

Chapter 1.

Regional development trends in Ukraine in the aftermath of the Donbas conflict

Chapter 1 provides an overview of Ukraine's economic performance, strengths and challenges at the subnational level. It analyses regional economic trends from the mid-2000s to 2015-16 and compares them with those observed in OECD countries and beyond. This chapter, which updates the 2014 OECD Territorial Review of Ukraine, focuses on issues relevant to the decentralisation process, analysed extensively in Chapter 2.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Note by Turkey

The information in this document with reference to “Cyprus” relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the “Cyprus issue”.

Note by all the European Union Member States of the OECD and the European Union

The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Introduction

The previous OECD *Territorial Review of Ukraine* (OECD, 2014b), completed just before the Euromaidan events and the eruption of a separatist conflict in the east of the country, concluded that Ukraine was both administratively and fiscally over-centralised. It argued that a more decentralised form of territorial governance was essential to making strength of the country's size and diversity and to overcoming the much-discussed east-west divide, which was reflected not only in its politics but also in the structure and performance of regional economies. This report updates and extends that analysis. It argues that the geopolitical and economic shocks of recent years have had asymmetric impacts, both sectorally and geographically. To a great extent, they seem to have accelerated a number of trends that emerged in the years following the global financial crisis of 2009. The structural shifts that began after the financial crisis present new opportunities for some regions, especially in the west of the country, but daunting new challenges for others, particularly in the east, where the consequences of armed conflict have exacerbated an already difficult structural adjustment. The asymmetric nature of these shocks across Ukraine's regions points to the need for a differentiated policy response and thus reinforces the case for more decentralised governance. However, it also underscores the importance – and difficulty – of getting decentralisation right, given the problematic institutional, political and economic environment in which it is being implemented.

The first section of this chapter provides an overview of the macroeconomic context and the state of ongoing structural reforms. The second analyses demographic and economic trends at subnational level, including the evolution of Ukraine's settlement patterns, production structure and growth performance. This is followed by an analysis of key drivers of economic performance with a strong regional dimension: the functioning of labour markets, transport infrastructure and changes in the manufacturing sector. It formulates diagnoses and recommendations that are relevant to both central and subnational authorities. The final section looks at changing patterns of civic engagement and governance at the subnational level, which are important aspects of decentralisation in Ukraine.

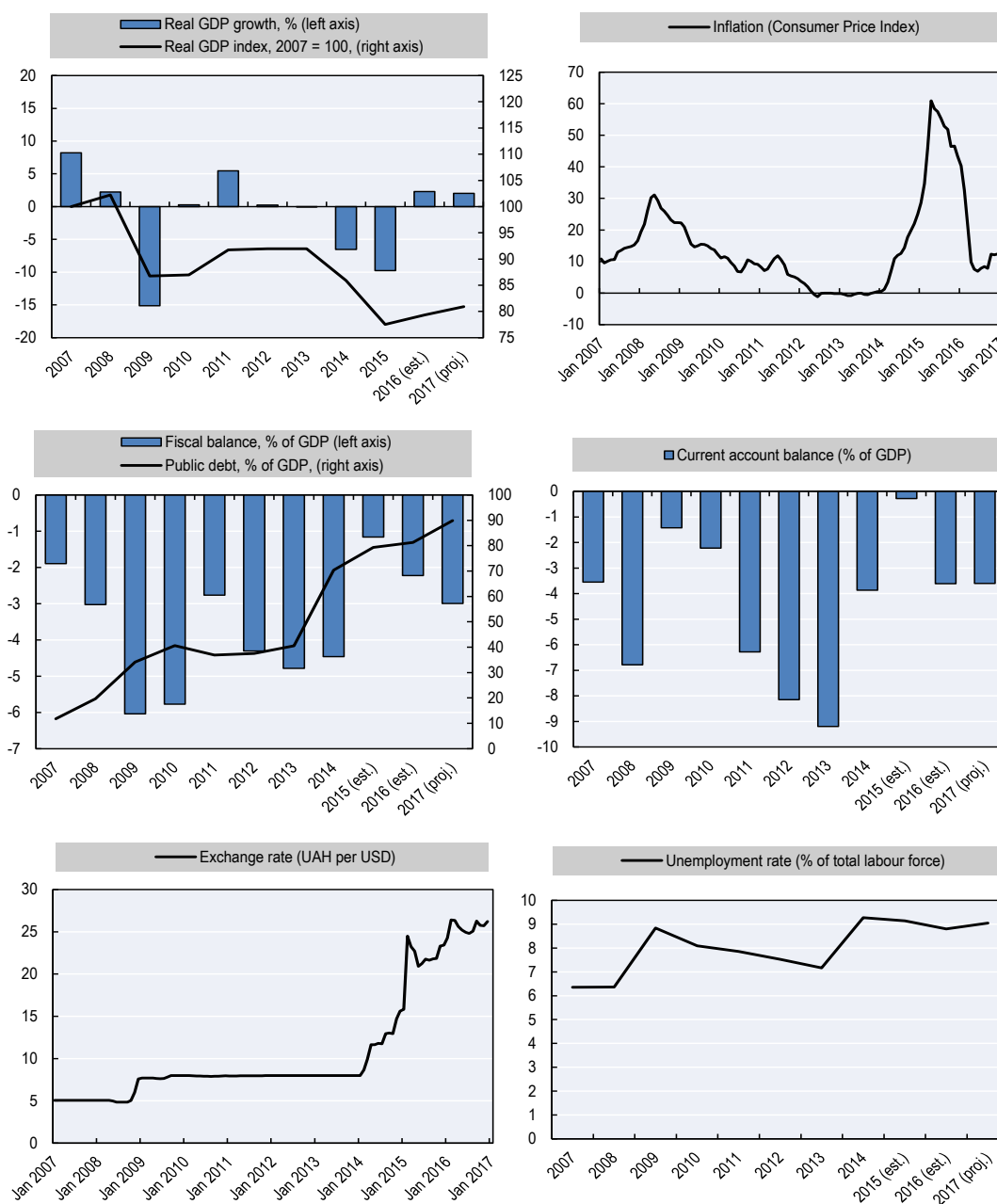
Macroeconomic overview

Ukraine is the largest country in continental Europe and, with 42.6 million inhabitants in 2016,¹ one of the most populous. Ukraine has access to the Black Sea mainly through ports in Odessa, Iuzhnoe (in Odessa *oblast*) and Mykolaiv. It has a comparative advantage in agriculture, particularly in grain production (it is among the top ten exporters of wheat and corn worldwide). Its approximately 320 000 km² of fertile arable land are equivalent to one-third of the arable land of the European Union (OECD, 2014b). Ukraine is also home to abundant mineral resources: it has the second-largest quantity of mercury deposits and sizeable reserves of coal (the seventh-largest in the world) and iron ores, mainly concentrated in Eastern Ukraine.

Ukraine has faced large challenges over the past decade. The global financial crisis hit Ukraine hard, with gross domestic product (GDP) falling by 15% in 2009 (Figure 1.1). The recovery that ensued was weak and short-lived, and gave way to a major economic, financial and political crisis that has been aggravated by the annexation of Crimea and the conflict in the eastern regions of Donetsk and Luhansk (the Donbas). GDP contracted by 16% in the two-year period from early 2014 to late 2015, while inflation surged, reaching a peak of 61% in April 2015; the exchange rate weakened; and the terms of trade

deteriorated. The crisis of 2014-15 highlighted a number of fragilities inherent in the Ukrainian economy. Growth in incomes during the decade before the crisis was largely driven by favourable prices for commodity exports (particularly steel and chemicals) rather than much-needed improvements in productivity and competitiveness (OECD, 2014b). Consistent delays in implementing structural reforms and recurrent political instability left the economy stuck in transition and overly exposed to external shocks.

Figure 1.1. **Selected economic indicators, Ukraine**



Source: IMF (2017b), *World Economic Outlook* (database), <https://www.imf.org/external/pubs/ft/weo/2017/01/weodata/index.aspx> (accessed April 2017).

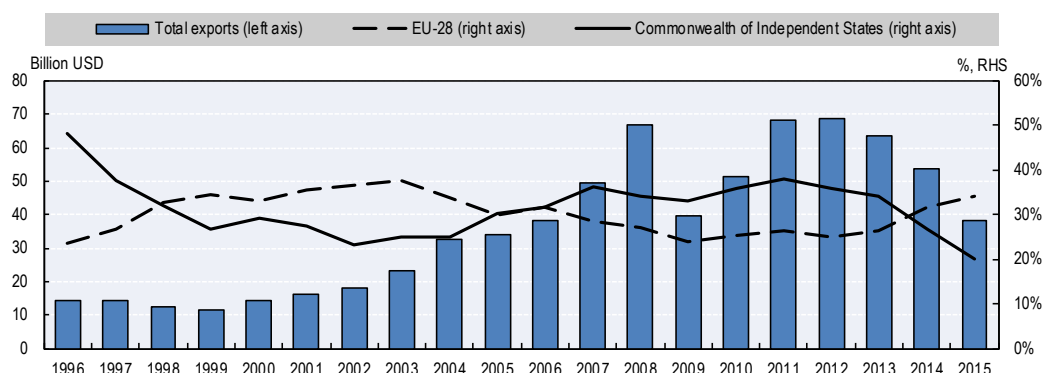
With the introduction of a flexible exchange rate regime, strong fiscal and monetary policies, and essential energy and financial sector reforms, the economy appears to have returned to modest growth in 2016, with real GDP rising by an estimated 2.3%. The government took important steps to reduce the fiscal deficit, which reached 10% of GDP in 2014 (including the state-owned gas company's deficit) before falling to 2.2% in 2016, thanks to tight fiscal policies and the imposition of market-based gas and heating tariffs. The external position also strengthened, with the current account deficit falling from 9.2% of GDP in 2013 to 3.6% in 2016. Gross reserves remain low but have doubled to USD 15 billion.

Continued recovery will depend on the government's ability to address important structural weaknesses in the economy. Public debt has risen sharply and is forecast to reach 90% of GDP in 2017. To help restore external sustainability and strengthen public finances, the government negotiated a four-year USD 17.5 billion IMF Extended Fund Facility, which has been operational since March 2015. Continued IMF support remains contingent on the implementation of structural reforms to reduce public sector inefficiencies, improve the business environment, increase labour market participation and boost productivity. Reform priorities highlighted by the IMF include attracting foreign direct investment (FDI), reforming the state-owned enterprise sector, developing a market for agricultural land, accelerating anti-corruption efforts, improving fiscal sustainability, further reducing inflation and rebuilding reserves, repairing viable banks, and reviving sound bank lending. To improve medium-term fiscal sustainability, the IMF recommends further fiscal consolidation and the adoption of a comprehensive pension reform, including increasing the effective retirement age to address the pension fund's large deficits and allow for higher average benefits (IMF, 2017a).

Over the past decade, Ukraine has made important efforts to open up its economy through trade and investment liberalisation. It became a member of the World Trade Organisation in 2008 and signed an Association Agreement with the European Union (EU) in 2014, including a Deep and Comprehensive Free Trade Area, which entered in force on 1 January 2016. Exports to traditional markets in the Commonwealth of Independent States (CIS) have declined markedly in recent years and the EU accounted for more than one-third of export revenue in 2015. In spite of the ongoing conflict, however, the Russian Federation still accounted for the largest share of Ukraine's exports – at 13% in 2015, followed by Turkey (7.3%), the People's Republic of China (6.3%), Egypt (5.5%) and Italy (5.2%). Imports predominately originate from the EU (41% in 2015) and CIS countries (28%; Figure 1.2).

Ukraine's average tariff rate is not particularly high, and the tariff regime does not present a significant obstacle to increasing trade. However, addressing non-tariff barriers such as customs regulations and border clearance issues can play an important role in reducing trade costs (OECD, 2016c). Ukraine ranked 80th out of 160 countries in the 2016 World Bank Logistics Performance Index, scoring below the average for the Europe and Central Asia region across all six dimensions (customs, infrastructure, international shipments, logistics competence, tracking and tracing, and timeliness). Similarly, the 2017 World Bank Doing Business assessment ranked Ukraine 115th out of 190 economies in the trading across borders dimension, which measures the time and cost of logistical procedures associated with exporting and importing goods. Ukraine also came out below the average for the Europe and Central Asia region on 10 out of 11 dimensions of the 2015 OECD Trade Facilitation Indicators. Performance is particularly weak in the areas of governance and impartiality, internal and external border agency co-operation, and document formalities.

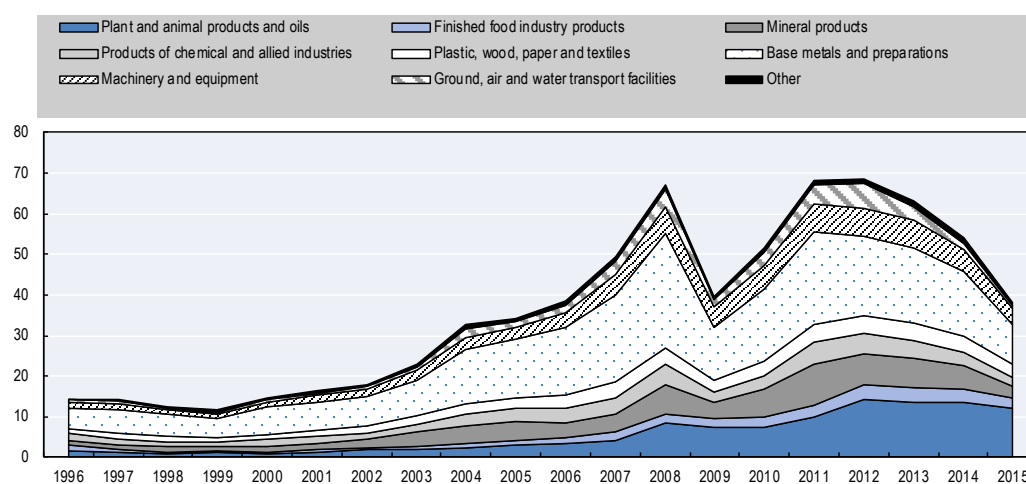
Figure 1.2. Evolution of exports, Ukraine



Source: UN COMTRADE Database, <https://comtrade.un.org/data> (accessed April 2017).

Ukraine's exports are dominated by primary commodities, particularly agricultural products (cereals) and base metals (iron and steel). The global economic slowdown and ongoing conflict have had a severe impact on the steel industry – base metals constituted 42% of exports in 2008 but just 26% in 2015. By contrast, the share of primary agricultural products has nearly tripled, from 12% in 2008 to 32% in 2015 (Figure 1.3). Exports of sophisticated manufactures are minimal and mainly consist of railway cars, aircraft parts and components, and car parts, predominantly oriented towards the Russian market. The recent adoption of a flexible exchange rate has allowed for a substantial devaluation of the Ukrainian hryvnia (UAH) against the dollar, which has helped to maintain demand for Ukrainian exports. Given the country's exposure to international markets, weak internal demand, and constraints on labour and capital supply, ensuring a sustained recovery in the long term will require concerted efforts to diversify the export base, attract FDI and support Ukraine's integration in global value chains.

Figure 1.3. Composition of exports, Ukraine



Source: UN COMTRADE Database, <https://comtrade.un.org/data> (accessed on April 2017).

FDI inflows increased rapidly after the turn of the century, from USD 600 million in 2000 to USD 10.7 billion in 2008. However, Ukraine has faced substantial difficulties in attracting FDI since the onset of the global financial crisis. Gross FDI inflows declined by

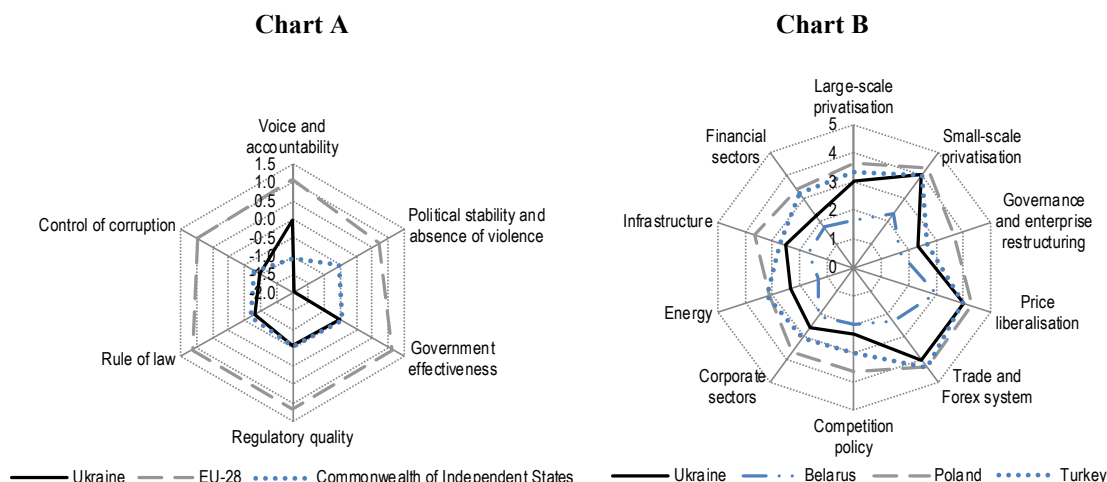
55% in 2009 and recovered slightly in 2010-12, before dropping by a further 45% in 2013 and a staggering 81% in 2014, reflecting growing concerns around the escalating conflict in the Donbas and the unstable domestic political situation. A sharp rebound was observed in 2015, bringing FDI inflows up from USD 847 million to USD 3.05 billion. However, this was largely due to the recapitalisation of foreign-owned banks through debt-to-equity conversions (OECD, 2016c). Furthermore, FDI statistics should be treated with a certain degree of caution, due to the prevalence of investment by special purpose entities² and round tripping (when funds transferred abroad by domestic investors are returned to the home country in the form of direct investment). The extensive use of round tripping is visible in the high share of offshore and low-tax jurisdictions such as Cyprus³, the Netherlands and the British Virgin Islands in the total inward FDI stock (44% as of 31 December 2015).

FDI can play an important role in upgrading Ukraine's ageing capital stock, supporting job creation, increasing productivity, and facilitating the transfer of knowledge and new technologies. However, Ukraine has faced difficulties attracting FDI in high value-added and technology-intensive sectors. Foreign investors have mainly targeted the domestic market through investments in non-tradable sectors such as financial and insurance activities (27% of the total inward FDI stock in 2015), wholesale and retail trade (13%), and real estate (8%). FDI in manufacturing is highly concentrated in metallurgy (12% in 2015), which is strongly influenced by commodity price fluctuations and global economic conditions. Moreover, inflows predominantly consist of mergers and acquisitions, and there is a need to facilitate efficiency-seeking greenfield investments that will foster the development of export-oriented activities (OECD, 2016c).

With GDP per capita in PPP terms standing at just 21% of the EU average in 2015, Ukraine needs a long-term strategy to accelerate growth and facilitate sustainable improvements in living standards. Currently, efforts to diversify the structure of exports and attract FDI are stymied by the poor investment climate, weak institutions and endemic corruption. There is, therefore, a pressing need to accelerate the pace of structural reforms in order to support productivity growth, particularly in light of the rapidly ageing population and the gradual decline of the working-age population. Figure 1.4 shows important gaps in Ukraine's performance across key areas of structural reform, particularly when compared with the EU and benchmark countries such as Poland. The World Bank's Worldwide Governance Indicators highlight political instability, corruption and the rule of law as the three most important issues. According to the European Bank for Reconstruction and Development's Transition Indicators, the most crucial priorities include financial sector reforms, governance and enterprise restructuring, competition policy, and energy sector reforms.

There is a broad consensus that reforming the Ukrainian economy will require significant improvements to the integrity and efficiency of public institutions. General government expenditure, which stood at 49% in 2012, has been declining, to a projected 41% in 2016 – but even this is a very high level for a country at Ukraine's level of per capita income. The public sector accounts for 25% of total employment. Privatisation and the reform of inefficient state-owned enterprises are needed to foster competition and reduce the influence of large and oligarchic business conglomerates. Creating a business environment conducive to competition will also require streamlining the legal and regulatory framework, strengthening the judiciary, and tackling systemic corruption. Corruption remains one of the most significant impediments to doing business, with Ukraine ranking 131st out of 176 economies in Transparency International's Corruption Perceptions Index for 2016.

Figure 1.4. **Worldwide Governance Indicators (2015) and European Bank for Reconstruction and Development's Transition Indicators (2014), Chart B**



Sources: World Bank Worldwide Governance Indicators, <http://info.worldbank.org/governance/wgi/index.aspx#reports> (accessed May 2017); European Bank for Reconstruction and Development (2014), "Transition report 2014: Innovation in transition", www.ebrd.com/downloads/research/transition/tr14.pdf.

Improving the policy environment for small and medium-sized enterprises (SMEs) is also necessary to support local development and allow the emergence of a more vibrant and diversified private sector. Access to finance remains a key constraint on SME development, due to the prevalence of high interest rates and collateral requirements, heavy dollarisation of the financial system, high levels of non-performing loans, and the lack of alternative sources of financing. The government should also focus on improving institutional support for SMEs, encouraging innovation through co-operation with research institutes, and supporting the development of linkages between multinational enterprises and domestic companies. The introduction of a targeted export promotion programme could also help Ukrainian SMEs to reap the benefits of the Association Agreement and the Deep and Comprehensive Free Trade Area with the EU (OECD et al., 2015).

Subnational trends

The political and economic shocks of the last few years have affected regions very differently

The country's administrative structure (Table 1.1) is a legacy of the Soviet era, but is undergoing a significant reform discussed in detail in Chapter 2. According to the 1993 Constitution, Ukraine comprises:

- At the TL2 level⁴, 24 regions (*oblasts*), the Autonomous Republic of Crimea and 2 cities with special status and prerogatives: Kyiv (the capital) and Sebastopol.
- At the TL3 level, 490 districts (*rayon*) in rural and suburban areas, and 184 cities of *oblast* significance. These are the largest cities – with very few exceptions their population is greater than 10 000 inhabitants.
- At the municipal (lowest) level, the territory is made up of more than 10 000 local councils: rural councils, councils for urban type settlements and councils of small cities (called cities of district significance) located within a district.

Table 1.1. **Ukrainian administrative units as of 1 December 2017**

TL2 level (<i>oblast</i>)	Districts (TL3) (<i>rayon</i>)	Cities with <i>oblast</i> significance and special status (TL3)	Other cities	Unified territorial communities ¹	Rural councils	Councils of settlements of urban type	Councils of urban districts ²
Ukraine	490	186	235	665	9 411	719	47
Crimea (Aut. Rep.)	14	11	5	–	243	38	3
Vinnitsya	27	6	8	33	658	28	
Volyn	16	4	6	39	355	19	
Dnipropetrovsk	22	13	5	53	231	33	15
Donetsk	18	27	24	9	239	75	9
Zhytomyr	23	5	7	45	530	35	2
Zakarpattia	13	5	5	6	302	19	
Zaporizhia	20	5	8	34	223	19	
Ivano-Frankivsk	14	6	8	20	420	22	
Kyiv	25	13	13	6	601	28	
Kirovohrad	21	4	5	13	368	27	2
Luhansk	18	14	23	8	195	87	4
Lviv	20	9	34	33	590	31	
Mykolayiv	19	5	3	21	285	17	
Odesa	26	7	10	23	402	31	
Poltava	25	6	7	32	427	19	3
Rivne	16	4	6	24	314	15	
Sumy	18	7	6	27	351	19	
Ternopil	17	4	9	40	426	8	
Kharkiv	27	7	10	12	376	59	
Kherson	18	4	5	24	255	30	3
Khmelnitskiy	20	6	4	33	368	13	
Cherkasy	20	6	8	24	516	14	
Chernivtsi	11	2	8	22	224	7	
Chernihiv	22	4	7	33	508	25	2
City of Kyiv	–	1		–			
City of Sebastopol	–	1	1	–	4	1	4

1. Newly amalgamated communities result from the merger of local councils. This table includes only local councils that have not merged into an amalgamated community.

2. Twenty-four large cities (including Kyiv and Sebastopol) are further divided into city districts.

Source: OECD research based on Verkhovna Rada of Ukraine (2017), Адміністративно - територіальний устрій України (*Administrative and territorial system of Ukraine*), <http://static.rada.gov.ua/zakon/new/NEWSAIT/ADM/zmist.html>.

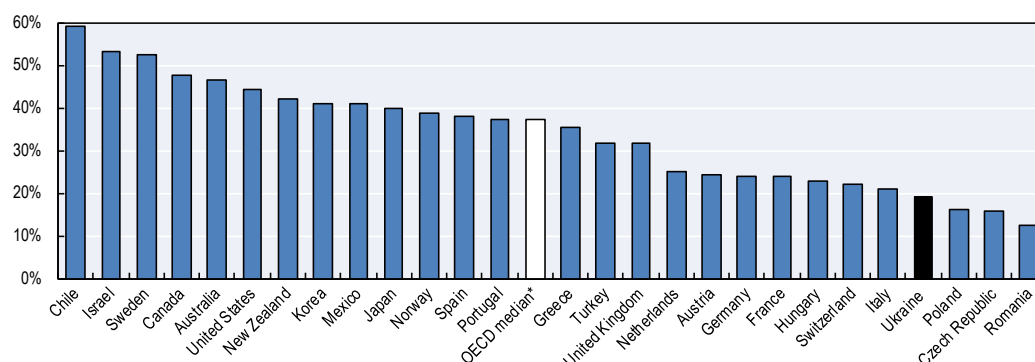
Ukraine is currently engaged in amalgamating (merging) these numerous local councils into larger municipal entities called unified territorial communities (UTC). This amalgamation process is one of the pillars of the decentralisation reform. All statistics and comparisons with OECD countries in this chapter are based on the TL2 level (*oblasts* and cities of Kyiv and Sebastopol) and in a few cases on the TL3 level (districts and cities of *oblast* significance).

While population is ageing and declining, its concentration remains lower than in most OECD countries

The median population density of Ukraine's TL2 regions (63.4 inhabitants per square kilometre [km²]) is somewhat lower than the median density of TL2 regions in OECD

countries (87.6 inhabitants/km²). Ukraine has a relatively low concentration of population across TL2 regions, meaning that the population is relatively dispersed across all regions. Only three OECD countries (the Czech Republic, Poland and Slovak Republic) have a lower population concentration (Figure 1.5). Many countries in Central and Eastern Europe, such as Bulgaria and Romania, also display low population concentration. The concentration of population increased slightly during 2005-15. The fact that it is still much lower than in OECD countries could reflect both the Soviet legacy of territorial planning and a relatively low rate of interregional labour migration: relatively few workers in Ukraine move to opportunity (i.e. to more affluent regions with better job prospects) (World Bank, 2015). Overall, the low concentration index of population compared to OECD countries suggests that there is still room to increase the size of Ukraine's largest urban clusters, with substantial benefits for Ukraine's productivity if urban growth is adequately managed.

Figure 1.5. **Geographic Concentration Index of population among TL2 regions, 2015**



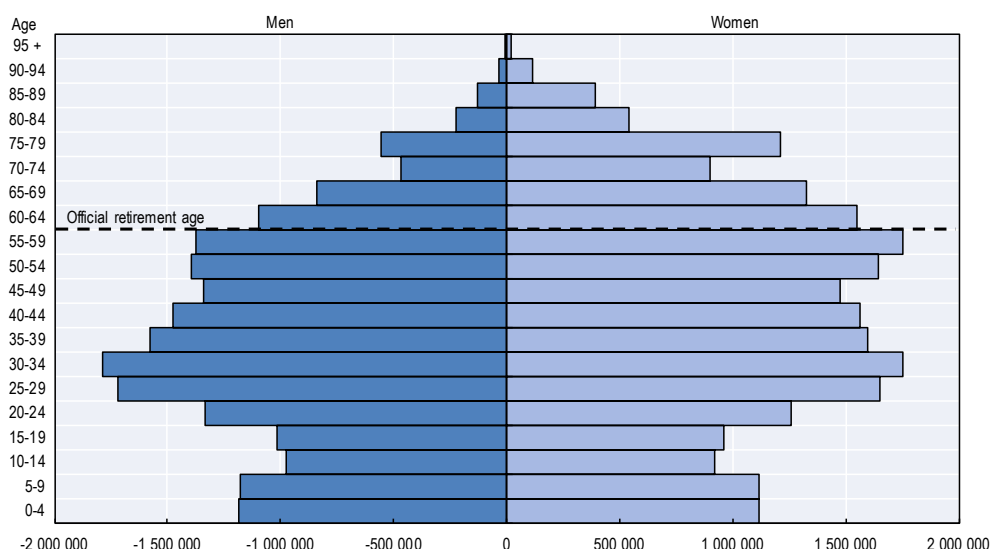
* Twenty-five OECD countries for which 2015 population data are available.

Note: Geographic Concentration Index formula detailed in Annex 1.A.

Sources: State Statistics Service of Ukraine, Demographic database; OECD (2017c), "Regional demography", *OECD Regional Statistics* (database), <http://dx.doi.org/10.1787/region-data-en> (accessed 7 April 2017).

Ukraine has experienced population ageing and population decline since independence in 1991. During 2000-16, the working-age population (i.e. 15-64 year olds) fell by 7.8%, while the population as a whole fell by 8.1%. Ukraine's population is already older than those of most OECD countries: the 65+ age group accounted for 21% of the population in 2016. Among OECD countries, only Germany, Greece, Italy and Japan had a higher share of residents aged 65 and more the same year, while the OECD median reached 17.7%. As illustrated by Ukraine's age pyramid in 2016 (Figure 1.6), this trend is expected to continue and even amplify in the coming years, because the relatively large cohorts now in their 50s will soon be replaced by much smaller cohorts born in the 1990s and early 2000s. According to both Ukrainian⁵ and UN population projections, the overall population will drop by approximately 7-8% over the 2015-30 period (UNDESA, 2015). Another striking feature of Ukraine's demography is the higher number of females compared to males in the age ranges 35-39 and older (Figure 1.6). Indeed, men have significantly higher mortality rates⁶ than females after the age of 35: this results in a very high gender gap in life expectancy at birth (around 10 years, i.e. 76.2 years old for females versus 66.4 for males).

Figure 1.6. Age pyramid of Ukraine, 2016*



* Without Crimea and Sebastopol.

Source: OECD calculations based on data from the State Statistics Service of Ukraine.

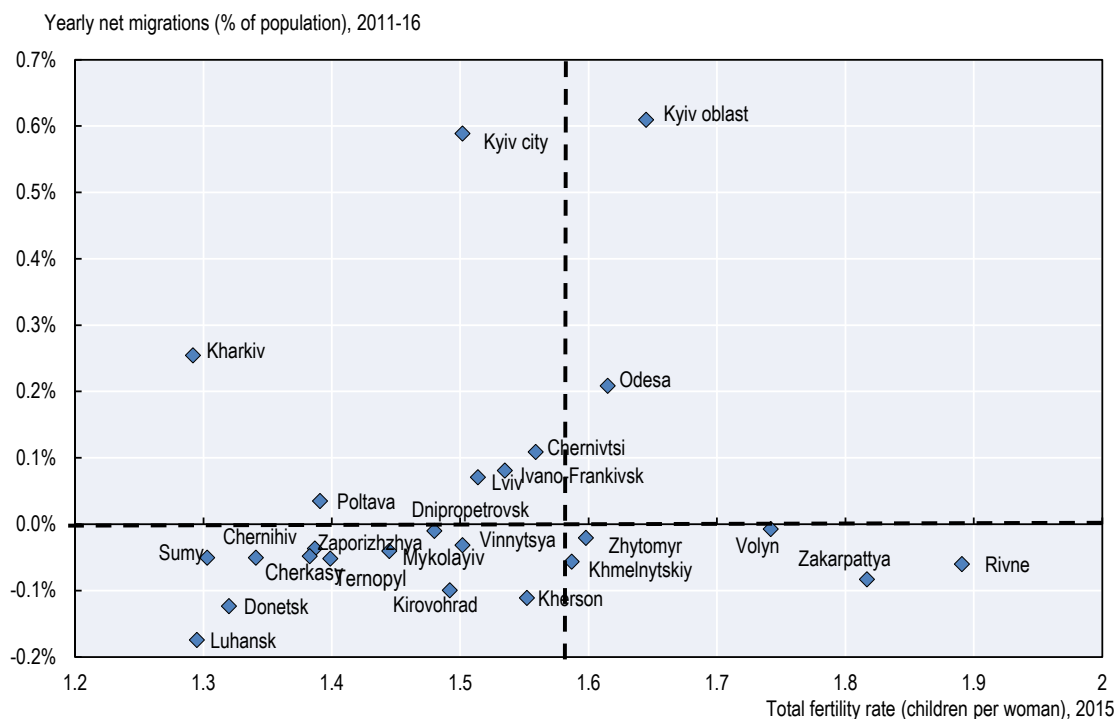
Population ageing and population decline have widely varying effects across regions and cities. Out of Ukraine's 27 TL2 regions, only Kyiv city, and two *oblasts* in the north-west (Volyn and Zakarpattia) experienced demographic growth during 2007-17. Population in the Eastern and Central-East regions, such as the Donbas, Dnipropetrovsk and Zaporizhia, and the north-eastern regions of Sumy and Poltava has been both declining and ageing more rapidly than Ukraine as a whole, with the exception of Kharkiv – Ukraine's second-largest urban agglomeration, and the only region in the east to benefit from significant positive net migration. In Western Ukraine, the rural border *oblasts* of the north-west (Volyn and Rivne) and several regions of the Carpathians (south-west) had roughly stable populations, chiefly because of higher fertility rates. No Ukrainian region has a total fertility rate higher than the population replacement rate of 2.1 children per woman (Figure 1.7). Kyiv city and (to a lesser extent) the surrounding Kyiv *oblast* are the main destinations of interregional migration flows, and their populations are growing rapidly. In Kyiv *oblast*, this growth is strongest in cities close to Kyiv and thus belonging to the Kyiv urban agglomeration (such as Bucha, Boryspil and Brovary).

Strong demographic decline, be it through low fertility rates or net migratory outflows, or both, are most evident in Eastern and Central Ukraine (Figure 1.7). Regions in the lower left quadrant are the most likely to experience the strongest population decline in the near future, given that they combine low fertility rates and net migratory outflows. Another striking feature is that net migration tends to be positive in *oblasts* hosting the largest urban agglomerations in Ukraine, such as Kharkiv, Odessa and Lviv, though to a lesser extent. Given the scale of population decline in many regions,⁷ regional and urban development strategies of Ukrainian *oblasts* and city master plans need to take more into account future population decline and population ageing and assess its impact on public services, urban infrastructure and regional labour markets.

More generally, however, the accuracy of population statistics is problematic in Ukraine. This is due in part to the fact that a large share of the population does not actually reside at its place of permanent registration, leading to distortions in official statistics regarding

the spatial distribution of the population (Box 1.1). These distortions result in an inadequate allocation of public funds because subvention and transfers (such as the healthcare subsidy) to local budgets, as well as the fiscal equalisation mechanism, are tied to official population numbers (CEDOS, 2017). To solve this issue, one priority should be to conduct the next population census as soon as possible (for instance, in 2018 instead of 2020) to provide an accurate picture of the spatial distribution of the population. In the medium term, an overhaul of the residence registration procedure (*Ukr. Propiska*) is necessary for registration statistics to more accurately reflect internal migration patterns.

Figure 1.7. **Regional demographic trends, Ukraine**



Source: OECD calculations based on data from the State Statistics Service of Ukraine.

Urban agglomerations are drivers of economic and demographic growth

Overall, 80% of Ukrainian cities experience population decline, and are disproportionately concentrated in Eastern Ukraine while growing cities are disproportionately found in the west. In traditionally rural Western Ukraine, many regions are still urbanising, driving the demographic growth of many medium-sized cities and of Lviv city. Rural-urban migration is still a significant factor in urban growth in Western and (to a lesser extent) in Central Ukraine. Unsurprisingly, economic and demographic growth are associated: the 22% of Ukrainian cities that are characterised by growing economic activity (using satellite night lights as a proxy) also record lower declines in population than other cities, or even population growth (World Bank, 2015). Population growth in Kyiv and other cities in Central and Western Ukraine could be positive for national economic development, by fostering further agglomeration economies (Box 1.2). However, for urban growth to translate into enhanced prosperity, it must be managed well (i.e. a scaling up of public services and infrastructure to ensure the integration of newcomers) (World Bank, 2015). Conversely, it is important that public service plans and urban planning in shrinking

places take falling population densities into account, as these phenomena create challenges in maintaining and operating urban infrastructure due to decreasing economies of scale. The combination of an overall ageing urban population and declining fertility rates will also likely shift demand from education to health services (World Bank, 2015).

Box 1.1. Population statistics and residential registration (*Ukr. Propiska*)

The State Statistics Service of Ukraine compiles all official population figures on the basis of administrative data from birth and death certificates and data on permanent residence registration from the State Migration Service of Ukraine. The number of residence registrations and residence “deregistration” with the State Migration Service is the basis to take into account migrations, particularly migrations between different territorial entities. However, several studies based on household surveys found that a major share of the population does not register their actual place of residence. According to a 2010 survey of 1 216 households conducted in 12 regional centres, more than a third of respondents declared that their actual place of residence did not match their permanent residence registration. The Ptoukha Institute for Demography and Social Studies used indirect methods to assess Kyiv’s population at the beginning of 2010 and 2011: it found that the actual population of Kyiv is higher than the official estimate, with a difference ranging from 3% to 22% depending on the year and assessment method.

Existing research points to internal labour migrants as the main category that does not register officially, and is therefore not adequately accounted for in official population and migration statistics. According to an International Organisation for Migration survey conducted in 2014-15, the number of internal labour migrants in Ukraine would reach 1.6 million people (without Crimea, and Donetsk and Luhansk *oblasts*), equivalent to around 4.4 % of the population and 10.4% of the employed population of the survey regions (i.e. excluding Crimea, and Donetsk and Luhansk *oblasts*). The current system of residence registration hinders the registration of internal labour migrants at their new place of residence due to the complicated procedure which creates obstacles for people who live in households not owned by them or their family members. Indeed, the rental housing market is small and largely informal in Ukraine, and landlords usually refuse to allow their tenants to officially register with the State Migration Service. Migrants not officially registered at their place of residence often face obstacles accessing various administrative and social services, accessing public healthcare, or participating in local elections.

These issues with permanent residence registration translate into substantial inaccuracies and distortions in official statistics regarding the spatial distribution of population. This is compounded by the lack of a recent national census. Indeed, national censuses usually provide a reliable basis for official population estimates and statistics. However, Ukraine conducted its last national census in December 2001: therefore data on natural growth (births and death certificates) and migrations (residence registrations) play a decisive role in shaping official population statistics.

Sources: Solodko, A., A. Fitisova and O. Slobodian (2017), “Residence registration in Ukraine: Issues for public governance and consequences for society” (“Reestracija misceja prozhivannja: vikliki dlja derzhavi ta naslidki dlja suspil’sstva”; in Ukrainian), www.cedos.org.ua/uk/migration/reyestratsiya-mistsya-prozhyvannya-v-ukrayini-problemy-ta-stratehii-reformuvannja; IOM (2016a), “Migrations as a factor of development for Ukraine” (“Migracija jak chinnik rozvitku v Ukraïni”; in Ukrainian), www.iom.org.ua/sites/default/files/mom_migraciya_yak_chynnyk_rozvytku_v_ukrayini.pdf.

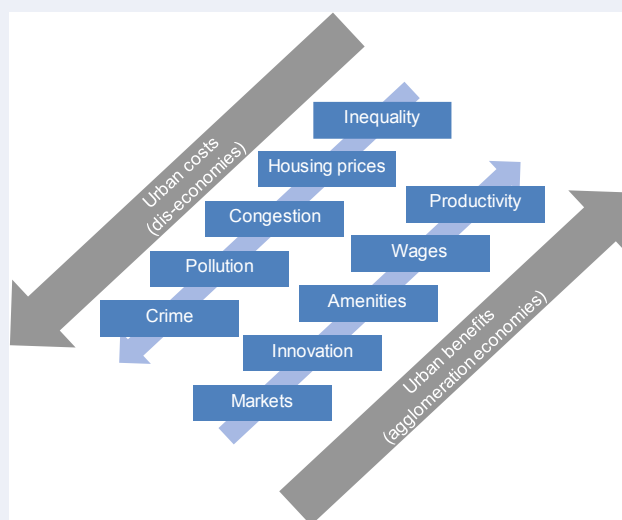
Box 1.2. Agglomeration economies: Costs and benefits

Large urban agglomerations and dynamic medium-sized cities have enormous potential for job creation and innovation, as they are hubs and gateways for global networks such as trade or transport. In many OECD countries, labour productivity is measured in terms of gross domestic product per hour worked and wages are seen to increase with city size. Stronger productivity levels are a reflection of the intrinsic value of being in a city, known as the agglomeration benefit. On average, a worker's wage increases with the size of the city where he/she works, even after controlling for worker attributes such as education level. OECD estimates suggest that the agglomeration benefit in the form of a wage premium rises by 2-5% for a doubling of population size (Ahrend et al., 2014).

Higher productivity is due in part to the quality of the workforce and the industrial mix. Larger cities on average have a more educated population, with the shares of both very high-skilled and low-skilled workers increasing with city size. A 10 percentage-point increase in the share of university-educated workers in a city raises the productivity of other workers in that city by 3-4% (Ahrend et al., 2014). Larger cities typically have a higher proportion of sectors with higher productivity, such as business consulting, legal or financial services, etc. They are also more likely to be hubs or service centres through which trade flows and financial and other flows are channelled. These flows typically require the provision of high value-added services.

Living in a large city does provide benefits, but it also has disadvantages (Figure 1.8). While productivity, wages and the availability of many amenities generally increase with city size, so do what are generally referred to as agglomeration costs. Some agglomeration costs are financial: for example, housing prices/rents and, more generally, price levels, are typically higher in larger cities. In addition, a number of non-pecuniary costs, such as pollution, congestion, inequality and crime, typically also increase with city size, while trust and similar measures of social capital often decline. Survey data from European cities confirm that citizens in larger cities – despite valuing the increased amenities – are generally less satisfied with the other aspects mentioned, notably air pollution. To some extent, city size is the outcome of a trade-off between agglomeration benefits and agglomeration costs.

Figure 1.8. Agglomeration costs and benefits



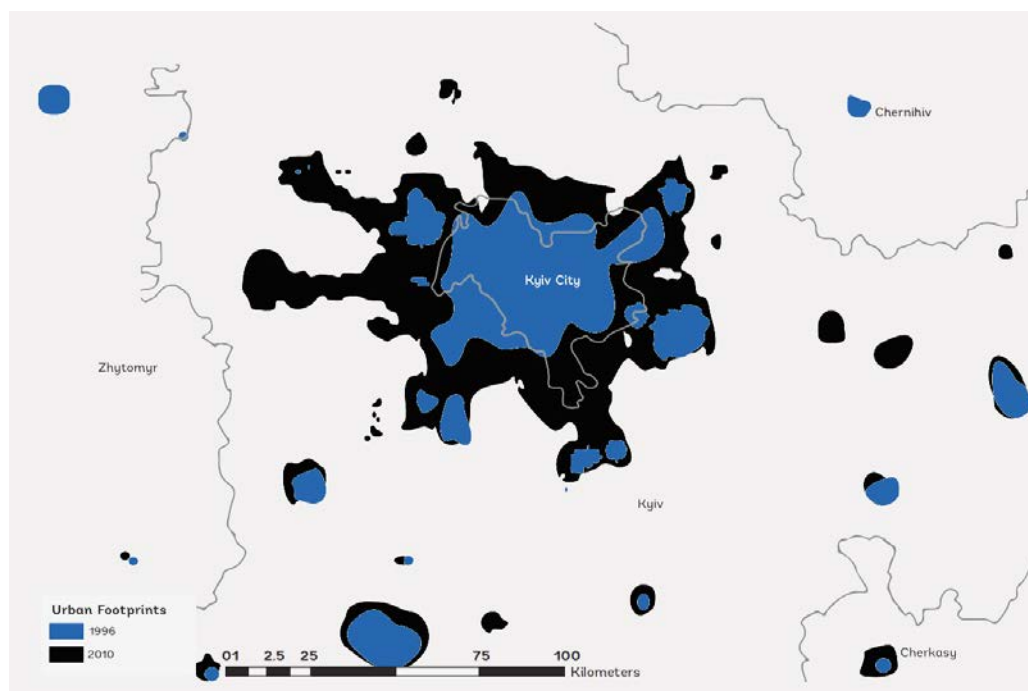
Sources: OECD (2014a), *OECD Regional Outlook 2014: Regions and Cities: Where Policies and People Meet*, <http://dx.doi.org/10.1787/9789264201415-en>; Ahrend, R. et al. (2014), "What makes cities more productive? Evidence on the role of urban governance from five OECD countries", <http://dx.doi.org/10.1787/5jz432cf2d8p-en>.

Cities in all regions have been losing population, mostly to the largest urban agglomerations, which are concentrating the little urban demographic growth that has been taking place in Ukraine. The largest urban centres also display higher productivity per capita and per km², based on night light measurements (World Bank, 2015). The Kyiv agglomeration is the most prominent example. Kyiv city (2.9 million inhabitants at the beginning of 2017), the largest city in Ukraine, is also one of the fastest growing (0.7% per year during 2007-17). Kyiv attracts significant net population inflows from the rest of Ukraine. Since 2011, Kyiv *oblast* has also attracted significant net migration inflows (including from Kyiv itself) and its population has been growing again. This demographic growth is concentrated in the cities surrounding the capital, and in the neighbouring rural districts. This suggests that the Kyiv urban cluster is increasingly becoming a large urban agglomeration that spans across administrative units, encompassing both Kyiv city and many areas of Kyiv *oblast*. World Bank (2015) confirms this by measuring Kyiv's urban footprint through satellite night light data. The urban footprint of Kyiv city has expanded to merge with the surrounding city and form an urban agglomeration encompassing 11 cities.⁸ These cities usually have separate geographic and political boundaries and initially had separate markets as well, but they grew together as they developed: their urban footprint was separate from Kyiv in 1996 but they have grown to become a single urban footprint in 2010 (Figure 1.9).

Satellite night light studies tracing the evolution of urban footprint found that 11 out of the 15 largest cities in Ukraine are part of an urban agglomeration (World Bank, 2015). Furthermore, urban agglomerations in Ukraine are not limited to central cities and their suburban secondary cities. Rural districts (*rayon*) on the outskirts of large cities (such as Kiev-Sviatoshyn *rayon* to the west of Kyiv or Ovidiopol *rayon* to the south of Odessa) often displayed higher growth than the central city to which they are functionally related, suggesting a pattern of peri-urban growth. As in OECD countries, urban agglomerations in Ukraine often encompass different administrative units. The OECD-EU definition of

functional urban areas (FUAs) allow for a more accurate delimitation of urban areas as functional economic units, which can be a good basis to co-ordinate public policies across administrative entities (Box 1.3). Efficient co-ordination among subnational governments responsible for the same urban agglomeration (core city, suburban secondary cities, rural districts experiencing peri-urban growth and *oblast* administrations) is critical to the efficiency of subnational public investment, as explored in Chapter 2 of this review. Therefore, applying the OECD-EU definition of FUAs to Ukraine could inform the current municipal amalgamation process, particularly around the largest cities.

Figure 1.9. Kyiv's agglomeration night light urban footprint, 1996-2010



Note: Agglomerations are defined using night light data and are formed by cities that in 2013 had a merged night light urban footprint.

Source: World Bank (2015), "Ukraine: Urbanization review", <http://documents.worldbank.org/curated/en/213551473856022449/Ukraine-Urbanization-review>.

Regional economic performance: Along with Kyiv, western regions are now the main drivers of national growth

Following the Euromaidan revolution and the political transition in the spring of 2014, the armed conflict that erupted in the Donbas area has resulted in the relocation of an estimated 1 million people from the conflict area (UNOCHA, 2016). Box 1.4 provides more details on internally displaced persons (IDPs) and the impact of the conflict on Ukraine's regions. Furthermore, the Russian Federation's subsequent trade and transit restrictions against Ukraine, together with the countermeasures adopted by Kyiv, have had a severe impact on industrial activities in Eastern and Southern Ukraine, particularly machine building.

Box 1.3. The OECD-EU definition of functional urban areas

The OECD-EU definition of functional urban areas (FUAs) consists of very densely populated urban centres (“city cores”) and contiguous municipalities with high levels of commuting (travel-to-work flows) towards the core municipalities (“commuting zones”). This definition resolves previous limitations for international comparability linked to administrative boundaries. FUAs are computed by combining geographic (cartographic) information about the administrative boundaries of municipalities and census data at the municipal level. Defining urban areas as functional economic units can help guide how national and city governments plan infrastructure, transport, housing and schools, and space for culture and recreation. Improved planning will make these urban areas more competitive, helping to support job creation and making them more attractive for its residents.

The methodology identifies urban areas as functional economic units, with densely inhabited “city cores” and commuting zones whose labour markets are highly integrated with city cores. In the first phase, the distribution of the population at a fine level of spatial disaggregation – 1 km² – is used to identify the urban clusters, defined as contiguous aggregations of highly densely inhabited areas (grid cells) with an overall population higher than 50 000 inhabitants. High-density grid cells have more than 1 500 inhabitants per km² (1 000 inhabitants per km² in Canada and the United States). City cores encompass all municipalities where at least half of the municipal population lives within the urban cluster.

The commuting zones of these internationally comparable city cores are defined using information on travel-to work commuting flows from surrounding municipalities. Municipalities sending at least 15% of their resident employed population to a city core are included in its commuting zones, which thus can be defined as the “worker catchment area” of the urban labour market, outside the densely inhabited core. The size of the commuting zones relative to the size of the city core gives a clear indication of a city’s influence on surrounding areas.

The definition is applied to 30 OECD countries* and identifies 1 198 urban areas of different sizes. Among them, 281 metropolitan areas (including 81 large metropolitan areas of more than 1.5 million inhabitants) have a population higher than 500 000 and are included in the *OECD Metropolitan Database*. As of 2014, they accounted for 49% of the OECD overall population, 57% of gross domestic product and 51% of employment. Other FUAs include 411 medium-sized urban areas (with a population of between 200 000 and 500 000) and 506 small urban areas (50 000-200 000). Digital maps and details about functional urban areas in each country are available at: www.oecd.org/cfe/regional-policy/functionalurbanareasbycountry.htm.

The OECD has already applied the OECD-EU Methodology of functional urban areas to non-member countries such as Colombia and Kazakhstan. For instance, the *OECD Urban Policy Review of Kazakhstan* found that the country contained 26 FUAs in 2009, among which 3 metropolitan areas (Astana, Almaty city and Shymkent). Applying this methodology requires a high degree of co-operation between the OECD and the national statistical office and the existence of inter-municipal travel-to work commuting flow data in the national census database.

* Data are not available for Iceland, Israel, New Zealand and Turkey.

Sources: OECD (2016b), “Functional areas by country”, www.oecd.org/gov/regional-policy/functionalurbanareasbycountry.htm; OECD (2016e), *OECD Regions at a Glance 2016*, http://dx.doi.org/10.1787/reg_glance-2016-en; OECD (2012), *Redefining “Urban”: A New Way to Measure Metropolitan Areas*, <http://dx.doi.org/10.1787/9789264174108-en>.

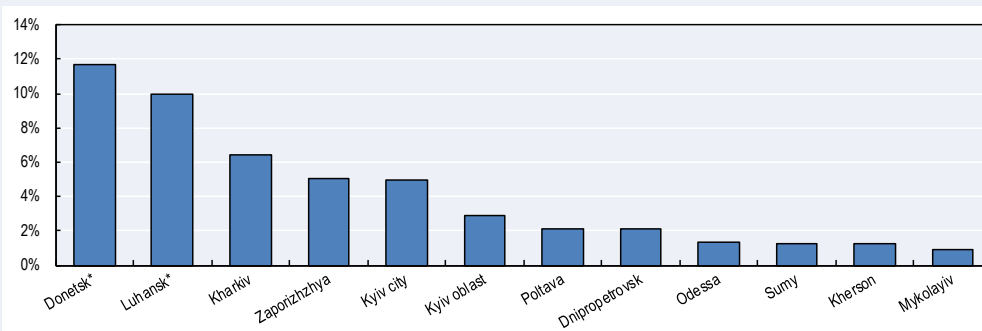
Box 1.4. The regional impact of the Donbas conflict and internally displaced persons

The Donbas conflict saw intense fighting in the eastern *oblasts* of Donetsk and Luhansk (the Donbas area), until a fragile ceasefire was brokered in February 2015. According to the UN High Commissioner on Human Rights, the total death toll is estimated to be at least 10 000, with at least 23 455 people injured. The conflict caused tremendous economic damage and the loss of at least 1.6 million jobs in the Donbas area alone, mainly in heavy industry sectors (mining, machine building and metals) and in services. In 2016, industrial production in government-controlled areas of Donetsk *oblast* amounted to only 47% of its 2013 (pre-conflict) volumes, and only 27% of 2013 volumes in government-controlled areas of Luhansk *oblast*.

Firms located in separatist territories were at the epicentre of the war and endured the most damage. An estimated 78% of the industrial capacity in Donetsk is located outside of the government-controlled areas, and the estimate is higher in Luhansk (84%). Economic activity in government-controlled areas of Donetsk and Luhansk *oblasts* was also severely affected: between 2013 and 2015, gross domestic product per capita fell by 58% in real terms in government-controlled areas of Donetsk *oblast* and by 70% in Luhansk. Industrial facilities still in operation are extremely vulnerable to any sort of escalation of the conflict. Beyond that, non-government controlled areas (NGCA) were economically integrated with nearby regions of Ukraine (particularly in Dnipropetrovsk and Zaporizhia *oblasts*), where many industries suffered from supply chain disruptions, for instance in the energy (coke plants for electric power and heat generation) and steel subsectors that both relied on coal supplies from mines in the NGCAs. The unofficial economic blockade and subsequent ban on all trade (except humanitarian assistance) with the NGCAs in early 2017 (as well as the separatist takeover of Ukrainian assets located in the NGCAs) broke the already weak economic ties of the NGCAs with the rest of the country. This further disrupted manufacturing activities in nearby regions in 2017.

The Russian Federation's annexation of Crimea and the conflict in the east also triggered a massive influx of internally displaced persons (IDPs). Entire families abandoned their homes and fled to government-controlled areas. It is estimated that around 1 million IDPs reside permanently in government-controlled territory, while several hundred thousand more live in the NGCA while periodically entering government-controlled territory to claim pension and social assistance payments. The actual number of IDPs is unclear, because some do not register at all. Three-quarters of the IDPs are registered close to their homes, above all (40%) in government-controlled areas of their *oblasts* of origin. Outside of the Donbas, the neighbouring *oblasts* of Kharkiv, Zaporizhia and Dnipropetrovsk received the most significant influx of IDPs (amounting to more than 4% of their 2016 populations in Kharkiv and Zaporizhia). Many IDPs also moved to the city of Kyiv and the surrounding *oblast*, which offers good employment opportunities in the service and trade sectors. The impact of IDPs on regional labour markets, and their ability to find new jobs matching their skills is a key issue for host regions.

Figure 1.10. **Registered internally displaced persons (share of regional population), January 2017**



* Many internally displaced persons register in these *oblasts* while still residing in the non-government controlled areas: these figures therefore overestimate the actual number of permanent internally displaced persons.

Source: Ministry of Social Welfare, State Statistics Service of Ukraine.

The government has been providing some emergency housing to IDPs and a very limited welfare payment (UAH 884 – approximately USD 35 – for individuals unable to work, half of that for the others) for a six-month period. It should be noted that pensioners make up a large share of registered IDPs (more than half of the IDPs registered by the Ministry of Social Welfare), but many of them still live in the NGCAs. The government has recently tightened the rules to register as an IDP (for instance, IDPs shall not reside in the NGCAs for more than 60 days) and introduced checks and controls to ensure that the IDPs actually live at their stated places of registration, resulting in the suspension of pensions and social payments for some.

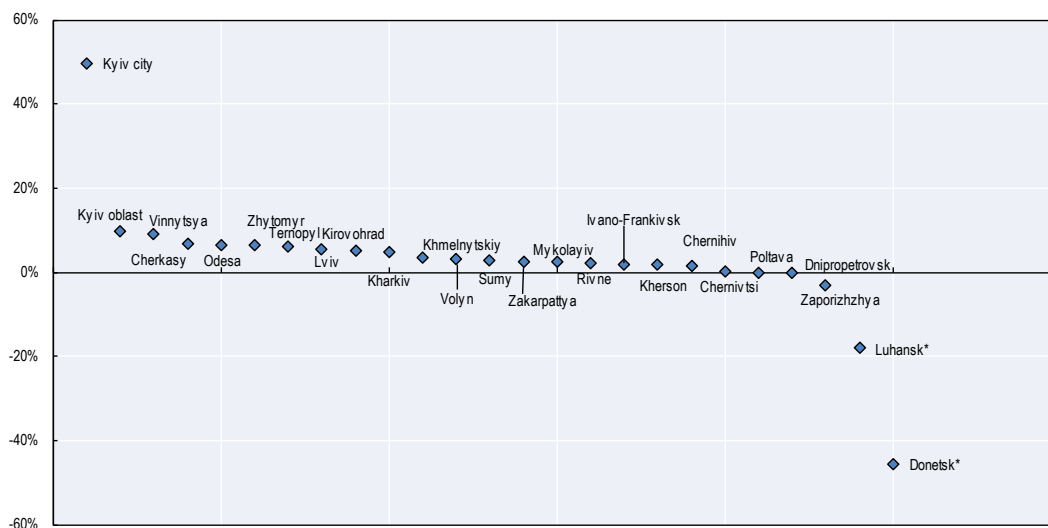
In the government-controlled areas of Donetsk and Luhansk *oblasts*, the influx of IDPs led to rapid population growth in cities such as Kramatorsk, Severodonetsk and Sloviansk. There is evidence that the influx of IDPs led to a rise in rental prices. The IDPs have complained about the high level of refusals on the side of lessors due to mistrust of IDPs and about inadequate quality of rental housing. The IDPs face challenges to find employment: according to the International Organization for Migration Monitoring Survey, only 31% of IDPs who worked before displacement could manage to find jobs at their new places of stay. Given the severe economic downturn in government-controlled areas of Donetsk and Luhansk *oblasts* in 2014 and 2015, the Donbas conflict resulted in a concentration of IDPs in host areas that are poorly prepared to receive them.

Sources: UNOCHA (2016), “Ukraine 2017 humanitarian response plan”, https://www.humanitarianresponse.info/system/files/documents/files/humanitarian_response_plan_2017_eng.pdf; European Union, World Bank and United Nations (2015), “Ukraine recovery and peacebuilding assessment: Analysis of crisis impacts and needs in Eastern Ukraine”, http://www.un.org.ua/images/documents/3738/UkraineRecoveryPeace_A4_Vol2_Eng_rev4.pdf; Smal, V. (2016), “A great migration: What is the fate of Ukraine’s internally displaced persons”, <https://voxukraine.org/en/great-migration-how-many-internally-displaced-persons-are-there-in-ukraine-and-what-has-happened-to-them-en>; IOM (2016b), “National monitoring system of the situation with internally displaced persons: March-June 2016”, www.iom.org.ua/sites/default/files/iom_nms_cumulative_report_eng.pdf.

In addition to the Donbas conflict and its consequences, regional economic specialisation and international metal prices were major factors determining the economic performance

of Ukrainian regions after 2004. Prior to the global crisis in 2009, Ukraine enjoyed sustained economic growth, while Kyiv and the surrounding *oblast* grew consistently faster than most other regions. Affluent industrial regions in the Donbas and Pridneprovsky areas also contributed significantly to national growth. Meanwhile, poorer agricultural regions in Central and Western Ukraine failed to converge towards the national level in terms of GDP per capita and productivity (OECD, 2014b).

Figure 1.11. **Contribution to national growth*, Ukraine, 2004-14**



* The contribution of Luhansk (-18.1%) and Donetsk (-45.5%) reflect the negative impact of the Donbas conflict on these regions. 2014 growth rates do not take into account territories controlled by separatists. National growth has been adjusted to reflect the absence of data for Crimea and Sebastopol after 2013.

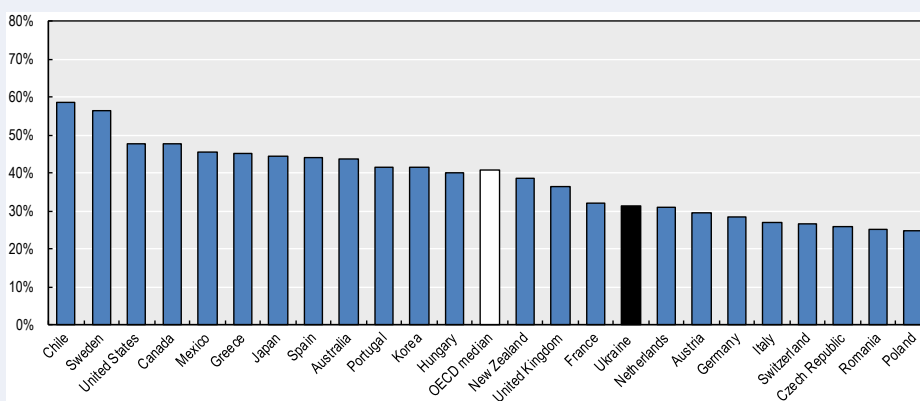
Source: OECD calculations based on data from the State Statistics Service of Ukraine.

After 2010, the geographic pattern of development reversed: Western regions have generally fared better than industrial strongholds in Eastern Ukraine. A clear “growth cluster” emerged in Central and Central-Western Ukraine, comprising Vinnytsya, Ternopil, Khmelnytsky and Zhytomyr *oblasts* to the west of Kyiv and Cherkasy and Kirovohrad *oblasts* to the south of Kyiv (Figure 1.11), along with the Kyiv urban agglomerations itself (Kyiv city and the Kyiv *oblast*). These rural regions of Central and Western Ukraine, which display lower productivity than the national average, became the main contributors to national economic growth (Box 1.5). By contrast, affluent industrial regions, such as Zaporizhia, Kharkiv, Dnipropetrovsk and Poltava, as well as the Donbas area, entered in a recession as early as 2012 and therefore were a drag on national GDP growth (Figure 1.11). The recession was driven by low metal prices on international markets, but also structural issues related to declining heavy manufacturing subsectors (metals, mining and machine building), such as an outdated capital stock and a lack of investment (Saha and Kravchuk, 2015). The Donbas conflict, of course, made matters much worse in the east (Figure 1.11). The Donbas was already underperforming before the conflict began: like in other industrial strongholds of Ukraine, its GDP has contracted continuously since 2012. Meanwhile, some Western and Central regions (Vinnitsa, Zhytomyr, Volyn and Ternopil) benefited from the growth of “light” industrial subsectors such as food processing, automotive parts and wood processing. As a result, during the 2004-14 decade economic growth was extremely concentrated in a few fast-growing regions in Ukraine compared to many OECD countries (Box 1.5).

Box 1.5. Low spatial concentration of GDP, but highly concentrated GDP growth

The Geographic Concentration Index of gross domestic product (GDP) (a measure of geographic concentration of economic activities) across Ukraine's TL2 regions (31.4%) is somewhat lower than the OECD median (Figure 1.12), although as one could expect it to be higher than the Geographic Concentration Index for population (Figure 1.5), reflecting agglomeration economies. In a majority of OECD countries, economic activity is more spatially concentrated than in Ukraine.

Figure 1.12. **Geographic Concentration Index of GDP in TL2 regions, 2014**



Notes: Data for Japan, New Zealand and Switzerland for 2013. The OECD median is for 22 OECD countries for which 2014 data are available. Geographic Concentration Index formula detailed in Annex 1.A.

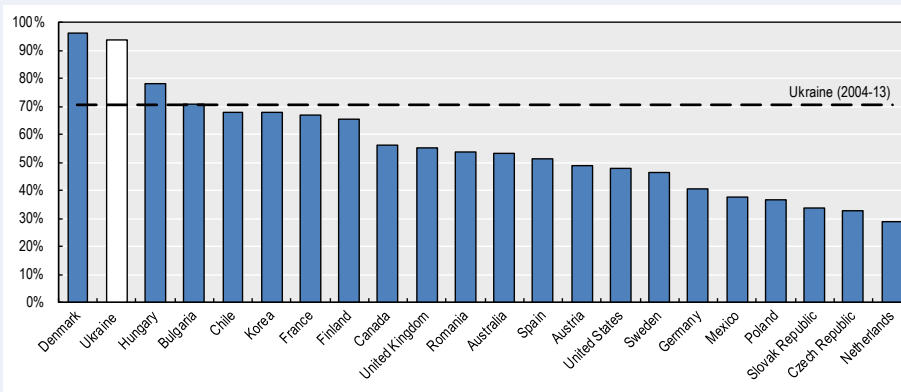
Sources: State Statistics Service of Ukraine, *regional GDP database*; OECD (2017a), *OECD Regional Statistics* (database), <http://dx.doi.org/10.1787/region-data-en> (accessed 7 April 2017).

In spite of a geographic concentration of GDP that is lower than many OECD countries, GDP growth has been extremely concentrated in recent years, i.e. national aggregate GDP growth has relied upon a handful of regions only. From 2004 to 2014, the six *oblasts* with the highest GDP growth rate (Ternopol, Cherkasy, Zhytomyr, Vinnytsya, Kirovohrad, Kyiv *oblast* and Kyiv city) accounted for 93.5% of national GDP growth. Among 21 countries (19 OECD countries, Bulgaria and Romania) with available data, only Denmark displayed a higher concentration of economic growth among TL2 regions (Figure 1.13). In the case of Ukraine, this high spatial concentration is due to: 1) the dismal economic performance of the largest regional economies located in the east, in the conflict-ridden industrial Donbas of course, but also in Dnipropetrovsk and Zaporizhia *oblasts*, even before the beginning of the Donbas conflict; 2) the strong economic dynamic of Kyiv city and Kyiv *oblast* (these two regions accounted for 60% of national growth during the 2004-14 decade).

It is worth noting that, if the same calculation is done for 2004-13, excluding 2014 when the Donbas conflict happened, the same *oblasts* still accounted for around 70% of national growth (dashed line). Thus, even before the conflict, Ukraine displayed a high level of spatial concentration of economic growth compared to OECD countries.

Figure 1.13. Contribution to national GDP growth by the fastest growing TL2 regions, 2004-14

Regions with the highest GDP growth rate accounting for at least 20% of national population



Note: The regions with the highest GDP growth are included until the equivalent of one reaches a threshold of 20% of the national population.

Sources: OECD research based on State Statistics Service of Ukraine (2017), *National Accounts database*, https://ukrstat.org/en/operativ/menu/menu_e/nac_r.htm (accessed 28 March 2017); OECD (2017c), "Regional demography", *OECD Regional Statistics* (database), <http://dx.doi.org/10.1787/a8f15243-en>; OECD (2017d), "Regional economy", *OECD Regional Statistics* (database), <http://dx.doi.org/10.1787/6b288ab8-en>.

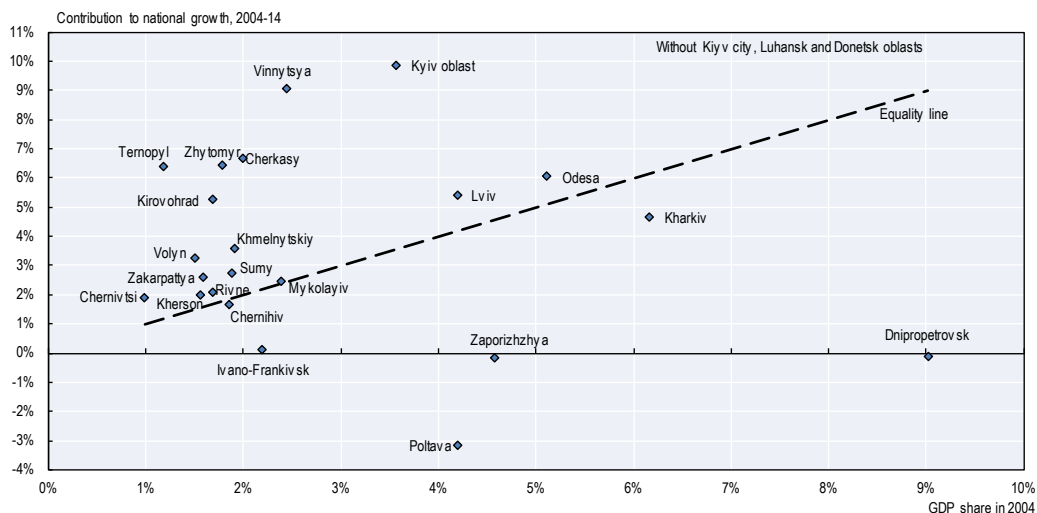
In Ukraine, the main driver of regional disparities during the last decade has been the strong growth of the Kyiv metropolitan region. Kyiv city alone accounted for 50% of Ukraine's aggregate GDP growth during 2004-14, even though its share of national GDP was only 18.4% in 2004. Kyiv *oblast* was the second-largest contributor to national growth (Figure 1.14). Together, Kyiv city and the surrounding *oblast* accounted for almost 60% of national growth; their combined share of Ukraine's nominal GDP increased from 22% in 2004 to 28% in 2015. This clearly points to the strong dynamics of the capital's urban agglomeration, which benefits from powerful agglomeration economies (see Box 1.2). Ukraine displays a high concentration of economic growth in the capital's urban agglomeration by OECD standards, but this situation is not unique: in France and Chile, the metropolitan capital regions accounted for 59% and 55% (respectively) of national economic growth during the same period. Capital regions also accounted for 70% of national growth in Romania and Bulgaria.⁹

This dominance of the metropolitan capital region with a core-periphery pattern of development is actually widespread among European Neighbourhood Policy countries¹⁰ (with the partial exception of Belarus and Morocco). Metropolitan regions benefited greatly from a catching-up process in market services in all the transition economies, and capital regions generally did best of all, as the main seats of central public services and higher education and research facilities. They all benefited from being the most attractive to FDI inflows and to the most educated part of the population because they typically

hosted the central offices of the main domestic and foreign firms and had the best transport connections domestically and to foreign destinations. In Ukraine, the experience of Kyiv fits into this paradigm very well given its level of economic development and ongoing structural changes arising from economic integration with advanced European partners (Petrakos, Tsiapa and Kallioras, 2016). Therefore, it is expected that Kyiv agglomeration will continue to be a strong growth driver for the country in the near future.

Figure 1.14. **Contribution to growth vs. share of GDP, Ukraine, 2004-14***

A region higher (lower) than the equality line grew more (less) than the national level



* 2014 growth rates do not take into account territories controlled by separatists. National growth has been adjusted to reflect the absence of data for Crimea and Sebastopol after 2013.

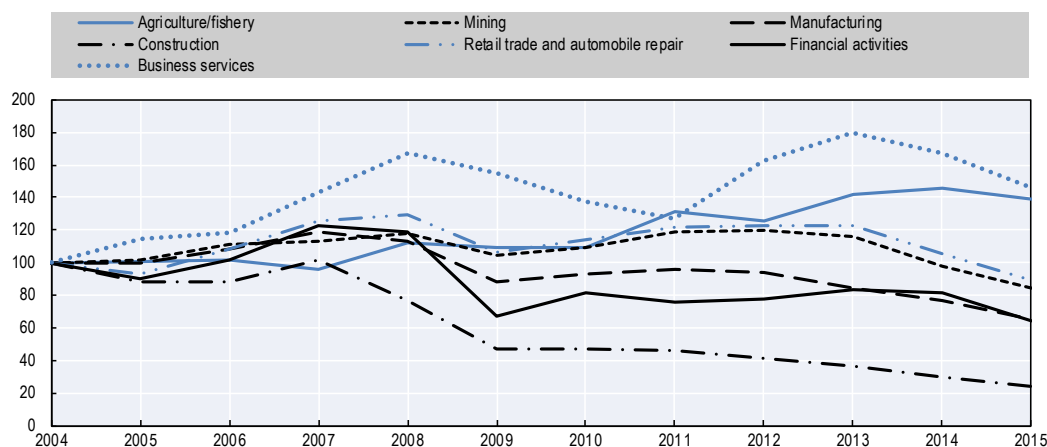
Source: OECD calculations based on State Statistics Service of Ukraine.

Differences in the performance of individual sectors had a clear impact on the spatial distribution of economic growth. After an impressive expansion prior to the 2009 crisis, manufacturing stagnated and then suffered a deep downturn (Figure 1.15). The financial sector also shrank after years of rapid expansion in the 2000s, while the 2014-15 reduction of households' real incomes depressed retail and service activities. By contrast, high value-added business services recovered after the global crisis, beginning in 2012, but declined in 2014-15. Since 2009, the agriculture and fisheries sector has demonstrated the most consistent growth (Figure 1.15). These patterns of development clearly favoured Kyiv agglomeration (high-end business services) and regions with agricultural specialisation.

The analysis of productivity growth during the decade to 2014 illustrates these patterns (Figure 1.16). OECD (2016d) uses a specific catch-up indicator based on the idea that a region needs to grow faster than the national frontier (the regions with the highest productivity levels) in order to reduce its productivity gap. In Ukraine, the national frontier is composed of Kyiv city and Poltava *oblast*. This allows us to differentiate three groups of regions: 1) catching-up regions (where productivity grew faster than the national frontier); 2) regions keeping pace with the frontier's productivity growth; 3) diverging regions, where productivity growth was lower than the frontier or even negative (catch-up indicators and a detailed explanation are available in Table 1.B.1 in Annex 1.B). Most of the regions catching up with the national frontier specialise in agriculture (although some have benefited from light manufacturing, such as Zhytomyr);

Ivano-Frankivsk in Western Ukraine is the only agricultural *oblast* in the diverging group. The decline in productivity in this region with a productivity level among the lowest in Ukraine is atypical and poses a challenge to Ukraine's regional development policy. By contrast, all regions specialised in mining and heavy manufacturing have been diverging (Figure 1.16). In many cases, regional productivity growth may also have benefited from population shrinking (because the capital per worker ratio increased in the short term), but this is likely to be reversed in the long run, as declining demography reduces incentives for investment and negatively impacts on GDP growth (World Bank, 2015).

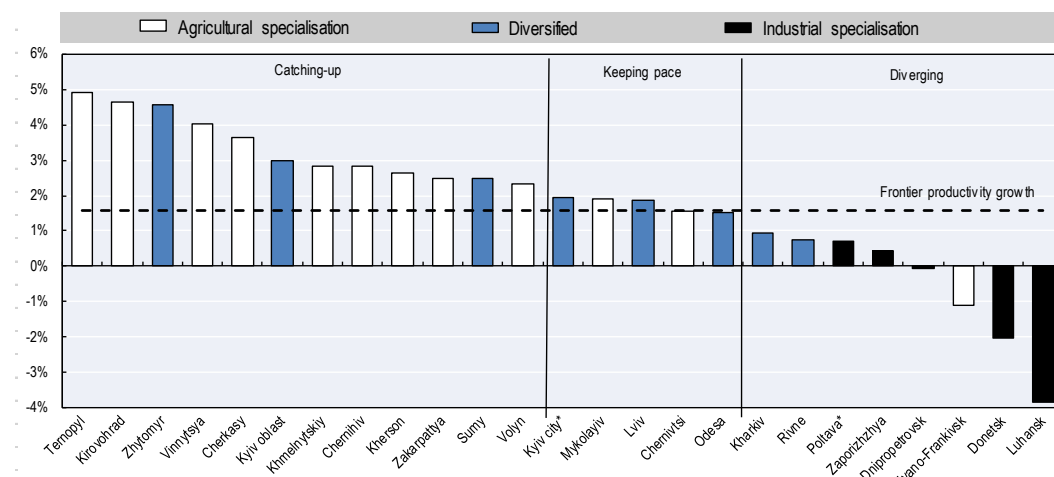
Figure 1.15. Real gross value added by sector (index, 2004=100)



* Professional and technical activities (legal, accounting, engineering, R&D and architecture services).

Source: OECD calculations based on data from the State Statistics Service of Ukraine.

Figure 1.16. Annual productivity growth across Ukraine's regions, 2005-14



* Frontier regions (regions with the highest GDP per employee accounting for no less than 10% of employment).

Notes: Productivity is defined as regional GDP per worker. The strong decrease in productivity in 2015 is not reflected on this graph.

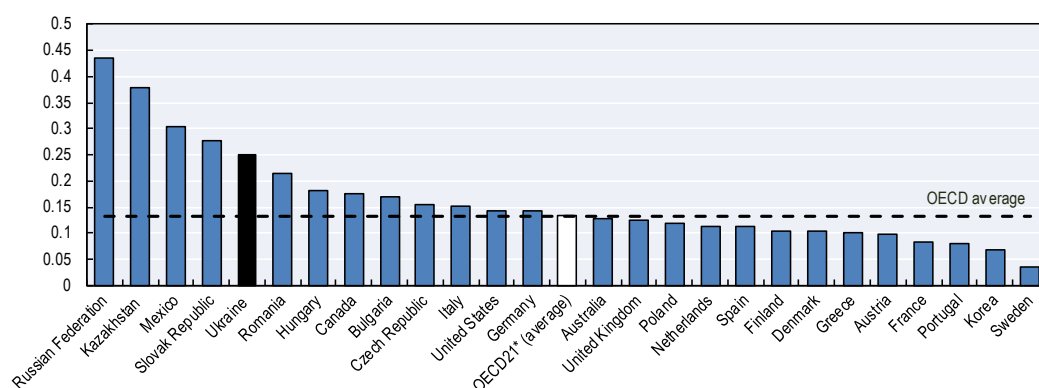
Source: State Statistics Service of Ukraine, National Accounts and Employment series.

Interregional disparities are high and keep increasing, partly because of the Donbas conflict

Economic inequalities among regions are high in Ukraine compared to most OECD countries. The dispersion of GDP per capita across regions as measured by the Gini Index of TL2 regions is comparable to OECD countries with high territorial inequalities, such as Mexico or the Slovak Republic (Figure 1.17). It is also close to countries in Central Europe, but much lower than in the other large post-Soviet countries.¹¹

Since 2004, interregional economic disparities in Ukraine have increased substantially (Figure 1.17). During 2004-14, the interregional Gini Index of GDP per capita rose from 22.3 to 25.1 in Ukraine, a larger increase than was observed in any OECD country except Australia (which has far lower levels of territorial inequality). In 2015, the interregional Gini Index rose again to 26.7 because of the armed conflict and severe economic downturn in Donbas, which caused GDP per capita to fall well below the national average in Donetsk and Luhansk *oblasts*.

Figure 1.17. Gini Index of GDP per capita in TL2 regions, 2014



* Twenty-one OECD countries for which 2014 data are available, excluding countries with less than four TL2 regions.

Sources: OECD research based on data from the State Statistics Service of Ukraine and OECD (2017a), *OECD Regional Statistics* (database), <http://dx.doi.org/10.1787/region-data-en> (accessed 16 February 2017).

The rise of interregional economic disparities in Ukraine is not unique. Like other transition countries, Ukraine inherited significant territorial imbalances from the Communist era: Southern and Eastern Ukraine were specialised in mining and manufacturing (machine building, steel and chemical sectors) and by 1989 had reached a higher level of urbanisation than the Central and Western regions. After the deep economic recession of the 1990s, interregional inequalities in GDP per capita increased continuously from 2000 to reach a peak before the 2008 financial crisis (OECD, 2014b). The rise of territorial inequalities during the 2000s is a common pattern among many European Neighbourhood Policy countries (Petrakos, Tsiapa and Kallioras, 2016). Many Central and Eastern European countries that joined the EU in 2004 and 2007 (particularly Bulgaria, Romania and the Slovak Republic) experienced a similar pattern. In Central Europe, rising territorial inequalities were often associated with intense structural change in the economy, economic convergence with more advanced EU members and the strengthening of the metropolitan capital region. This may be related to some extent to a broader empirical regularity known as the “Williamson curve” (Box 1.6), which suggests that interregional disparities may grow as incomes rise up to a relatively high level, only to decline thereafter.

Box 1.6. Is the Williamson curve applicable to transition economies?

Rising interregional disparities in Ukraine reflect in part an observed regularity discussed in the literature on economic geography since the 1960s – the so-called “Williamson curve”. Williamson (1965) extended the Kuznets hypothesis, which describes the relationship between income inequality and development, to the explanation of regional disparities. Kuznets found that income inequality tended to increase at low levels of per capita income and to decrease at higher levels of development, forming an inverted “U” shaped curve (Kuznets, 1955).

Williamson found a similar pattern at the regional level: national development created increasing regional disparities in the early stages of development, but later on it led to regional convergence, resulting in an inverted U-shaped curve. The primary explanation for Williamson’s finding is that, in a catching-up country, a few regions typically drive growth, and capital and skilled workers are increasingly drawn to them. Rapidly rising productivity causes growth to accelerate still further in these regions, leading to increasing regional disparities. Given the importance of agglomeration economies and the fact that rising investment goes with increasing concentration, there is an obvious link with urbanisation here: fast-urbanising regions will tend to pull away from others. At later stages, higher factor costs and/or agglomeration diseconomies emerge in the leading regions, prompting capital to shift to places where the potential returns to capital deepening are higher (i.e. those with lower capital per worker). Knowledge spillovers and a shift from a growth model driven by capital deepening to one more dependent on human capital may also play a role in this reallocation of productive factors.

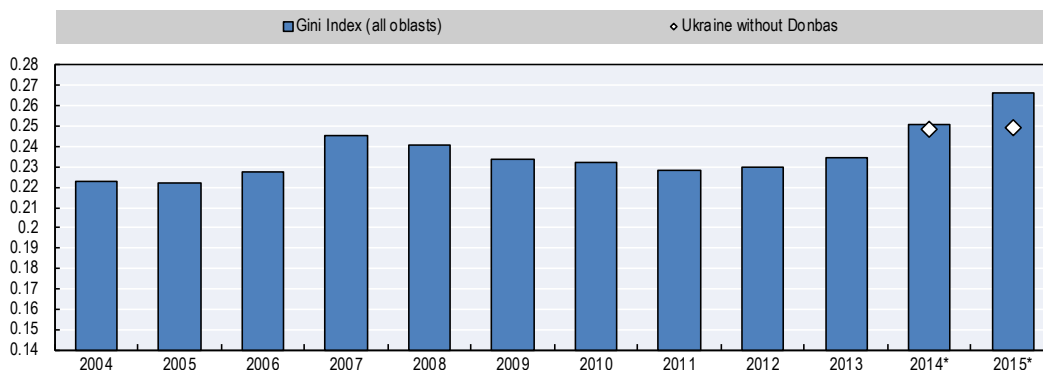
Recent research on Central and Eastern Europe suggests that the Williamson curve (or regional Kuznets curve) may not (yet) apply to transition economies. Monastiriotis (2014) compares regional convergence in labour productivity in EU-15 and the ten Central and Eastern Europe countries (CEE) that joined the EU in 2004. His research suggests that while CEE countries faced rising regional disparities, there has so far been no “return to regional convergence” at higher income levels. At comparable levels of development, regions in the EU-15 were already converging. However, since those processes took place a generation or more ago, the countries of the EU-15 were much closer to the leading economies than the CEE-10 are today; in short, they are still converging economies at national level, moving closer towards the international productivity frontier. Monastiriotis concludes that, despite strong growth up to 2009, CEE economies could still be in a phase of development and restructuring where cross-regional inequalities become more acute and persistent. In other words, non-convergence would be attributable to “centripetal forces” instigated by the process of transition.

For Ukraine, this leaves open the question of when the Williamson turning point might be reached. It is possible that even a resumption of strong growth would only lead to a reduction in interregional disparities over the longer term. However, provided that growth is strong and broad-based, both geographically and sectorally, it could provide a boost to prosperity even in lagging regions. It is, moreover, clear that the war in the east has reinforced interregional disparities; a settlement of the conflict could contribute to their rapid reduction, at least to pre-war levels, if not below.

Sources: Williamson, J.G. (1965), “Regional inequality and the process of national development: A description of the patterns”; Kuznets, S. (1955), “Economic growth and income inequality”; Monastiriotis, V. (2014) “Regional growth and national development: transition in Central and Eastern Europe and the regional Kuznets curve in the east and the west”, <https://doi.org/10.1080/17421772.2014.891156>.

In Ukraine, high economic growth in the Kyiv urban agglomeration, boosted by the strong dynamic of the tertiary sector (notably financial intermediation and real estate), was the driving force of widening economic disparities among regions, a pattern that was reinforced by the crisis in the east of the country (Figure 1.18). It is not clear whether Ukraine reaching a higher level of economic development will favour a more equal allocation of income across its territory in the near future. However, it should be noted that Ukraine has mechanisms to stimulate the growth of lagging regions, such as the formula-based allocation of funds by the State Fund for Regional Development.¹²

Figure 1.18. **Gini Index of GDP per capita in Ukraine's TL2 regions**



* For 2014 and 2015, Crimea is not included due to a lack of data.

Source: OECD calculations based on data from the State Statistics Service of Ukraine.

Economic disparities between Ukraine's regions have also increased from the standpoint of households. The dispersion index of real disposable income per capita has been on an upward trend since 2002, with a sharp increase in 2014-15 (Figure 1.19). This increase in dispersion is in great part driven by higher growth of real disposable income per capita in Kyiv compared to the national level. However, real disparities in material well-being are lower once the substantial differences in the cost of living across regions are accounted for: price levels are higher in prosperous regions. For instance, there is a rather good correlation (63%) between the price of wheat bread and available income per capita in each region. The largest disparities in price levels across regions are observed in the non-tradable sector, particularly real estate prices and rents, which is as one would expect. Nevertheless, the material well-being sub-index (part of Ukraine's official regional development index),¹³ which attempts to measure material living standards beyond household monetary income, also suggests an increasing dispersion in material well-being across Ukraine's regions (Figure 1.19). Unfortunately, the index is not available for Kyiv city, and therefore underestimates interregional disparities.

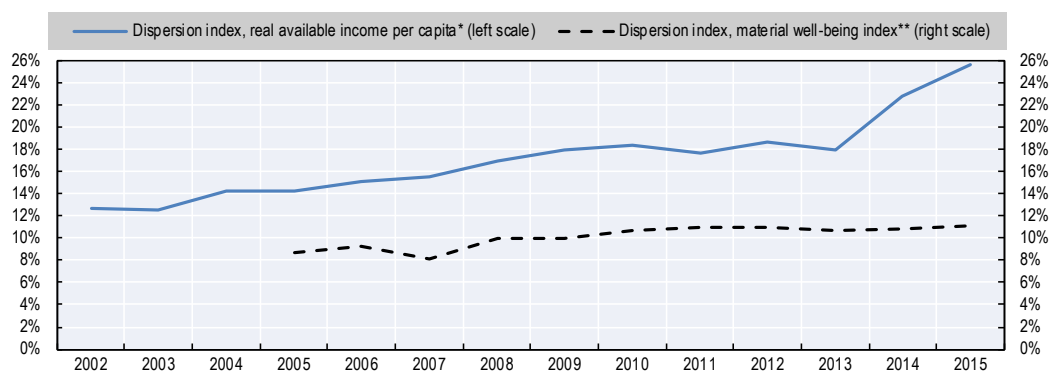
In contrast to real disposable income per capita, the dispersion in real wages fell during the 2000s, up until 2014. It is likely that wage adjustments to economic shocks take place largely in the informal labour market, including through the practice of unregistered wages (OECD, 2014b).

Tackling obstacles to growth across Ukraine's regions

Regional growth can be influenced by a myriad of interconnected factors such as amenities, geographic location, demographics, size, industry specialisation and agglomeration economies. Like national growth, regional growth is dependent on the availability of inputs – capital, labour and land. The supply of labour is unlikely to support economic

growth in the medium term: Ukraine's active population is gradually decreasing and projected to decrease by around 39% up to 2060 because of low fertility and widespread out-migration (Kupets, 2014). However, improving the functioning of regional labour markets can help mitigate the effects of population ageing and the gradual decline of the working-age population.

Figure 1.19. **Regional dispersion trends in Ukraine**



*. Base year: 2002.

** The material well-being index is a component of the regional Human Development Index published by the State Statistics Service of Ukraine and Ptoukha Institute for Demography and Social Studies. It is a composite index of material living standards in each region. It encompasses monetary poverty; the availability of durable consumption goods; and the relative purchasing power of households, GDP per capita, and the share of households able to save money or invest in real estate.

Notes: The dispersion index is measured as the sum of absolute differences between regional and national values, weighted with regional share of population and expressed as a percentage of the national value. For 2014 and 2015, Crimea is not included due to missing data.

Sources: OECD research based on data from the State Statistics Service of Ukraine (2014), *Regional Human Development Index*, http://idss.org.ua/ukr/index/irlr_2014_en.html (accessed 28 March 2017) and National Accounts of Ukraine, www.ukrstat.gov.ua (accessed 15 January 2017).

Labour productivity growth is a key driver of performance among OECD regions (OECD, 2016d). Increasing labour productivity in Ukrainian regions from its currently low level (10% of the EU-28 average) is critical to support sustainable economic growth. Beyond labour markets, this would require an improvement in external and internal connectivity, through modernisation of the outdated manufacturing sector, and sustained investments to upgrade the country's transport infrastructure (discussed in more detail in Chapter 4).

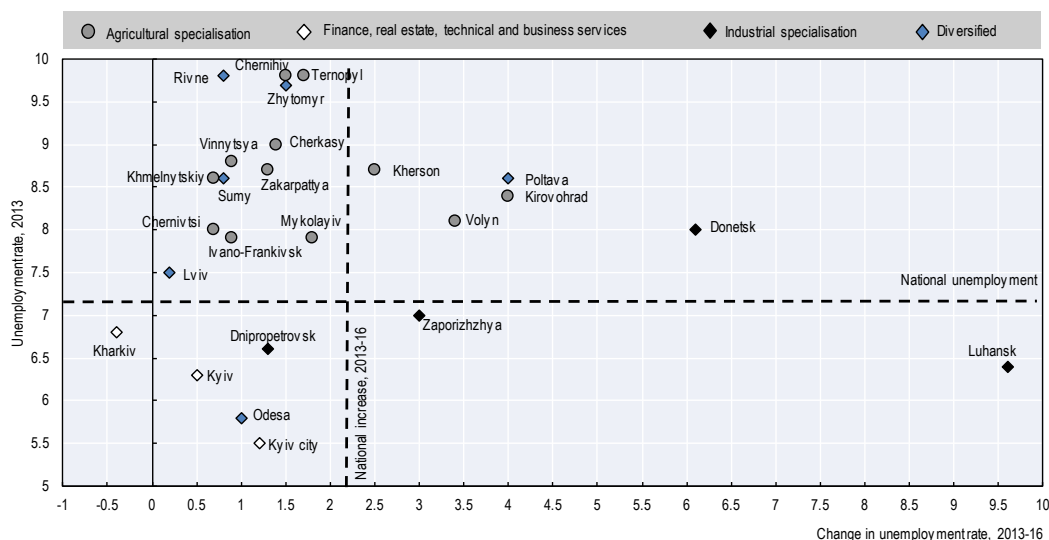
Improving the functioning of Ukraine's labour markets should be a priority

As a result of the 2014-15 economic downturn, the unemployment and youth unemployment¹⁴ rates in 2016 reached their highest levels since 2005 (9.3% and 16%, respectively). The 2014-15 recession led to a drop in employment and a sharp increase in unemployment in all regions, except Kharkiv. In 2013, as in the past, regions specialised in agriculture (largely in Western and Central Ukraine) exhibited higher unemployment rates (Figure 1.20). Two years of recession and the Donbas conflict somewhat altered this pattern: in 2016, the two Donbas regions (Donetsk and Luhansk) had the highest unemployment rates in Ukraine, 16% in Luhansk. Poltava and Zaporizhia, with strong manufacturing and mining sub-sectors, also recorded relatively high unemployment rates (12.6% and 10%, respectively). Employment in regions surrounding large urban centres

was usually lower, particularly Kyiv, Kharkiv (the lowest unemployment rate in Ukraine) and Odessa (Figure 1.20).

In all but one of Ukraine's 25 regions, labour force participation rates have decreased since 2013.¹⁵ The higher the unemployment rate in a given region, the sharper the drop in labour market participation.¹⁶ This suggests that the drop in labour market participation is mostly due to discouraged workers, who could join the labour force again if it became easier to find a job. The decrease in labour market participation has been particularly strong in Donetsk *oblast* and in some agricultural *oblasts* of Western Ukraine (Volyn, Khmelnytskyi and Ternopyl), where labour force participation fell below 60% (corresponding to the 15% of TL2 regions in the OECD with the lowest labour market participation rates). In some *oblasts* (Odesa, Donetsk), female participation rates fell as low as 52% (this is lower than all OECD countries except for Turkey). Therefore, increasing the female labour market participation in these regions could help mitigate the effect of a declining labour force over the next few years.

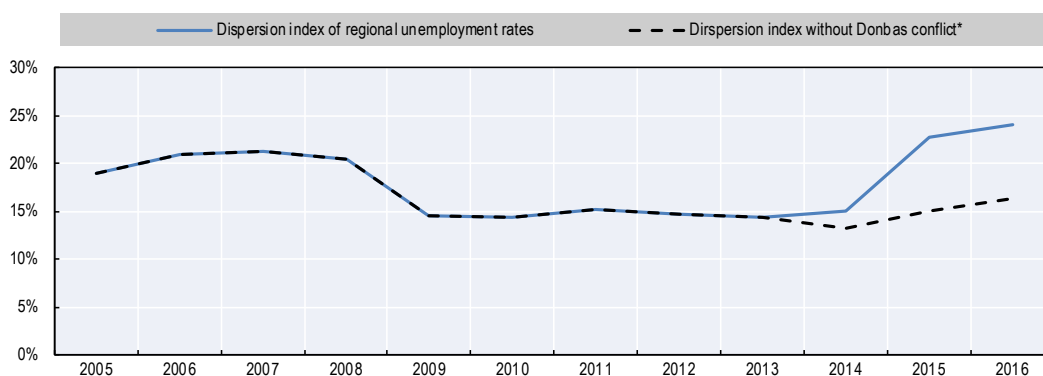
Figure 1.20. Impact of the 2014-15 recession on regional unemployment, Ukraine



Source: State Statistics Service of Ukraine (2017a), "Labour Force Survey", www.ukrstat.gov.ua.

The Donbas conflict contributed to increasing spatial fragmentation of Ukraine's labour market: the dispersion index of regional unemployment rates, which went down after 2009 because unemployment increased particularly in low-unemployment regions, reached 24% in 2016, the highest level since 2005 (Figure 1.21). This would place Ukraine in the upper quartile among OECD countries as regards the dispersion index of unemployment rates.¹⁷ Annex 1.C provides an analysis of regional labour markets based on vacancy statistics from the State Employment Service. While further research and more reliable data are needed, analysis of the limited available data provides further evidence of spatial fragmentation and of inefficiency in some regional labour markets. For instance, a few *oblasts* – such as Zhytomyr, Ternopyl and Poltava – have a higher unemployment rate than the national average while their vacancy rate (an indicator of firms' labour demand) is also above the national level (Figure 1.C.1 in Annex 1.C). This could be due to mismatches between workers' skills/qualifications and labour market needs.

Figure 1.21. Regional dispersion of unemployment rates, Ukraine



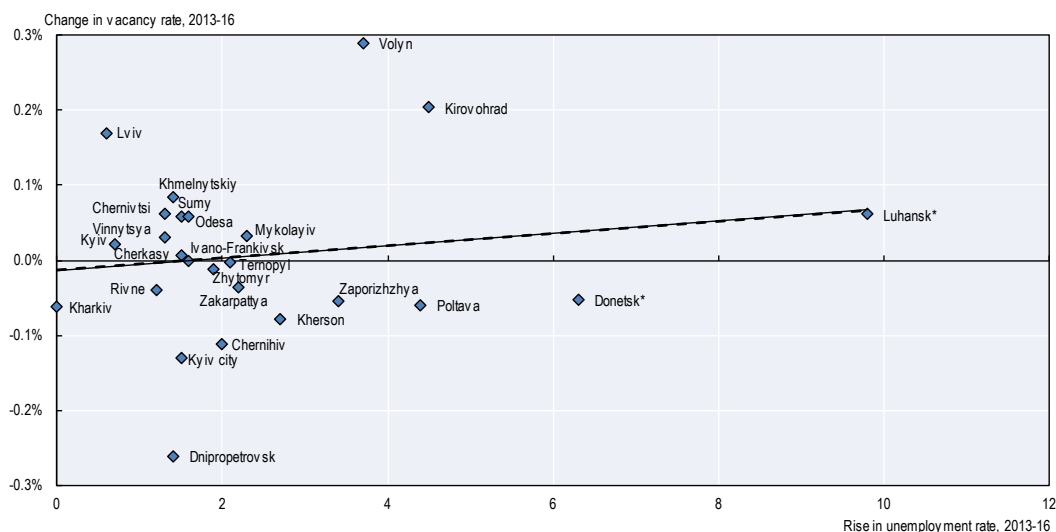
* Holding the 2013 unemployment rate and population share constants in 2014-15-16 for Luhansk and Donetsk.

Notes: The dispersion index is measured as the sum of absolute differences between regional and national values, weighted with regional share of population and expressed in per cent of the national value.

Source: OECD calculations based on data from the State Statistics Service of Ukraine (2017a), "Labour Force Survey", www.ukrstat.gov.ua.

There is also evidence that the matching between labour demand and labour supply degraded during 2013-16: contrary to what one would expect, while unemployment rates increased in all regions, vacancy rates also increased in 12 regions out of 25. Moreover, there is a positive correlation between the increase in unemployment and the rise of vacancy rates (Figure 1.22). Three regions (Volyn, Kirovograd and Luhansk) entirely determine this correlation, because they experienced both a substantial increase in unemployment and in their vacancy rate, suggesting an increasingly poor matching between firms and workers. In the case of Luhansk this could be due to the relocation of many qualified workers to other regions of Ukraine in the context of the armed conflict.

Figure 1.22. Change in unemployment and vacancy rates by region, Ukraine, 2013-16



* Data for government-controlled territory.

Source: State Statistics Service of Ukraine, State employment Service of Ukraine, Labour market indicators, www.ukrstat.gov.ua.

Addressing this skill mismatch and improving the functioning and economic integration of regional labour markets are key objectives to lower structural unemployment and boosting productivity. This means that Ukraine needs to tackle three major obstacles: low interregional labour mobility, widespread labour market informality, and substantial education-job mismatch and graduates' skill gap.

Low interregional labour mobility

Internal labour market mobility is low in Ukraine because substantial constraints increase migration costs and reduce the incentives to move to other regions with better economic prospects. It is estimated that, controlling for the size and number of regions, internal migration rates in Ukraine are about half of what would be expected compared to other countries (Koettl et al., 2014). This is confirmed by findings from the EBRD/World Bank “Life in Transition” Surveys: in 2010, only 0.9% of Ukrainians intended to move to other parts of the country, one of the lowest rates among 32 countries in Europe and Central Asia. Besides, the few Ukrainians contributing to interregional labour mobility are not always seeking better labour opportunities: “push factors” (economic constraints and cuts in public spending in the regions of origin) appear to be stronger drivers of internal migration than “pull factors” (better education/job opportunities). This limits the efficient reallocation of human resources within the country (Koettl et al., 2014; World Bank, 2015).

The primary factors limiting internal labour migration in Ukraine are the lack of access to credit and underdeveloped mortgage and housing markets, combined with the overall high cost of housing and considerable interregional housing price differentials. Ukraine has a very high rate of home ownership: according to the 2010 Household Budget Survey, 95% of households owned the home they lived in, while only 2.4% were tenants from private owners and the rest tenants from public institutions (such as city administrations, universities, etc.). Extremely high home ownership discourages mobility because the perceived cost of staying in one's home is low compared with the high transaction costs of relocating (Koettl et al., 2014). This translates into an underdeveloped rental housing market, which increases the cost of rental housing. Substantial regional housing price differentials are another obstacle: housing in economically attractive urban areas is significantly more expensive (as a share of local annual average income or local average wage) than in other regions. For instance, research indicates it can take 21.2 years of average salary to buy a 2-bedroom apartment in Kyiv and 19.7 years average salary in Odessa, the highest ratios in Ukraine (Komarov, 2012). Therefore, the sale of residential property in a lagging region is not enough to finance the acquisition of new housing in a destination with better economic prospects. Ukraine's residential mortgage market reached a peak of 11% of GDP in 2009: this is well below the EU average (51.8% of GDP), making it one of the smallest mortgage markets in Europe, along with Bulgaria and Slovenia (Koettl et al., 2014).

An overreliance on social networks and informal labour and housing arrangements, as well the cumbersome residence registration system, are additional obstacles to internal labour mobility. In Ukraine, the small rental market is predominantly informal, i.e. most landlords and tenants do not conclude formal rental agreements. Over the long term, this increases uncertainty about the risks of the rental agreements, inciting migrants to rely on personal networks such as family and friends, which increases the transaction costs linked to migration (Koettl et al., 2014). It also means that migrant tenants usually cannot register with local authorities at their new place of residence because a copy of the rental contract is required for migrant tenants to register. In Ukraine, residence registration is compulsory (after 30 days) and is a condition of access to a wide range of administrative procedures

and public services, such as social assistance, voting in local elections, applying for official documents, etc. Although *de jure* residence registration is not a condition to access essential public service such as healthcare, it *de facto* plays an important role as hospitals often require local registration certificates from patients (CEDOS, 2017). Residence registration seems to present more acute problems for low-skilled migrants (Koettl et al., 2014).

Internally displaced persons present specific challenges (Box 1.4), because they are not typical “normal” economic migrants but migrants that have moved as a result of forced relocation. Geographic proximity to the region of origin is the most important factor determining the allocation of the IDPs across regions. Despite this, economic “pull” factors (such as the number of vacancies or the wage level) also played a role in the IDPs’ destination choices: they tend to move to relatively prosperous regions (Benzel, Betliy and Robert, 2015). This is positive and should ease their integration into regional labour markets. However, given the low share of IDPs that found a job in their new regions (31% in 2015), additional targeted labour market programmes are probably necessary. A fast-track access could be designed for the IDPs to register as unemployed even if they do not have all the required documents (such as labour books), as is common.

A set of policies aimed at easing labour mobility is necessary to increase economic gains from rising productive sectors, such as finance, IT technologies and light manufacturing and to decrease the spatial fragmentation of the Ukrainian labour market. This requires eliminating or smoothing some of the obstacles to internal labour mobility, beginning with the housing market. Koettl et al. (2014) and World Bank (2012) make practical policy recommendations to develop rental housing markets. For instance, the Austrian model of social housing and its financing, with limited-profit housing associations acting as a third sector between state-owned social housing and the private market, yielded positive results in Central and Eastern Europe. The imposition of a stronger real estate tax based on market values (rather than apartment size in the current system) and with fewer tax exemptions could stimulate housing supply in the higher demand areas while providing local budgets with an additional source of revenue. Beyond housing, improving access to finance, stimulating the mortgage market and reforming the residential registration system (*Ukr. Propiska*) would be key next steps. In this regard, a gradual evolution of residential registration towards a fully declarative system, without any requirement of “landlord consent” in the case of tenants, is necessary to encourage citizens to register at their actual place of residence (CEDOS, 2017). Such a reform of residence registration in Latvia led to positive results, i.e. Latvian citizens can now easily declare their new place of residence (in person or via an e-declaration process) and have it recorded in the electronic population registry when they move inside the country (CEDOS, 2017).¹⁸

Widespread labour market informality

Ukraine combines a very stringent formal employment protection system¹⁹ with a high level of *de facto* labour market informality (an estimated 24.4% of employees were in the informal sector in the first half of 2016). Such a high level of labour market informality is detrimental to productivity growth because it reduces incentives to invest in human capital and hampers business innovation. Informality is also a factor in low interregional labour mobility because it is associated with uncertainty over the actual payment of wages and other abuses of power by employers. This increases the risks and reduces the expected pay-offs from labour market migration (Koettl et al., 2014). Last but not least, widespread labour market informality leads to fiscal sustainability challenges, contributing to the extremely high deficit of Ukraine’s pension fund, which reached 6.25% of GDP in 2016 (IMF, 2017a). Moreover, because the personal income tax is a major source

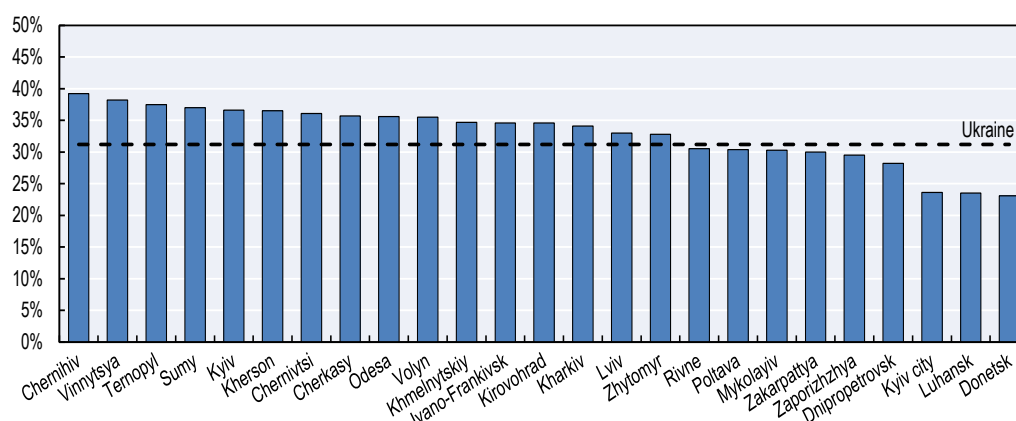
of income for local budgets, labour market informality (including the widespread under-reporting of formal wages by employers) is a challenge for local government finance.

Most informal workers are employed in the agricultural sector, either on private or family farms. This means that 1.5 million people are not covered by any sort of social security; the labour informality rate in rural areas reaches 41%. The main motive for informal labour in rural areas seems to be the lack of alternatives to subsistence farming and small-scale informal activities (World Bank, 2011). In urban areas, informal workers (accounting for 17% of employment) are common in the trade and construction sectors, most often in micro or small enterprises with fewer than ten employees. Informality decreases with education: it is widespread among the unskilled, individuals with low educational attainment and the skilled trades, and comparatively rare among employees with higher education. Labour informality is particularly widespread in certain areas of Western and Central Ukraine (Vinnytsya, Ternopol, Khmelnytsky, Cherkasy and Kirovohrad *oblasts*).

The estimated prevalence of informal jobs has risen moderately since 2011: from around 22% of employment to 26% in 2014-15, possibly due to large-scale job losses in the formal sector in conflict-affected regions. The rate of informality stabilised around an estimated 24.4% in the first half of 2016. In January 2016, the government halved the social security contribution rate paid by firms from around 44% to 22%, one of the lowest levels in Europe. The government introduced this reform with the hope that it would incite informal businesses to join the formal sector. However, based on 2016 social contributions data, it is estimated that the improvement in payment compliance has been very modest so far (IMF, 2017a). In January 2017, the government doubled the minimum wage to UAH 3 200 (about USD 120), with the objective of tackling the under-reporting of formal wages (so-called “envelope wages”) and boosting revenues to the pension fund from social security contributions. The rationale is that a large share of actual private sector wages (including the cash supplement) is already above UAH 3 200. However, this sharp increase could negatively affect small and medium-sized enterprises (SMEs) in some of Ukraine’s less-developed regions, driving them out of business or into the shadow economy. Figure 1.23 plots the share of workers with a wage below UAH 3 000 (i.e. below the new minimum wage) before the new minimum wage entered into force in January 2017. In many *oblasts*, almost a third of official wages were below the new minimum (almost 40% in Chernihiv). The impact of the new minimum wage on the SME sector in these regions should be carefully monitored.²⁰ The government should resist pressures to raise the minimum wage further: the ratio of the minimum wage to the average wage is already high in Ukraine (53% in January 2017 versus on average 40% in OECD countries in 2016).

Informality is a multivariate problem, and it is doubtful that the minimum wage hike or the decrease in social contributions alone will be sufficient to discourage informal employment or massive under-reporting of formal wages. There is a need to strengthen revenue administration and upscale the efforts to tackle low tax compliance (IMF, 2017a). Due to the very limited number of labour inspectors, it is estimated that the probability of inspection in each enterprise is about once every 20 years (World Bank, 2011). As part of its 2017 Memorandum of Economic and Financial Policies with the IMF, the Ukrainian government committed to enhancing labour inspections and abolishing the current moratorium on tax and labour inspections of small businesses, which account for the bulk of non-agricultural informal workers (IMF, 2017a). The adoption of a modern labour code introducing more flexibility for employers could also help reduce labour informality over the long term.

Figure 1.23. Share of official wages below UAH 3 000 in the wage structure, Ukraine, December 2016



Notes: Share of wages below UAH 3 000 among workers with at least half-time employment. Official wages might not reflect actual wages paid by employers because of widespread under-reporting (“envelope wages”).
Source: State Statistics Service of Ukraine.

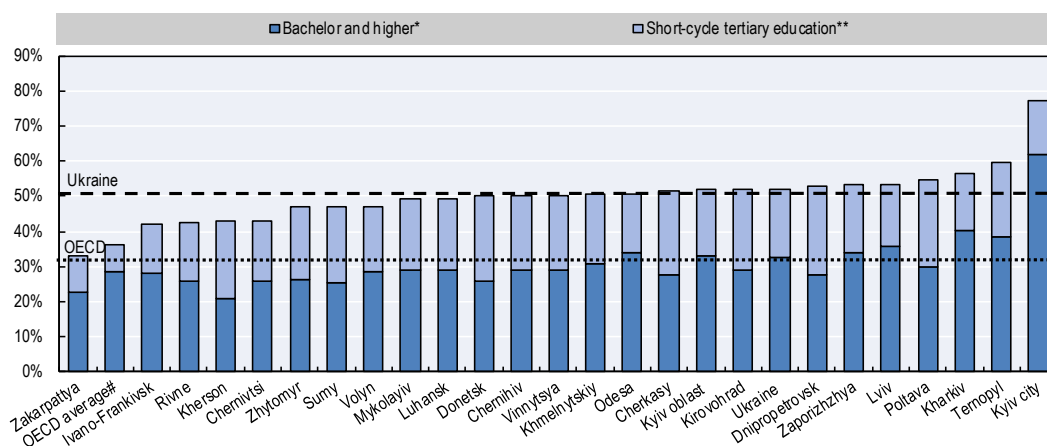
Substantial education-job mismatch and graduates’ skill gap

Ukraine has achieved almost universal literacy and nearly universal primary education. Average basic cognitive skills are comparable to OECD country averages, and reading proficiency in urban areas is higher than in many middle-income countries (Del Carpio et al., 2017). In 2015, less than 1% of the active population had completed only primary education. The formal educational achievements of the Ukrainian workforce increased continuously during the 2000s. Younger cohorts have high enrolment rates in the higher education system: after 12 years of continuous increases, the gross tertiary enrolment rate (the ratio of total enrolment in tertiary education to the population of the corresponding age group) reached 82% in 2014 (against 65.4% in 2002). This is partly due to the increased popularity of long-cycle programmes, such as Master’s degrees, compared to short-cycle tertiary education with a technical specialisation. Indeed, the number of graduates from long study programmes has more than doubled since the fall of the Soviet Union (from 137 000 in 1990 to 485 000 in 2013), while the number of graduates of short-cycle technical tertiary education fell by more than half during the same period (from 229 000 in 1990 to 91 200 in 2013). In 2015, 32% of Ukraine’s economically active population had the equivalent of a Bachelor’s degree or higher (Figure 1.24). If those completing short-cycle tertiary education with technical specialisations are included, then 52% of the active population had some sort of higher education in 2015, far higher than the OECD average (36.2%; Figure 1.24). The figure for Ukraine is comparable to the OECD countries with the highest tertiary attainment rates, such as Canada (55%) and Japan (50%).

After 2005, the share of active population with tertiary education rose in almost all regions (except Ivano-Frankivsk *oblast*), driven by the increased popularity of long-cycle academic programmes (roughly equivalent to Bachelor’s and Master’s degrees). However, in some agricultural *oblasts* of Western Ukraine, the share of the workforce with only a secondary education is still high (55% in Zakarpattya, for instance). Urban areas, and

particularly large cities, have a higher share of university graduates: in Kyiv, 61% of the employed population has an advanced degree, which is double the national level (32%). Kharkiv *oblast* has the second-highest share of advanced degrees in its active population (Figure 1.24).

Figure 1.24. Share of active population with a tertiary education, Ukraine, 2015



Notes: *: Advanced degrees include Ukrainian *Povna vyshha osvita* and *bazova vishha*. **: Short-cycle tertiary education includes Ukrainian *Nepovna vishha*. #: Percentage of 25-64 year-olds (instead of active population) with a tertiary education.

Sources: State Statistics Service of Ukraine; OECD (2016a), *Education at a Glance 2016: OECD Indicators*, <http://dx.doi.org/10.1787/eag-2016-en>.

Despite a growing share of graduates and increased access of younger cohorts to higher education, per capita income and average labour productivity in Ukraine are very low, much lower than in OECD countries with a similar stock of human capital. Corruption in the education system is a major issue, with a strong negative impact on the quality of education. According to a 2013 poll, 77% of respondents answered that corruption is pervasive or widespread in higher education (OECD, 2017b). Moreover, curricula in the formal education and training system are focused on theory rather than on skills relevant to the workplace. Some 60% of firms in four key sectors (i.e. food processing, IT, agriculture and renewable energy) report that graduates do not meet the skills needs of employers; as they lack up-to date knowledge and practical skills (Del Carpio et al., 2017). In business surveys, 40-50% of Ukrainian companies report that skills shortages are a major constraint to doing business, a higher rate than in most countries in Europe and Central Asia. Business surveys also show that skill gaps are a major constraint on hiring, especially regarding high-skill positions such as technicians or professionals (Del Carpio et al., 2017). Beyond the quality and labour-market relevance of education, the Ukrainian labour market experiences an acute education-job mismatch (Kupets, 2016). Existing evidence and research points to an oversupply of university graduates with a formal education in “fashionable” fields (such as finance, economics and law) and a deficit of engineers, physicists and skilled craftsmen (Koettl et al., 2014). The first assessment of the prevalence of education-job mismatch across Ukrainian regions revealed substantial heterogeneity, with the highest incidence of over-education in agrarian regions located in Western and Southern Ukraine (Kupets, 2016). This confirms some of the findings of the analysis in Annex 1.C, which suggests that many of these agrarian regions have “inefficient” labour markets.

There are several reasons for the education-job mismatch in Ukraine, including a low demand for skilled workers in several regions. Over the long term, macroeconomic instability, a challenging business environment and an outdated and rigid labour code are constraints on the development of skill-intensive firms and sectors (Del Carpio et al., 2017). Several measures focused on skills and the education and training system could help to improve labour market efficiency and productivity. As Ukraine is decentralising its education system, regions and local governments will bear an increased responsibility in this regard.

- To reduce the mismatch and the skills gap between employer expectations and graduate abilities, the education and training system needs to be more responsive to labour market needs. This requires building systematic partnerships with the private sector to adapt curricula and increase their relevance to the workplace. Another priority should be to develop on-the-job training and life-long learning, as currently few working-age Ukrainians take part in trainings outside of the formal education system.
- Workers and students need better access to labour market data, including prevailing wages, vacancy rates and advancement opportunities. Reducing information asymmetries could stimulate internal labour mobility and favour a more relevant choice of fields of study by prospective students. Setting up regional labour market observatories analysing vacancies from both the State Employment Service and leading private job portals could be a first step.
- Given the shortage of skilled craftsmen across Ukraine, vocational and professional training should be modernised and must become more attractive. Since local governments are now in charge of maintaining professional and vocational training institutions, they should have the opportunity to influence the number of students in each specialty. They could also be involved in reforming curricula based on partnerships with local industry to adapt the profile of graduates to local labour market needs.

Confronted with a strong asymmetric shock, Ukraine's ailing heavy industrial complex requires modernisation

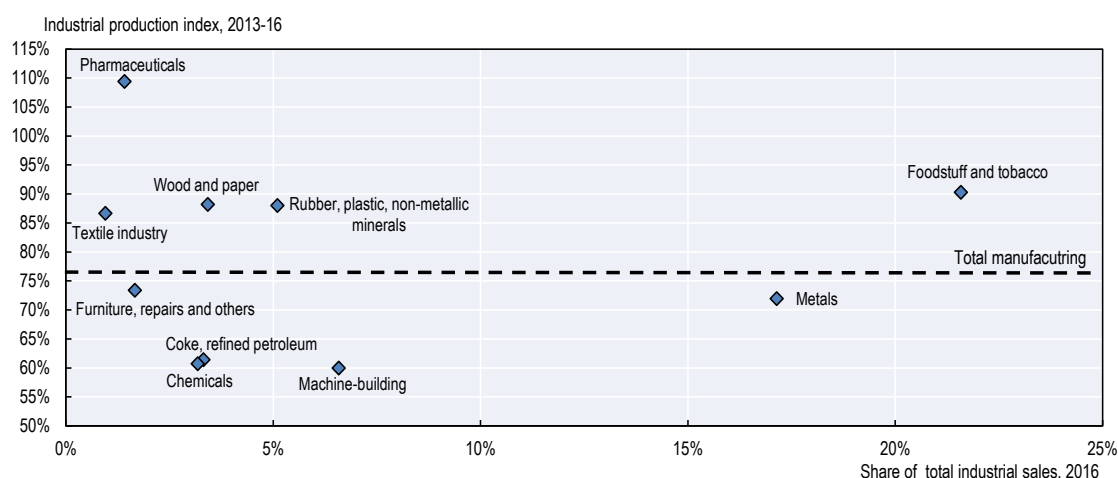
The 2014-15 economic crisis and the Donbas conflict led to considerable disruption of Ukraine's industrial sector. Industrial production began to decline in 2013 and huge losses were registered in 2014 and 2015. Despite a modest recovery in 2016, the volume of industrial production only reached 82% of its 2010 level. However, the decline of mining and, above all, of the manufacturing sector is a long-term trend. The manufacturing share of GDP has more than halved since 1999, reaching 14% in 2015. Unlike some countries in Central and Eastern Europe, such as Hungary, Poland and the Slovak Republic, Ukraine did not manage to modernise its industrial sector and stabilise the manufacturing share of GDP during the 2000s. Inside the industrial sector, the Donbas conflict has accelerated an ongoing structural shift towards light manufacturing – textiles, food and wood processing, rubber and plastic. The heavy, capital-intensive subsectors were the strongest component of Ukraine's industry, accounting for 50% of industrial sales as recently as 2013. Since 2010, however, lighter subsectors have been growing faster.

The Donbas conflict and collapsing exports to the Russian Federation due to trade sanctions (and the Russian Federation's import substitution policy) hit Ukrainian heavy industry hard, especially in the Eastern and south-eastern regions. The economy of the NGCAs (separatist-controlled areas) is highly concentrated in heavy subsectors of metals,

mining, coke and petroleum (Saha and Kravchuk, 2015). The 2017 economic blockade stopping the movement of goods to and from the NGCAs is putting further pressure on metallurgical production. The conflict thus caused a sharp contraction in the metals and coke subsectors (Figure 1.25). The heavy machine-building sector (particularly the railway machine-building and machinery and equipment subsectors) had the highest exposure to the Russian market, which absorbed around 22% of their output in 2012. The disruption of trade ties with the Russian Federation thus constituted a further blow to heavy industry (Movchan, Guicci and Ryzhenkov, 2014). Indeed, production volumes dropped by 40% in machine building from 2013 to 2016 (Figure 1.25).

By contrast, in Western and Central Ukraine, industry is dominated by food processing and other light subsectors (wood processing and furniture, plastics and pharmaceuticals). These did not suffer as much from the 2014-15 recession: in four *oblasts* (Vinnitsa, Zhytomyr, Volyn and Ternopyl) manufacturing value added even increased in real terms between 2010 and 2015. Initially small, the industrial sector in Western and Central Ukraine has been increasing its economic weight (Saha and Kravchuk, 2015).

Figure 1.25. **Manufacturing sub-sectors through the 2013-16 downturn, Ukraine**



Source: State Statistics Service of Ukraine.

Thus the Donbas conflict and 2014-15 crisis resulted in an asymmetric shock, weakening the traditional heavy industrial complex in Eastern and (to a lesser extent) Southern Ukraine. In contrast, in all *oblasts* where manufacturing volumes increased as compared to 2010, the food processing sub-sector was the main component, in conjunction with smaller light manufacturing sectors, including wood, paper and printing in Zhytomyr, Lviv and Kyiv *oblasts*, and rubber and plastics in Lviv *oblast*. All of these regions are located in Central and Western Ukraine, with the exception of Mykolaiv.²¹ While machine building was facing a crisis nationwide, Volyn (in the north-west of Ukraine) was the only region where the sector continued to grow.

The spatial asymmetries in the impact of recent shocks mean that different regions of Ukraine will face very different challenges in the future. Western and Central Ukraine (including Kyiv) are best positioned to benefit from trade integration with the EU. Western Ukraine stands to gain significantly from increased participation in cross-border, EU-wide production networks, which played a crucial role in the convergence of Central

and Eastern European countries towards the more advanced EU economies (Adarov et al., 2015). This is already happening in some Western *oblasts*: for instance, Lutsk (Volyn *oblast*) is home to a growing cluster of companies supplying the EU automotive manufacturing industry, including foreign investors such as Kromberg End Shubert (board electrical cable system) and SKF (tapered roller bearing). The depreciation of the hryvnia after 2014 (the real effective exchange rate fell by 22% between January 2014 and January 2017)²² further increased the comparative advantage of labour-intensive light industrial production in Ukraine.

Setting up of “cluster councils” could be a sound instrument to stimulate cross-border production networks (Saha and Kravchuk, 2015). They would aim to enhance cluster visibility to international investors and foster intra-cluster co-operation. This is all the more relevant in Western Ukraine because its industrial structure is characterised by smaller companies, with less influence from oligarchic business conglomerates. For instance, in the Czech Republic, the Klastry programme led to the creation of 25 clusters based on a self-selection process co-ordinated by the national agency Czech Invest.²³ A gradual upgrading of transport infrastructure, particularly roads, is also necessary to ensure that the least developed agrarian regions are well connected and can fully benefit from their comparative advantage of cheap labour and affordable land.

The industrial sector of Eastern and Southern Ukraine presents daunting challenges. Industry still accounts for a large share of employment (32% in government-controlled Donbas, 25% in Dnipropetrovsk *oblast* and 19% in Kharkiv *oblast*, for instance). Many companies focusing on steel, machine building, coke and refined petroleum operate with an outdated capital stock, old technology and a weak corporate governance culture. Because of challenging ownership structures (state companies with a “strategic” status or Ukrainian and Russian business conglomerates, often with a vertically integrated structure), most of the required investments have not taken place.

Machine building is the subsector facing the most acute challenges, partly because it relies on long-term supply chains (unlike commodities such as steel) that make it difficult to find alternative export markets. One indicator of the challenges facing the sector is that labour productivity in Ukrainian machine building in 2012 was only at 79% of overall manufacturing productivity and 67% of national average productivity for all sectors. This is something of an anomaly, since labour productivity in manufacturing is usually higher than the national average and machine building, being a capital-intensive sector, usually has higher labour productivity than many other branches of manufacturing. This suggests that there is a large capital and technology gap *vis-à-vis* global competitors. (Naūrodski and Babicki, 2016). Indeed, underinvestment ensured that in Ukraine’s machinery sector, the depreciation rate of fixed assets reached 85% in 2015 (against 60% on average in all sectors).

Saha and Kravchuk (2015) outline options for the modernisation and restructuring of the machine-building sector, which could be relevant to the rest of Ukraine’s heavy industry. This programme involves export promotion to help firms find alternative export markets and investment facilitation, which is crucial to attracting much needed foreign investment to renew the capital stock and introduce new technologies. In many ways, the success of long-term modernisation will depend on nationwide institutional reforms, such as improving corporate governance, strengthening competition policy, opening industrial state-owned enterprises to foreign capital through a revision of their “strategic” status, and strengthening the rule of law. Greater transparency and better corporate governance could help attract FDI into industrial sectors (Naūrodski and Babicki, 2016). This is

paramount for the machine-building sector, which unlike the metals or food processing industries has not benefited from significant foreign capital inflows: in December 2016 it accounted for only 2.2% of Ukraine's overall FDI stock.

Civic engagement and local governance

Despite corruption and low electoral participation, trust in local government is gradually growing in most cities

Institutional conditions and governance matter for individual well-being and regional development. A study focused on 169 EU regions demonstrated that the quality of local government is a key factor in the efficient use of EU Cohesion and Structural Funds. This suggests that the quality of subnational governments could be a strong determinant of the return on public investment at the subnational level (Rodriguez-Pose and Garcilazo, 2013).

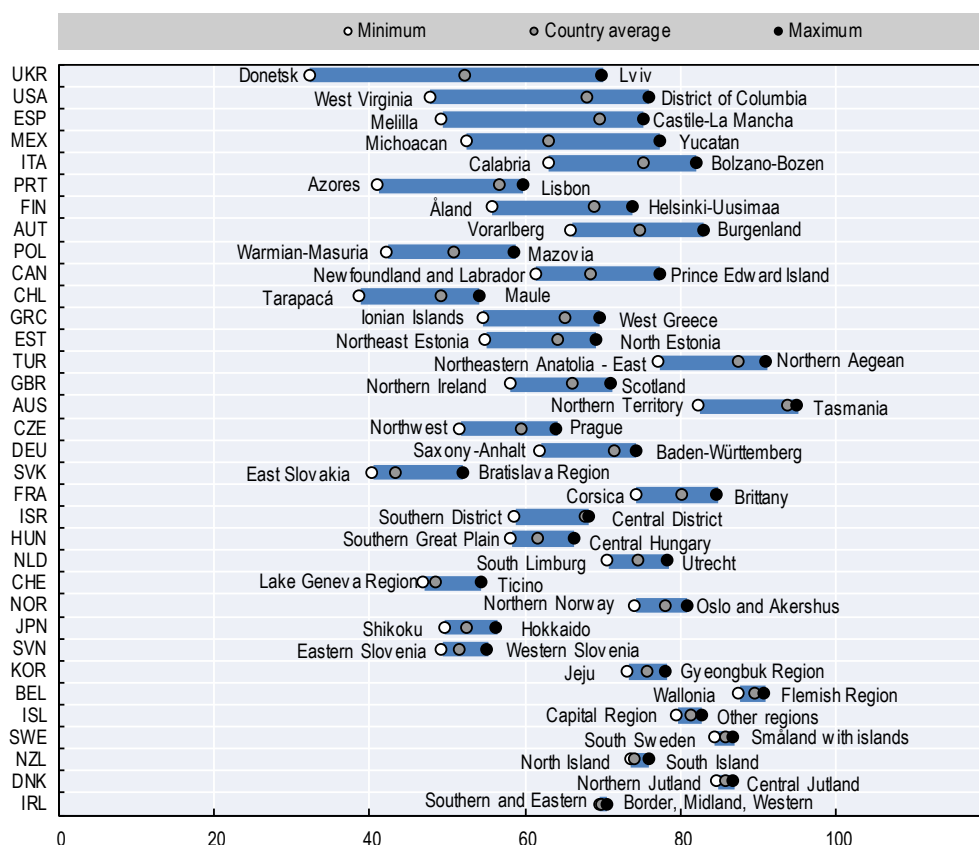
Civic engagement and participation are necessary conditions for effective governance, while good governance can enhance citizen participation (OECD, 2016e). Both vicious and virtuous circles are possible: poor governance and citizen disengagement reinforce one other, as do good governance and citizen participation. Voter turnout is an indication of the degree of public trust in government and of citizens' engagement in the political process. In Ukraine, voter turnout in national elections has been lower than the OECD average (69.6%) in the last two general (parliamentary) elections, e.g. in 2010 (58%) and 2014 (52.4%). As of mid-2016, only five OECD countries registered a lower electoral participation in their latest national election. Turnout was slightly higher in the last presidential elections (59.5% in 2014), but still below most OECD countries.²⁴

Moreover, the last national elections (i.e. the 2014 parliamentary elections) exposed very substantial regional disparities in electoral participation: there is a gap of 37.6 percentage points between the region with the highest turnout (Lviv) and the one with the lowest (Donetsk). This gap is higher than in any OECD country (Figure 1.26). Turnout was the lowest in the government-controlled territory of the Donbas (around 33%). Nevertheless, even excluding Luhansk and Donetsk *oblasts*, the gap between the highest and lowest reached 30.5 percentage points, still higher than in any OECD country (the United States had the highest gap in the OECD with 28.1 percentage points; Figure 1.26). Electoral participation was much lower than the national level in many other regions of Eastern Ukraine (Dnipropetrovsk, Zaporizhia, Kharkiv, etc.) and in the Southern Black Sea regions of Odesa, Mykolaiv, Kherson, but also in Zakarpattia (Western Ukraine). Voter turnout in almost all regions in the 2014 parliamentary elections was below the levels of the previous elections in 2012.

Wide disparities in levels of citizen engagement have important implications for the regional and local level, especially in the context of the current decentralisation reforms. A large and increasing range of public activities which directly affect citizens' everyday lives are now managed by subnational authorities. Effective local accountability – including competitive, transparent and fair local elections – will be critical to ensure that decentralisation leads to better public service delivery, improved governance and a greater ability for citizens to affect policies enacted at the local level. However, turnout for local elections in Ukraine has tended to be far lower than for national elections, as is the case in many OECD countries. Turnout for the October 2015 elections for *oblast*, district (*rayon*) and city councils, and for heads of city and rural administrations, was just 46.6%, significantly lower than the level of 52.2% recorded at the previous local elections

in 2010. In Kyiv, electoral participation fell to 41.9% (one of the lowest levels in Ukraine), from 54.2% for 2008 city council elections. Electoral participation displayed the same geographic pattern seen at national level, with higher turnout in Western and Central Ukraine (except in Kyiv city) and low turnout in the Black Sea area, in government-controlled Donbas (32% in Donetsk *oblast*) and in other Eastern regions. Low (and decreasing) electoral participation in local elections might be a concern for the success and local ownership of the ongoing decentralisation reform.

Figure 1.26. **Regional variation in last national elections turnout, 2014**



Note: Luxembourg, the OECD country with the highest electoral participation (91.1%), is excluded. Countries are ranked from the highest disparity in regional turnout to the lowest.

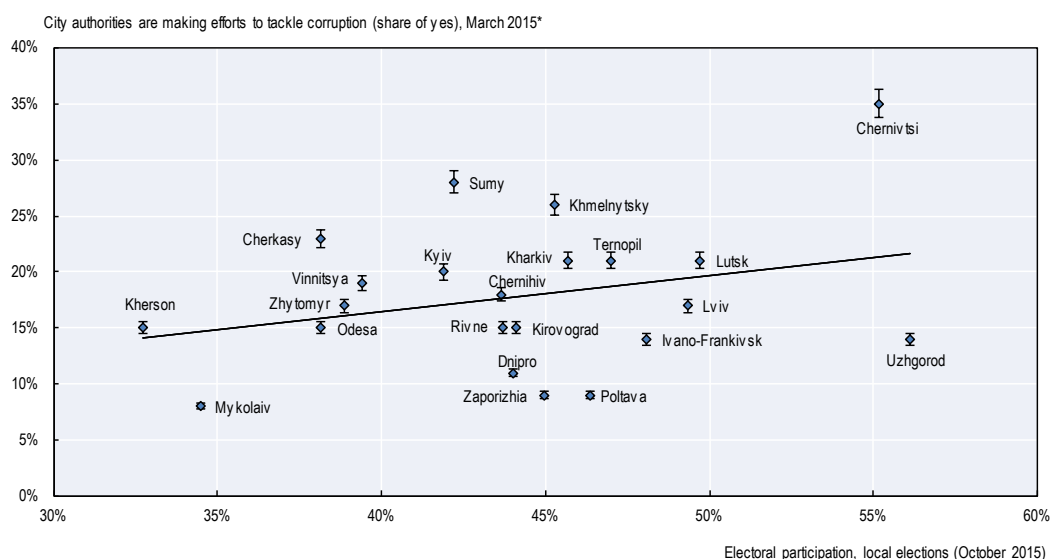
Sources: Data from Ukraine's Central Election Committee, www.cvk.gov.ua/pls/vnd2014/wp063?PT001F01=910 (accessed 3 May 2017); OECD (2016e), "Well-being in regions", *OECD Regions at a Glance 2016*, http://dx.doi.org/10.1787/reg_glance-2016-en.

People have the most direct interaction with local public authorities. Research on corruption, democratic representation and well-being suggests that trust in local government tends to be higher than trust in national governments. However, experiences of corruption in local public services can undermine trust, affecting people's behaviour and well-being (Tavits, 2008). In Ukraine, corruption is a major concern for a vast majority of citizens, and the dispersion in electoral participation across regions is much higher than in OECD countries. Across OECD regions, people living in areas with higher voter turnout in national elections often perceive lower levels of government corruption (OECD, 2016e). One reason might be that less corruption, better quality public services and more efficient public institutions might motivate people's participation and trust in institutions' capacity

to generate positive change (OECD, 2016e).²⁵ The degree of effective electoral competition is also important: voter turnout tends to rise when contests are competitive, while strong competition means that officeholders are more likely to face an opposition committed to exposing corruption and malfeasance.

In Ukraine, a correlation of similar magnitude exists between the perceived level of corruption at the local level and electoral participation in local elections. Data from the first Ukrainian Municipal Survey (conducted seven months before the October 2015 local elections), suggest that in cities where a higher share of citizens felt that corruption was a significant problem, subsequent electoral participation was lower (Box 1.7).²⁶ Moreover, the higher the share of citizens who believed that city authorities were tackling corruption at the municipal authority level, the higher the subsequent participation in the October 2015 local elections (Figure 1.27). Even though voter abstention has many causes and no causal relationship can be established without further research, this suggests that mistrust in local government's willingness to tackle corruption is one of the drivers of low electoral participation in local elections in Ukraine. This is a critical concern in the context of the ongoing administrative and fiscal decentralisation process.

Figure 1.27. **Electoral participation and trust that local government will tackle corruption, Ukraine**



Notes: * Margin of error: maximum 3.5%.

No data available for Donetsk and Luhansk *oblasts*. Survey conducted between 2-20 March 2015. Statistical correlation between the two series: 28.7%.

Sources: OECD calculations based on data from the Central Election Committee, "Local elections 2015 Database", www.cvk.gov.ua/pls/vm2015 and data from International Republican Institute/Rating Group Ukraine (2015), "Ukrainian Municipal Survey", www.iri.org/sites/default/files/wysiwyg/2015-05-19_ukraine_national_municipal_survey_march_2-20_2015.pdf.

Data from the Ukrainian Municipal Survey also point to a gradual improvement in the quality of public goods and services in Ukraine's largest cities. The city-level composite indicator of the quality of public goods and services is based on survey answers assessing the quality of 22 public goods and services (sidewalks, trash collection, roads, sport facilities, etc.). During 2015-17, 20 out of 24 cities saw moderate improvements in their composite indicators, with some noticeable positive shifts. For instance, in just two years

residents of Poltava and Dnipro substantially upgraded their assessment of the quality of local roads, while the perceived quality of trash collection improved in Odesa and Zaporizhia. There were also setbacks: in Lviv, the perceived quality of trash collection fell sharply, due to a fire at the city dump which covered Lviv in ash and resulted in four deaths. The survey also reveals some improvement in citizens' satisfaction with interactions with local authorities for administrative services. It should be noted, however, that these trends rely on observations of survey data covering a very short time frame (two years after March 2015): conclusions should therefore not be drawn before these positive trends are confirmed in the coming years.

Box 1.6. The annual Ukrainian Municipal Survey

Survey data are a precious source to assess the perceived quality of local public services, such as local public transport or street lighting. In Ukraine, such an assessment relies on the annual Ukrainian Municipal Survey. "Rating Group Ukraine" has conducted 3 annual waves of this survey in 24 cities* (all 22 *oblast* centres, Kyiv, Mariupol in Donetsk *oblast* and Severodnietsk in Luhansk *oblast*) on behalf of the International Republican Institute since March 2015. The annual Ukrainian Municipal Survey is funded by the Department of Foreign Affairs, Trade and Development of Canada.

The first wave was conducted in March 2015, the second in January-February 2016 and the third wave was conducted in January-February 2017, with a sample of 19 200 permanent residents of Ukraine (800 respondents were interviewed in each city regardless of the size of its population). One drawback of the Ukrainian Municipal Survey is its exclusive focus on *oblast* centres and Kyiv city, i.e. the largest cities in Ukraine, excluding rural Ukraine and smaller towns, but also all of the newly amalgamated communities. Another issue is that the survey covers a very short time frame (less than two years), which is barely sufficient if data are to be used for public policy impact assessment. Using the same methodology to conduct municipal surveys in Ukraine on an annual basis would ensure that a comparable dataset is developed over time.

* The first survey in March 2015 was conducted only in 22 cities (n = 17 600), without Mariupol and Severodnietsk.

Sources: Center for Insights in Survey Research (2016), "Ukrainian Municipal Survey", www.iri.org/sites/default/files/wysiwyg/municipal_poll_2016_-_public_release.pdf; Center for Insights in Survey Research (2017), "Third Annual Ukrainian Municipal Survey", http://ratinggroup.ua/en/research/regions/tretiy_vseukrainskiy_municipalnyy_opros.html.

Furthermore, the survey reveals a positive trend regarding local governance. In 16 out of the 24 cities surveyed, the proportion of respondents who think things are headed in the right direction in their cities has increased since 2015. This contrasts with more pessimistic assessments at the national level (IRI, 2017). Another positive trend is the decline in the share of respondents citing corruption as a significant problem in their cities, which fell between 2015 and 2017 in 21 out of 22 surveyed cities. The data confirm that corruption is still a major issue in local governance in Ukraine, but the

perceived severity of bribery and graft is gradually declining. This trend could contribute to higher participation in local elections, which is necessary to increase local accountability.

These positive developments translated into a higher approval by citizens of the activities of city heads (many were elected in October 2015), which once again contrasts with the low or falling approval ratings of many other institutions. Data from the Ukraine Municipal Survey reveal a gradual increase in trust (average approval of activities) in mayors and (to a lesser extent) local city councils.²⁷ Evidence of increased trust in local government is very positive for the ongoing decentralisation process. Further research is necessary to disentangle the role of the decentralisation process in these positive outcomes, but a study of 29 European countries suggests that, when properly conducted, decentralisation can contribute to higher citizen satisfaction with political institutions (Díaz-Serrano and Rodríguez-Pose, 2012). The successful completion of the ongoing decentralisation reform and the establishment of sound multi-level governance mechanisms is therefore all the more important. Indeed, the ongoing decentralisation reform could enhance local officials' ability to design and conduct local policies tailored to the specific needs of their community, while improving the efficiency of subnational investments through better horizontal (with other municipalities) and vertical (with higher levels of government) co-ordination. Such positive results may influence Ukrainians toward more civic engagement (including through higher electoral participation).

Notes

1. Average estimated population for 2016 from the State Statistics Service of Ukraine. This does not include Crimea or the city of Sebastopol, for which official statistics are not available after 2014.
2. Special purpose entities are entities with little or no physical presence in the host economy, which provide services to a multinational enterprise such as holding assets and liabilities and raising capital (OECD, 2016c).
3. Footnote by Turkey: The information in this document with reference to "Cyprus" relates to the Southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".
Footnote by all European Union member states of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.
4. This analysis is based on the OECD regional typology. The OECD has classified two levels of geographic units within each member country: large regions (Territorial level 2 or TL2) composed by 389 regions, and small regions (Territorial Level 3 or TL3) composed by more than 2 241 small regions. TL3 regions are further classified as predominantly urban (PU), predominantly rural (PR) and intermediate (IN).
5. 2014 population forecasts published by the Ptoukha Institute for Demography and Social Studies, available at: <http://idss.org.ua/index.html> ("Population forecasts").
6. Medical and economic studies highlight alcoholism, unhealthy lifestyles and risky behaviour on the roads as possible causes of high male mortality rates. See, for instance:

www.pewresearch.org/fact-tank/2015/08/14/why-the-former-ussr-has-far-fewer-men-than-women.

7. According to a forecast by the Ptoukha Institute for Demography and Social Studies, eight regions would lose more than 10% of their population by 2030 (compared to the 2015 level), with the highest decline in Luhansk and Kirovohrad regions (around 17%). For details, refer to <http://idss.org.ua/dir.html> ("Population projections").
8. This includes, for instance, Brovary, Boryspil (east of Kyiv) or Vyshneve (west of Kyiv).
9. In Bulgaria and Romania, the high contribution of the metropolitan capital region is also due to the small size of these countries and their limited number of TL2 regions (compared to Ukraine).
10. European Neighborhood Policy countries covered in Petrakos, Tsiapa and Kallioras (2016) are Armenia, Azerbaijan, Belarus, Georgia, Moldova, Morocco and Ukraine.
11. The high level of territorial inequalities in Kazakhstan and the Russian Federation is largely due to the strong spatial dimension of natural resource activities (mainly in the oil and gas sector). For a comparison of territorial inequalities in Kazakhstan, the Russian Federation and Ukraine see Zubarevitch and Safronov (2011).
12. Twenty per cent of available financing under the State Fund for Regional Development is reserved for "lagging" regions with GDP per capita below 75% of Ukraine's national level.
13. Ukraine's official regional development index is computed according to a national definition and should not be assimilated to a regional version of the Human Development Index published by the UNDP.
14. Youth unemployment here focuses on the 15-34 year-old age group, instead of 15-24 in international statistics.
15. The exception was Ivano-Frankivsk, which has a specific demographic profile, with a large amount of young cohorts entering the labour market.
16. The Pearson correlation coefficient between the decrease in labour participation rate (2013-16) and old-age dependency ratio (60+ year old) in 2015 is -0.35. In contrast, the Pearson correlation coefficient between the decrease in labour participation rate (2013-16) and the rise in the unemployment rate (2013-16) is -0.67.
17. In 2015, the dispersion index of regional unemployment rates (22.7%) in Ukraine corresponded to the 75th percentile with the highest dispersion index in the OECD (23%), for instance the Slovak Republic or Spain.
18. For the procedure to declare a new place of residence in Latvia, please refer to: www.pmlp.gov.lv/en/home/services/declaration-of-residence-place/first.html.
19. This might change when a new labour code, under discussion in parliament for more than two years, will finally replace the current one, which was drafted in Soviet times.
20. A study conducted in April 2017 found a short-lived drop in employment in January 2017, which was almost entirely reversed in February. No causal relationship could be established with the minimal wage hike. A presentation of this study is available at: www.beratergruppe-ukraine.de/wordpress/wp-content/uploads/2017/04/PB_05_2017_en.pdf.
21. Mykolaiv *oblast* benefited from a strong recovery of industrial production in 2016, mainly thanks to the food processing subsector.

22. *Source:* National Bank of Ukraine, available at: https://bank.gov.ua/control/en/publish/category?cat_id=7693083.
23. For more details on Czech cluster programme, please refer to OECD (2007) and to the cluster webpage on Czech Invest webpage: www.czechinvest.org/en/czech-clusters. Some Czech clusters received co-financing from the EU Structural Funds.
24. In Chile, Poland, the Slovak Republic, Slovenia and Switzerland electoral participation was lower than in Ukraine in the last national elections.
25. There is a negative statistical correlation between the perception of government corruption (based on microdata from the Gallup World Poll) and voter turnout in 348 OECD TL2 regions (Pearson r: -33.4%). For details refer to OECD (2016b).
26. There is a negative statistical correlation between the share of respondents perceiving corruption as a significant problem and electoral participation in the subsequent 2015 local elections (Pearson r: -29.7%). The first Ukrainian Municipal Survey was conducted seven months before the October 2015 local elections.
27. The average approval rate of mayors increased from 35% in March 2015 to 49% in January 2017 across the 24 cities surveyed.

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Annex 1.A. Geographic Concentration Index

The Geographic Concentration Index of population is defined as:

$$\left(\sum_{i=1}^N |p_i - a_i| / 2 \right) * 100$$

where p_i is the population share of region i , a_i is the area of region i as a percentage of the country area, N stands for the number of regions and $| \ |$ indicates the absolute value. The index lies between 0 (no concentration) and 1 (maximum concentration) in all countries and is suitable for international comparisons of geographic concentration.

Likewise, the Geographic Concentration Index of GDP is defined as:

$$\left(\sum_{i=1}^N |y_i - a_i| / 2 \right) * 100$$

where y_i is the GDP share of region i , a_i is the area of region i as a percentage of the country area, N stands for the number of regions and $| \ |$ indicates the absolute value. The index lies between 0 (no concentration) and 1 (maximum concentration) in all countries and is suitable for international comparisons of geographic concentration.

Annex 1.B.

Additional graphs and tables

The catching-up indicator (Malmquist Index) is based on the idea that a region needs to grow faster than the national frontier to reduce its productivity gap. In Ukraine, the national frontier (the *oblasts* with the highest productivity level) is composed of Kyiv city and Poltava *oblast*. The catching-up index (CU Index) is the ratio between regional productivity growth and the productivity growth of the country's frontier. Ukraine's frontier is an employment-weighted average of Kyiv city and Poltava *oblast*. Catching-up regions have a CU Index higher than 1.05; keeping pace regions between 0.95 and 1.05; and diverging regions lower than 0.95.

Table 1.B.1. **Patterns of catching up and divergence across Ukraine's regions, 2005-14**

<i>Oblast</i>	Group	CU Index	<i>Oblast</i>	Group	CU Index	<i>Oblast</i>	Group	CU Index
Terнопіль	Catching up	1.34	Миколаїв	Keeping pace	1.03	Харків	Diverging	0.94
Кіровоград	Catching up	1.31	Львів	Keeping pace	1.03	Рівне	Diverging	0.93
Житомир	Catching up	1.30	Чернівець	Keeping pace	1.00	Полтава	Frontier (diverging)	0.93
Вінниця	Catching up	1.24	Одеса	Keeping pace	0.99	Запоріжжя	Diverging	0.91
Черкаси	Catching up	1.20				Дніпропетровськ	Diverging	0.86
Київ <i>oblast</i>	Catching up	1.13				Івано-Франківськ	Diverging	0.79
Хмельницький	Catching up	1.12				Донецьк	Diverging	0.72
Чернігів	Catching up	1.12				Луганськ	Diverging	0.61
Херсон	Catching up	1.10						
Закарпаття	Catching up	1.08						
Суми	Catching up	1.08						
Волин	Catching up	1.07						
Київ city	Frontier	1.03						

Source: OECD research based on State Statistics Service of Ukraine, National Accounts and employment series.

Table 1.B.2. Road Infrastructure by region: Quality and density indicators

Regions	Perceived quality of roads, 2013*	Density of all-purpose paved roads (2015)	Average road wear over five years (2006-10)
Ukraine	2.4	275	47
Rivne	4.17	252	45
Donetsk	4.06	302	42
Kyiv	3.99	306	55
AR Crimea	3.85	245	20
Kharkiv	3.78	299	35
Vinnitsya	3.72	339	34
Dnipropetrovsk	3.59	287	44
Zaporizhia	3.54	251	72
Odesa	3.44	242	26
Volyn	3.35	288	49
Zakarpattia	3.3	261	51
Zhytomyr	3.28	280	30
Poltava	3.25	308	64
Kherson	3.22	174	39
Khmelnyskiy	3.22	346	51
Mykolayiv	3.18	195	51
Chernihiv	3.08	227	74
Cherkasy	3	284	39
Lviv	2.98	376	42
Terнопil	2.98	361	74
Luhansk	2.89	219	49
Ivano-Frankivsk	2.82	296	46
Kirovohrad	2.79	252	47
Chernivtsi	2.76	355	55
Sumy	2.69	282	51

* Perceived quality of roads on a scale from 1 to 7 based on business executive survey in each region. For methodology and details refer to Foundation for Effective Governance (2013).

Sources: State Statistics Service of Ukraine (transport and communications in Ukraine, 2015); Foundation for Effective Governance (2011a), "Quality of roads indicator", www.feg.org.ua/en/reports (accessed 10 April 2017); Foundation for Effective Governance (2013), "Ukrainian national competitiveness report 2013: Towards sustained growth and prosperity", www.feg.org.ua/en/reports; Foundation for Effective Governance (2011b), "The current state of transportation infrastructure impedes economic growth", www.feg.org.ua/docs/sostoyanie_en.pdf.

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Annex 1.C.

Labour market efficiency in Ukrainian regions

This annex makes use of the official job vacancies from the State Employment Service (SES) of Ukraine and official unemployment statistics (based on the Labour Force Survey) to assess the efficiency of matching between employers and workers in Ukrainian regions. Only a few of the available jobs are actually reported by employers to the SES. However, it can serve as an instrument to capture an impression about the labour demand in Ukrainian regions. The job vacancy rate (JVC) in each region is:

$$\text{JVC} = \text{number of SES job vacancies} / (\text{total employment} + \text{number of job vacancies})$$

This estimate of the job vacancy rate is not internationally comparable. In the future Ukraine could adapt its vacancy rate statistics to bring it closer to Eurostat's statistical definition of job vacancies,¹ notably by estimating job vacancies through business surveys instead of relying on administrative data from the SES. This would improve the reliability of labour market statistics across Ukraine's regions.

Comparing unemployment/vacancy rates at a given time

In both 2013 (i.e. before the Donbas conflict) and 2016, there is only a weak negative statistical correlation between the job vacancy rate and the unemployment rate across Ukraine's regions.² In 2013, Kyiv city and the industrial Dnipropetrovsk *oblast* display low unemployment and high vacancy rates; in 2016 this is only the case of Kyiv city, while Luhansk and Donetsk *oblasts* have both low vacancy rates and the highest unemployment rate. In Kyiv city, the high job vacancy rate could be a sign of a deficit of skilled professionals, which is a top concern of Ukrainian firms according to business surveys. In between, many *oblasts* display high unemployment and job vacancy rates, pointing to inefficient matching between vacancies and (unemployed) workers. This is particularly the case in Zhytomyr, Ternopol (agricultural regions in the centre-west of Ukraine) and Poltava in both 2013 and 2016, and in Kirovohrad and Volyn in 2016. Overall, this analysis suggests that the efficiency of labour markets differs substantially across regions, due at least in part to substantial education-job mismatches and low interregional mobility. Because this analysis focuses on SES job vacancies, discrepancies could also reflect differences in SES performance or/and in employer's propensity to report vacancies to the SES across regions.

How the vacancy rate reacted to the rise in unemployment across regions?

Between 2013 and 2016, the unemployment rate increased in all Ukrainian regions. However, in 12 regions out of 25, the vacancy rate increased during the period, contrarily to what one could expect. There is even a weak positive correlation between the change of the unemployment rate and of the vacancy rate across regions (Figure 1.C.1). Regression analysis show that three regions determine this positive correlation: Luhansk

(where the vacancy rate was stable while the unemployment rate increased by almost 10 percentage points, the strongest increase in Ukraine); Volyn and Kirovograd (where a substantial increase in unemployment led to a solid increase in vacancies, contrarily to what one could expect. This suggests that the functioning of the labour markets might have degraded in these three regions between 2013 and 2016.

Figure 1.C.1. **Regional labour market efficiency (cross section)**



Source: State Statistics Service of Ukraine, State Employment Service of Ukraine, labour market indicators, www.ukrstat.gov.ua.

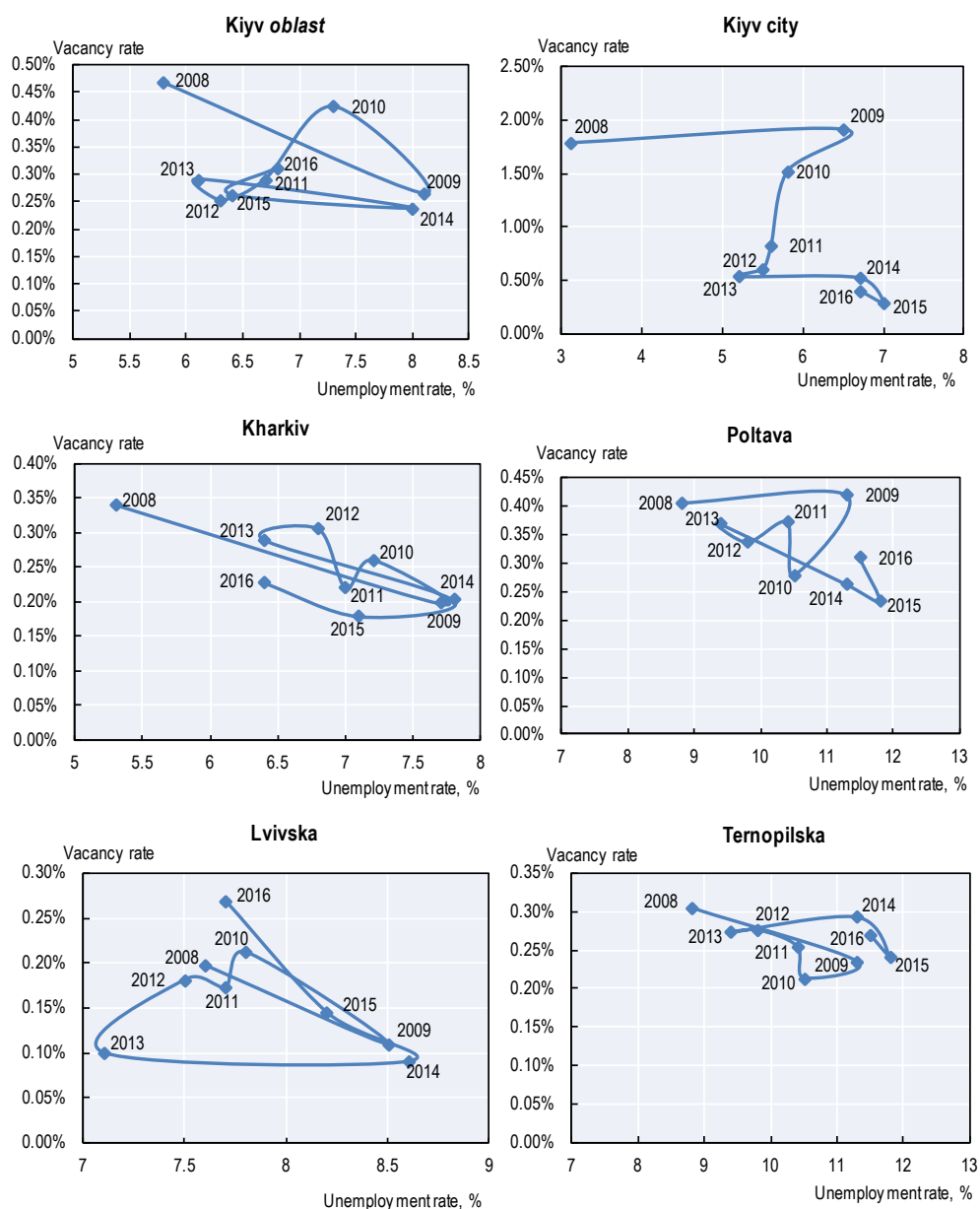
Beveridge curves for selected regions³

In order to assess the efficiency of regional labour markets and its evolution over time, we also analysed Beveridge curves at *oblast* level. Beveridge curves measure the relationship between unemployment and the vacancy rate and are thus an indicator of labour market efficiency. In contrast to the static presentation used in Figure 1.C.1,

Beveridge curves present change over time. The Beveridge curve typically slopes downward – higher rates of unemployment tend to occur with lower vacancy rates, as one would expect. Large movements along the curve are typically associated with cyclical shocks. In contrast, when the curve shifts rightwards (away from the origin) over time, a given level of vacancies would be associated with a higher level of unemployment, implying decreasing efficiency of the labour market. This might reflect, *inter alia*, mismatches between available jobs and the skills of the unemployed or an immobile labour force. Conversely, leftward shifts in the curve (towards the origin) are associated with increases in labour market efficiency. In the case of Ukraine, it is important to note, however, that the shifts in the Beveridge curves between 2013 and 2014, when large numbers of internally displaced persons were on the move, may look rather odd – i.e. even the influx of labour would, other things being equal, affect the relationship between vacancy rates and unemployment.

Beveridge curves based on SES job vacancies yield very different patterns across Ukraine's regions, including among neighbouring regions, pointing to high spatial fragmentation of labour markets. Figure 1.C.2 displays the Kyiv agglomeration (Kyiv city and the surrounding *oblast*) and neighbouring regions in Western Ukraine (Lviv and Ternopil) and Eastern Ukraine (Kharkiv and Poltava). The main common patterns are the rise in unemployment and the drop in vacancy rate corresponding to the 2009 crisis (2008-09) and to the Donbas conflict in 2014 (however, in the agricultural Ternopil *oblast*, the vacancy rate actually rose, pointing to structural labour market issues). However, the most striking feature is that even neighbouring regions display sometimes sharply divergent trends (particularly in 2016), suggesting that labour markets are highly fragmented. The sharp drop in vacancy rate of Kyiv city (the region with the highest vacancy rate) is striking (no equivalent drop is recorded in the surrounding *oblast*) and could be related to a change in firms' propensity to report vacancies to the SES rather than to a real improvement of labour market efficiency. Overall, caution is warranted in interpreting these Beveridge curves based on administrative data from the SES, which does not account for substantial parts of Ukraine's labour market.

Figure 1.C.2. Beveridge curves in selected (neighbouring) regions



Source: State Statistics Service of Ukraine.

Notes

1. For the methodology of Eurostat's vacancy rates, see: http://ec.europa.eu/eurostat/cache/metadata/en/jvs_esms.htm.
2. The Pearson correlation coefficient amounts to -21% in 2013 and -22% in 2016.
3. The national Beveridge curve is not reported here because of a major statistical break in employment series in 2014-15 due to the Donbas conflict.



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