Ukraine's economic reconstruction

Addressing territorial inequalities, consolidating regional policy and reaping the benefits of EU integration

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Contents

I. Abstract

Russia's 2022 invasion of Ukraine and the subsequent all-out war have amplified the dramatic regional reorientation of Ukraine's economic activity that began in 2014. The causes go from severed commercial links with Russia to trade blockades following the occupation of Ukraine's eastern regions by Ukraine's largest neighbour, all of which resulted in redirecting Ukraine's trade towards the EU. With the all-out war has come the unevenly spread destruction of production facilities – exacerbating regional inequalities. Meanwhile, the EU has abandoned its balancing act between neighbourhood and enlargement policies and embarked on a path leading to membership for Europe's second-largest country. For the twin Herculean tasks this entails – economic reconstruction and EU integration – a regional perspective will have to be an important focus. "Building back better" requires structural changes that, in turn, must be aligned with Ukraine's regional inequalities.

This study sets out to examine differences in Ukrainian regional industrial structures and explores potential for industrial specialisation and growth as well as suitable policy mixes for economic development during and after the war, with a particular focus on regional and industrial policy. To identify patterns in regional specialisation, we pinpoint the most promising structure of economic activities – with a focus on the tradable sector – for supporting post-war growth. We look at EU Cohesion Policy funds as models for shaping Ukraine's reconstruction and drawing lessons from the experience of regional policy elsewhere in the EU. We show that Ukraine's National Recovery Plan and the objectives of EU Cohesion Policy are comparable both in scope and goals. At a time of shifting investment priorities, the EU should leverage its strong economic and financial influence so that reconstruction and economic policy contribute to developing Ukraine's comparative advantages and encourage its integration into European value chains.

II. Key findings

- Economic development is possible even amidst instability, as the advent and development of advanced industries (e.g. IT) in Ukraine between 2016 and 2021 indicate. We find that the portfolio of industries suitable for investment and export specialisation within Ukraine's macro-regions[1] is not restricted to those sectors traditionally associated with these regions. This allows for multiple financing scenarios to accommodate conservative as well as progressive investment strategies.
- The regional economic reorientation begun in 2014 will continue during reconstruction, whereby the East and South will be more dependent on public investment and support while Western regions can expect prompter interest from private domestic and international investors. The ongoing war adds to challenges of funding and institutional capacity and augments the risk of widening spatial disparities in post-war development. Eastern regions experiencing the bulk of destruction and outward migration as well as facing higher transportation costs to the European market are at risk of becoming ensnared in a poverty trap.
- Comparative advantages (considered within a dynamic context) will shape economic activity in each Ukrainian macro-region. Policymakers need to opt for investment strategies that target regionally defined key industries and offer support for housing, infrastructure and labour market policy, training and education based on individual regional needs.
- Economic policy should create the conditions for Ukraine's integration into European value chains at a time of shifting investment priorities. Reconstruction must focus on Ukraine's step-by-step integration into the EU to narrow Ukraine's development gap.
- Regional policies should address the problems associated with demography – already differing significantly across regions pre-invasion, but now accelerated with dramatic depopulation and detrimental age profiles in some areas and immigration in others – via incentives (e.g. training and retraining, job opportunities, housing). An overly heavy focus on infrastructure investment at the expense of human and social capital could undermine longer-term prospects.
- Ukraine's National Recovery Plan and the policy objectives of EU Cohesion Policy are in many ways comparable in scope and objectives. They provide a framework for addressing funding absorption capacity. Experience derived from EU Cohesion Policy institutions, implementation mechanisms, procedures and evaluations could therefore help to guide Ukraine's reconstruction towards an economically diversified and territorially balanced growth path, delivering an independent but integrated approach to which all supporting nations could contribute.
- Evidence from spending on Cohesion Policy indicates that, above a certain level of investment, quality of governance becomes a more critical factor for economic development than additional funding. Given that this investment threshold is largely surpassed in the case of Ukraine's reconstruction needs, governance will be a determining factor for building up administrative capacity, which is of particular relevance for the effective absorption of funds. Disparities in this respect across regions (especially in those with the strongest need of policy support) should be a major focus of attention.

1 The reader will notice that we refer to "macro-regions" and "regions" throughout this study, bundling Ukrainian "oblasts" (regions) into groups called "macro-regions" for the sake of simplicity. "Region" refers to one of Ukraine's 24 "oblasts", Ukraine's first-order administrative divisions (next to cities with a special status, Kyiv and Sevastopol, and the Autonomous Republic of Crimea). A "macro-region" is defined by the Law of Ukraine "On the Principles of State Regional Policy" as a geographical unit comprised of multiple "oblasts" (https://zakon.rada.gov.ua/laws/show/156-19#Text, Article 1, Item 5). Occasionally, we refer to "sub-regions" when we want to differentiate within a "macro-region".

III. Introduction

Ukraine's regions will have dramatically different needs under post-war reconstruction. These will depend on their comparative advantages, strengths and weaknesses as well as on how they have been impacted by the invasion. Since the occupation of parts of the Donbas in 2014, regions have been affected in very different ways that have changed the state of their infrastructure, impacted the dynamic of their economic activity, and produced dramatic shifts in their population profile. The ongoing war and subsequent reconstruction process are shrouded in uncertainty, notably about outcomes. This creates tremendous challenges regarding funding ability and institutional capacities. The danger of wide disparities in regional development patterns getting entrenched in the post-war pattern of economic development is great. 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.

To increase the chances of cohesive post-war economic development, policymakers need to prioritise support based on regional economic strengths and potential. Ukrainian regions share some common features in terms of output structure but differ remarkably overall. Hence, a one-size-fits-all policy is unlikely to foster cohesive long-term growth. The goal of the first part of this paper is to pinpoint the most promising structure for Ukraine's economic activities, with a focus on the tradable sector, to support the post-war growth of its regions. We first document medium-term patterns of regional and industrial differentiation among those regions by examining the composition of GVA (gross value added) and individual regions' export profiles (section IV). We then analyse the geographical and industrial exposure of the Ukrainian economy to armed hostilities and how this uneven impact may have altered pre-war growth trends (section V). On the basis of this analysis, we suggest adopting an active regional and industrial policy that is tailored to the different conditions in which Ukraine's regions will find themselves after the war regarding infrastructure, housing and demography, as well as their geographic position with respect to potential further conflict and distance to EU neighbours. Reconstruction will have to orientate itself towards the potential for industrial specialisation and integration with the European economy at large, thereby taking into account not only past trends but also forward-looking potential for the composition of industrial activity to change.

It is a well-founded observation, seen in countries around the world, that entering new markets does not happen randomly (Hausman and Hidalgo 2010; Hidalgo and Hausman 2009). Companies typically prefer to expand existing capabilities in order to overcome the multitude of barriers to entering a new market – from financing to customer acquisition. Hence, firms are more likely to grow within industries where they are already competitive. This does not mean that creating new industries from scratch is impossible; just look at the semiconductor industry in South-East Asia. It is rather a question of the costs one is ready to bear to support a competitive industry. The fewer capabilities a country has in any industry, the more time, government support and investor commitment one needs to become internationally competitive within it. With war damage disproportionately affecting some Ukrainian regions, industrial policies must inevitably factor in spatial differentiation when refining their support for structural change. Hence, identifying regional specialisation patterns is the cornerstone of our analysis.

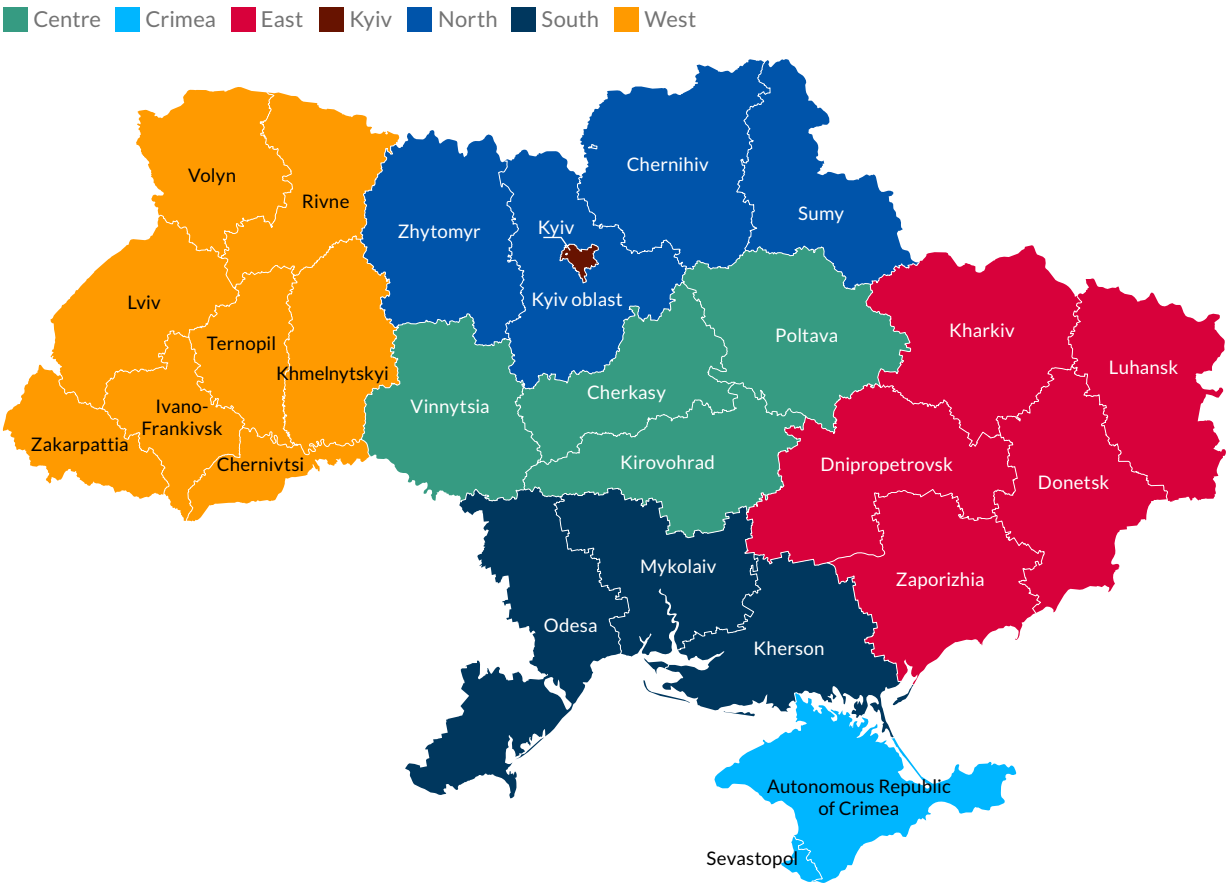
From both an industrial and regional policy perspective, it is of course also crucial to see that Russia's invasion in February 2022 sparked a shift in the EU's enlargement policy, from restraint regarding the countries of the EU neighbourhood, including Ukraine, to proactive strategy development. The fact that Ukraine became a candidate country in July 2022 and thereby one set on "a path" to EU membership has raised many profound questions, not least about the economic state of the country today and for an indefinite period of war, but also about how recovery and reconstruction should be approached given this new commitment to further enlargement as an instrument to stabilise the European continent.

We therefore dedicate a second part of this paper to what lessons EU Cohesion Policy may hold for reconstruction in Ukraine's regions not least because, as we will show, there are major commonalities between Ukraine's reconstruction plan(s) and the policy objectives of EU Cohesion Policy (section VI). First, Ukraine's prior experience with EU Cohesion Policy programmes ("Interreg programmes") is briefly laid out. Second, key lessons learnt from EU Cohesion Policy that will prove useful for Ukraine's reconstruction are addressed. Third, fund allocation and thematic prioritisation are discussed, including suggestions in light of Ukraine's specific challenges.

In a final section (section VII) we identify the policy questions that regional shifts in economic activity raise and then bring together specific proposals regarding Ukraine's major socio-economic regions. We end with identifying what we believe are unanswered questions regarding suitable support schemes, including oversight, capacity and evaluation issues.

IV. Strong regional heterogeneities

FIGURE 1: **Classification of Ukrainian macro-regions**



Source: Own illustration

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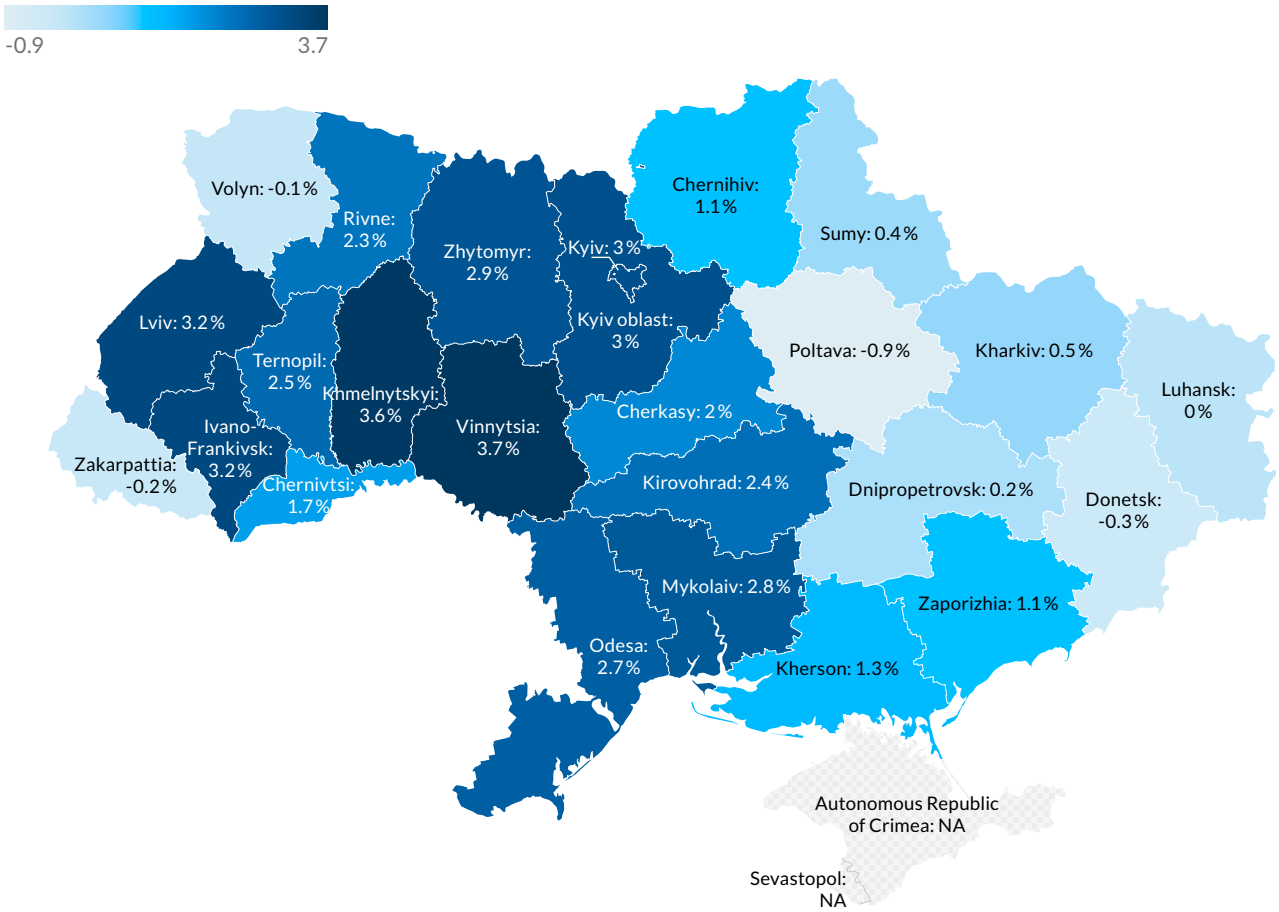
Regional growth rates post-2014 show strong geographical divergence. Regions of the West (with the exception of Volyn and Zakarpattia), the South-West, and Kyiv constitute the "emerging core" with above-average growth. In contrast, regions in the East and the South-East have stagnated.

Many regions lack the capacity to manufacture advanced products in many industries (this will be documented in the following sub-sections IV.1 and IV.2). Although there are exceptions, most exports are concentrated either at the raw material, less processed or lower value-added end of the product spectrum or in legacy industries such as metals and minerals. This implies that there is a lot of scope for upgrading and foreign direct investment while integration into pan-European production networks will be key to technological advancement. Furthermore, there is a tendency towards "tertiarisation", which pervades the Ukraine economy as a whole.[2]

2 Tertiarisation involves the service ("tertiary") sector coming to comprise the biggest element of the economy. For details, see Appendix Figure 8.

FIGURE 2: **GVA (gross value added) average growth rates 2016–2019, constant prices**



Note: Values for Donetsk and Luhansk regions reflect only the government-controlled territories at the time of data collection.

Source: Ukrstat (2020), wiiw calculation

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Cases of IT and telecom industries, which grew rapidly between 2014 and 2021 in Kyiv and other big cities (e.g. Lviv and Kharkiv), show that Ukraine does have the capacity to quickly develop products in certain niches. But a single industry is unlikely to be the basis for growth in all regions due to differences in endowments. Hence, we dedicate most of our analysis of historical data to identifying industry portfolios for each individual Ukrainian region.[3]

IV.1 | Patterns of regional production specialisation

We attempt to identify the growth potential of Ukrainian regions through the lens of patterns of the most recent trends in domestic output and exports. As a starting point, we use the concept of revealed specialisation, according to which competitive industries in a particular region manifest themselves through a greater share of production or export volumes compared to other regions (Balassa 1964).

Timewise, we restrict our analysis to the 2016 – 2019 (and/or 2021) period.[4] Albeit comparatively short, we find this sample useful as it approximates most closely to three main features of the post-war environment: fragile macroeconomic stability, regional reorientation of economic activity (linked to the deterioration of productive capacities in some regions), and the persistent security risk/threat of hostilities with Russia.

3 See https://www.n-ix.com/ukraine-industry-major-it-hubs-overview/

4 We trim the sample to the 2016 – 2019 period to avoid the impact of the Covid pandemic. However, when following export activity, we aim to capture developments up to 2021, stopping just short of the year in which the current war started.

In what follows we focus on three dimensions when analysing the patterns of geographical and industrial structures:

- The share of regional production in each industry within nationwide production of that industry. This metric reveals the region's importance in terms of nationwide production of that industry. Plus, we look at how this share evolved during the pre-war period.
- Industry's absolute growth rate: An industry located in a particular region might be important from a national point of view, but growth may be nevertheless low – or vice versa.
- Share of a given industry in the regional economy. From a regional economy perspective, it matters little if a region accounts for a relatively large share of the national industry and even enjoyed rapid growth when it ultimately represents only a small slice of that regional economy. Larger industries are more likely to serve as an engine of regional economic growth.

For the sake of simplicity, we bundle Ukrainian regions into groups called "macro-regions" following the definitions used by the International Organization for Migration based on Ukrainian law.[5] These groupings combine multiple NUTS2 regions (*oblasts*) based on their similarity in terms of socio-economic characteristics. This classification would correspond to EU NUTS1 level, which reflects "major socio-economic regions".[6] Although this reduces complexity, it does so at the cost of masking variation at the sub-regional level. Where this occurs, we discuss these individual sub-regions separately or provide a more detailed exposition on the graphs.

Figure 3 presents an overview of the main patterns of industrial specialisation across Ukrainian macro-regions, encompassing tradable and non-tradable industries.[7] Further details of specialisation patterns within manufacturing are provided in Table 1 below and in the Appendix (Table 6):

The **East macro-region** historically specialised in mining and manufacturing, especially of metals. Almost a decade of war is likely to change this. More services activities are expected to emerge during and after the reconstruction phase. The East region accounted in 2016 for 60 percent of the mining industry and 40 percent of manufacturing output (in value-added terms) of Ukraine while only accounting for about 28 percent of Ukraine's GVA (gross value added). Looking at the more detailed profile within manufacturing (Table 1, Table 6), we see the pre-war dominance of iron and steel, metal products and mechanical engineering, but also – to some extent – pharmaceuticals and various food processing industries. However, due to exposure to damage occurring lately, it cannot be concluded that this is the potential for the future. Over the 2016 – 2019 period, the East's share of manufacturing production declined, with the exception of mining. The war has dramatically changed the position of this region with regard to the industries in which it has historically specialised. Infrastructure (water supply, waste management, electricity and gas distribution/supply) also declined strongly in this period. As a mirror-development, the share of service industries increased significantly. Agriculture, which in the East region still accounted for over 20 percent of Ukraine's national output in that sector in 2016, also declined in absolute growth terms before the current war (i.e. between 2016 and 2019 or 2021) and as a share of the national industry.[8]

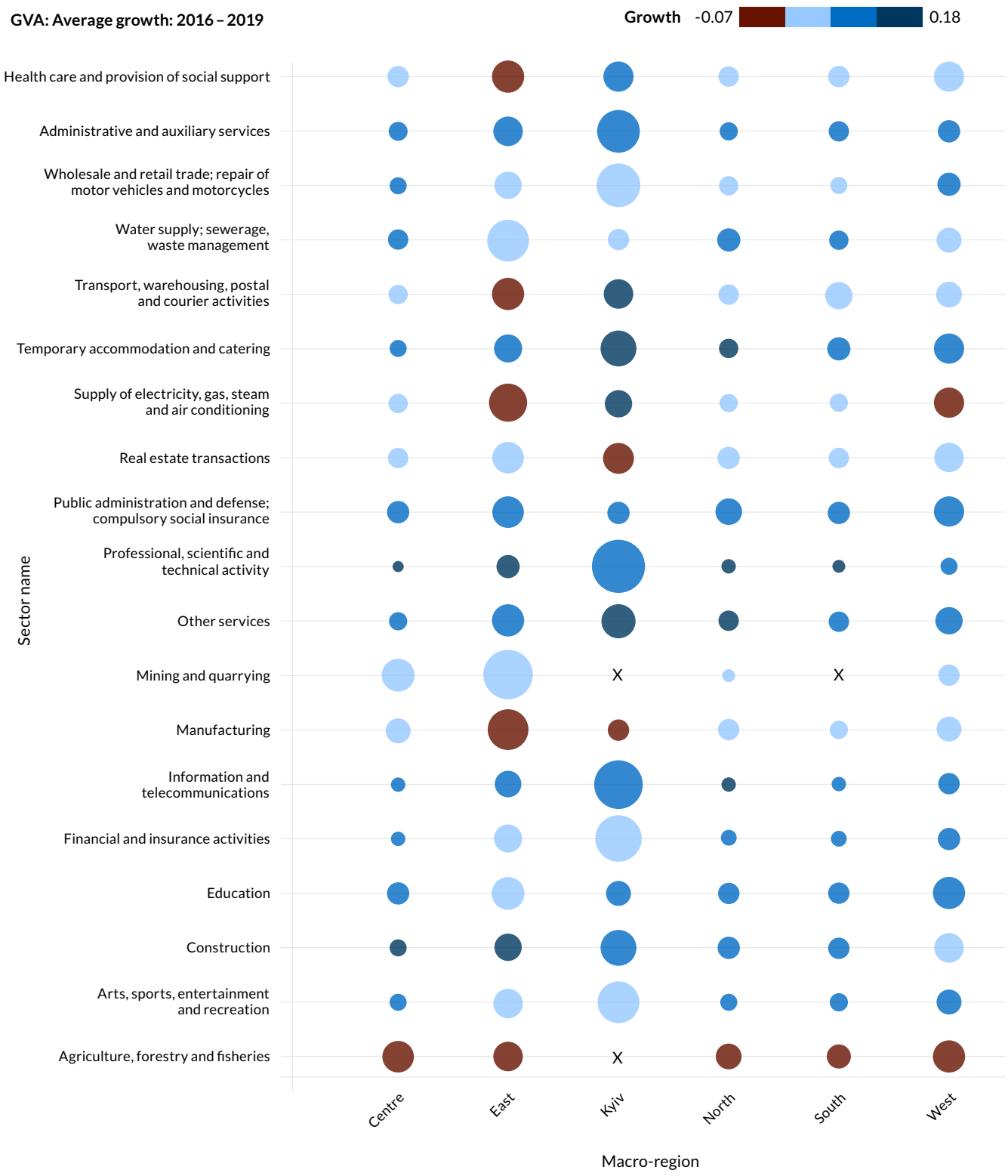
5 The Ukrainian law "On the Principles of State Regional Policy" (Article 1, item 2) defines a "macro-region" as a geographical unit comprised of multiple oblasts (regions) (https://zakon.rada.gov.ua/laws/show/156-19#Text). Since we are not aware of any formal subdivision, we follow the classification used by the International Organization of Migration in its regular reports (https://dtm.iom.int/reports/ukraine-internal-displacement-report-general-population-survey-round-12-16-23-january-2023).

6 Nomenclature of Territorial Units for Statistics is a geocode standard for referencing the administrative divisions of countries for statistical purposes. For details of the EU definition see https://ec.europa.eu/eurostat/web/nuts/background

7 More detailed information can be obtained from the Appendix Table 6 which covers each micro-region separately in a greater detail and includes additional variables. It includes the share of the industry in regional value added, nominal growth rate over the 2016 – 2019 period, and the importance of that industry to the national economy.

8 This paper uses the words "sector" and "industry" interchangeably.

FIGURE 3: **Shares of regional industries in the national economy (GVA) and growth rates 2016 – 2019**



Note: Size of the circle represents the share of the industry's regional production (gross value added; GVA) in the nationwide industry; the growth rates refer to average annual growth of GVA (at constant prices) over the 2016 – 2019 period. "X" signs reflect industries that are not present in the GVA structure of the region.

Source: Ukrstat (2020), wiiw calculation

TABLE 1: **Dominant industries in regional manufacturing (industries with highest shares in regional value added)**

NACE2 code	Industry description	Share in region's manufacturing (%): 2019	Spec. Index: 2019	Growth: 2016 – 2019
East				
24.10	Manufacture of basic iron and steel and of ferro-alloys	20.81	2.86	0.43
33.12	Repair of machinery	9.57	1.75	2.90
24.20	Manufacture of tubes, pipes, hollow profiles and related fittings, of steel	3.04	2.86	0.93
22.22	Manufacture of plastic packing goods	2.65	1.38	1.03
10.13	Production of meat and poultry meat products	2.65	1.38	1.64
21.20	Manufacture of pharmaceutical preparations	2.56	0.43	1.27
South				
10.41	Manufacture of oils and fats	20.17	7.36	0.35
33.15	Repair and maintenance of ships and boats	9.52	23.98	1.01
11.02	Manufacture of wine from grape	6.00	23.98	0.50
10.61	Manufacture of grain mill products	5.28	6.44	2.62
33.12	Repair of machinery	4.72	0.86	1.08
25.11	Manufacture of metal structures and parts of structures	3.35	1.44	0.89
Centre				
10.41	Manufacture of oils and fats	17.71	6.46	0.97
10.51	Operation of dairies and cheese making	14.50	9.01	1.66
10.82	Manufacture of cocoa, chocolate and sugar confectionery	6.50	5.58	1.01
28.30	Manufacture of agricultural and forestry machinery	4.72	3.32	1.02
23.61	Manufacture of concrete products for construction purposes	4.62	1.11	2.83
10.39	Other processing and preserving of fruit and vegetables	3.74	4.10	Inf

NACE2 code	Industry description	Share in region's manufacturing (%): 2019	Spec. Index: 2019	Growth: 2016 – 2019
North				
17.21	Manufacture of corrugated paper and paperboard and of containers of paper and paperboard	9.79	4.43	1.55
23.61	Manufacture of concrete products for construction purposes	7.64	1.84	1.70
10.13	Production of meat and poultry meat products	6.00	3.13	5.52
28.13	Manufacture of other pumps and compressors	5.69	7.08	0.96
16.10	Sawmilling and planing of wood	4.80	2.12	2.22
10.71	Manufacture of bread; manufacture of fresh pastry goods and cakes	3.52	1.09	0.83
West				
29.31	Manufacture of electrical and electronic equipment for motor vehicles	11.90	7.25	1.88
16.21	Manufacture of veneer sheets and wood-based panels	8.16	5.27	0.84
16.10	Sawmilling and planing of wood	6.52	2.88	1.88
31.09	Manufacture of other furniture	6.44	3.92	1.75
23.61	Manufacture of concrete products for construction purposes	4.83	1.16	1.46
10.71	Manufacture of bread; manufacture of fresh pastry goods and cakes	3.83	1.19	0.96
Kyiv				
21.20	Manufacture of pharmaceutical preparations	17.48	2.92	1.48
23.61	Manufacture of concrete products for construction purposes	5.78	1.39	1.44
18.12	Other printing	4.73	2.06	1.02
33.20	Installation of industrial machinery and equipment	4.70	2.36	4.07
10.71	Manufacture of bread; manufacture of fresh pastry goods and cakes	4.16	1.29	1.60
33.12	Repair of machinery	3.81	0.70	2.62

Note: inf stands for infinity: reported for industries with no production in 2016; categories of macro-regions as in Figure 1.
Source: Ukrstat, calculations by wiiw. Only top six largest industries (in terms of value-added shares) are reported plus a specialisation indicator (i.e., comparison with shares of these industries in the national economy), as well as average (nominal) annual growth rates over the 2016 – 2019 period. Information across a wider range (depicting the 20 most important regional manufacturing industries for each macro-region) is available in the Appendix Table A1.1.

Source of data: https://ukrstat.gov.ua/operativ/operativ2021/fin/pdp_roz_reg/dvvvh_ved_14-20.xlsx; own calculations.

The **South macro-region** shows a specialisation profile blessed by its location on the Black Sea and its temperate weather, which is conducive to agricultural production. This region accounted for just below 10 percent of Ukraine's pre-war GVA. Two sectors stick out as occupying strong positions within Ukraine's overall economy: agriculture and transport, the latter largely due to its maritime links. Otherwise, this region is heavily oriented towards services, in both the private and public sectors but also public services (e.g. public administration, naval defence facilities, education and healthcare). The highest growth rates were achieved in professional services, information and telecommunications, but also in public administration and defence. When looking at manufacturing (Table 1, Table 6), we can observe the region's distinctive focus on shipbuilding as well as agricultural products requiring a temperate climate (e.g. wine, sunflower oil and various food products). Given the complete destruction of the large steel works in Mariupol during the war, the data on metals production refers to these former facilities. The South macro-region has been significantly affected by and become a focus of the war. For example, agricultural production has been severely impacted, grain storage and port facilities destroyed, and grain exports curtailed. During the reconstruction phase, demining the land and reopening the shipping ports will have to become a priority so that agricultural production can move quickly towards its pre-war potential.

The **Centre macro-region** has some strengths in manufacturing and, given that it has been less impacted by the war than the Donbas region, which was traditionally home to heavy industry, it could take on further related capacities during and after the reconstruction phase. It encompasses central micro-regions (*"oblasts"*) around the capital city Kyiv. The region accounted for about 13 percent of national GVA and was home to around a quarter of Ukraine's agriculture and mining. While mining declined in importance over the 2016 – 2019 period, the share of agriculture slightly increased in terms of national production. Manufacturing here accounted persistently for about 15 percent of the national sector. Given that the old industrial heartland in the Donbas has and will be severely affected by the war and occupation, the Centre macro-region – together with some of the North and West regions – might become the new centres for manufacturing, albeit with a rather different sectoral profile (see below in section IV.2 on trends in export composition). The shift towards services is also a feature. As regards manufacturing (Table 1, Table 6), the Central macro-region shows a prevalence of a wide variety of food products (e.g. dairy products, fruits and vegetables, confectionary and juices), but also machinery and equipment linked to agriculture and the food industry as well as automotive parts and components.

The **North macro-region** holds a strong position in public administration and defence (18 percent share of national industry) and in agriculture (16 percent of national output). Other industries for the most part fall below a 10 percent share. Many of the services industries (e.g. financial and insurance services, professional services, information and telecommunications services, arts, sports and entertainment) displayed high real growth between 2016 and 2021. Their positions in the respective national industries sectors improved. This shows a tendency towards "deagglomeration" from Kyiv City. Within manufacturing, the North enjoys quite a diversified profile covering the paper and paperboard industry, various metal and machinery products, construction materials, wood products and – again – a wide range of food products. Given the loss of manufacturing production capacities in the East, the evidence would suggest a shift into this region and scope for further development.[9]

The **West macro-region** has won and will gain even more prominence in Ukraine's economy as it has been much less affected by the war. It accounted on average for about 17 percent of Ukraine's GVA overall, and quite a few of the industries had already increased their shares in the national industry segment/sector during the 2016 – 2019 period. This is true for agriculture, manufacturing, wholesale and retail trade, repair of motor vehicles etc. Growth was also quite high in a range of services activities, both public and private. Our projection is that this will further accelerate because of the war and the related internal migration/displacement. Although it was never previously the centre of manufacturing activity in Ukraine, the West has been gaining ground in this sector. It benefits from its geographic location far from the conflict zones in the East

9 The Ukrainian government operates a programme supporting the relocation of enterprises under which, by end-September 2022, 558 businesses had relocated to safer parts of the country. Ministry of Economy of Ukraine (2022): Ministry of Economy: 558 relocated enterprises have resumed work in safe regions of the country. Available at: https://www.kmu.gov.ua/en/news/minekonomiky-558-relokovanykh-pidpryiemstv-vzhe-vidnovyly-robotu-u-bezpechnykh-rehionakh-krainy (accessed: 07 June 2023).

and South of the country, but also from its proximity to EU countries and the potential this provides for cross-border production networks. By now, the composition of manufacturing industries covers a wide spectrum, ranging from advanced segments (e.g. electrical and electronic equipment) to wood-based products and furniture to clothing and textiles plus various food products.

As a city with at least 3 million inhabitants, **Kyiv** shows a typical capital city profile, as it accounts for about 45 to 70 percent of national value added in a variety of private-sector and public services (e.g. professional services, information and telecommunications, financial services and telecoms but also administrative and auxiliary services, plus arts, sports and entertainment). This compares with Kyiv's share of about 23 percent of Ukraine's GVA. Due to some degree of "de-agglomeration" in the provision of such services, Kyiv's share of these industries fell during the 2016 – 2019 period. Furthermore, one has to bear in mind the so-called "headquarter" effect, that companies declare their revenues at their headquarters (HQ) location (i.e. more often than not the capital city) rather than at production sites per se. We can observe Kyiv's greater importance in some areas, such as transport services which is likely due to the national airport, and also in utilities (e.g. electricity, water, postal services, etc.). Nonetheless, as regards manufacturing, we wish to highlight pharmaceuticals; furthermore, HQ functions, including product development and marketing, are key contributions emanating from Kyiv for a range of manufacturing industries (though not captured by our analysis of manufacturing activities in Table 1).

IV.2 | Patterns of regional export specialisation

In the first instance, the export profile of Ukrainian macro-regions mirrors Ukrainian specialisation patterns (see Figure 4):

- The **East macro-region's trade** is characterised by an economy based on raw materials and commodities while being centred around legacy industries, such as minerals and metals;[10]
- The **South macro-region's exports** are concentrated in agricultural industries and shipbuilding;
- **The Centre macro-region** is specialised in vegetables and minerals;
- The **North macro-region** is strong in agricultural industries (e.g. grain and animal meat), the processing of natural resources (e.g. stone, glass and wood), and rubber production;
- The **West macro-region** is strong in vegetables, food and wood processing, chemicals and plastics production;
- **Kyiv** is dominant in services industries like IT/telecoms, consulting, finance, and insurance together with an emerging chemicals industry focused largely on fertilizers, inorganic chemistry products, tannil extracts, and pharmaceuticals.[11]

Substantial heterogeneity nevertheless marks these macro-regions. To account for differences in size, recent development and importance to the regional economy, we construct a competitiveness index. It integrates three variables in a single measure: the share of the industry's exports within a region's overall exports, its share in national exports of that industry, and the industry's export growth performance in the recent (pre-war) past.[12] In general, higher values reflect a better performance of the industry in the recent past. After constructing the index, we select the top 20 percent industry-region pairs to focus on the top-performers.

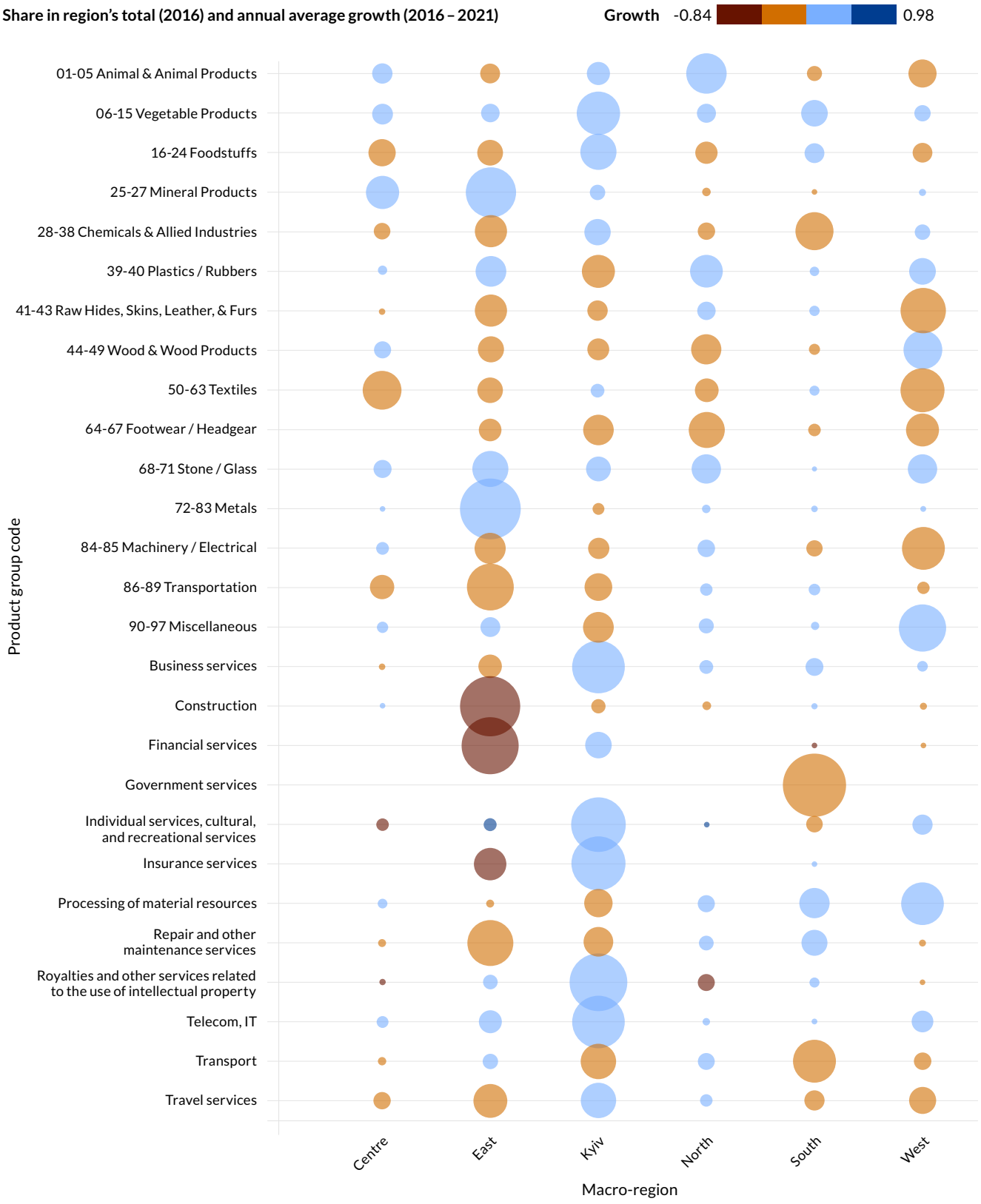
10 Note that the comparatively high performance for metals and minerals is at least in part artificially driven by high global commodity prices.

11 Note that Kyiv accounts for a big share of agricultural exports, which cannot be cultivated in an urban area. This reflects the fact that most of the exporting companies are registered in Kyiv, while their production is located elsewhere.

12 The index reflects the strength of the industry i in a region r by multiplying together the share of that industry's exports within the region's total exports $\left(\frac{e_{i,r}}{e_r}\right)$, share of the industry's exports within national total exports for this industry $\left(\frac{e_{i,r}}{e_i}\right)$, and the growth of the industry's export between 2016 and 2021 $(g_{i,r})$.
$I = \frac{e_{i,r}}{e_r} \times \frac{e_{i,r}}{e_i} \times g_{i,r}$

That is, the industry with the highest score should simultaneously occupy a large share within the region and in the nationwide exports of that industry and show high growth over the 2016 – 2021 period. This means that industries that have a high share on the market but have a poor growth record could be ranked similarly to industries that have been growing quickly but are still small in size.

FIGURE 4: **Export specialisation of the Ukrainian macro-regions**



Note: The circle colour shows the growth rate of the industry, while the circle size represents the importance of the industry in regional exports measured by its share in total regional export amount. Growth rates are calculated from export values at current prices. Industry names according to HS02 classification as reported by Ukrstat (2020).

Source: Ukrstat (2020), wiiw calculation

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When focusing on the best-performing industries, we see that each region has a more diverse industry mix than appears at first glance. Figure 5 highlights the fact that each region – note that the figure refers to individual "oblasts" – has typically around three to four industries that score highly –contributing factors which account for the overall score an industry gets (see Table 2 below for the labels and contributing factors).

TABLE 2: **Types of the top-performing industries**

Label	High export growth	High share in total regional exports	High share in nationwide industry exports
National star	X	X	X
Regional cluster		X	X
Rising star	X		
Market dominator			X
Market star	X		X
Regional star	X	X	
Regional staple		X	
Underdogs			

Note: An industry in a particular region classifies with an (x) if the value of a particular considered variable belongs to the top 33 percent of the selected sample; growth rates are calculated for the 2016 – 2021 period.
The classification labels are constructed modularly to reflect the strength of individual components. For industry-region pairs, names with comparatively high growth are defined as "stars" for their outstanding performance. For pairs with a high share in regional economy we use a "regional" postfix. And for pairs with a high share in the national economy we use "market" in the label. Therefore, if the industry-region pair had a high growth and a big share in national – but not regional – exports, it has a strong positioning on the "market" and is a "star" due to high growth. This results in a label "market star". There are two exceptions: "underdogs" and "national stars". "Underdogs" are industry-region pairs that belong to top 20 percent of the index but do not have a strong individual position in any of its subcomponents. Therefore, they belong to the best industry-region pairs but show less potential compared to their peers. "National stars" are the opposite of that. Their excellence at all three subcomponents – high growth, high shares nationally and regionally – makes them what might be called the best of the best.

FIGURE 5: **Competitiveness index across export industries of Ukraine**

Note: Only the top 20 percent of the high-performing industries according to the index are depicted. Size of the bubble represents logarithm of the competitiveness index; value reflects the unscaled competitiveness index. See Table 2 for the industry classification according to different classes.

Source: Ukrstat (2020), wiiw calculation

Based on Figure 5 we come to the following conclusions as far as export specialisation is concerned:

- The areas of **advanced processing and manufacturing** are distributed more widely geographically. A notable case is machinery/electrical products. While it was common to associate the main production and exports of these products with sites in the East, we identify sizeable (Volyn, Ternopil, Zakarpattia) – and in some cases rapidly growing (Chernivtsi, Zhytomyr) – production in the West as well.
- **Minerals** output experienced some shift in regional production and exports and is one of the most promising industries. The Lviv (West), Poltava (Centre), and Dnipropetrovsk (East) regions have been rapidly growing, although the growth is partly driven by rising global prices.
- **Services industries** are not just concentrated in Kyiv. Lviv, Vinnytsia in the West and Kharkiv in the East show a sizeable and dynamic (although this restricted to the western regions) IT sector, whereas Odesa dominates transport services. Somewhat surprisingly, the Luhansk region shows high growth in business services exports.[13]
- **Agricultural industry,** prominent in Ukrainian exports, has a different nature and role depending on the region. For non-West regions, the industry typically occupies a large share of regional international exports, but it is only the western and northern regions that display high growth.
- **Wood-based production** is the most frequent underdog industry. It shows potential in several regions of the West and Centre, but not the rapid export growth dynamic of other industries.

An important general take-away is that the portfolio of industries suitable for investment is not restricted to the industries traditionally associated with Ukraine. With each region having at least three industries within the top 20 percent according to the competitiveness index, a favourable investment portfolio should be differentiated by region. At the same time, the sources of relative competitiveness vary, which allows for multiple strategies for policy intervention. This is particularly helpful under multiple financing scenarios. With extremely limited finances, a conservative investment strategy focused on the top/most competitive industries (regional or national stars) is most likely to be the one that guarantees the highest return on investment. If, however, reconstruction is implemented across the board and the funding for it will meet its targets, a more progressive strategy that targets "rising stars" and "underdogs" is likely to be more successful when it comes to achieving the qualitative and technological advance in Ukraine's economic structure that will be sought. The analysis can be further deepened, such as by using more detailed product-level trade statistics. However, these are not available at the regional level.

13 Available data does not allow us to identify in greater detail which subindustries within business services accounted for the growth.

V. How have different regions been affected by war damage?

Although each region of Ukraine has experienced direct strikes by the Russian forces, the extent of the damage inflicted is highly uneven. World Bank estimates of February 2023 indicate that the damage is largely concentrated in the areas of active ground operations.[14] The East and South-East regions have been the most affected, followed by the North and Kyiv, which were active theatres of war in spring 2022. Industry-wise, the largest costs associated with war damage are housing, land contamination and transport infrastructure, followed by production facilities in agriculture, commerce, manufacturing and energy.

The type of damage incurred has significant implications for the post-war production structure of Ukraine. From a macroeconomic standpoint, the East- and South-East may get stuck in a low-income equilibrium with poor prospects for growth. Even when hostilities stop, security concerns in the damaged regions will remain high due to geographical proximity to the aggressor country, wrecked housing and unexploded ordnance. This implies that return migration of the most productive population groups is anything but guaranteed and that the demographic structure will become skewed towards the elderly, who are net recipients of fiscal transfers.[15]

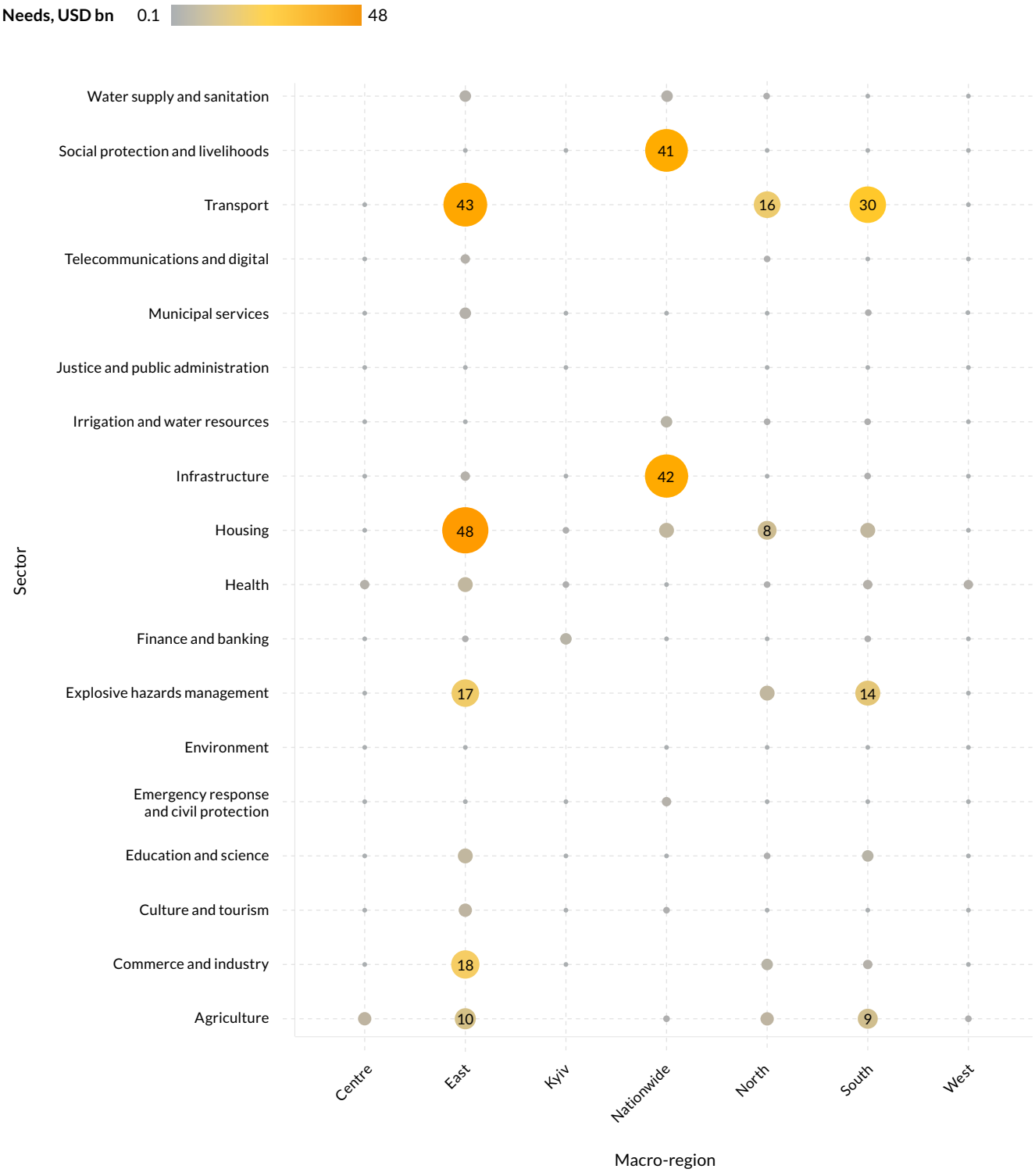
When it comes to the impact of war on industry composition, there is both bad and good news. The bad news is that Ukraine's core industries of the East region have been severely affected and will require prompt support in the recovery phase to ensure growth. Even in the pre-2014 period, the coal mining and metals industrial core showed signs of declining productivity and deteriorating environmental spoliation, which were exacerbated by the partial occupation of the 2014-2022 period and the ensuing hostilities (Havlik et al. 2020). With the cities and industrial sites severely impaired by the direct and indirect impacts of the war, we do not see the potential for the region to recover on its own. Thus, there is a need for active government intervention in the region to avoid perpetual impoverishment.

The good news is that such a policy intervention is unlikely to face much resistance from the industrial lobby (including oligarchs) inherited from Soviet-era industries (e.g. coal mining). This, in turn, creates an opportunity for rapid intervention – at least in the early stages of the reconstruction process – focused on promoting a more advanced industrial mix.

14 The estimation does not reflect needs to recover from damage incurred after February 2023. Note that needs are different from losses and damage. Needs reflect the costs for restoration of sustainable economic growth in the long-term. Losses reflect foregone revenues or benefits of the wartime. Damage stands for destroyed asset value due to the direct impact of war.

15 For more details see Tverdostup 2023.

FIGURE 6: **Estimated reconstruction needs, USD billions**



Note: Nationwide costs are costs that cannot be directly attributed to a specific region. For example, rebuilding of a power plant is to be a part of nationwide costs.

Source: World Bank (2023).

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VI. What lessons does EU Cohesion Policy hold for reconstructing Ukraine's regions?

The EU has considerable know-how when it comes to fostering regional economic development and administrative capacity-building. Its various regional development instruments are concentrated in its Cohesion Policy. Given these facts, we suggest shaping Ukraine's (regionalised) policy framework for reconstruction in line with EU Cohesion Policy. Creating such a framework should help address the timeliness of support measures and the significant challenge of funding absorption capacity. The experience from EU Cohesion Policy institutions, implementation mechanisms, procedures and evaluations can help guide Ukraine's reconstruction towards an economically diversified and territorially balanced growth path. This should yield an independent but integrated approach to which all states supporting Ukraine can contribute. In addition, it would enable the EU and other stakeholders to jointly introduce conditionalities and apply mechanisms that have proved their effectiveness in the Cohesion Policy experience.[16] Furthermore, it would facilitate Ukraine's full integration in due course into the current and future EU policy framework. The fact that Ukraine's National Recovery Plan and the policy objectives of EU Cohesion Policy are comparable both in scope and goals can be a solid first step in that direction.

VI.1 | Commonalities between Ukraine's reconstruction plan(s) and EU Cohesion Policy

EU enlargements in Southern and Eastern Europe have demonstrated the power of Cohesion Policy. The new member states showed significantly lower levels of infrastructure development and economic competitiveness when they joined the EU. Since then, they have gained ground. Ukraine's reconstruction needs are comparable, given that infrastructure, public services, employment and more generally social and human capital remain key areas of intervention at work in EU Cohesion Policy. Indeed, Ukraine's National Recovery Plan widely aligns with the rationale behind and strategic priorities of EU Cohesion Policy, with the former's guiding principles "grow prosperity in equitable way", "build back better for the future" and "integrate into the EU" (National Recovery Council 2022). Furthermore, the national programmes laid out in the plan dovetail to a very large extent with the policy objectives of the EU Cohesion Policy for the 2021 – 2027 period, thereby confirming the commitment of Ukrainian policymakers to fully engage in the EU integration process (see Table 3).

16 For more information in particular on conditionalities in the 2014 – 2020 and 2021 – 2027 Cohesion Policy framework, see e.g. Viță (2018).

In the 2021 – 2027 programming period these ex-ante conditionalities are called enabling conditions and are differentiated into four horizontal and 16 thematic enabling conditions. Horizontal enabling conditions include monitoring mechanisms being in place, the tools and capacity for managing authorities to ensure compliance with state-aid rules, or to ensure the compliance with the Charter of Fundamental Rights of the European Union. Thematic enabling conditions are plans, frameworks and measures related to the Policy Objectives (PO), these respective plans, frameworks and measures also have to be in line with certain EU regulations and directives.

TABLE 3: **Alignment between the national programmes of Ukraine's National Recovery Plan and the policy objectives of the EU Cohesion Policy**

National programmes included in Ukraine's National Recovery Plan	Policy objectives of the 2021 – 2027 EU Cohesion Policy
1. Defence and security	*Outside the scope of EU Cohesion Policy*
2. EU integration	5. Europe closer to citizens by fostering the sustainable and integrated development of all types of territories
3. Re-build clean and safe environment	2. A greener, low-carbon transitioning towards a net zero carbon economy
4. Energy independence and Green Deal	2. A greener, low carbon transitioning towards a net zero carbon economy
5. Boost business environment	*(Partly overlaps with)* 4. A more social and inclusive Europe[17]
6. Ensure competitive access to funding	*Outside the scope of EU Cohesion Policy*
7. Macro-financial stability	*Outside the scope of EU Cohesion Policy*
8. Grow value adding sectors of economy	1. A more competitive and smarter Europe
9. Logistics	3. A more connected Europe by enhancing mobility
10. Modernisation of regions and housing	4. A more social and inclusive Europe 5. Europe closer to citizens by fostering the sustainable and integrated development of all types of territories
11. Modernise social infrastructure	4. A more social and inclusive Europe
12. Improve education system	4. A more social and inclusive Europe
13. Upgrade health care system	4. A more social and inclusive Europe
14. Develop culture and sport systems	*Not directly targeted by EU Cohesion Policy*
15. Secure targeted and effective social policy	4. A more social and inclusive Europe

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17 "Boost business environment" includes a re-employment platform with a reskilling program, and "a more social and inclusive Europe" also covers employment and training.

Likewise, the so-called "Lugano Principles" agreed on at the first conference on Ukraine's recovery and that are to serve as guiding principles for that process widely match the rules for establishing Partnership Agreements between the European Commission and the respective EU member states within the framework of EU Cohesion Policy. They also coincide with the horizontal principles and transparency requirements of the policy itself, as laid out in EU Regulation 2021/1060 (also known as the Common Provisions Regulation (CPR) for the 2021–2027 EU Cohesion Policy):

TABLE 4: **Alignment between the Lugano Principles and the rules, requirements and horizontal principles of the EU Cohesion Policy**

Lugano Principles	EU Cohesion Policy rules, principles and requirements
1. Partnership	Rules for organising and implementing partnership and multi-level governance (Art. 8 of the CPR)
2. Reform focus	*Not addressed under the EU Cohesion Policy but under the National Reform Programmes as part of the European Semester*
3. Transparency, accountability and rule of law	Requirements for Local Action Groups (Art. 33 of the CPR), Monitoring Committees (Art. 38 and 39 of the CPR) and more generally on visibility, transparency and communication (Art. 46 to 50 of the CPR)
4. Democratic participation	Rules for organising and implementing partnership and multi-level governance (Art. 8 of the CPR)
5. Multi-stakeholder engagement	Rules for organising and implementing partnership and multi-level governance (Art. 8 of the CPR)
6. Gender equality and inclusion	Principle for ensuring respect for fundamental rights and compliance with the Charter of Fundamental Rights of the EU (Art. 9 of the CPR) Principle for ensuring equality between men and women, gender mainstreaming and the integration of a gender perspective (Art. 9 of the CPR) Principle for taking appropriate steps to prevent any discrimination based on gender, racial or ethnic origin, religion or belief, disability, age or sexual orientation (Art. 9 of the CPR)
7. Sustainability	Principle for promoting sustainable development, taking into account the UN Sustainable Development Goals, the Paris Agreement and the "do no significant harm" principle (Art. 9 of the CPR)

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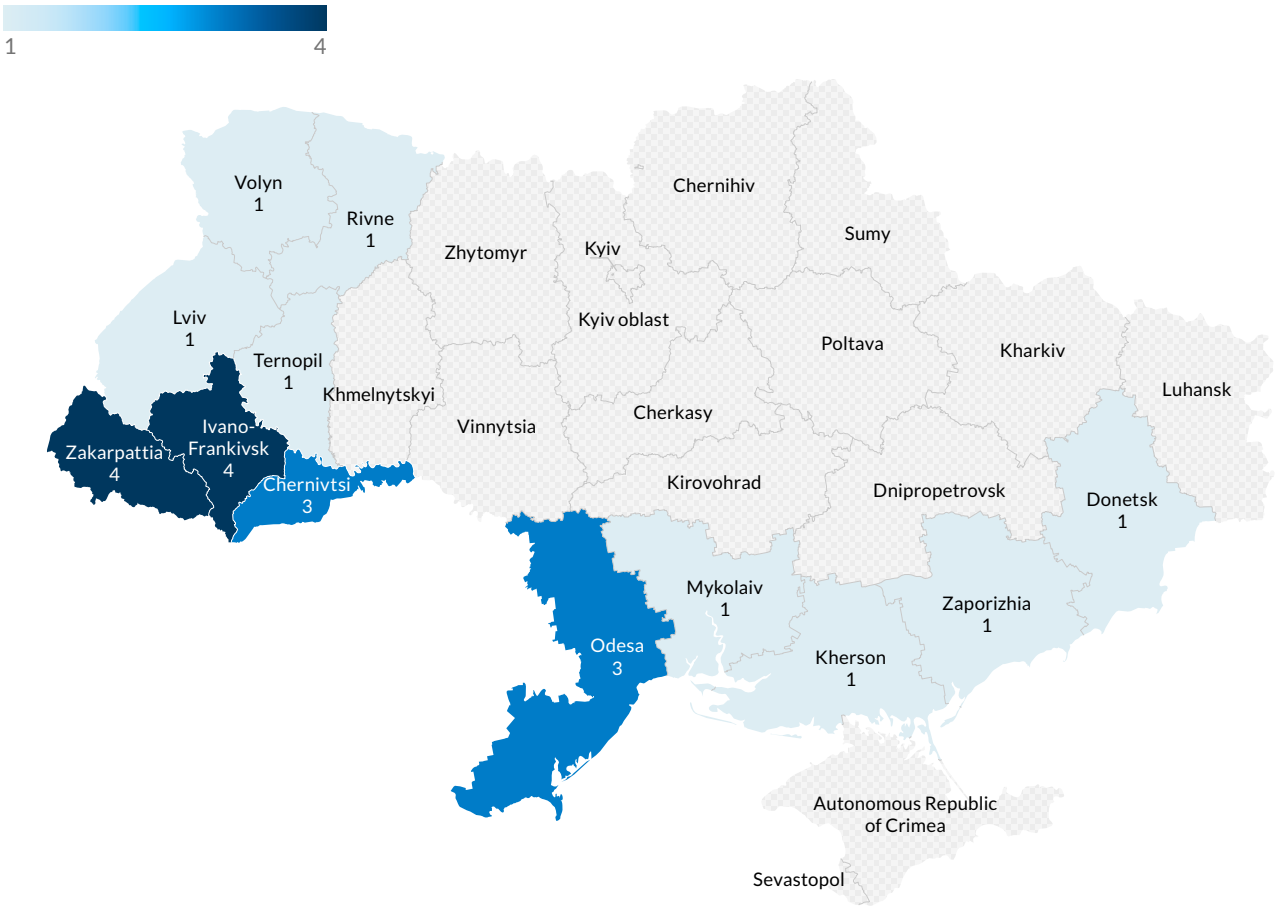
EU Cohesion Policy funding is distributed among regions according to their needs and the challenges they face. Regional (and in smaller member states, national) authorities handle the distribution of funds on the ground. Similar institutions are required for the efficient allocation and management of Ukraine's reconstruction funds. Ukraine had already engaged in an EU-like regional development strategy before the war, with a Sectoral Working Group on Decentralisation and Regional Development as part of its European integration agenda.[18] Other noteworthy initiatives include the so-called Ukraine – Local Empowerment, Accountability and Development Programme (U-LEAD with Europe), an ongoing partnership project launched pre-war between the Ukrainian government and the EU and some of its member states that aims "to enhance the capacities of key actors at national, regional and local levels to further implement Ukraine's decentralisation and related regional policy, and to contribute to defining the functions for each level of government within specific policy areas."[19]

18 Government Portal of Ukraine, Decentralisation and Regional Development, https://www.kmu.gov.ua/en/yevropejska-integraciya/coordination/decentralization-and-regional-development (accessed: 27 August 2023).

19 EU Neighbours East, U-LEAD with Europe: Ukraine Local Empowerment, Accountability and Development Programme – Phase II, https://euneighbourseast.eu/projects/eu-project-page/?id=1235 (accessed: 27 August 2023).

FIGURE 7: **Regions participating in cross-border and transnational Interreg programmes (2014 – 2020)**



Note: Values for Donetsk and Luhansk regions reflect only the government-controlled territories at the time of data collection.

Source: European Commission, own compilation

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VI.2 | Prior experience with EU Cohesion Policy programmes

Some Ukrainian regions have prior experience with EU Cohesion Policy programmes within the context of European Territorial Cooperation (Interreg) programmes as Figure 7 shows.

Given the focus of Interreg programmes on cross-border and transnational cooperation, participating regions in the 2014–2020 funding period are concentrated in Ukraine's west and south, most notably in Zakarpattia, Ivano-Frankivsk, Chernivtsi and Odesa. The five Interreg programmes – namely the Poland - Belarus - Ukraine ENI CBC[20], Hungary - Slovakia - Romania - Ukraine ENI CBC, Romania – Ukraine ENI CBC, the Black Sea Basin ENI CBC and the Interreg Danube programmes – collectively receive EU funding of € 552.1 million (€ 626.7 million including co-financing from participant states), excluding technical assistance.[21] The geographic concentration of cross-border and transnational cooperation in Ukraine's west and border areas can also be observed at sub-regional level, with twinning arrangements more developed in regions bordering the EU (Smętkowski et al. 2023). In the 2021–2027 programming period, the above-mentioned programmes have been renewed (with Belarus still suspended) and are also comparable in volume to the 2014–2020 period. As a successor to the Interreg Poland - Belarus - Ukraine ENI CBC programme, the Interreg NEXT Poland-Ukraine 2021-2027 programme encompasses 13 Polish NUTS 3 regions and six Ukrainian "oblasts" that "present comparable

20 The participation of Belarus in this programme was suspended from 2022 onwards in the wake of the full-scale war against Ukraine.

21 Source: keep.eu, own calculations.

development potential".[22] The programme aims to further exploit local development potentials and to deepen institutional cooperation as well as the integration of both communities, among other priorities. Ukraine's candidate status will now also give the country access to funds from the European Social Fund Plus (ESF+),[23] provided it puts the relevant administrative structures in place. As the European Commission's recent country assessment of Ukraine states, "preparations for using the European Social Fund have not started, and there are no administrative structures in place to operate this fund" (European Commission, 2023a).

Given the scale and dynamics of territorial disparities in Ukraine and the strong congruence between EU Cohesion Policy and Ukraine's reconstruction plan, an in-depth analysis of EU Cohesion Policy best practices could prove most valuable. Such an analysis should focus on its sectoral scope, allocation mechanisms and management systems, as key factors for an efficient reconstruction/regional-growth path. In the 2021-2027 programming period, EU Cohesion Policy relies on a threefold concentration principle: the concentration of resources on the poorest regions and countries; the concentration of efforts on selected policy objectives for a more competitive, smarter and greener Europe; and the concentration of spending whereby funds committed must be spent by the end of the third year after their allocation (or 2029 for funds committed for 2027).

In the case of Ukraine's National Recovery Plan, it is important to determine whether and how far the principles of concentration and multi-level funding governance could be applied to produce the most cost-effective results. In a critical evaluation of this plan, Bogdan et al. (2022) note that "decentralised management of the reconstruction process may perform well in certain elements of local infrastructure and housing, but not as a universal approach to country-wide reconstruction and tackling issues of nationwide importance". They also underline that "the programmes available [in the recovery plan] do not specify the policy instruments that will be used to achieve the goals set; the agencies that will be responsible for implementation; the sources of funding for the sectoral initiatives; or the form that the capital inflows could take".

22 Interreg NEXT Poland-Ukraine 2021 – 2027 programme document, approved by the European Commission in November 2022.

23 https://ec.europa.eu/european-social-fund-plus/en (accessed: 04 August 2023).

VI.3 | Learning from Cohesion Policy experience

Ukraine's government structure as a unitary state should not prove an impediment to efficient governance per se. Empirical research conducted at EU level remains inconclusive as to which type of administrative structure yields the highest quality of governance (Charron et al. 2014; Incaltarau et al. 2020) and how economic growth is affected by political decentralisation (Ezcurra and Rodríguez-Pose 2013) or fiscal devolution (Martinez-Vazquez and McNab 2003). In fact, regional economic growth seems to be more influenced by the mismatch between political and fiscal decentralisation than by the degree of each taken separately. In other words, if decentralisation is pursued, subnational responsibilities should be accompanied with the necessary resources and "unfunded mandates" should be avoided (Rodríguez-Pose and Vidal-Bover 2022). Likewise, (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).

In light of Ukraine's recent administrative reform which saw the municipal level strengthened and the number of districts and municipalities reduced (Romanova and Umland 2019), the focus should initially be put on consolidating these new structures, notably by clarifying competences and building administrative capacity, and then on supplying the required budget. At the local (municipality) level in particular, fiscal and administrative capacity varies widely across Ukraine (OECD, 2022a). Poland has been used by Ukraine as a reference point in its reform and can also serve as a benchmark for its administrative experience with EU Cohesion Policy. Hesitance among central governments to let regional authorities set their own priorities has also been identified in a study on Poland, Czechia and Hungary as an impediment to strategic regional planning (Dąbrowski 2014). Crucially, the reconstruction process will also provide an opportunity to review Ukraine's territorial governance structure (OECD 2022b) and improve it where it demonstrably comes up short.

Institutional quality at the regional (and local) level will also be of pivotal importance for attracting FDI. The example of Poland compared to Romania shows that the former managed to distribute its support more evenly for foreign direct investors in the automotive sector across regions and firms (Medve-Bálint and Šćepanović 2020).

This is attributed to factors such as higher state capacity, greater policy continuity and a strategy designed to focus on developing an eco-system for individual firm support. In the case of Romania, weaknesses have been identified in its stronger centralisation as well as in its newer and weaker regional institutions, which lead to the existence of a smaller group of economically more powerful recipients.

Beyond the structure and quality of governance, another key factor for Ukraine's reconstruction is to create the administrative capacity required to absorb these funds efficiently. The experience of EU Cohesion Policy shows that administrative capacity plays a crucial role in ensuring the effectiveness of its investment programmes. In fact, the administrative performance of EU Cohesion Policy implementation in terms of financial compliance, timely spending and outcomes improves with quality of governance (Mendez and Bachtler 2022). This suggests that institutional quality and administrative capacity go hand in hand in fostering investment-based economic growth. Evidence from the assessment of Cohesion Policy expenditure indicates that above a certain level of investment, quality of governance becomes a considerably more important factor for economic development, whereby extra money alone would lead to marginal gains in economic growth (Rodríguez-Pose and Garcilazo 2015). The authors of this study estimated this threshold at € 120 per capita and per year, beyond which the quality of government becomes "the basic factor determining why a region grows". Applying this estimate to Ukraine by taking into account both 2002-2022 inflation[24] and the country's pre-war population leads to a critical threshold of € 7.8bn of annual financial support. This threshold is, in the case of Ukraine's reconstruction needs, largely surpassed, which implies that governance quality will be one, if not the, major factor in determining the success of the country's (re)development.

In terms of administrative capacity, Ukraine faces several challenges. First, Ukraine has so far been involved in programmes of limited scope, both in geographic and financial terms when compared to EU member states. Second, administrative structures were only recently reformed. Indeed, new administrative structures for local governments were rolled out in 2020 nationwide and saw two changes at once: administrative and territorial reform and the reform of local self-government (Okunovska et al. 2020). This is a key difference to the Polish case. In the Ukrainian reform, the municipal ("hromada") level was strengthened while the district ("rayon") level lost competences. Therefore, both local council members and many municipal employees still lack experience and training for their new tasks and competences (Hirchak 2021).

Co-management between the EU (represented, for example, by the European Commission) and the Ukrainian national and regional authorities running the reconstruction programmes could compensate for deficient administrative capacity, at least at the beginning of the reconstruction process. Around 70 percent of EU programmes are implemented under such shared responsibility between the European Commission and the national and regional authorities of EU member states, with the latter selecting which projects to finance and taking responsibility for the programmes' day-to-day management.

Evidence from the EU Cohesion Policy literature indicates that economic convergence has been more successful in less developed and smaller economies (Pietrzykowski 2020), whereas a lack of differentiation between more and less developed regions within a country has primarily benefited wealthier regions (Medve-Bálint 2016; Komorowski et al. 2021). This observation could be applied to Ukraine in a cross-regional context by identifying overarching nationwide objectives to complement the (individual) development priorities of its various regions. In fact, Ukraine's "oblasts" had an average population of 1.7 million in 2021, ranging from 896,000 in Chernivtsi to 4.1 million in Donetsk, while Estonia had 1.3 million, Latvia 1.9 million and Lithuania 2.8 million inhabitants (State Statistical Service of Ukraine; Eurostat). In other words, the population of a single Ukrainian region is, on average, equivalent to the entire population of a Baltic state. Thus, the size of Ukrainian "oblasts" further underpins the relevance of regional programming in the country's reconstruction plan.

VI.4 | Dedicated funds with different policy objectives

EU Cohesion Policy funding is allocated to EU member states and their regions based on several different criteria, the main one being "relative wealth", i.e. (regional) GDP per capita as a percentage of the EU average. Considering the latest developments in war-torn Ukraine, "relative wealth", but also war damage and (as yet unclear) demographic changes are all parameters that could be relevant in determining the allocation of Ukraine's reconstruction funds on a regional or even municipal basis, making it

24 Euro Area Harmonised Indices of Consumer Prices (HICP).

more likely for financial support to be channelled where it is most needed.

Experience from EU Cohesion Policy indicates a bias towards physical infrastructure investments over those in human capital or R&D (Medve-Bálint, 2018). This focus on infrastructure investment has been a long-standing feature that could already be observed for the EU-15 before the 2004 enlargement round (Rodríguez-Pose and Fratesi 2004). Evidence from the EU's southern (Greece, Italy, Portugal and Spain) and eastern (EU-8 plus Bulgaria and Romania) member states over the 2006-2013 and 2014-2020 programming periods also confirms this, as the only funding goals met were linked to physical infrastructure and institution-building (Medve-Bálint 2018). However, the relegation of human capital to a second-rank priority is critical, as investments in education and human capital showed positive and significant effects on economic growth in the medium term (Rodríguez-Pose and Fratesi 2004). Given the major and multifaceted implications of the war for Ukraine, thematic diversification in the country's reconstruction plan remains a crucial component, whereby "soft" measures aimed at intangible assets (e.g. human capital) could be underestimated. With regard to Ukraine's future regional development, the OECD (2022b) also calls for striking a balance between "hard" (e.g. roads, bridges and railways) and "soft" (e.g. innovation and research and development) infrastructure investments for balanced regional development.

Infrastructure investment will undoubtedly be a key priority for Ukraine, but focusing too heavily on it at the expense of human and social capital[25] could undermine Ukraine's longer-term development prospects. Soldiers will need to retrain to find their way back into normal life; returning refugees will need to take up the jobs that Ukraine's reconstruction requires and start businesses afresh wherever these were destroyed; children will need to re-enter the national education system; and, more generally, professional qualifications will need to meet emerging challenges (linked, for example, to the green and digital transitions) as well as EU standards for a successful European integration.

Prioritisation in EU Cohesion Policy comes along two lines, through the different funds and through different policy objectives that have different eligibility criteria for funding. Cohesion Policy funds for the 2021–2027 programming period are the European Regional Development Fund (ERDF), the Cohesion Fund (CF), the European Social Fund Plus (ESF+) and the newly created Just Transition Fund (JTF). These funds have different goals: The ERDF aims at reducing regional disparities and finances cross-border and transnational cooperation (i.e. Interreg); the ESF+ focuses on the social dimension in areas such as employment, inclusion and gender equality; the CF addresses connectivity, such as trans-European networks; and the JTF homes in on the regions most impacted by the green transition. ERDF is by far the largest fund, followed by the ESF+, CF and JTF. In the 2021-2027 programming period, this translates into € 215.2 billion for the ERDF, € 98 billion for the ESF+, € 36.6 billion to the CF and € 19.2 billion for the JTF – including additional Next Generation EU-funding (NGEU), the EU recovery instrument in 2021 prices.[26] With regard to relative wealth as a key criterion for allocating funds, 72 percent of ERDF and ESF+ is dedicated to less developed regions, 17 percent to transitioning regions, 10 percent to more developed regions, and the remaining 1 percent to outermost regions. The set-up of the JTF (which is only geared towards selected territories) could provide a template for framing the reconstruction of Ukraine's housing sector. Indeed, if Ukrainian reconstruction were to follow the structure of EU Cohesion Policy, the housing sector could potentially fall within two funds (i.e. the ERDF and the ESF+) and two policy objectives (i.e. rebuilding and greening Ukraine's housing). This could lead to inefficiencies. Furthermore, reconstruction or extensive renovation could provide the opportunity to combine both the reconstruction of the housing sector and its greening, where deemed economically viable in terms of time and costs. Splitting all this into separate programmes and objectives could undermine such efforts. Given that not all Ukrainian regions are equally affected by the destruction of the housing sector (see Figure 6 above), resorting to a territorially targeted fund in that regard appears to be a more meaningful approach. An integrated approach to housing-sector reconstruction could also increase energy efficiency and reduce dependence on external supplies. This would not only make houses fit for the green transition but also increase the resilience of homes to power outages or attacks on district heating systems, as last winter demonstrated. It could be financed by a unique, dedicated fund restricted to the most affected territories ("oblasts" or "hromadas").

25 The education-related programme of Ukraine's National Recovery Plan accounts for less than 1 percent of the entire planned budget!

26 European Commission (no date). "2021 – 2027: Initial Cohesion policy EU budget allocations." https://cohesiondata.ec.europa.eu/stories/s/2021-2027-EU-allocations-available-for-programming/2w8s-ci3y/ (accessed: 17 April 2023).

Implications of a potential integration of Ukraine into EU Cohesion Policy before EU accession

While our study looks at EU Cohesion Policy funds only as *models* for shaping Ukraine's reconstruction (as Ukraine would only access such funds upon joining the EU), it is increasingly relevant to examine the implications of an early integration of Ukraine into the EU Cohesion Policy framework. At the same time, it can hardly be estimated what a direct and full-fledged integration of Ukraine into the four EU Cohesion Policy funds would translate into in monetary terms. Even though there are basic criteria regulating the allocation of Cohesion Policy funds (see table below), the actual fund allocation follows a more complex procedure. Part of these additional criteria relate to socio-economic and environmental factors, parameters such as minimum and maximum levels of support, and fund allocations from the prior programming period. Poland* could act as a suitable proxy for assessing, first, what could be politically and financially possible and, second, what could be technically feasible in light of Ukraine's absorption capacity. In the 2021-2027 programming period, € 75.5 billion of EU Cohesion Policy funds were earmarked for Poland, of which € 47.4 billion from the ERDF, € 14.9 billion from the ESF+, € 9.3 billion from the CF, and € 3.85 billion from the JTF. This sum is in fact comparable to the total amount of financial pledges made by EU institutions to Ukraine (€ 27.3 billion by the end of May 2023) and the European Commission's proposed Ukraine Facility (€ 50 billion in grants and loans) taken together (European Commission 2023b; Trebesch et al. 2023).

* Poland is the (nominal) top recipient of EU Cohesion Policy funds and is often taken as a benchmark for Ukraine, not least because of its geographic and cultural proximity but also because of its fairly similar population size.

Stipulating prioritisation for certain funding areas (e.g. infrastructure or social capital) through distinct funds (e.g. the ERDF and ESF+) allocated and managed on a regional basis (i.e. taking regional differences into account) would combine flexibility for regional programming with the need to focus on different priorities that contribute to the overall objectives of Ukraine's reconstruction and recovery. This, in turn, should help to strike a balance between short-term gains and medium-term growth prospects.

The following table gives a preliminary overview of how Ukraine's reconstruction needs compare to EU Cohesion Policy objectives, the basic EU Cohesion Policy allocation keys, the corresponding fund management systems, the amount of funds earmarked for Poland, and our first assessment of how Ukraine's integration into the Cohesion Policy framework could materialise. Building on the identification of the most acute reconstruction needs outlined in this paper and the estimates of damaged Ukrainian infrastructure calculated by the Kyiv School of Economics (2023), we draw a parallel between the mechanisms of Cohesion Policy fund allocation in terms of territorial eligibility, management systems, objectives, funding amounts and Ukraine's reconstruction priorities. In doing so, we attempt to highlight how the latter could benefit from the former – as a direct, though incremental funding source with a finely detailed allocation system.

TABLE 5: Cohesion Policy funds for the 2021 – 2027 programming period – and potential implications of Ukraine before EU accession

Cohesion Policy fund	Allocation keys	Management system	Objective of the fund	Ukraine reconstruction needs	Timeline for Ukraine's potential integration into the Cohesion Policy fund	KSE (2023) Selected sectors of damaged infrastructure*	Amount of funds (2021 – 2027) allocated to Poland
ERDF	NUTS 2 level fund distribution Less developed regions: GDP per capita < 75 % of EU average Transition regions: GDP per capita between 75 % and 100 % of EU average More developed regions: GDP per capita ≥ 100 % of EU average	Shared management Direct and indirect management (e.g. EUI)	A smarter and more competitive Europe (PO1); digitalisation, innovation and SME support Greening the economy (PO2); energy efficiency, development of energy systems (TEN-E), climate change adoption, water management, environmental protection and urban mobility Connectivity (PO3); TEN-T investment, sustainable, climate resilient, intelligent, and intermodal mobility (regional, national, cross-border) Social Europe (PO4); inclusiveness of labour markets through infrastructure improvements, socioeconomic inclusion and integration, sustainable tourism Local development (PO5) in both urban and non-urban areas	Reducing economic disparities within Ukraine and cross-border and transnational cooperation	At an early stage, with a significant allocation upfront	USD 58.1 billion	EUR 47.4 billion
ESF+		Shared management Direct and indirect management (EaSI)		Skills upgrading and retraining of workforce to meet new emerging challenges such as the green and digital transitions and European integration Retraining and labour market integration of soldiers Re-integration of children into national educational system	At an early stage, with a significant allocation upfront	USD 10.9 billion	EUR 14.9 billion
Cohesion Fund (CF)	NUTS 0 level fund distribution GNI < 90 % of EU average	Shared management Direct and indirect management (e.g. CEF)		*Omitted in analysis as its objectives (PO3 in particular) are also covered by ERDF's POs*	–	–	EUR 9.3 billion
JTF	NUTS 3 level fund distribution Regions selected by member states and the European Commission	Shared management	Alleviation of the socio-economic costs triggered by the climate transition Support to the economic diversification and reconversion of the territories concerned	Combining reconstruction with an upgrade of the energy performance of buildings, scope depending on economic viability Social dimension of housing provision	At an early stage for a JTF-like housing fund concentrated in regions most impacted by the war At a later stage for a JTF-like green transition fund concentrated in carbon-intensive regions	USD 53.6 billion	EUR 3.85 billion

**These estimates only include damage to physical infrastructure. The damage depicted here covers 85.3 percent of all infrastructure damage one year into the war.*
ERDF (and CF) row: Infrastructure, energy sector, communal services and utilities, administrative buildings, digital infrastructure, assets of enterprises and industry
ESF+ row: Education, healthcare and social sector
JTF row: Residential buildings

VII. Conclusions and policies to accompany a regional shift in economic activity

The Ukrainian economy faces a high risk that wartime damage will lead to a deep and long-lasting division between the Eastern and Southern regions and the rest of the country. While the East will require significant net fiscal transfers for years to come, the government also needs to actively support investments that will help to rebuild local production capabilities in the drive for long-term economic growth. Our analysis has found that, even within a short timeframe (2016 – 2021) and despite an unstable environment, some regions have experienced the advent and development of advanced industries. This implies that further development is possible even amidst instability.

The allocation of reconstruction funds needs to take into account regional economic and social inequalities, demographic disparities and the territorial distribution of war damage. Ukraine's reconstruction plan(s) should address these aspects by combining overarching national objectives with centralised fund management as well as regional and municipal level reconstruction programmes with devolved fund management. The balance between the two will depend on the type and extent of the reconstruction needs observed at the local and regional levels, as well as on the capacity of national, regional and local authorities to efficiently manage the volume of reconstruction funding.

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

To ensure the efficient absorption of funds from the EU and other key actors, administrative capacity in Ukraine's authorities across all governance levels needs to be boosted, especially at the local level, where authorities only recently saw their competences considerably increased. At this stage, Ukraine still lacks the administrative capacity and experience to absorb large-scale funds (European Commission 2023a). To that end, the implementation of Ukraine's reconstruction plan could also lean on the experience of the EU's Instrument for Pre-accession Assistance (IPA), much like Pillar III of the Ukraine Facility (European Commission 2023b), which addresses the issue of administrative capacity by providing technical assistance and support to Ukraine in a way comparable to the support the EU currently proposes pre-accession countries. Even though the IPA has become less focused on compliance with the EU acquis (a requirement for formal accession), it is still praised as a useful means to promote the (capacitated) decentralised management of funds by the beneficiary (Koeth 2014). Between 1990 and 2006, overall EU commitments for Ukraine were (obviously) much less than what the EU members in Central, Eastern and South-Eastern Europe (CESEE) received. While Ukraine received € 35 per capita in that period, Poland received € 159 per capita (Wolczuk and Zeruolis 2018). In parallel, Ukraine's reconstruction at the regional level could be (partly) co-managed by an EU institution along with Ukraine's relevant national and regional authorities.

We favour an activist regional and industrial policy, which would be critical when major changes in economic structure and in regional development are necessary within a longer-term timeframe. This requires front-loaded and regionally differentiated public investment in infrastructure, training facilities and labour market institutions that support return migration, internal mobility and jobs-labour force matching. Special attention should also be paid to supporting start-ups (also as a tool to encourage return migration) and to ensuring that competition policy has a strong hand to control the market power of dominating enterprises which can stifle the sustained growth of the SME sector. Encouragement of FDI and the stimulus it can give to local firms will be essential (Movchan and Pindyuk, forthcoming). The effectiveness of schemes in this area will have different time-horizons in different regions, owing to the highly uneven regional impact of the war.

With that in mind, one should nonetheless be careful not to attempt to substitute markets in their totality. Markets are likely to have more complete information about gaps in production and unmet demand. After the recovery phase featuring large-scale direct state investment/intervention, the long-term strategy should switch to addressing market and state failures, e.g. high costs of entry, excess regulatory control, information asymmetries, and market domination by monopolies.

We must stress the critical importance of considering differentiated development strategies for Ukraine's regions, starting with the one most affected by the Russian invasion and the war.

The **East macro-region** has been confronting a huge upheaval in its production structure which began in the wake of events in 2014 and 2015. With its core industries (i.e. mining and metals) severely damaged and burdened with the technological legacy of the Soviet era, the strategy for reviving them is bound to encounter serious challenges. However, differentiation across the East's sub-regions in terms of damage and endowment will require a more nuanced approach.

For the **Luhansk and Donetsk** regions we propose the following:

- At the early (post-war) stage, we advocate supporting industries that do not require advanced technology and skills, as emigration since 2014/2015 and high security risks are likely to limit the migration of highly skilled individuals. Addressing local security risks in the short- to medium-term (e.g. resilience of the critical infrastructure, housing, and safety from unexploded ordnance) will have the greatest impact on local living standards and could stimulate return migration.
- A resettlement programme that provides cash grants to individuals depending on their long-term residence is what these regions need in the first place. Internally displaced persons should be targeted as they are the most likely to move back, and this will simultaneously relieve pressure on the housing market in the rest of Ukraine.
- SMEs focused on community-based services[27] and construction are likely to emerge quickly due to high local demand given the scale of destruction in housing and infrastructure. The state should support them with cash grants to cover enterprise setup costs, a tax moratorium in the early reconstruction period, and subsidised interest rates.
- In the longer term, the region's wealth of metals and minerals – putting aside coal due to its detrimental environmental impact – will remain its strength. Any recovery based on this would be capital- and energy-intensive. With coal production being phased out, this presents an opportunity to facilitate the shift to renewable energy sources. Public investment and finance from donor countries should assume the principal role in supporting the green transition and rebuilding of the local manufacturing sector. Lifting FDI restrictions from the countries that do not pose security threats will be essential at this point. Over time, of course, encouraging return migration among more skilled personnel and thereby promoting FDI and domestic start-ups in technologically more advanced fields, setting up good training institutions to enhance the human capital base and improving its demographic profile should allow the region to re-emerge as an important contributor to Ukraine's industrial base and related services.

For the **Zaporizhia, Dnipropetrovsk, and Kharkiv regions,** we propose the following:

- Although damaged during the invasion, their production capacities have been less affected (so far). This implies that the reconstruction process can begin via longer-term industry support programmes. Their nature and the support instruments involved should vary depending on the type of industry.

27 Community-based services are activities tailored to individuals and communities within a specific geographic area. Traditionally, these services have been provided by local organisations and aimed at enhancing the well-being and quality of life of community members. The variety of services ranges from healthcare services (e.g. mobile health units) and youth/elderly services (e.g. tutoring services, vocational training initiatives, in-home care) to disaster (e.g. emergency shelters) and environmental services. The latter refer to programmes that focus on environmental conservation, sustainability, and education regarding for example community gardens, recycling initiatives and environmental awareness campaigns.

- For the best-performing local industries (minerals and metals), the ultimate goal is to stimulate production of higher-quality products with greater value added (e.g. upgrading from production of simple metal components, such as gears and valves, via metal casting to precision machined parts with complex geometries based on computer numerical control).
- Sizeable but stagnating industries (e.g. mechanical engineering and transport) will have to pursue a similar goal but might require a more active industrial policy involvement (in the form of R&D, FDI involvement, management and workforce training) to upgrade their technology. So far, they have been most heavily affected by the loss of their Russian market and have failed to find their niche elsewhere.
- The IT industry is expanding in Kharkiv and Dnipro. These industries have no Soviet legacy and are rapidly expanding. They require less capital investment initially but rely heavily upon personal skills, international linkages and an improved environment in which the companies are based – from infrastructure to urban communities.

For the **South macro-region,** agriculture will remain the pillar industry thanks to its fertile land. There, de-mining will be critical for exploiting that favourable endowment during the recovery stage. The specific outcome of the war (there are varied scenarios with respect to partial continued occupation or full liberation) will determine the attractiveness of these and other areas of economic activity to international investors. Strategically, proximity to maritime trade via Odessa and Mykolaiv may serve as a foundation to continue developing shipbuilding and service industries. Foreign trade is likely to support demand for vessels and related services, such as transport repair and goods packaging. Of course, again depending on the outcome of the war, the tourism industry may enjoy further development.

The strategy for the **Centre macro-region** should bolster ongoing upgrading from a commodity-based agricultural economy to advanced food processing, which is already there in diversified form. The invasion has interrupted this process, but it will regain momentum after the war. The participation of international companies will be important. Competition authorities should be vigilant while facilitating new entrants and competitive structures. A campaign to attract manufacturing enterprises from Eastern Ukraine began before the current war, and this must continue. Integration of skilled individuals who are internally displaced persons (IDPs), return migrants or demobilised soldiers will be important here. Also, given the richness in forests, the development of more advanced wood products, including furniture (with the involvement of international companies), should show significant potential.

The **North macro-region** has and should retain a strong position in paper and board production and excels in meat production. The food processing sector is already strongly diversified (poultry, sugar, biscuits/pastries, preserves), and there are also popular brands in footwear production. Again, qualitative up-grading in all these areas will strengthen Ukraine's export potential. On top of that, the region is home to a machinery and equipment industry serving the agricultural and food processing sector, which should be nurtured to develop alongside it.

The **West macro-region,** given its geographic location away from the war-zone and adjacent to EU member states, has already benefited from regional economic reorientation since 2014. It has moved from a more agriculture-based economy (apart from important urban centres such as Lviv) towards a much more diversified structure and has already benefited from cross-border economic integration –especially with Poland. This increased during the war. These trends should be further encouraged in the post-war era, whether in the form of cross-border infrastructure investment[28] or interest from Western European, especially German and Polish, companies in forging stronger economic ties by setting up new plants. This can cover a wide range of industries, from food processing to electrical engineering and, in places like Lviv, to IT and a range of services. The West region has also benefited from net migration from other regions of Ukraine, notably of skilled personnel, and will also be relatively attractive to returning migrants. This advantage will strengthen its economic potential.

28 In this respect we can refer to the historic commitments of the EU to the former CESEE accession candidate countries: € 14.7 billion have been earmarked for the six Western Balkan states and Turkey in pre-accession assistance (IPA III), which amounts to approximately 4 percent of the volume compared to the EU-wide territorial policy in the 2021 – 2027 programming period.

Kyiv plays a central role in Ukraine's economic development, as it is the capital city, the "service shop" of Ukraine, the seat of many corporate headquarters, the administrative and central government hub, and the entry point for international partners from business, international financial institutions (IFIs) and overseas partners more generally. It is, of course, also the core of the IT sector while the evolving insurance, financial and general business services sector opens the door for IT companies to expand into other domains, such as the fintech and logistics markets. Apart from the services area, pharmaceuticals could be another high-performing industry, which merits strategic investment and a conducive policy-support framework.

Coming back to the bigger picture of **regional reallocation,** the trends of a significant shift of the industries from the East to the Centre and West – most notably in machinery and minerals – should continue. These trends are likely to even accelerate given the proximity of the Eastern, Southern and possibly also Northern regions to current and (potential) future military conflicts. Policymakers will have to cater to the highly differentiated demands on public support that such a major regional reallocation and reconstruction effort will require on a sustained basis.

We have less clarity about which **support schemes** will present the optimal solution, as budgetary constraints on the state will play a decisive role. Here we list a few instruments that require limited/restricted financial support from the state:

- Consider **differentiated interest rate subsidies** for advanced and potentially high-performing industries. This policy has been tested in several countries, including Ukraine, and helps widen access to finance. Such programmes are already in place (e.g. the "5-7-9" loan scheme)[29] but remain undifferentiated by region or industry, apart from agriculture. There might be further potential for increasing the instrument's effectiveness by allowing differentiated rates across multiple industry sectors/segments and regions. Since increasing its complexity carries its own risk, we recommend experimenting with it on a small scale to begin with and scaling up in the event of positive feedback.
- Develop **risk insurance for long-term projects**. Typically used to support business in uncertain environments, risk insurance instruments were heavily used in less-developed economies during the COVID-pandemic and helped to facilitate private investment by counterbalancing potential risks. We consider them particularly important in Ukraine's case, given the persistent security threats, especially during the early years of its recovery programme. The limits of these insurance programmes should then vary by region, as they will obviously be more important in regions where the danger of continued military conflict remains greatest or where large-scale destruction requires bigger initial incentives for private capital to enter. Risk insurance schemes should also be attuned to strategic plans regarding regional industrial development, especially when it comes to new industries such as those linked to energy generation from renewables or exploration for critical minerals as well as those requiring major overhauls of their outdated technologies, but promise comparative regional advantage.
- Strengthen the **investment promotion agencies (IPAs)** with resources, improve the quality of their services, and enhance the visibility of local businesses to investors through investor-matching platforms. Current IPAs in Ukraine do not have a strong record of attracting FDI. They suffer from lack of personnel, limited budgets, unclear project plans, and poor coordination with each other.[30] To make them an effective instrument, one needs to hire staff via competitive selection criteria, book long-term funding and receive regular audits from an independent agency with public involvement. To avoid high FDI concentration in just a few selected industries or regions and to improve the visibility of local businesses, we recommend supporting IPAs by developing a nation-wide investor-matching

29 It is worth noting, however, that the efficiency of the current loan subsidy program is disputed. As recognised by officials and financial institutions, small businesses frequently fail to qualify due to high collateral requirements. See more here: https://minre.gov.ua/en/2023/06/12/the-program-of-affordable-loans-of-5-7-9-should-work-for-the-de-occupied-territories/; https://www.kyivpost.com/post/8003#:~:text=The%20premise %20was%20simple.,plus%20cost%20of%20unsubsidized%20borrowing

30 USAID, A New Ukraine: Catalyzing Investment in Freedom, Peace, and Prosperity, https://www.usaid.gov/ukraine/report/apr-20-2023-new-ukraine-catalyzing-investment-freedom-peace-and-prosperity (accessed: 27 August 2023).

platform.[31] On paper, this instrument can provide an inclusive and more diverse presentation of businesses tailored to specific regions or communities and attract domestic and international investors.

- Incentivise **local supervision** of reconstruction projects. Lack of information and inadequate state capacities for administering funds is a serious risk, which might result in the misuse of funds or non-compliance with project targets. Ukraine can harness its civil society and active citizenry to address both issues by granting the opportunities to participate in the investment projects directly via project-linked convertible bonds.[32] To be effective, the legal framework should bind the bond-issuers to a regular disclosure of the project's progress to retail investors and prevent any excessive concentration of instruments in the hands of lone individuals or connected customers.
- The effectiveness of the proposed instruments rests strongly on **capacities** of both the national administrations and financial institutions. Banks should be effective at screening projects and administering financial instruments. The National Bank must have adequate capacity for a more active micro- and macroprudential policy to avoid excessive concentration of exposures. The calibration of interest rate subsidies should be founded on expertise, observed interest rate differentials across regions, and estimated entry costs of the projects rather than on the demands by industry lobbies. The use of any IT monitoring product on a nationwide scale requires a solid legal framework to ensure trust, a strong media campaign backed-up by the authorities to deliver user traction, and dedicated capacity for content moderation and secure data management.
- **Special Economic Zones (SEZs):** Although Ukraine's experience with SEZs in the 1990s and early 2000s proved unsuccessful, this policy tool can be redeployed provided it is designed to avoid previous mistakes. It is worth building on the successful experience of SEZs in CEE countries, especially in Poland, where SEZs were introduced in 1994. Similar schemes are operated in other EU members states such as Hungary, Latvia and Lithuania. Until a 2017 reform widened the territory covered to Poland as a whole, the country had 14 designated SEZs. The geographic borders of Poland's SEZs have been changed depending on whether certain locations attracted investors or not.[33] Among the key incentives they offer are exemptions for corporate taxes, personal income taxes and real estate taxes. SEZs are not an element of Cohesion Policy, but the funding priorities of cohesion funds include infrastructure investment, as well as labour force training and labour market integration, so they contribute to the functioning of SEZs. Evidence suggests that the impact of SEZs in Poland's least developed regions has been strongly positive, such as in reducing unemployment, while weak in relatively rich regions (Ambroziak and Hartwell 2018).

Further important aspects in connection with EU Cohesion Policy programmes to be considered in the context of Ukraine's reconstruction include the provision of ex-ante liquidity for project implementation, fraud investigation, rule-of-law criteria for fund allocation, and policy evaluation, to name just a few.

Administrative reforms in Ukraine strengthened the competences and duties of municipalities as we have observed (see above). However, regions and municipalities particularly impacted by the war face a twofold challenge: greater damage to infrastructure and a stronger decline of economic activity, which reduce municipal revenue bases. The administrative reforms entailed a change in Ukrainian tax codes and a reallocation of personal income tax (PIT), which made up (after the PIT tax reform) approximately 30 percent of pre-war local government own resources (Hirchak 2021). The drop in municipal revenues could constrain fiscal capacities for planning and pre-financing

31 Investor-matching platforms are two-sided markets that operate in a manner similar to online marketplaces. They allow business owners and investors to set up profiles and screen potential partners based on submitted information.

32 Project-linked convertible bonds are bonds for which interest/repayment is contingent on the outcome of the project and can be convertible to a share if the project fails.

33 According to the European Commission Decision in 2015 (State Aid SA.38830 (2015/N) – Poland) Polish government support for SEZs amounted to approximately € 500 million annually. Aid intensity for SEZs in Poland varies from region to region, as it takes into account differences in regional economic development at the NUTS 2 level. Four regions receive a maximum of 50 percent in aid intensity and in four additional ones aid intensity ranged from 10 to 35 percent. SMEs could receive even higher support of between 60 and 70 percent, depending on the region they are located in (COMPETE IN 2016 – 2021).

reconstruction projects in the most heavily hit local authorities/municipalities.

The limited competences of EU authorities to investigate and pursue fraudulent activities related to project funding and implementation have also been considered a weakness of Cohesion Policy. Rule-of-law conditionalities have been incorporated in the 2021-2027 EU budget and also the Recovery & Resilience Facility (RRF), though the powers of EU bodies such as the European Anti-Fraud office OLAF have remained restricted in that area. However, the European Commission can now withhold funds, as we have seen in the cases of Poland and Hungary. Given that Ukraine's reconstruction will primarily be funded by external stakeholders, a framework will have to be created that is considered bi-partisan and transparent but also balances the need for swift investigations and unobstructed reconstruction on a broader scale.

The evaluation of reconstruction programmes should be incorporated into more detailed plans. The recurring and structured evaluation of EU Cohesion Policy represents a key contribution to shaping its successive programmes. In light of the scope and challenges that Ukrainian reconstruction will entail, the monitoring and evaluation of reconstruction plan(s) and programmes should be incorporated and clearly laid out from the onset. This could help to broaden the basis for future planning of the reconstruction process but also to mitigate and avoid inefficiencies in its current roll-out.

Building on its recent administrative reforms, Ukraine should first focus on the final consolidation of its administrative restructuring, in particular by fine-tuning the distribution of competences between the different levels of government and building capacity within municipal administrations. More specifically, administrative capacity to absorb the large influx of reconstruction funds in a relatively short period of time must be increased. At the same time, financial support will very likely dwarf pre-war programmes in both scope and scale, and inadequate administrative capacity could become a key impediment to reaping the full benefits from aid. Given Ukraine's geography and territorial disparities, administrations at the sub-national level will need to attain significantly higher capacity to plan, procure and implement reconstruction. Ukraine's socio-economic disparities between "oblasts" should be addressed by "regionalising" the country's recovery plan – in other words by taking into account economic development and structure, war damage and demography dynamics when planning the territorial and sectoral allocation of reconstruction funds. Eligibility criteria for EU Cohesion Policy programming could provide the template for structuring the allocation of funds on a regional basis and help tackle the bad practice of fund concentration observed in wealthier regions.

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IX. Appendix: Patterns of regional specialisation and growth by macro-regions

The primary data source for our analysis is the regional statistical yearbooks compiled by the national statistical service of Ukraine (Ukrstat). For domestic production we use regional GVA production by industries based on the ISIC classification (International Standard Industrial Classification of all economic activities). Export data of goods and services are compiled according to the HS2 classification aggregated by main product categories.

For export structure we use the 2016–2021 period as pre-war reference period as by 2021 the economy had almost recovered from the Covid crisis. Nonetheless, as a major reorientation of economic activity started after the partial occupation of the Donbas region in 2014 which accounted for a significant share of industrial production, we think that an analysis of trends in regional and compositional changes over the period 2016–2019 and 2016–2021 respectively will give us some indication of the direction in which the structure of economic activity and its regional orientation may develop in future.

All export volumes are compiled from current USD prices. Exchange rate development is not an issue in this case since we are mostly interested in the industries' performance relative to each other. Changes in global prices across industries, however, might skew the results. We mention specific instances (such as relative oil and gas prices) when we discuss our results.[34]

We aggregated Ukraine's Oblasts into six broader regions: East, South, Centre, North, Kyiv, and West following the classification of International Organisation of Migration (see Figure 1 earlier on). To some extent these different broader regions (e.g. the distinction between 'East' and 'West' regions) will reveal how strongly they have been affected by the conflict – already in the aftermath of the Russian intervention in 2014/2015 - and then how much they are likely to be affected further by the invasion of 2022.

In the following figures, three variables are always presented. The size of the circles shows the share of industry *i* in total GVA of region *r*; the horizontal axis shows the share of industry *i* of region *r* in the national GVA for industry *i*; the vertical axis shows the growth rate of GVA in constant prices for industry *i* in region *r* over the period 2016–2019.

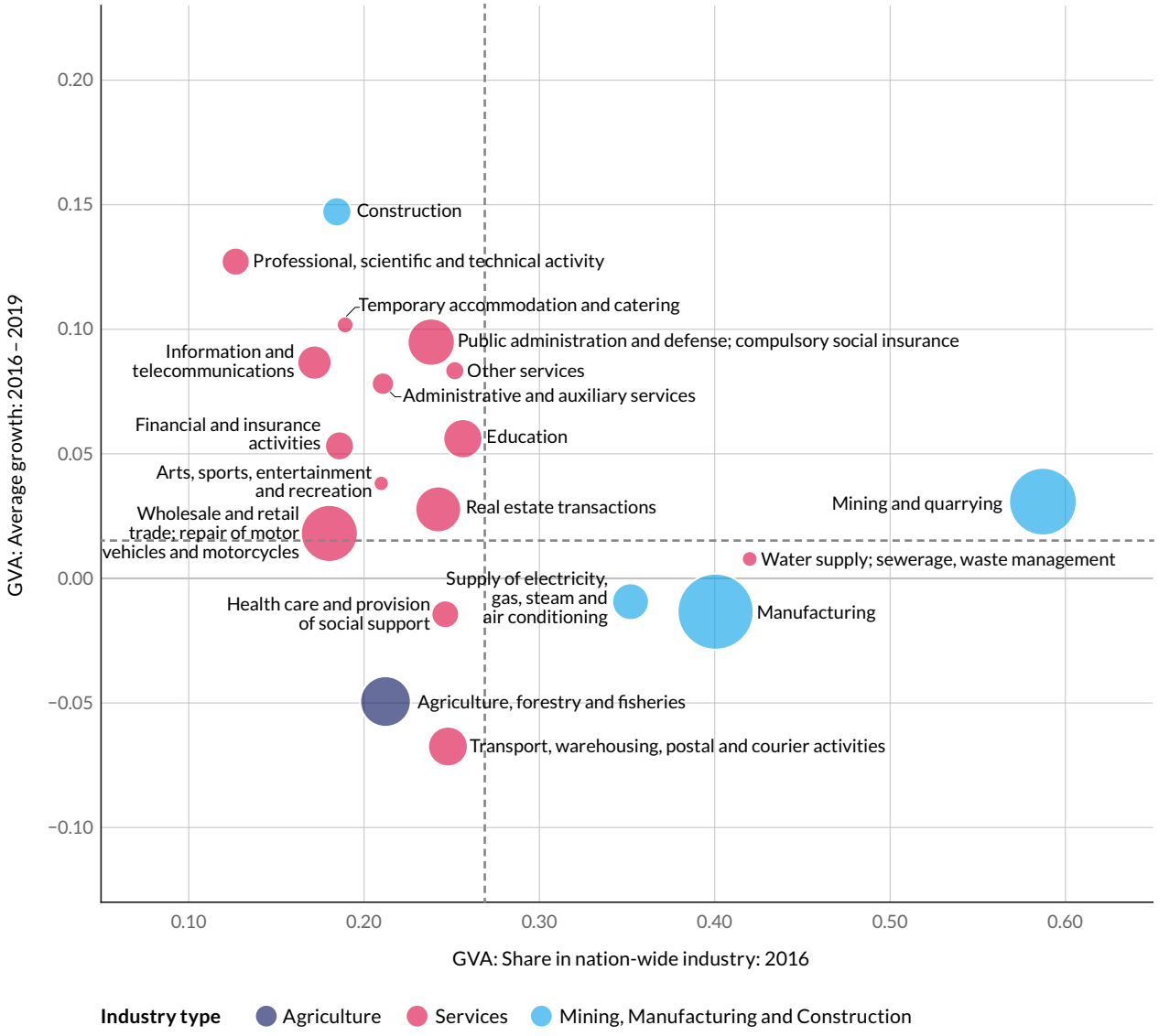
The dashed line represent benchmark values. They represent region's total GVA growth over the corresponding period and share in the national economy. The intersection of the dashed lines splits the product space into four quadrants, which help to understand the relative performance of the industries:

- Best-performers (upper-right quadrant): Industries with uncharacteristically high share in the national production and growth above the regional average
- High potentials (upper-left quadrant): Industries that grow quickly but are comparatively small in size
- Small non-performers (lower-left quadrant): Industries with comparatively weak growth and size
- Big non-performers (lower-right quadrant): Industries with comparatively weak growth but big size in the national production

34 To take another example, if the export volume of metals stayed the same but export prices for metals increased, we would observe growth although export share in real terms might not have risen.

FIGURE 8: **GVA by industries and macro-region**

GVA by industries: East
2016 – 2019



Note: The dashed lines represent benchmark values. They represent regions' total GVA growth over the corresponding period and share in the national economy.

Source: Ukrstat (2020), wiiw calculation

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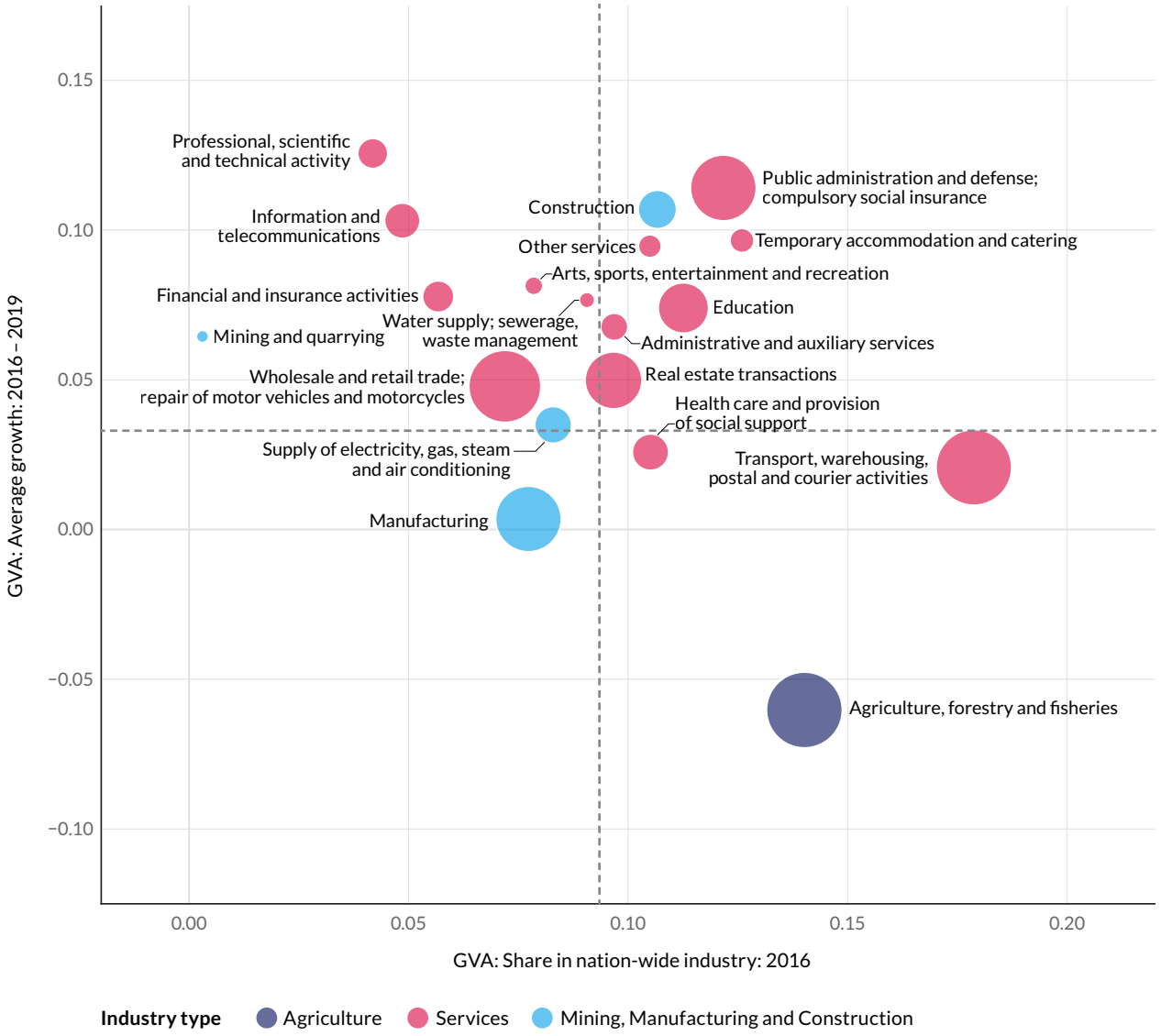
GVA by industries: South
2016 – 2019



Note: The dashed lines represent benchmark values. They represent regions' total GVA growth over the corresponding period and share in the national economy.

Source: Ukrstat (2020), wiiw calculation

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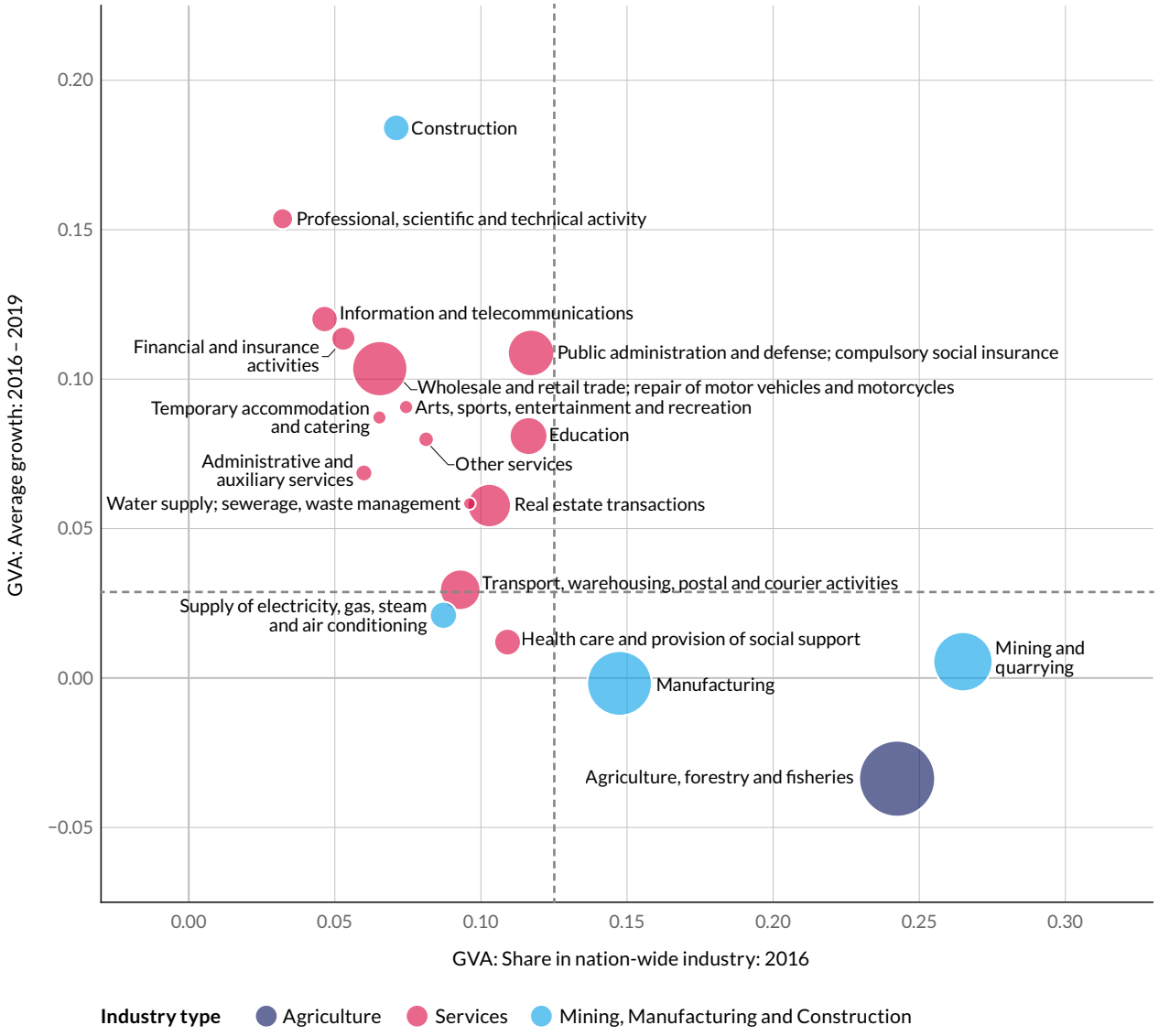
GVA by industries: Centre 2016 – 2019



Note: The dashed lines represent benchmark values. They represent regions' total GVA growth over the corresponding period and share in the national economy.

Source: Ukrstat (2020), wiiw calculation

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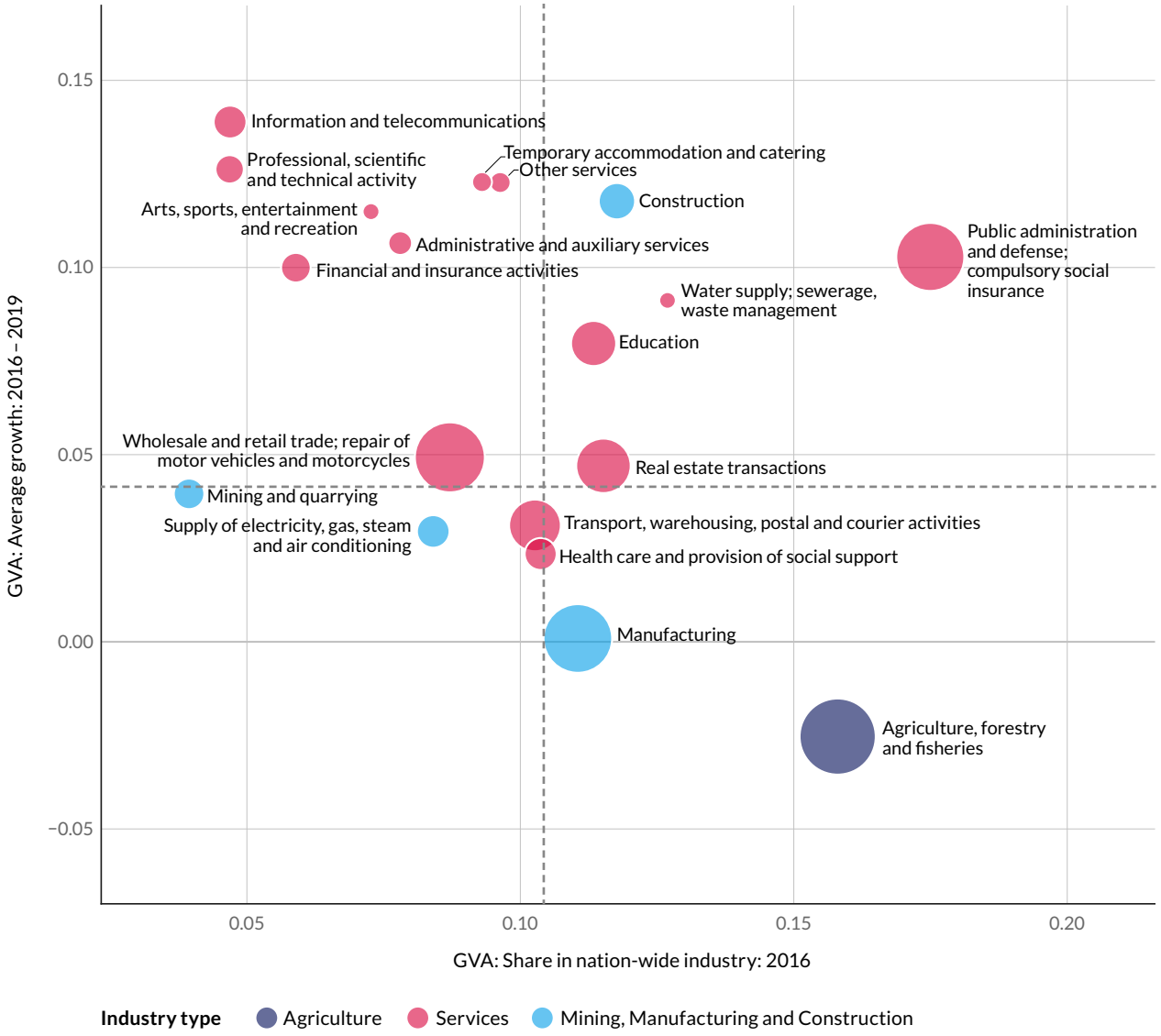
GVA by industries: North
2016 – 2019



Note: The dashed lines represent benchmark values. They represent regions' total GVA growth over the corresponding period and share in the national economy.

Source: Ukrstat (2020), wiiw calculation

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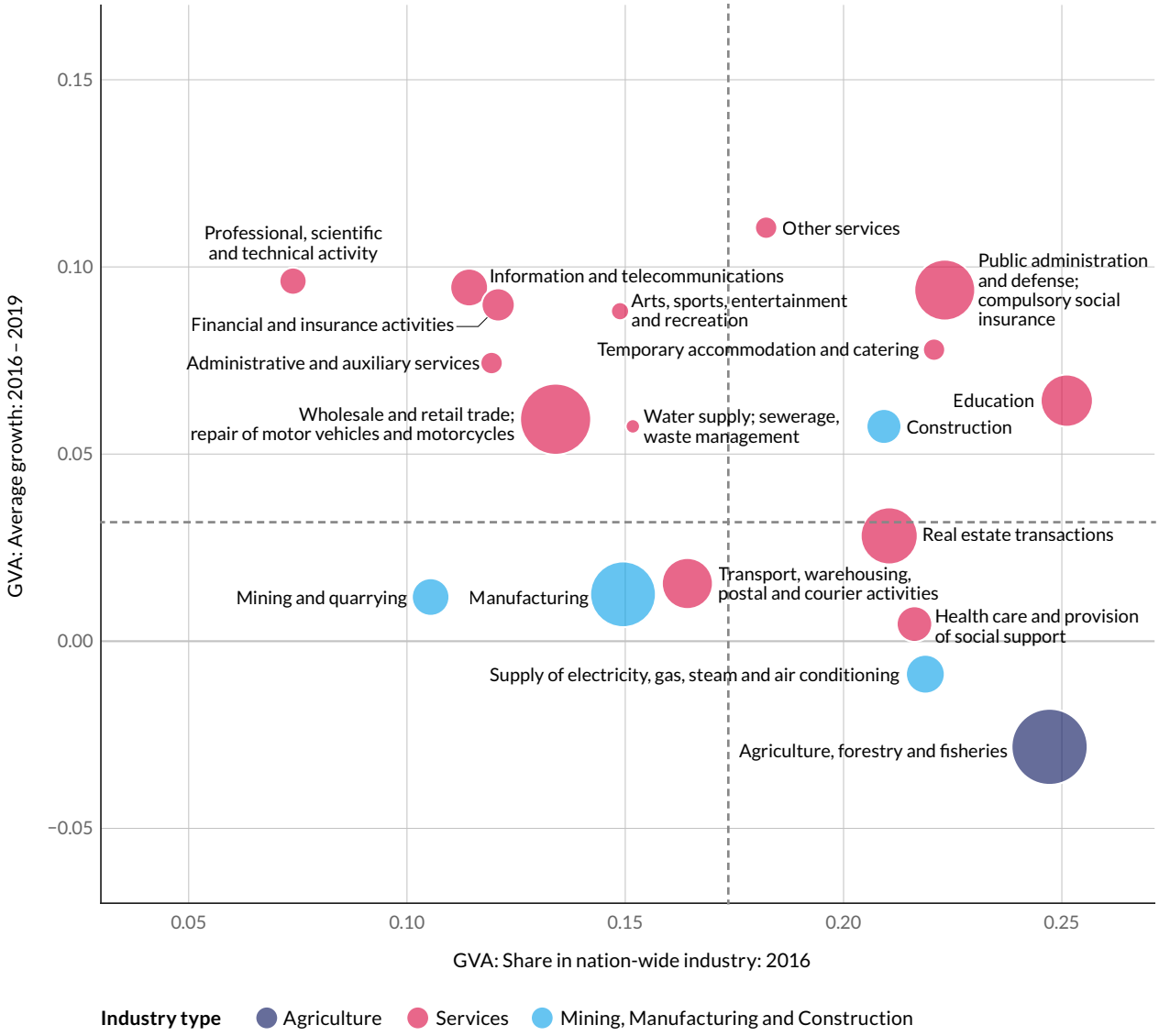
GVA by industries: West
2016 – 2019



Note: The dashed lines represent benchmark values. They represent regions' total GVA growth over the corresponding period and share in the national economy.

Source: Ukrstat (2020), wiiw calculation

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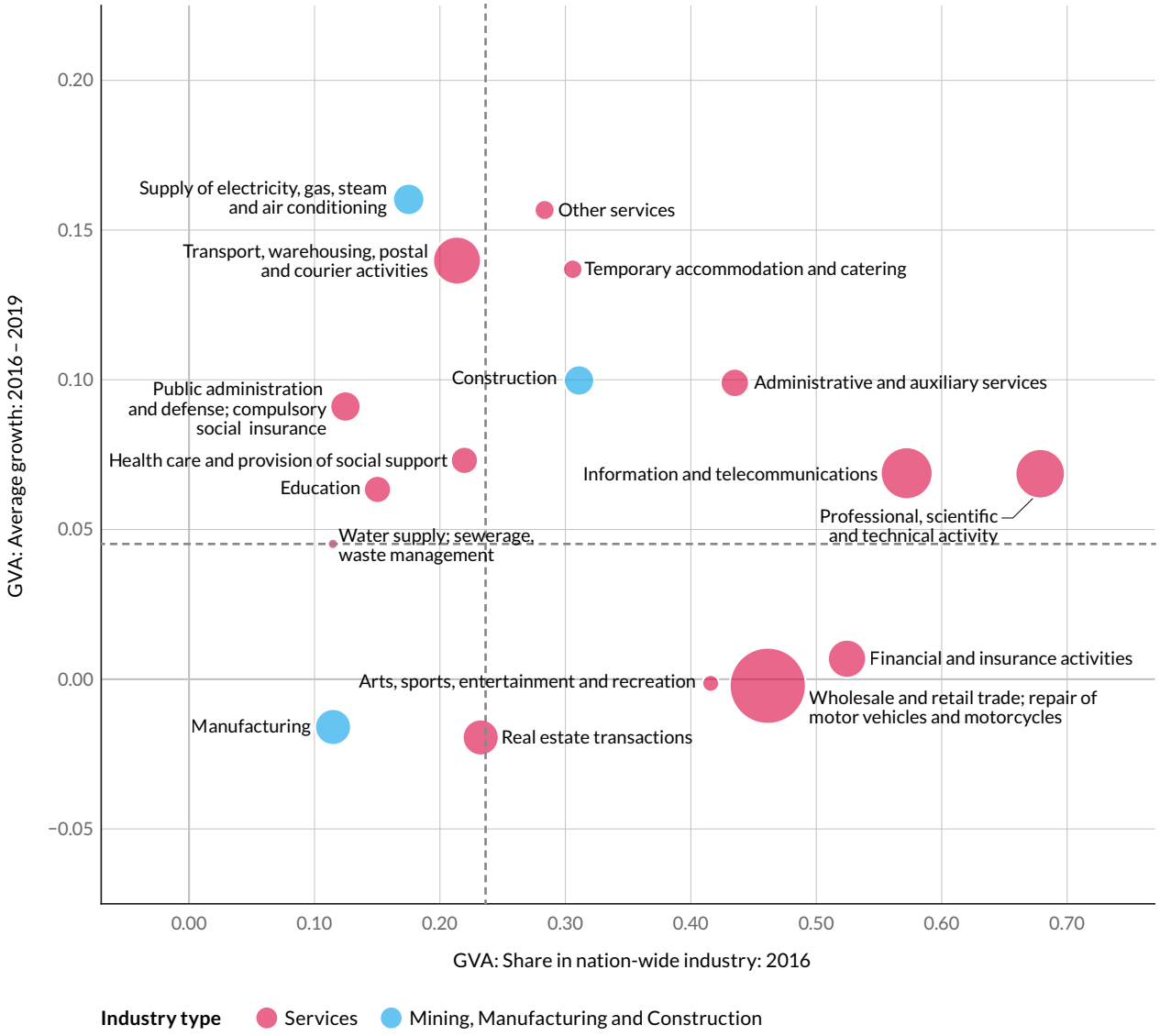
GVA by industries: Kyiv 2016 – 2019



Note: The dashed lines represent benchmark values. They represent regions' total GVA growth over the corresponding period and share in the national economy.

Source: Ukrstat (2020), wiiw calculation

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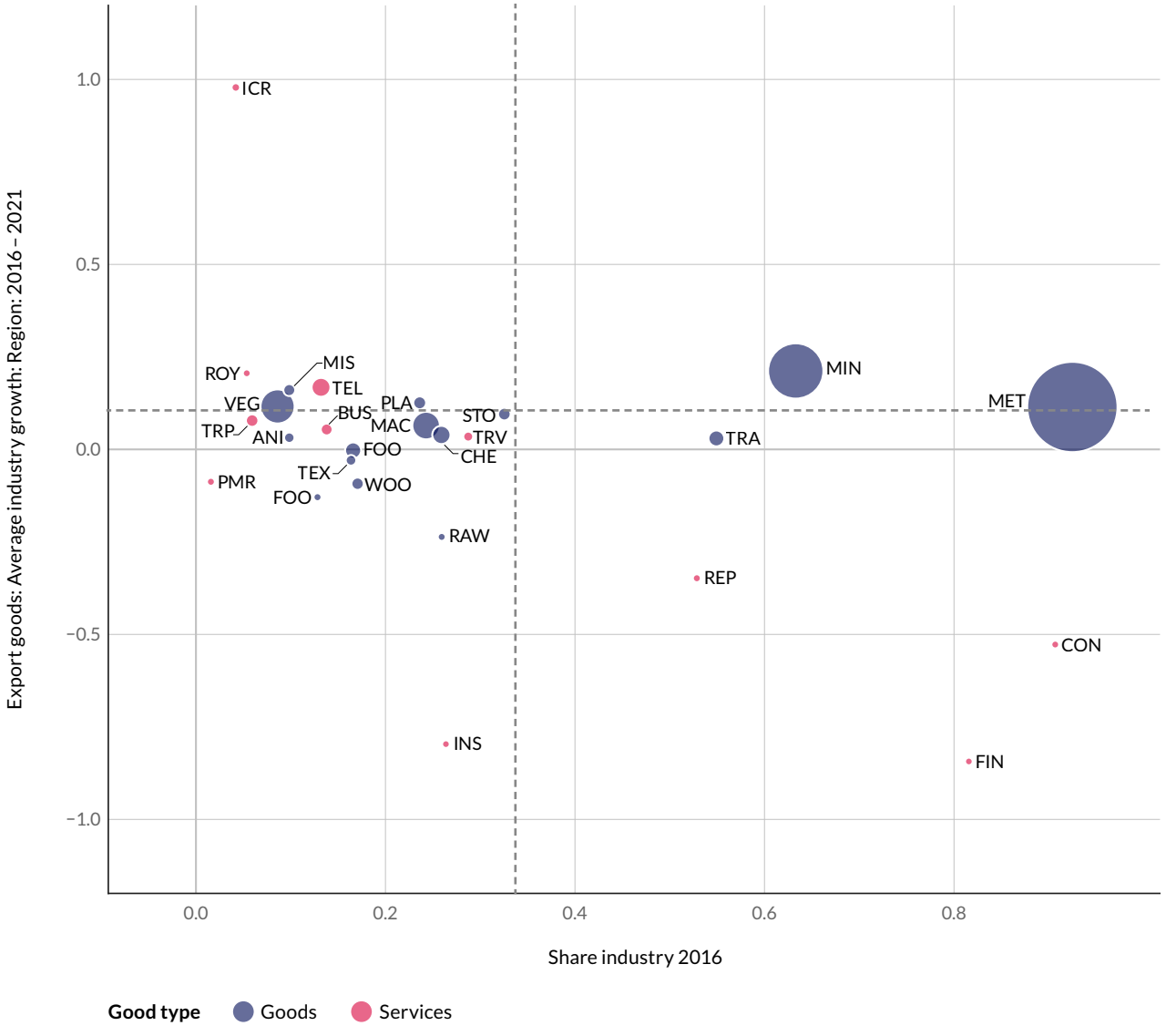
FIGURE 9: **Export by industries and macro-region**

Evolution of regional export growth by macro-region | East 2016 – 2021



Note: The dashed lines represent benchmark values. They represent regions' total export growth over the corresponding period and share in the national exports.

Source: Ukrstat (2020), wiiw calculation

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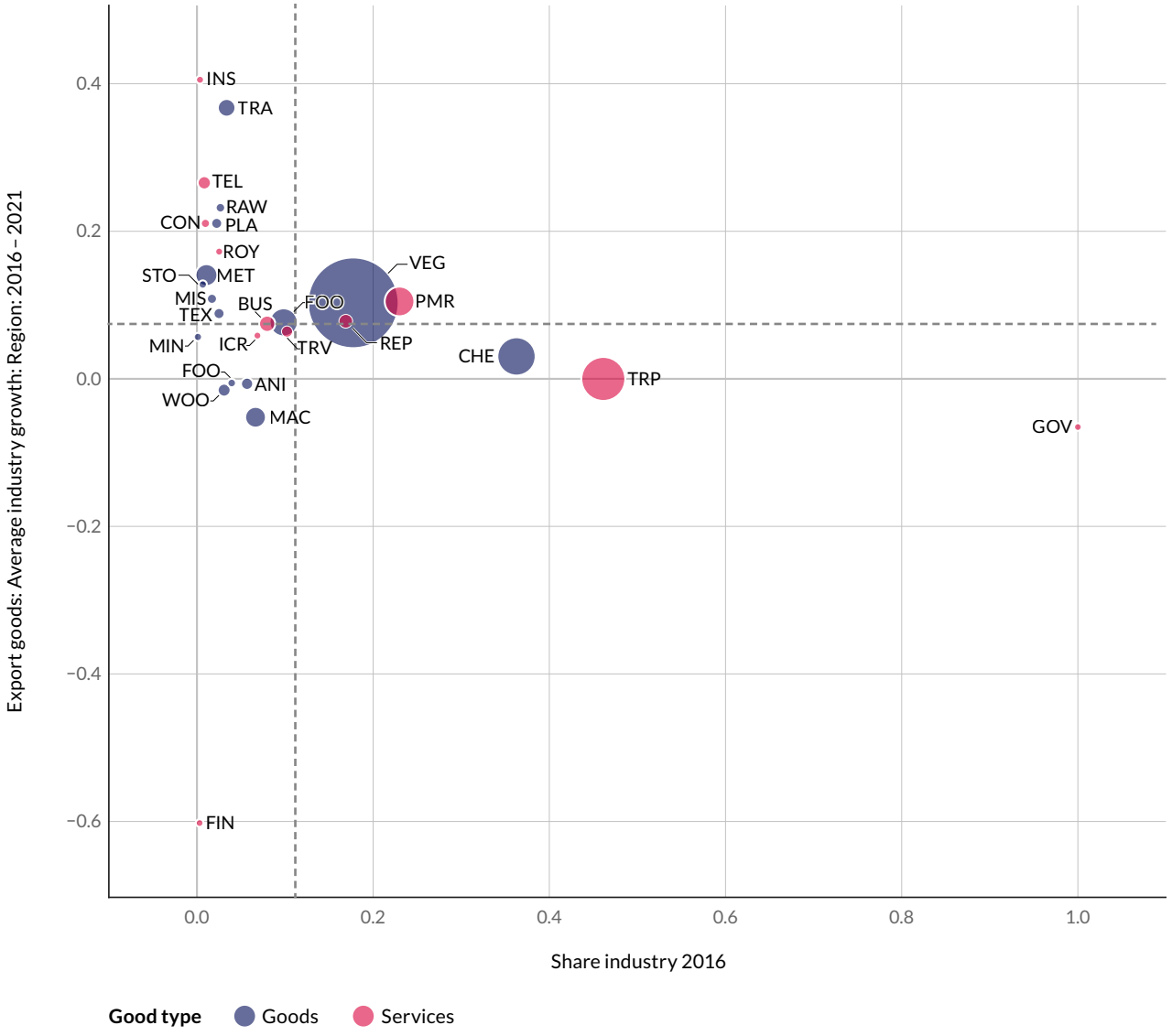
Evolution of regional export growth by macro-region | South 2016 – 2021



Note: The dashed lines represent benchmark values. They represent regions' total export growth over the corresponding period and share in the national exports.

Source: Ukrstat (2020), wiiw calculation

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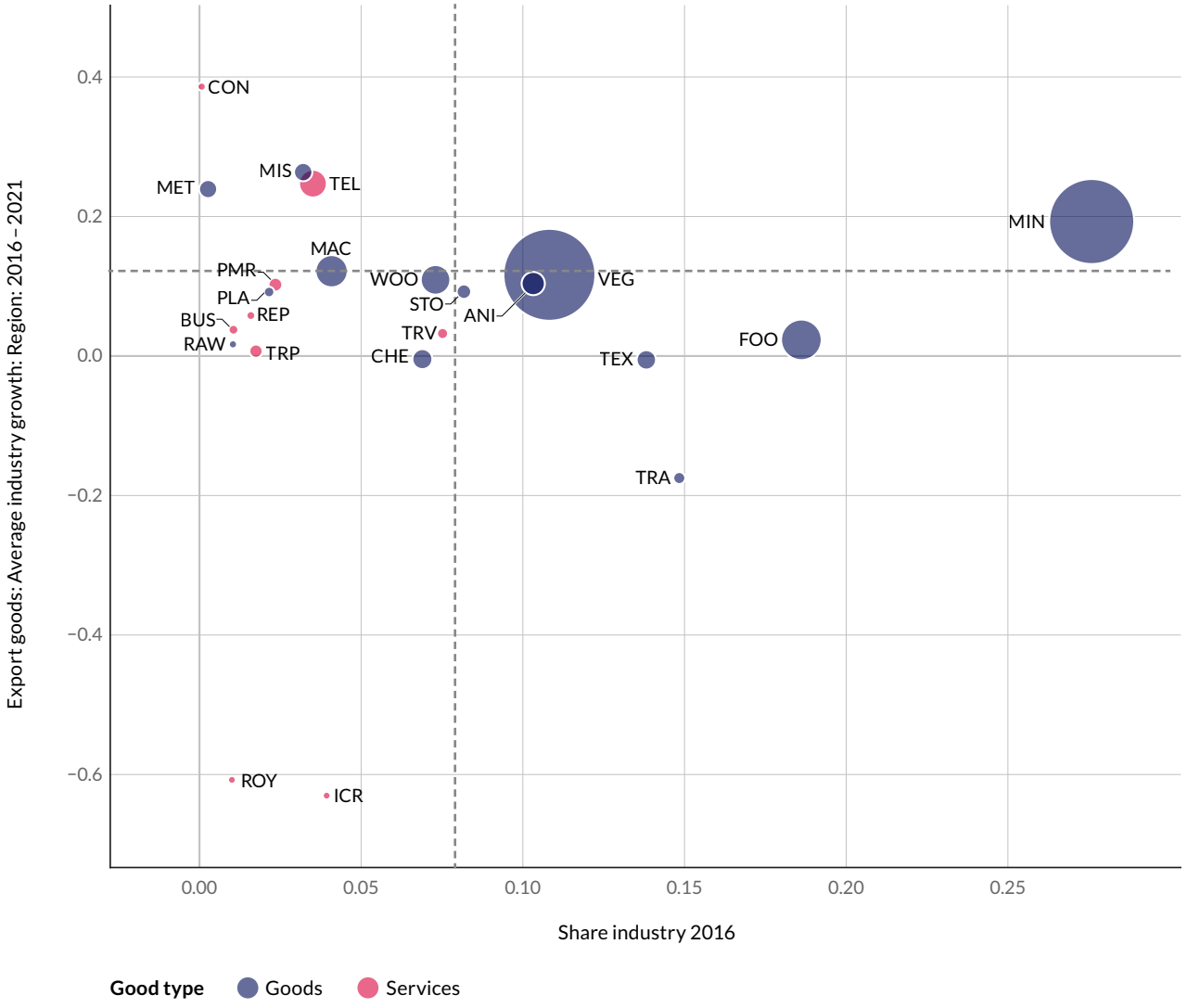
Evolution of regional export growth by macro-region | Centre 2016 – 2021



Note: The dashed lines represent benchmark values. They represent regions' total export growth over the corresponding period and share in the national exports.

Source: Ukrstat (2020), wiiw calculation

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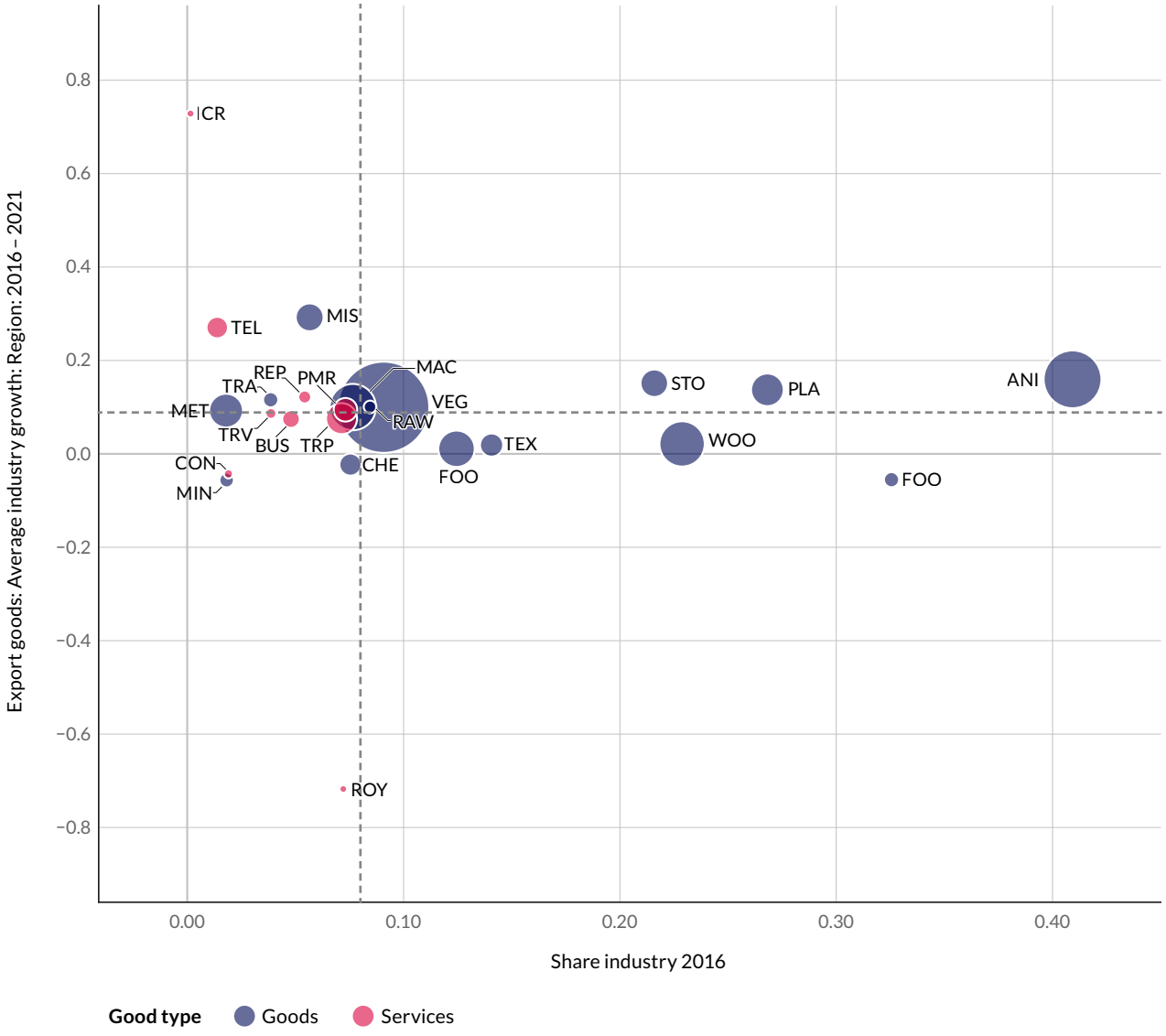
Evolution of regional export growth by macro-region | North 2016 – 2021



Note: The dashed lines represent benchmark values. They represent regions' total export growth over the corresponding period and share in the national exports.

Source: Ukrstat (2020), wiiw calculation

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Evolution of regional export growth by macro-region | West 2016 – 2021

Note: The dashed lines represent benchmark values. They represent regions' total export growth over the corresponding period and share in the national exports.

Source: Ukrstat (2020), wiiw calculation

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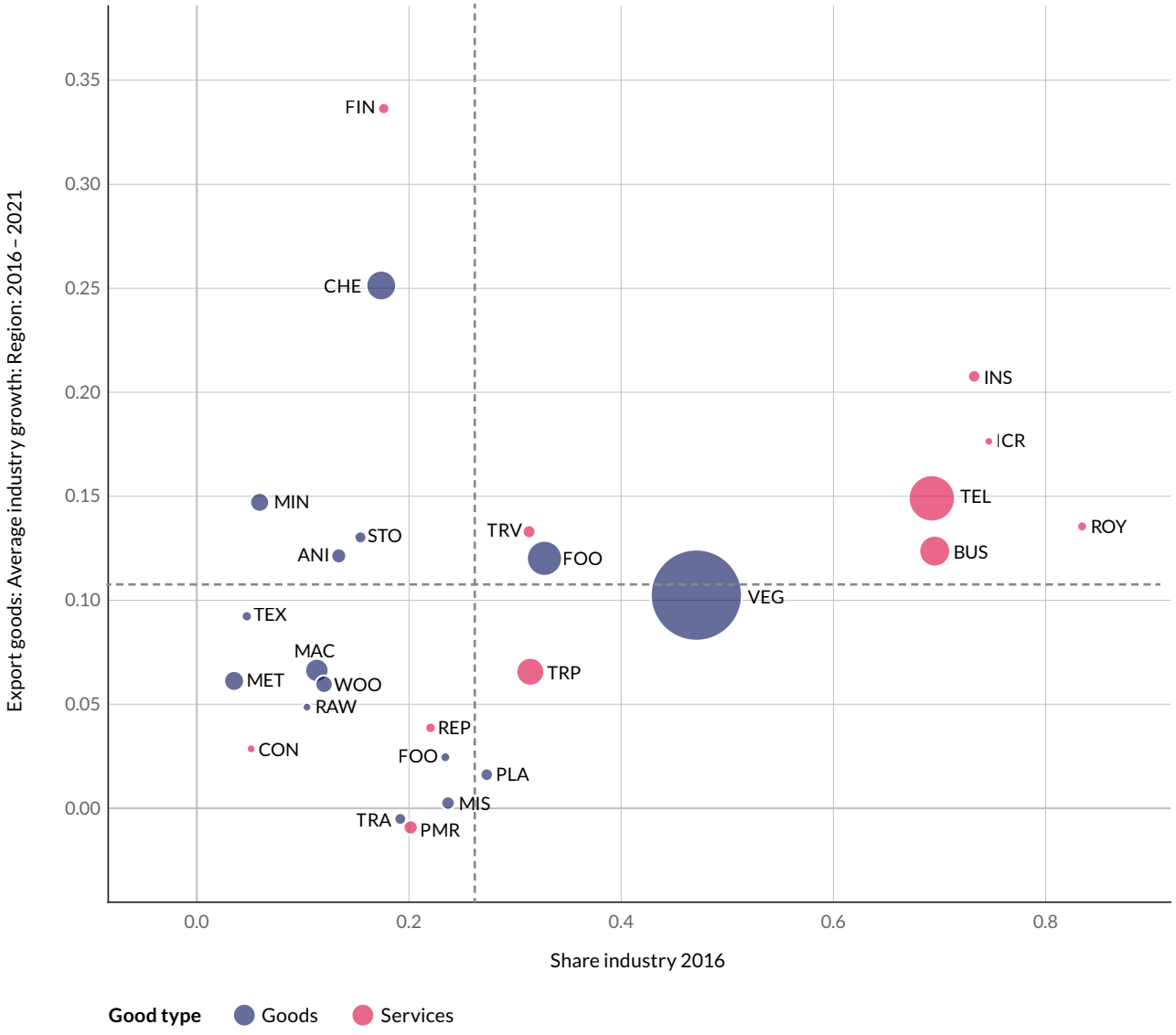
Evolution of regional export growth by macro-region | Kyiv 2016 – 2021



Note: The dashed lines represent benchmark values. They represent regions' total export growth over the corresponding period and share in the national exports.

Source: Ukrstat (2020), wiiw calculation

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TABLE 6 | **Specialisation of production in Ukrainian macro-regions**

NACE2 code	Industry description	Share in region's manu-facturing (%): 2019	Share of the nationwide industry in national ma-nufacturing (%): 2019	Specialisa-tion index: 2019	Nominal growth: 2016 – 2019	Share in nationwide industry (%): 2019
East						
24.10	Manufacture of basic iron and steel and of ferro-alloys	20.81	7.28	2.86	0.43	100.00
33.12	Repair of machinery	9.57	5.46	1.75	2.90	61.29
24.20	Manufacture of tubes, pipes, hollow profiles and related fittings, of steel	3.04	1.06	2.86	0.93	100.00
22.22	Manufacture of plastic packing goods	2.65	1.92	1.38	1.03	48.39
10.13	Production of meat and poultry meat products	2.65	1.92	1.38	1.64	48.23
21.20	Manufacture of pharmaceutical preparations	2.56	5.99	0.43	1.27	14.94
25.11	Manufacture of metal structures and parts of structures	2.52	2.32	1.08	1.98	37.87
10.71	Manufacture of bread; manufacture of fresh pastry goods and cakes	2.36	3.23	0.73	1.43	25.57
25.99	Manufacture of other fabricated metal products n.e.c.	2.19	1.41	1.55	1.33	54.38
28.30	Manufacture of agricultural and forestry machinery	2.04	1.42	1.43	1.26	50.13
26.51	Manufacture of instruments and appliances for measuring, testing and navigation	2.01	0.96	2.09	1.00	73.19
10.82	Manufacture of cocoa, chocolate and sugar confectionery	1.89	1.16	1.63	1.04	56.91
28.92	Manufacture of machinery for mining, quarrying and construction	1.69	0.80	2.12	1.14	73.99
30.30	Manufacture of air and spacecraft and related machinery	1.69	0.92	1.84	0.10	64.39
18.12	Other printing	1.65	2.29	0.72	1.67	25.13
10.41	Manufacture of oils and fats	1.50	2.74	0.55	0.40	19.13
25.62	Machining	1.47	0.71	2.08	1.72	72.87
17.21	Manufacture of corrugated paper and paperboard and of containers of paper and paperboard	1.45	2.21	0.65	1.59	22.89

NACE2 code	Industry description	Share in region's manu-facturing (%): 2019	Share of the nationwide industry in national ma-nufacturing (%): 2019	Specialisa-tion index: 2019	Nominal growth: 2016 – 2019	Share in nationwide industry (%): 2019
30.40	Manufacture of military fighting vehicles	1.42	0.50	2.86	1.14	100.00
23.61	Manufacture of concrete products for construction purposes	1.40	4.15	0.34	3.04	11.76
South						
10.41	Manufacture of oils and fats	20.17	2.74	7.36	0.35	30.68
33.15	Repair and maintenance of ships and boats	9.52	0.40	23.98	1.01	100.00
11.02	Manufacture of wine from grape	6.00	0.25	23.98	0.50	100.00
10.61	Manufacture of grain mill products	5.28	0.82	6.44	2.62	26.85
33.12	Repair of machinery	4.72	5.46	0.86	1.08	3.60
25.11	Manufacture of metal structures and parts of structures	3.35	2.32	1.44	0.89	6.01
16.10	Sawmilling and planing of wood	3.33	2.26	1.47	5.02	6.13
10.71	Manufacture of bread; manufacture of fresh pastry goods and cakes	3.14	3.23	0.97	0.90	4.05
30.11	Building of ships and floating structures	3.10	0.13	23.98	3.92	100.00
28.25	Manufacture of non-domestic cooling and ventilation equipment	3.10	1.30	2.38	0.88	9.92
23.63	Manufacture of ready-mixed concrete	2.87	1.21	2.37	3.58	9.90
27.11	Manufacture of electric motors, generators and transformers	2.85	0.39	7.24	1.84	30.18
23.61	Manufacture of concrete products for construction purposes	2.79	4.15	0.67	1.44	2.80
22.22	Manufacture of plastic packing goods	2.37	1.92	1.23	1.90	5.15
22.29	Manufacture of other plastic products	2.13	1.13	1.89	0.97	7.87
28.30	Manufacture of agricultural and forestry machinery	1.92	1.42	1.35	0.43	5.63
16.23	Manufacture of other builders' carpentry and joinery	1.76	0.54	3.29	2.20	13.72
15.11	Tanning and dressing of leather; dressing and dyeing of fur	1.47	0.07	20.43	inf	85.22
10.13	Production of meat and poultry meat products	1.43	1.92	0.74	1.45	3.10
28.93	Manufacture of machinery for food, beverage and tobacco processing	1.31	0.61	2.16	1.16	9.02

NACE2 code	Industry description	Share in region's manu-facturing (%): 2019	Share of the nationwide industry in national ma-nufacturing (%): 2019	Specialisa-tion index: 2019	Nominal growth: 2016 – 2019	Share in nationwide industry (%): 2019
Centre						
10.41	Manufacture of oils and fats	17.71	2.74	6.46	0.97	41.77
10.51	Operation of dairies and cheese making	14.50	1.61	9.01	1.66	58.27
10.82	Manufacture of cocoa, chocolate and sugar confectionery	6.50	1.16	5.58	1.01	36.07
28.30	Manufacture of agricultural and forestry machinery	4.72	1.42	3.32	1.02	21.44
23.61	Manufacture of concrete products for construction purposes	4.62	4.15	1.11	2.83	7.20
10.39	Other processing and preserving of fruit and vegetables	3.74	0.91	4.10	inf	26.50
14.13	Manufacture of other outerwear	3.19	1.21	2.65	1.02	17.12
21.20	Manufacture of pharmaceutical preparations	2.74	5.99	0.46	1.45	2.96
10.61	Manufacture of grain mill products	2.66	0.82	3.24	0.43	20.94
33.12	Repair of machinery	2.64	5.46	0.48	3.20	3.12
29.32	Manufacture of other parts and accessories for motor vehicles	2.52	0.27	9.25	1.18	59.81
28.93	Manufacture of machinery for food, beverage and tobacco processing	2.25	0.61	3.71	1.02	23.99
10.71	Manufacture of bread; manufacture of fresh pastry goods and cakes	2.13	3.23	0.66	1.90	4.27
31.09	Manufacture of other furniture	2.05	1.64	1.25	1.64	8.08
25.11	Manufacture of metal structures and parts of structures	1.92	2.32	0.83	3.75	5.35
16.10	Sawmilling and planing of wood	1.88	2.26	0.83	0.33	5.37
10.32	Manufacture of fruit and vegetable juice	1.87	0.12	15.47	1.88	100.00
28.22	Manufacture of lifting and handling equipment	1.37	0.77	1.79	1.68	11.60
22.23	Manufacture of builders' ware of plastic	1.32	0.88	1.50	1.74	9.72
10.91	Manufacture of prepared feeds for farm animals	1.31	0.11	12.37	1.97	79.97

NACE2 code	Industry description	Share in region's manu-facturing (%): 2019	Share of the nationwide industry in national ma-nufacturing (%): 2019	Specialisa-tion index: 2019	Nominal growth: 2016 – 2019	Share in nationwide industry (%): 2019
North						
17.21	Manufacture of corrugated paper and paperboard and of containers of paper and paperboard	9.79	2.21	4.43	1.55	55.29
23.61	Manufacture of concrete products for construction purposes	7.64	4.15	1.84	1.70	23.00
10.13	Production of meat and poultry meat products	6.00	1.92	3.13	5.52	39.02
28.13	Manufacture of other pumps and compres-sors	5.69	0.80	7.08	0.96	88.43
16.10	Sawmilling and planing of wood	4.80	2.26	2.12	2.22	26.49
10.71	Manufacture of bread; manufacture of fresh pastry goods and cakes	3.52	3.23	1.09	0.83	13.58
33.12	Repair of machinery	3.44	5.46	0.63	1.20	7.88
10.81	Manufacture of sugar	3.37	0.99	3.41	1.31	42.63
23.63	Manufacture of ready-mixed concrete	3.30	1.21	2.73	4.65	34.11
10.72	Manufacture of rusks and biscuits; manufac-ture of preserved pastry goods and cakes	3.16	0.55	5.77	53.76	72.02
22.21	Manufacture of plastic plates, sheets, tubes and profiles	2.89	1.63	1.77	1.27	22.12
25.11	Manufacture of metal structures and parts of structures	2.46	2.32	1.06	2.05	13.24
23.99	Manufacture of other non-metallic mineral products n.e.c.	2.25	0.59	3.83	1.87	47.81
22.29	Manufacture of other plastic products	2.24	1.13	1.99	1.60	24.87
31.09	Manufacture of other furniture	2.15	1.64	1.31	2.52	16.34
28.99	Manufacture of other special-purpose machinery n.e.c.	2.00	0.45	4.48	1.22	55.99
18.12	Other printing	1.97	2.29	0.86	1.70	10.75
28.30	Manufacture of agricultural and forestry machinery	1.76	1.42	1.24	0.90	15.46
14.13	Manufacture of other outerwear	1.67	1.21	1.38	0.94	17.26
25.50	Forging, pressing, stamping and roll-forming of metal; powder metallurgy	1.63	0.33	4.98	4.66	62.17

NACE2 code	Industry description	Share in region's manu-facturing (%): 2019	Share of the nationwide industry in national ma-nufacturing (%): 2019	Specialisa-tion index: 2019	Nominal growth: 2016 – 2019	Share in nationwide industry (%): 2019
West						
29.31	Manufacture of electrical and electronic equipment for motor vehicles	11.90	1.64	7.25	1.88	100.00
16.21	Manufacture of veneer sheets and wood-based panels	8.16	1.55	5.27	0.84	72.68
16.10	Sawmilling and planing of wood	6.52	2.26	2.88	1.88	39.72
31.09	Manufacture of other furniture	6.44	1.64	3.92	1.75	54.11
23.61	Manufacture of concrete products for construction purposes	4.83	4.15	1.16	1.46	16.06
10.71	Manufacture of bread; manufacture of fresh pastry goods and cakes	3.83	3.23	1.19	0.96	16.35
10.11	Processing and preserving of meat	3.39	0.99	3.42	1.35	47.14
10.51	Operation of dairies and cheese making	3.35	1.61	2.08	– 21.26	28.72
10.81	Manufacture of sugar	3.33	0.99	3.38	2.87	46.54
14.13	Manufacture of other outerwear	3.28	1.21	2.72	1.05	37.55
12.00	Manufacture of tobacco products	2.67	0.37	7.25	inf	100.00
17.21	Manufacture of corrugated paper and paperboard and of containers of paper and paperboard	2.44	2.21	1.10	0.77	15.20
22.21	Manufacture of plastic plates, sheets, tubes and profiles	2.30	1.63	1.41	1.04	19.46
11.05	Manufacture of beer	2.04	0.30	6.73	0.91	92.79
22.22	Manufacture of plastic packing goods	1.80	1.92	0.94	1.39	12.96
16.23	Manufacture of other builders' carpentry and joinery	1.80	0.54	3.35	1.05	46.25
33.12	Repair of machinery	1.77	5.46	0.32	2.24	4.46
13.92	Manufacture of made-up textile articles, except apparel	1.76	0.85	2.06	0.69	28.35
14.12	Manufacture of workwear	1.70	0.91	1.86	1.42	25.65
14.14	Manufacture of underwear	1.53	0.25	6.21	1.31	85.65

NACE2 code	Industry description	Share in region's manu-facturing (%): 2019	Share of the nationwide industry in national ma-nufacturing (%): 2019	Specialisa-tion index: 2019	Nominal growth: 2016 – 2019	Share in nationwide industry (%): 2019
Kyiv						
21.20	Manufacture of pharmaceutical preparations	17.48	5.99	2.92	1.48	82.10
23.61	Manufacture of concrete products for construction purposes	5.78	4.15	1.39	1.44	39.19
18.12	Other printing	4.73	2.29	2.06	1.02	58.04
33.20	Installation of industrial machinery and equipment	4.70	1.99	2.36	4.07	66.46
10.71	Manufacture of bread; manufacture of fresh pastry goods and cakes	4.16	3.23	1.29	1.60	36.18
33.12	Repair of machinery	3.81	5.46	0.70	2.62	19.64
25.40	Manufacture of weapons and ammunition	3.22	0.90	3.56	1.72	100.00
28.25	Manufacture of non-domestic cooling and ventilation equipment	2.46	1.30	1.89	1.68	53.23
25.11	Manufacture of metal structures and parts of structures	2.45	2.32	1.06	2.51	29.69
22.21	Manufacture of plastic plates, sheets, tubes and profiles	1.95	1.63	1.20	0.95	33.63
30.20	Manufacture of railway locomotives and rolling stock	1.88	0.58	3.24	1.31	91.19
33.14	Repair of electrical equipment	1.73	0.83	2.10	1.36	59.04
22.22	Manufacture of plastic packing goods	1.60	1.92	0.84	1.07	23.51
16.10	Sawmilling and planing of wood	1.53	2.26	0.68	4.55	19.04
24.33	Cold forming or folding	1.53	0.76	2.02	1.58	56.79
14.19	Manufacture of other wearing apparel and accessories	1.51	0.53	2.84	48.54	79.93
14.12	Manufacture of workwear	1.43	0.91	1.57	2.29	44.01
25.99	Manufacture of other fabricated metal products n.e.c.	1.41	1.41	1.00	1.92	28.07
23.63	Manufacture of ready-mixed concrete	1.38	1.21	1.14	1.96	32.18
10.39	Other processing and preserving of fruit and vegetables	1.32	0.91	1.45	1.72	40.77

Note: inf stands for infinity: reported for industries with no production in 2016; categories of macro-regions as in Figure 1. In 2016, the State Statistics Service of Ukraine (Ukrstat) reports negative values for GVA for dairy industries for the two Western regions, Khmelnytskyi and Chernivtsi.

Source: Ukrstat, calculations by wiiw

X. Figures and tables

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