with a gauge that allows European rail freight to enter and exit Ukraine easily, as well as building up and modernising the country’s port infrastructure (Kosse 2023). However, from the EU side, perhaps the most important action of all will be setting up a war risk insurance scheme to make sure that private capital will enter the country before the war ends as well as after it ends, even if there is still some risk that hostilities could resume.

In addition to these measures, the EU should work with Ukraine to encourage it to develop a sustainable model for attracting FDI beyond just cheap labour and low taxes so as to better prepare it to cope with the pressures of the EU single market. Although low wage levels combined with a relatively well-educated

population are initially a point of attraction for foreign investors, setting a trajectory to compete mostly on the basis of low wage levels is certainly not a good idea. As we have shown above, Ukraine has very low wages relative to Germany. Competition mostly on the basis of labour costs exposes Ukraine to competition from non-European markets where labour availability is much higher. Moreover, Čulafić et al. (2021) find that when potential FDI investors look at the CESEE region, they no longer focus on labour costs (many parts of Asia, for example, have even lower wages and taxes) but instead prioritise political stability as well as the quality of institutions, infrastructure and education.

Therefore, to attract FDI, it makes much more sense to focus on increasing labour productivity – by improving education, training, institutions and infrastructure – rather than on trying to rely simply on low wages to attract investors. The EU can provide significant support by supplying technical assistance with training facilities, by establishing (circular) mobility programmes, and by (fully) integrating Ukraine into EU educational, R&D and industrial policy programmes as quickly as possible. The EU should also fund and provide knowledge transfer for higher education in the STEM (Science, technology, engineering and math) fields and vocational education, as the standards of both are important drivers of FDI (ibid.).

Policy 3: Develop an industrial policy

Ever since the invasion of 2014, Ukraine has been undergoing a major structural regional shift in its economic activity, and this has been significantly intensified by the full-scale invasion of 2022. Reconstruction should build on the strengths and promising niches identified in several regions and industries (Kochnev et al., forthcoming) so as to make a broader section of Ukraine's industry ready for the demands of the EU single market. This will require a joined-up approach: increased EU market access, an FDI-attraction policy that targets the right areas, investments to improve education and infrastructure, and a modern industrial policy that adapts various EU strategies (e.g. “smart specialisation”) to the Ukrainian context.

EU candidacy is providing an impetus for setting up and harmonising the industrial policy set-up of Ukraine and the other candidate countries, as they need to imple-

ment Chapter 20 (Enterprise and Industrial Policy) as part of the accession process. Ukraine has been aligning its industrial regulatory frameworks and technical standards with those of the EU and has begun participating in the EU Smart Specialisation Platform (S3 Platform) on a regional basis. Smart specialisation requires the state to assume a supporting and collaborative role with other market actors as well as to identify opportunities for specialisation that would build on existing capabilities and niches. Some Ukrainian regions initially started developing smart specialisation strategies on a voluntary basis, but S3 elements were later formally introduced to the State Strategy for Regional Development for 2021–2027, which establishes a more efficient connection between regional economic development and smart specialisation initiatives.

This strategy will require identifying priority areas in accordance with the EU's smart specialisation methodology. With its adoption, many regions have started to develop their own smart specialisation strategies, and registration of Ukraine's regions in the S3 Platform has increased significantly. So far, 15 regions have joined the platform: Cherkasy, Chernihiv, Donetsk, Ivano-Frankivsk, Kharkiv, Khmelnytskyi, Kirovohrad, Kyiv, Luhansk, Lviv, Poltava, Rivne, Ternopil, Vinnytsia and Zakarpattia. Seven regions were close to finalising their strategies before Russia launched its full-scale war of aggression in 2022. With the destruction brought on by the war and the shifts in the geopolitical context, the smart specialisation strategies will need to be adapted to support a process of reconstruction and to address new societal challenges, such as increasing regional disparities.

If Ukraine can support and build export capacity in key industries of the future, it could gain an important foothold in the huge EU market, where the advantages of more developed countries are much less engrained than in more traditional industries. The sectors with the best post-war growth potential are: agriculture and food, ICT, renewable energies, critical minerals, automotive parts manufacturing and the military industry (Movchan and Pindyuk, forthcoming).

To maximise the upside of increased EU market access, Ukraine should make active use of industrial policy in post-war reconstruction – although it must improve on its past record in this area – with EU support. Although the country has had numerous state aid programmes,

they have generally been considered inefficient in terms of encouraging industrial development and boosting competitiveness. Industrial policy for countries at Ukraine's level of institutional development can be viewed sceptically, but best practice examples from other regions provide guidance. Successful examples of industrial policy in Asia show that major strides can be made in the development of industries with institutions that are far from Western European levels. Moreover, instead of having a situation in which advanced institutional quality is a prerequisite for successful industrial policy, the Asian cases – including those of Hong Kong, Japan, Singapore, South Korea and Taiwan – illustrate that both can be upgraded at the same time (Altenburg 2011). With EU support, Ukraine can foster professionalism and accountability for institutions involved in industrial policy. Meanwhile, Ukraine's accelerated EU integration will allow it to follow EU-CEE countries and maximise the opportunities of increased EU funds, participation in EU research networks, and transfer of best practices to support industrial development. Ukraine may well also be able to take advantage of the EU's own renewed openness to industrial policy, which comes in reaction to competition from China and the US. Especially in green energy and critical minerals, Ukraine has the potential to position itself as a key element in any serious EU moves to strengthen its industrial policy in these areas.

Policy 4: Encourage more trade liberalisation

The EU should aim for increased regulatory alignment with Ukraine and get Ukraine more involved in EU forums, debates and initiatives. This should include involvement in the EU Green Deal, digital market integration and digital transition initiatives as well as a deepening of transport connectivity (including TEN-T networks, which is ongoing). Transport integration between the EU and Ukraine is likely to be a challenge, but the EU-Ukraine Solidarity Lanes initiative can provide something of a blueprint for standardisation aimed at improving connectivity (Umland 2023).

On top of the AA/DCFTA, Ukraine has been preparing for Agreements on Conformity Assessment and Acceptance of Industrial Products (ACAA) talks with the EU, which are expected to be concluded in 2024. This will be the first mutual recognition agreement that the EU

will sign with a middle-income country. In this case, the EU should provide further technical assistance for Ukraine to continue reducing technical barriers to trade with the aim of having mutual recognition for product safety (i. e. the ACAA for industrial products and recognition of equivalence for food products) before Ukraine joins the EU.

The EU should also aim to make permanent as many as possible of the temporary liberalisation measures that have been introduced for Ukraine since the 2022 invasion. In agriculture, this will be difficult in political terms, but the EU's goals should be to transform temporary improvements in access to the EU market, such as tariff rate quotas (TRQs) and cargo transport permits, into permanent ones. This would provide businesses with more security and encourage them to take longer-term investment decisions aimed at targeting the EU market. As Ukraine's GDP is currently around 1 percent of the EU's, the potential upside for the country's firms in maximising their exposure to this market as soon as possible is huge.

The EU should also support Ukraine in making it easier for companies outside of the already strong industries to export more to the EU. Increased market access under the AA/DCFTA and subsequently the ACAA will be important here, but not enough on their own. With financial and technical assistance, the EU should support the expansion of the Export Credit Agency of Ukraine to improve access to finance for exporters, with the particular focus being on export insurance. In addition, the EU should continue cooperating with Ukraine to help it to adopt or reduce the cost of several trade regulations in the pipeline, including the Carbon Border Adjustment Mechanism (CBAM), the deforestation initiative and due diligence (Erixon et al. 2022).

Policy 5: Support regional and infrastructure initiatives

To increase the chances of cohesive post-war growth, policymakers will need to diversify economic activities on a region-to-region basis (Kochnev et al., forthcoming). Since Ukraine's regions have dramatically different needs due to the war, in addition to existing regional diversity, EU regional policy initiatives could play a central role. Eastern Ukraine, with its high outward migration and destroyed infrastructure, could

be stuck in a poverty trap. A one-size-fits-all policy will not yield good results. Investment in regionally defined key industries can act as a lever to pull the rest of the economy up, albeit at the cost of uneven growth across industries. To upgrade infrastructure, the EU must offer technical assistance and expertise in the form of project preparation, feasibility studies, regulatory frameworks and capacity-building. Ukraine should collaborate with neighbouring EU countries on cross-border infrastructure projects that promote regional connectivity and economic integration.

To maximise the effectiveness of regional policy, improvements in institutions will be very important. The regional quality of governance – covering accountability, impartiality and transparency – has been identified as an important determinant of (regional) economic growth (Rodríguez-Pose and Muštra 2022), including in the context of EU Cohesion Policy investments (Rodríguez-Pose and Garcilazo 2015). Furthermore, evidence from the assessment of Cohesion Policy expenditure indicates that quality of governance becomes a considerably more important factor for economic development above a certain level of investment, whereby additional funding alone would lead to marginal gains in economic growth in the absence of substantial improvements in the quality of governance (ibid.).

Ukraine's recent decentralisation reforms have brought its local government structures closer to EU benchmarks. The reconstruction governance model(s) should thus be aligned with (consolidated) decentralisation reforms in addition to ensuring that local government bodies are empowered, both politically and financially, especially in the regions and municipalities hardest hit by the war.

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Appendix

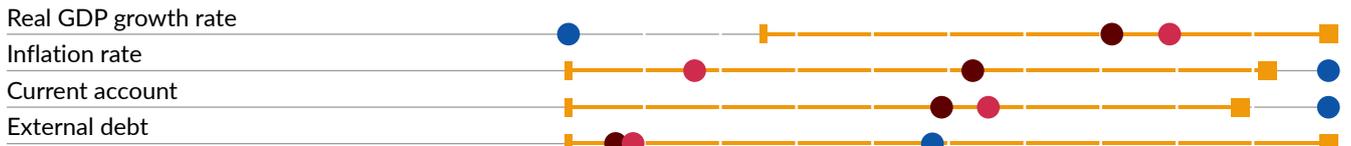
This appendix is intended as a summary of the main indicators used in the report and for which a standardised, comparable data set is available since 2004. In each case, the maximum and minimum values for EU-CEE are shown, as well as those for Poland, Romania, and Ukraine. For EU-CEE countries, in all cases, the year shown is the year of accession. For Ukraine, the comparison year is 2022, except where the data have been significantly impacted by the war or are unavailable, in which case we use 2021 data. A more detailed examination and explanation of each indicator is included in the main report.

FIGURE 35: **Comparative analysis of Ukraine with selected countries across key indicators**

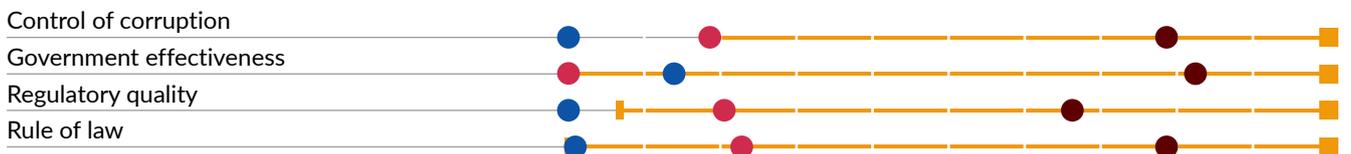
Economic size, development and population



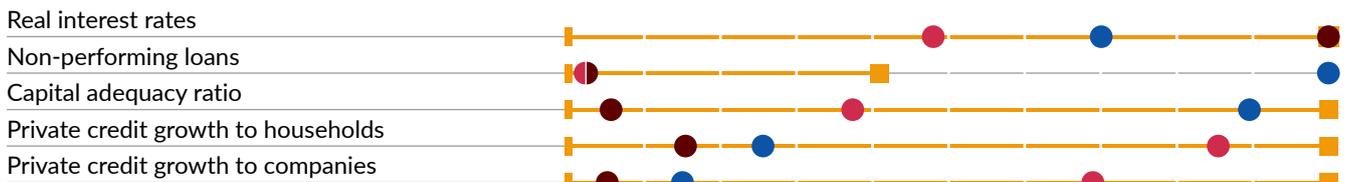
Macroeconomic growth and stability



Business environment



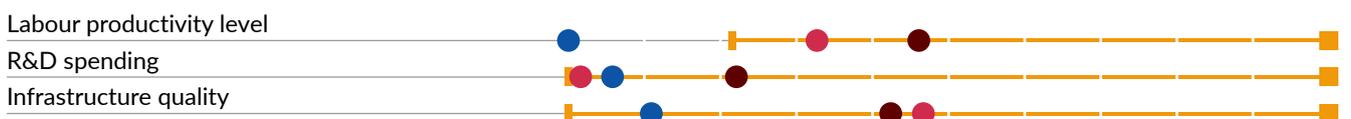
Financial sector



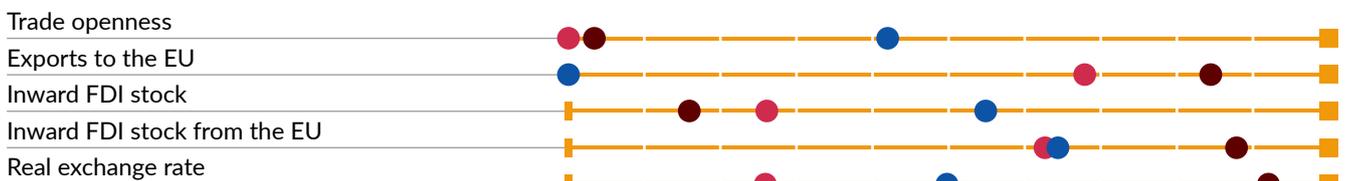
Labour market



Productivity and competitiveness



International economic integration



Public finances



■ EU-CEE (Min) ■ EU-CEE (Max) ● Poland ● Romania ● Ukraine

TABLE 1: Indicator definitions in Figure 35

Indicator	Definition	Source
Economic size	Percent of EU	Eurostat, national sources, wiiw
Population	Percent of EU	Eurostat, national sources, wiiw
Per capita GDP at PPP	Percent of EU	Eurostat, national sources, wiiw
Real GDP growth rate	Percent, average of five years before accession	Eurostat, national sources, wiiw
Inflation rate	Percent, average of five years before accession	Eurostat, national sources, wiiw
Current account	Percent of GDP, average of five years before accession	Eurostat, national sources, wiiw
External debt	Percent of GDP, average of five years before accession	Eurostat, national sources, wiiw
Inward FDI stock	Percent of GDP, average of five years before accession	Eurostat, national sources, wiiw
Control of corruption	World Bank Worldwide Governance Indicators relative to the average of France, Germany, and Italy at the time of application for EU membership	World Bank
Government effectiveness	World Bank Worldwide Governance Indicators relative to the average of France, Germany, and Italy at the time of application for EU membership	World Bank
Regulatory quality	World Bank Worldwide Governance Indicators relative to the average of France, Germany, and Italy at the time of application for EU membership	World Bank
Rule of law	World Bank Worldwide Governance Indicators relative to the average of France, Germany, and Italy at the time of application for EU membership	World Bank
Real interest rates	Percent, CPI-deflated, average of five years before accession	Eurostat, national sources, wiiw
Non-performing loans	Percent of total loans, year of accession	Eurostat, national sources, wiiw
Capital adequacy ratio	Percent, year of accession	Eurostat, national sources, wiiw
Private credit growth to households	Percent change per year, year of accession	Bank for International Settlements, wiiw
Private credit growth to companies	Percent change per year, year of accession	Bank for International Settlements, wiiw
Unemployment rate	Percent, average of five years before accession	Eurostat, national sources, wiiw
Wage level	Percent of German level, year of accession	Eurostat, national sources, wiiw
Labour productivity level	Percent of German level, year of accession	Eurostat, national sources, wiiw
R&D spending	Percent of GDP, average of five years before accession	World Bank
Infrastructure quality	World Bank Logistics Performance Index, 1 = worst, 5 = best, 2007 data for all countries except Croatia (2014) and Ukraine (2022)	World Bank
Trade openness	Total trade in goods and services (exports and imports) as a Percentage of GDP, average of five years before accession	Eurostat, national sources, wiiw
Exports to the EU	Percent of total, average of five years before accession	Eurostat, national sources, wiiw
Inward FDI stock from the EU	Percent of total, average of five years before accession	Eurostat, national sources, wiiw
Real exchange rate	Versus the EUR, CPI-deflated, Percentage change in the five years leading up to accession	Eurostat, national sources, wiiw
Fiscal balance	Percent of GDP, average of five years before accession	Eurostat, national sources, wiiw
Public debt	Percent of GDP, average of five years before accession	Eurostat, national sources, wiiw
Government spending	Percent of GDP, average of five years before accession	Eurostat, national sources, wiiw

Figures and Table

FIGURE 1: Ukraine's per capita GDP grew by much less than that of any other CESEE country between 1990 and 2021	9	FIGURE 9: Relative to the EU, Ukraine's inward FDI stock is the lowest of any previous or current accession country in the years before accession	19
FIGURE 2: Ukrainian EU accession would be comparable to that of Hungary or Romania in economic size and to that of Poland in population terms	13	FIGURE 10: In the five years after accession, the current account deficits of many EU-CEE countries widened, although by 2021 most were running small deficits or even surpluses as export capacity increased and external competitiveness improved	19
FIGURE 3: Ukraine has a very low level of economic development, but several EU-CEE countries were equally poor relative to the EU average at the time of their membership application in the 1990s	14	FIGURE 11: Ukraine is weak but not an outlier in terms of institutional quality relative to some of its peers at the time of their membership applications	21
FIGURE 4: Like Ukraine now, Romania was very poor relative to the EU average when it joined in 2007. But it has thrived within the bloc, converging rapidly with richer countries	14	FIGURE 12: Ukraine will need at least 10 years to prepare for EU accession, if it reforms at the same speed as EU-CEE countries	22
FIGURE 5: Ukraine's economy badly underperformed that of the EU in the last five years, but in the absence of external shocks it has mostly converged with the EU since 2000	16	FIGURE 13: Ukraine's real interest rates relative to the EU's are high but comparable with those of Croatia, Lithuania and Poland before their accession	23
FIGURE 6: Even before the invasion, Ukraine had a substantially higher level of inflation than any other accession hopeful, but it is comparable with that of some EU-CEE countries ahead of their membership	17	FIGURE 14: Non-performing loans in the Ukrainian banking sector are substantially higher than in any other peer country, but the capital adequacy ratio is more in line with those of the rest of the region	24
FIGURE 7: Ukraine's currency tends to face much stronger depreciatory pressures than those of almost all its CESEE peers	17	FIGURE 15: Credit growth in Ukraine is much weaker than it was in most EU-CEE countries when they joined the EU	26
FIGURE 8: Ukraine's current account deficit is smaller than that of any other CESEE country in the years leading up to accession, and its external debt is not especially high	18	FIGURE 16: Ukraine's unemployment rate relative to the EU's is considerably lower than those of many EU-CEE countries and current accession hopefuls	27

FIGURE 17: The share of Ukraine's population that is employed and economically active is slightly higher than that of the EU and higher than those of many EU-CEE countries at the time of their accession	28	FIGURE 28: Agriculture and mining play a bigger role in Ukraine than in EU-CEE peers, while manufacturing is less important. In the course of EU accession, EU-CEE countries' agricultural sectors have tended to become less important for overall GDP	40
FIGURE 18: Wage levels in Ukraine are very low by the standards of the wider region, although they have risen since 2016	29	FIGURE 29: Ukraine's relative labour-productivity strengths lie in ICT and agriculture	41
FIGURE 19: Ukraine's wage levels are very low compared to that of Germany, but higher than those of many EU-CEE countries at the time of their application	30	FIGURE 30: Ukraine's trade openness is only slightly below the CESEE average in the years leading up to accession	43
FIGURE 20: Ukraine's labour productivity has only grown slightly over the last two decades and is by far the lowest among EU members and other accession hopefuls	31	FIGURE 31: Ukraine trades less with the EU as a share of its total than most CESEE countries, but its share of FDI from the EU is in line with those of its peers	43
FIGURE 21: Ukraine's labour productivity is only about 10 percent of the German level and well below the levels of previous joiners, and it has barely improved versus EU-CEE countries over the past two decades	33	FIGURE 32: Ukraine has not experienced the strong real exchange rate appreciation that several EU-CEE countries did before their accession	44
FIGURE 22: Ukraine's innovation performance measured by patent registrations is very weak compared with that of the EU, but in this sense Ukraine is a typical CESEE country	34	FIGURE 33: The share of government spending in GDP has generally been low in Ukraine compared to the EU, but this changed dramatically in 2022 due to the demands of the war	46
FIGURE 23: Almost all CESEE countries are below the EU average for innovation, but Ukraine had the highest score among the accession hopefuls in 2021	35	FIGURE 34: Ukraine's government budget deficit is higher than those of other accession hopefuls, but it is comparable to those of most EU-CEE countries ahead of their accession. At the same time, Ukraine's public debt is not especially high relative to those in the EU or by regional standards	47
FIGURE 24: Ukraine spends very little on R&D as a share of its GDP, both in relation to previous joiners and the EU	35	FIGURE 35: Comparative analysis of Ukraine with selected countries across key indicators	56
FIGURE 25: Ukraine's PISA scores are lower than the EU average, but easily the best among the accession hopefuls and higher than those of some EU member states	36	TABLE 1: Indicator definitions in Figure 35	57
FIGURE 26: Ukraine's level of IT infrastructure is weaker than that of the EU, but comparable with that of Croatia in 2013 and above average compared with other accession hopefuls	38		
FIGURE 27: Ukraine's trade- and transport-related infrastructure is among the weakest in CESEE and further from the EU level than most EU-CEE countries were in 2007	38		

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