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Avoiding a Trap and Embracing the Megatrends:

Proposals for a New Growth Model in EU-CEE

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Proposals for a New Growth Model in EU-CEE

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Abstract

It is now over three decades since the eleven EU member states in Central, Eastern, and Southeastern Europe (EU-CEE) started their transition to market capitalism. All countries experienced deep recessions in the early 1990s, but since have achieved mostly sustained convergence with Western Europe. Many EU-CEE countries have overtaken Southern EU member states in terms of economic development. However, growth rates have slowed since the 2008 crisis, and the level of economic and social development varies widely across the region. This study has three key components. First, it establishes that the existing EU-CEE growth model may be reaching its limit, especially for the region's most developed countries. Second, it details the megatrends which will further impact the region's growth model now and in the future, including demographic, environmental, and digital factors. Finally, it outlines a set of policy options to develop the region's growth model in a way that would drive a more sustained and sustainable rate of convergence with Western Europe in the coming decades. We find that governments in the region need to a) provide an underlying infrastructure that can support the growth of internationally competitive companies, b) fully embrace and take advantage of the digital revolution, c) maximise all available resources to profit from the green transition, and d) use policy levers to stimulate the automation of low productivity jobs and ease the transition into new and higher value work for their populations. Behind this should stand two important supportive pillars: accommodative fiscal and monetary policy at the national and EU levels and a more progressive tax system to fund an expanded welfare state.

Keywords: EU-CEE, transition, convergence, functional specialisation, digitalisation, green transition, EU, demographics, FDI, industrial policy

JEL classification: O40, O47, P27, F21, O44, L16

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Executive summary

The eleven EU member states from Central, East, and Southeast Europe (EU-CEE) have undergone three decades of transition to market capitalism and convergence with Western Europe. There have been many successes and challenges, and the level of economic and social development varies widely across the region. The Czechia and Slovenia have comfortably surpassed some older member states such as Greece and Portugal and have reached around 90 percent of the EU level of GDP per capita, whereas Bulgaria is at just over 50 percent.

Our study finds that the convergence process, especially for the more advanced countries, has slowed since 2007 and that the current growth model may well be reaching its limit. We find that it will take decades for EU-CEE's more developed countries to halve the remaining gap to Germany and other rich countries in Western Europe. This implies that it is high time to think about a new growth model for the region.

EU-CEE countries are strongly specialised as 'factory economies' with a focus on production, the least profitable part of the value chain. This specialisation mirrors that of Western Europe, where more profitable functions continue to be mostly undertaken by multinational institutions. Based on their income levels, EU-CEE countries should have long ago started to specialise more in more lucrative parts of the value chain, including headquarter services. The fact that this has not happened implies that there are factors 'trapping' EU-CEE in this stage of development.

The EU-CEE region will be further impacted by 'megatrends' in the coming years, including potential near-shoring of production as a result of the COVID-19 pandemic, structural changes in the automotive industry, climate change, the digital revolution, and demographic decline. These all present threats to EU-CEE's growth model but also may create opportunities for the region. Minimising the threats and seizing the opportunities will require sensible policies at the national and EU level.

EU-CEE's growth model is heavily reliant on FDI, and although there are few signs of investors leaving the region, it is also unlikely that there will be further growth from this source. Near-shoring by major Western Europe multinationals as a result of the pandemic may benefit EU-CEE somewhat but is unlikely to be a game-changer. The repatriated income of investors is an increasingly important political topic in EU-CEE, one often viewed negatively. However, it is at least partly offset by reinvested profits and trade surpluses.

The central role of the automotive industry in the four Visegrád countries, as well as in Slovenia and Romania, means the region is heavily exposed to structural change in this sector. Carmakers have to cope with changing regulations, consumer preferences, and supply chain challenges. So far, little progress has been made towards the production of electric cars in EU-CEE.

Historical, economic, and political circumstances have impacted the willingness of EU-CEE to embrace the green transition and sometimes fuel disagreements with the rest of the EU. However, while the EU-CEE countries are lagging behind the rest of the EU in progress and pace of the green transition, the differences are not always dramatic, and trends are generally pointing in the right direction. The green economy in EU-CEE will require state support to prevent it from falling behind the rest of the EU and achieve its full potential in introducing greener value chains, innovation, and employment.

Digital transformation has the potential to significantly boost economic growth in EU-CEE. Estonia's economy is already very digitally advanced, while other EU-CEE countries also show success in particular dimensions. Several countries of the region have the potential to develop a new growth model based on value chains related to advanced digital production (ADP) technologies and industry 4.0 diffusion. New industrial ecosystems offer a chance to expand specialisation towards digital services required to enable ADP technologies. Comparatively good education systems and the advanced digital skills of the young population are advantageous. However, this transformation is endangered by shortages of IT-professionals created by strong outward migration.

The region has several further important strengths which will help to drive the transition to a new growth model. Using the broader standards of Central, East and Southeast Europe (CESEE), EU-CEE countries are generally politically and socially stable. Many have built a sophisticated and high value export sector and have achieved central functional comparative advantages (such as in pharmaceuticals). However, they also display important weaknesses, including shrinking working-age populations. For some countries, institutional convergence with Western Europe has reversed. In terms of digitalisation and education systems, some countries — especially in Southeast EU-CEE — score badly on international comparisons.

To transition to a new growth model, the first priority is to contribute to changing the debate at the EU and local level around macroeconomic policy. Especially during the current pandemic, but also in the recovery and during the various transformations outlined above, fiscal and monetary policy should remain accommodative. Any reforms that EU-CEE countries undertake to adapt their growth model to the conditions of the new global economy will be much easier if there the aggregate demand increases. The architecture of the EU, for example, via the Stability and Growth Pact, enforces insufficient demand. EU-CEE should use its voice to contribute to making permanent the pandemic-driven temporary changes in this regard.

The second priority is to reorient EU-CEE's functional specialisation towards more lucrative parts of the value chain. EU-CEE needs to host more headquarters. More logistics, marketing, research and development (R&D), and other non-production tasks should take place within EU-CEE. Areas where this has already been achieved, such as pharmaceuticals, should be built upon. It is not possible for EU-CEE to protect its own 'national champions' following the East Asian model, but various steps can and should be taken to create more large and globally competitive firms in the region. Existing industrial policy should be redirected towards a National Innovation System, with a major increase in R&D spending. The goal should be a 'development' or 'entrepreneurial' state, with coordination between key ministries, universities, and the private sector. The state should step in to fund and coordinate basic research to support promising firms. Moreover, EU state aid rules provide numerous exceptions for R&D and innovation aid. All EU-CEE countries receive considerable transfers from the various EU Regional Funds.

The third priority is to fully embrace and take advantage of the digital revolution, which has received a serious push forward from the current pandemic. Very few countries are truly advanced in the digital economy, and overall, Western Europe has a much more limited head start over EU-CEE than in other sectors. Barriers to entry are generally lower since the infrastructure required for a modern digital economy is easier to introduce than for manufacturing. Human capital in the digital economy is also extremely important, and this is an area of relative strength for much of EU-CEE. Estonia is a 'best practice' example for the rest of EU-CEE to learn from. However, there is a risk that strong digital growth will contribute to urban/rural and inter-generational inequality. Combatting these negative externalities will require thoughtful labour market and education policies, as well as ensuring proper investment in digital infrastructure in rural areas.

The fourth priority is to maximise all resources available to fund and profit from the green transition. EU-CEE countries are entitled to an enviable amount of financial support relative to non-EU countries in CESEE, and much of this is now tied to environmental priorities. Governments in EU-CEE should identify companies, including small and medium sized enterprises (SMEs), with high potential for innovation, work to create research and innovation (R&I) capacities in large firms and adjust higher education to create expertise in the green economy. Special attention should be put on identifying sectors where there is 'leap-frogging' potential.

The fifth priority is to address demographic decline by using government policy to stimulate the automation of low-paid jobs. Negative demographic trends will stimulate automation on their own, as a shortage of workers leads to tighter labour markets, higher wages, and more incentives for firms and the public sector to invest in labour-saving technologies. However, governments can push this process along by setting higher minimum wages, which will force firms to automate low-productivity jobs. In order to make sure that those who lose their low-productivity jobs due to automation do not end up unemployed in the long-term, governments should use active labour market policies and invest in education to ease the transition for workers to more productive (and better paid) work. The costs of hiring (but not firing) must be kept low. Retraining schemes must be extensive, well-funded, tied to the needs of the modern (digital, automated) economy, and provide sufficient income support to allow for longer periods of retraining.

The sixth priority is to limit, as much as possible, the economic and social volatility caused by these changes. Funding the transition will cost money, and the size of the state relative to GDP will have to expand. This means increased revenues. There are various options but moving to more progressive tax systems (like Slovakia and the Czechia did in 2013) is a clear priority. This will increase government revenues and reduce inequality without harmful economic effects.

Our study shows substantial opportunities for EU-CEE in a greener, digitised, automated world. EU-CEE compares reasonably well with Western Europe in many areas, and even where it does lag behind, the gaps are not always big. Fully tapping into the opportunities afforded by the megatrends of the 2020s and beyond, combined with appropriate macroeconomic policies at the national and EU level, would set the stage for sustained and sustainable convergence with Western Europe. However, this requires sensible government policies to be enacted now. The risks of doing nothing are serious. EU-CEE is in danger of being stuck at a low level of living standards relative to Western Europe, the political consequences of inequality and economic insecurity, and perpetuating environment standards harmful to the populace and the planet.

1. Introduction

It has now been three decades since the fall of Communism and the establishment of market capitalism in Central, Eastern, and South-eastern Europe (CESEE). Since 2004, eleven CESEE countries have joined the EU (EU-CEE). Membership to this coalition was contingent on the adoption of the EU acquis, fulfilment of the Copenhagen Criteria, and the completion of other important steps related to the economies of the region. Although far from identical, the economies of EU-CEE have therefore accepted an economic model with common facets.[1]

In a broad sense, this model has delivered a lot of economic convergence. As of 1995, the first year for which fully comparable data are available, the eleven CESEE countries that are now part of the EU had a level of per capita income (in purchasing power parity terms) equivalent to 40 percent of the EU15 level. By 2020, this had risen to 72 percent.[2] In the period since the global financial crisis, convergence has continued in EU-CEE. However, for the wealthier parts of the region, the pace of catch-up with the most successful economies of Western Europe, such as Germany, has generally slowed down.

This paper starts out with two hypotheses. First, while the economic model of EU-CEE has been largely successful in driving economic convergence with wealthier parts of the EU, it may be hitting its limit, especially for countries with the highest level of economic development, such as the Czechia and Slovenia. This points to endogenous challenges to the EU-CEE growth model.

Our second hypothesis is that these endogenous challenges are now colliding with important exogenous trends, including industrial structure and global value chains (GVCs), technological developments, and demographic and environmental changes. These provide both opportunities for and threats to EU-CEE countries' future economic convergence performance. As we will go on to show in Chapter 3, these trends all manifest themselves in very particular ways in EU-CEE, creating unique possibilities and difficulties in the way they interact with the existing growth model.

However, in this paper, we want to put these considerations in the context of the options available to actors in this process. Actors include governments and firms in EU-CEE, but also the EU itself. All are far from passive players in this process, and we will highlight the options that each has to try to achieve sustainable convergence in living standards for the populations of EU-CEE over the medium and long-term.

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1 This model has variously been described as integrative and neoliberal. However, it should be kept in mind that a neoliberal model under the umbrella of EU membership is not the same as the more extreme variant that has been applied in many parts of the world in recent decades.

2 Quoted data are from AMECO, the annual macroeconomic database of the European Commission's Directorate General for Economic and Financial affairs. Data used are a simple (unweighted) average of the eleven EU-CEE countries. Despite the UK's exit from the EU, AMECO continues to quote the EU-15 as a benchmark for comparison. We follow this approach here.

1.1. WHAT ROLE FOR NATIONAL GOVERNMENTS IN EU-CEE?

One of our assertions at the start of this paper is that the state in EU-CEE has an important role to play in managing and adapting to the endogenous and exogenous threats to the region's growth model, and most likely a much more active role than it has in the past. So far, the EU-CEE growth model has tended to rely on a fairly small state,[3] which is unusual when combined with an often extreme openness measured in terms of trade and GDP (Rodrik 1996). The more exposed a country is to globalisation, the bigger the state needs to be to shield citizens from the volatility and distribute the (large) gains and costs in a roughly equal way. EU-CEE has generally not followed this pattern so far, with high economic openness generally accompanied by a small share of public spending in GDP by EU standards. This is likely going to have to change, not least because of the almost overnight increase in the role of the state in economic life as a result of the current pandemic. Using greater state power to re-mould the EU-CEE growth models means industrial policy would have a particularly expanded role. There are two basic ways to think about this in the EU-CEE context.

First, EU-CEE countries could aim to create domestic innovation-leading companies ('national champions' in the style of several East Asian countries). Japan, South Korea, Taiwan and China have moved up into the league of technological innovators by producing 'national champions' who then proved competitive in international markets and developed their own research and development (R&D) capabilities. The lack of strong, innovative companies is a weakness of the current EU-CEE model (just as it is a weakness of the economic structure in the former GDR and in Southern EU countries like Portugal and Greece).[4] The existence or non-existence of these kinds of internationally competitive firms marks the difference between catching up successfully and remaining in the second division.

The second way to think about industrial policy in the EU-CEE context is via the idea of an 'entrepreneurial state' (Mazzucatto 2013) to create new markets and support the development of new activities and products. This is a formidable task that also has great potential. Some authors (Mazzucatto 2013; Wade 2012; Wade 2014) argue that the most technologically advanced economies, such as the United States, owe their technological leadership to the state and its agencies' active support for and facilitation of the development of new technologies and whole new markets. The successful establishment of an entrepreneurial state requires top-quality public officials and a dense network of specialised agencies[5] — both public and private — providing research and technical support. Moreover, the state and these agencies do not act in a vacuum but need to interact and coordinate with many other actors, including universities, development banks, and most importantly (at least nascent) lead firms in the targeted sector or field of technology. These firms are vital because the idea behind the entrepreneurial state is not to replace private firms but to complement their activities in the field of basic research, infrastructure, training, and educational facilities where private activities are scarce. The innovating capacity of firms can be supported through a well-developed national innovation system (NIS) led by a far-sighted state. In turn, these innovative firms will support the development of an innovation ecosystem.

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3 Here, the comparison is important. Relative to Western Europe, government spending as a share of GDP is fairly low in EU-CEE. This is one of the challenges of creating a 'developmental state' in the region.

4 It should be kept in mind here that having strong, internationally competitive firms does not guarantee fast growth. Take the examples of Japan and Italy. Both are blessed with highly sophisticated and technologically innovative firms. However, both countries have fared pretty badly in terms of growth for many decades. Why? Firstly, the domestic macroeconomic environment is crucial for the development of such companies and, secondly, there might be a discrepancy between company performance (e.g. relocating significant parts of its activities internationally) and its impact on the domestic economy.

5 Examples include DARPA and NASA in the US and the Fraunhofer-Gesellschaft in Germany.

These two approaches — national champions and an entrepreneurial state — may well both include elements that can be successfully implemented in EU-CEE countries. However, neither represent anything close to a complete solution to the current and future threats to the EU-CEE growth model. Taking both areas together, we see two central difficulties in implementing these approaches in EU-CEE.

First, building up national champions following the Western European or East Asian model is simply not possible within the current EU. The successes in building 'national champions' in parts of Western Europe and East Asia involved many decades of incubation. During these decades, the future national champions tended to be strongly protected and subsidised by their respective national governments. Apart from the fact that the direct, heavy involvement of the state does not guarantee ultimate success (as evidenced by the experience of Latin American countries[6]), the levels and forms of protectionism, industrial policies, and public aid that used to be acceptable in Western Europe (and is still practised in China, for example) are no longer possible in the contemporary EU. The imposition of import tariffs or quotas restricting access to the domestic market in order to protect budding national champions is unthinkable. Meanwhile, providing subsidies to domestic firms cannot be squared with the principle of fair EU-wide competition.

Second, even if there were no obstacles as part of EU membership, at present most EU-CEE countries lack the institutional capacity to fully support national champions or implement an entrepreneurial state. Institutional capacity — including innovation-promoting ecosystems of basic research, application-oriented research, and training systems and companies — has been a bedrock of German success since World War II. Despite many improvements, EU-CEE institutions do not compare with 'best practice' examples like Germany. In the last decade, institutional quality has gone backwards in parts of EU-CEE, posing additional difficulties to this approach for some countries. Although the situation varies between countries, in at least some parts of EU-CEE, it is questionable whether state capacity is compatible with the notion of an entrepreneurial state.

These constraints on government action are important. Yet, our paper will set out to identify the areas where state action is permitted by EU rules, where it is feasible given the institutional capacity of EU-CEE, and where it would be desirable in the current political context. Very few countries in the world, not only in EU-CEE, can hope to enact the ambitious policies outlined above in full. Within these constraints, we hope to show there is a great deal that EU-CEE governments can and should do to help their economies transition to a new and more sustainable growth model.

1.2. WHAT ROLE FOR THE EU AND GERMANY?

The model of the last 30 years has tended to create economies in EU-CEE that, relative to GDP, have both a smaller state and higher level of exports than in Western Europe. This means that domestic demand plays a relatively less important role as a growth driver and that exports are relatively more important. Given that EU-CEE's exports tend to be strongly weighted towards Western Europe, the level of growth in the region's big economies is itself an important source of demand and driver of economic

[6] The Latin American states have proved to be rent-seeking rather than modernizing. All EU-CEE strategic segments of the economy have remained public. In effect, the EU-CEE states conduct a form of industrial policy through the management of these segments. There is some evidence that the management of public-owned firms is often guided by rent-seeking motives rather than modernization.

development in EU-CEE. These links encompass trade in goods and services, tourism, investment, remittances, and other capital flows.

In the period since the 2008 global financial crisis in particular, growth rates in most of the pre-2004 member states have slowed. From 2010–19, real GDP growth averaged 1.5 percent per year in the EU15. This compares with an average of 2.5 percent in the ten years leading up to 2007. This slowdown reflects particularly deep and long-lasting downturns after the 2008 crisis in some parts of the EU15, such as Greece (where real GDP growth averaged -2 percent per year in 2010–19), Italy (0.3 percent per year) and Portugal (0.8 percent per year). However, it also reflects the widespread austerity bias over this period across the EU (Heimberger 2016). Given the high level of economic integration between pre- and post-2004 member states, EU-CEE risks also becoming trapped in this low growth trajectory. A consideration of the EU policy framework, and the ways in which a change here is possible and could contribute to EU-CEE growth performance, will also be an important part of this study.

1.3. IS THERE AN ALTERNATIVE OUTSIDE THE EU?

In EU-CEE, just like in Western Europe, the 2008 crisis and its aftermath had important political effects. One of these seems to have been that it exposed a feeling of a second-class relationship between EU-CEE and older EU member states. Tooze (2018) argues that the 2008 crisis fundamentally altered EU-CEE countries' relationships with Western Europe by explicitly demonstrating that rich parts of Europe would only support the states selectively.[7] Holmes and Krastev (2020) argue that '2008 had such a shattering ideological, not merely economic, effect.' They suggest that 2008 not only demonstrated a lack of solidarity with EU-CEE in Western Europe but also broke the idea that Western Europe was something to be emulated: 'being an imitator is often a psychological drama. But it becomes a shipwreck if you realise midstream that the model you have started to imitate is about to capsize and sink' (Holmes / Krastev 2020).

This has led to speculation that the relationship between at least some EU-CEE countries and the EU is on course for a fundamental break (Wanat / Cienski 2020). We believe that this speculation is unfounded. Actually leaving the EU is not a realistic option for the eleven EU-CEE countries and would certainly not be in their interests. Whatever grievances EU-CEE countries may have with Brussels, it is extremely hard to make a convincing case for an alternative. As we will show in this study, EU-CEE countries derive a multitude of positives from EU membership.

The rest of this paper is structured as follows. In Chapter 2, we look at the historical context of the EU-CEE growth model and explain how this historical legacy interacts with present challenges to further convergence that the region faces. In Chapter 3, we look at six of the megatrends in more detail. In Chapter 4, we bring together parts 2 and 3 in a SWOT analysis to identify EU-CEE's strengths, weaknesses, opportunities, and threats explicitly. In Chapter 5, we give our policy proposals, and in Chapter 6, our conclusions.

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[7] Whereas Sweden and Denmark received swap lines from the ECB, 'Poland and Hungary were fobbed off with repo arrangements that treated them no better than stressed commercial banks in need of extra liquidity' (Tooze 2018). Hungary had to go to the IMF, naturally with a lot of austerity: 'In 2010 the right-wing Fidesz part would reap the benefits' (Tooze 2018). Meanwhile, Germany shot down Austrian and Hungarian initiatives for a common support fund. 'Not our problem,' Peer Steinbrueck announced.

2. Historical context and current challenges

Key messages

After the severe transition recessions of the early 1990s, most EU-CEE countries posted strong income convergence with Western Europe in the period before the 2008 crisis.

However, since that crisis, rates of convergence with the EU average have generally slowed. This has been especially true for the wealthier countries in EU-CEE, implying that the growth model is hitting its limit.

The fundamental underpinnings of the growth model have not changed since 2008, and therefore there is still a reliance on FDI-driven export growth and 'sound' fiscal policy.

Giving up on the FDI model is not realistic, but more space for the domestic demand for growth would be a positive step. The region would benefit from a fundamental change in thinking in the whole EU on what constitutes appropriate fiscal policy. Here, the role of Germany will be key.

EU-CEE's relatively low level of economic development compared with North-western Europe has deep historical roots, going back to the Middle Ages. By and large, the societies of these countries could not, and did not, actively contribute to the long-term socioeconomic advancement of North-western Europe. Instead, they had become the latter's hinterland, a subordinate supplier of raw materials and cheap labour. By 1913, EU-CEE's per capita GDP stood at about 40 percent of the average West European level (Podkaminer 2015a).

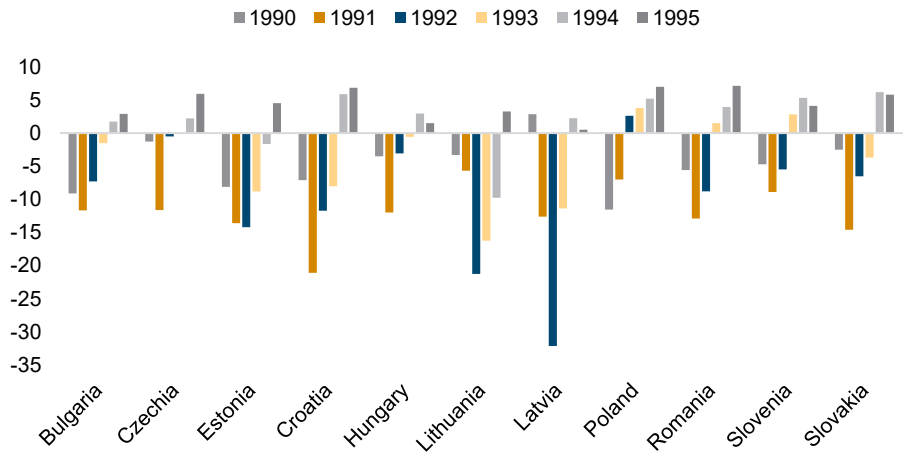
The command system imposed on CEE after WWII sought to address, with varying degrees of success, some of the symptoms of economic backwardness and dependence, such as prevalent small-scale peasant farming or dominant positions of foreign ownership in financial services. At the same time, it did not permit market forces to operate. This deformed the structure of the economy and prevented organic development of the domestic entrepreneurial potential in industry and services.

2.1. TRANSITION AND CONVERGENCE BEFORE 2008

The experience of EU-CEE countries in the period between the collapse of Communism and the 2008 global financial crisis was very mixed. Broadly, this period can be split into two distinct stages: several very difficult years for all countries in the region in the early 1990s and a period of sustained convergence with Western Europe for many from around 1995 to 2007.

The collapse of the command system in the late 1980s and early 1990s and the ensuing 'shock therapies,' inspired and supervised by the international financial institutions, brought about massive losses in output, employment, and living standards. Sudden exposure to market conditions (and external competition) did not give domestic producers time to adjust. In effect, it resulted in the destruction of much of the existing physical and human capital. Double-digit output losses were not uncommon, and Latvia GDP contracted by around a third in 1992 (Figure 2.1).

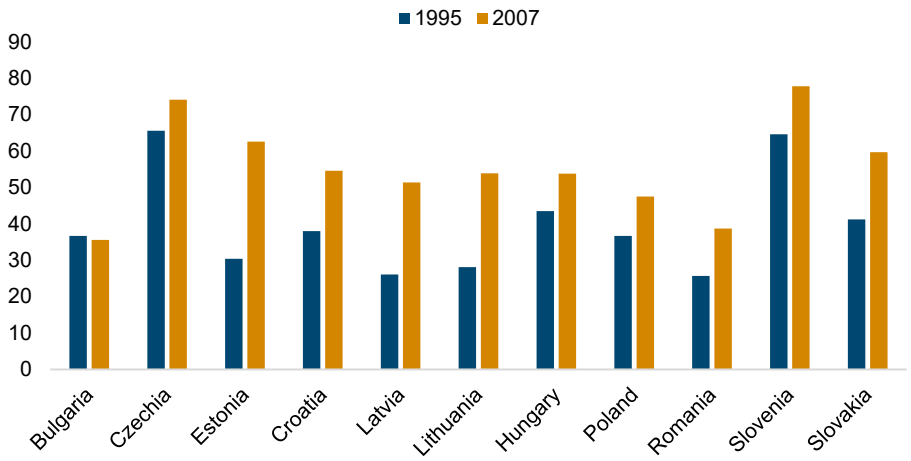
Figure 2.1 / Real GDP growth, % per year



Source: Vienna Institute of International Economic Studies (wiiw).

From the mid-1990s, however, the region's economies started to take off. Between the mid-1990s and 2007, most of EU-CEE became substantially richer in relation to Western Europe. Using a simple average, the eleven EU-CEE countries that are now part of the EU went from 40 percent of EU15 per capita GDP (at purchasing power parity) in 1995 to 55 percent by 2007, including levels of 78 percent in Slovenia and 74 percent in the Czechia (Figure 2.2). Over this period, the average growth rate of EU-CEE (4.8 percent per year) was exactly double that of the EU15 (2.4 percent). These more advanced EU-CEE countries were, by 2007, getting close to the development levels of the poorer pre-2004 member states.

Figure 2.2 / Real per capita GDP, PPS, EU15 = 100



Source: AMECO, wiiw.

This rising economic convergence went hand in hand with the integration of many EU-CEE countries in the broader Euro-Atlantic institutional framework. Institutional convergence towards Western standards helped eight EU-CEE countries join the EU, with Romania and Bulgaria following in 2007 and Croatia

following in 2013. Meanwhile, the Czechia, Hungary, and Poland joined NATO in 1999, followed by most of the rest of EU-CEE in 2004 and Croatia in 2009.

Throughout this whole period, all EU-CEE countries largely followed an economic model based on the 'ten commandments' of the Washington Consensus, including external openness and 'sound' fiscal policy.[8] Other possible routes, such as the Social Democratic models of Sweden or Austria, the phenomenal systems used in East Asian economies, or the methods that created the post-war 'golden years' of managed capitalism in Western Europe, were not followed.

While the overall robust convergence performance of 1995–2007 is clear, the debate around the economic policies implemented in this period remains quite heated, especially in relation to the early 1990s.[9] The EBRD found that people born around the time of the 'shock therapy' in the early 1990s are 1 centimetre shorter than would be expected (Adsera et al. 2019). Moreover, the mostly robust rates of convergence from the mid-1990s to the mid-2000s were certainly helped by favourable base effects. Meanwhile, even during these good years, certain problems were increasingly apparent, including massive population decline across much of EU-CEE, still-high unemployment in some places, persistent trade deficits, and over-specialisation in the automotive sector.

2.2. POST-2008: LEAPFROGGING SOUTHERN EUROPE, BUT SLOWER CONVERGENCE WITH GERMANY

The 2008–09 crisis was a seismic event for the European and global economies. However, unlike during the transition recessions of the early 1990s, not all countries in EU-CEE suffered badly. While the three Baltic states suffered real GDP declines of over 14 percent in 2009, Poland avoided recession entirely. Perhaps because of this differentiated impact, the crisis did not fundamentally change basic convictions about the inherited growth model in the 'old' EU, nor in EU-CEE.

Since the crisis, EU-CEE's outperformance over the EU15 has continued, driving further convergence. As of 2019, the highest level of income convergence had been achieved by the Czechia (88 percent of the EU15 level at purchasing power parity), followed by Slovenia (83 percent) and Lithuania (82 percent). Using a simple average, EU-CEE countries had achieved 70 percent of EU15 per capita GDP in 2019, up 15 percentage points from 2007.

However, two important caveats must be kept in mind. First, headline growth in EU-CEE during this period has been substantially lower than pre-2008. EU-CEE countries grew by an average of 2.7 percent per year from 2010–09, compared with 5 percent in the ten years leading up to 2007. Second, the convergence that they have achieved has been in the context of a substantial slowdown in growth in the EU15. These countries posted average real GDP growth per year of 1.5 percent 2010–19, compared with 2.5 percent in the ten years leading up to 2007.

These nuances become even more apparent when comparing EU-CEE performance with individual countries (Figure 2.3). Within the EU15, there has been a vast range of outcomes since 2008. Compared with Southern European countries badly affected by the 2008 crisis, EU-CEE's convergence

[8] See Havlik (1991).

[9] Even at the time, many expressed doubts and suggested that a more gradual transition would have been better. See, for example Passell (1993).

performance over the past decade or so looks strong. EU-CEE, on average, went from 67 percent of Greek per capita GDP in 2007 to 114 percent by 2019; among EU-CEE countries, only Croatia and Bulgaria are now poorer than Greece when using this measure. By 2019, the Czechia even overtook Spain and reached 98 percent of the Italian level.

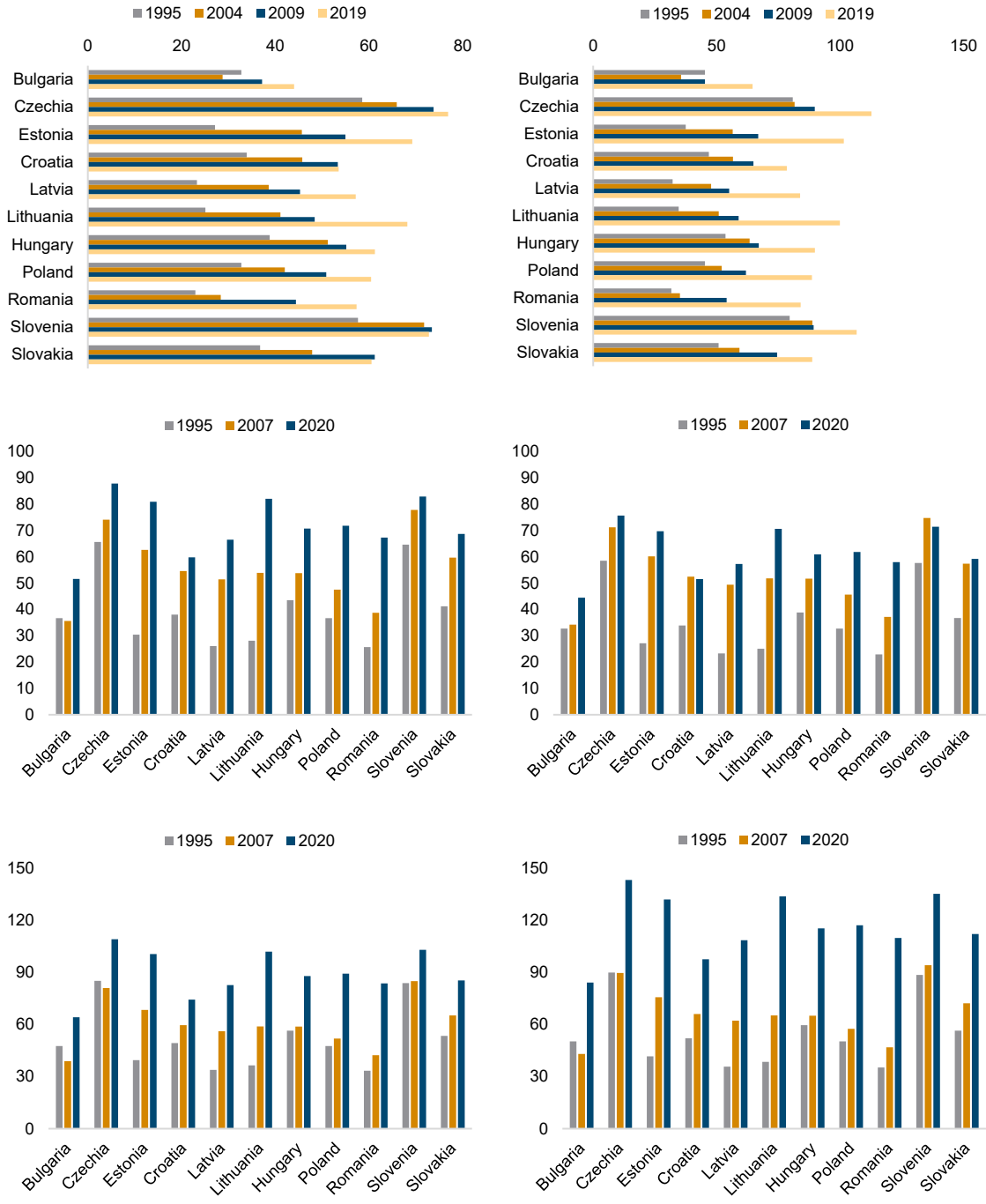
Measured against Germany, however, a country that has had a decent (albeit not spectacular) post-crisis period, the outcomes look quite different. Particularly for the more developed parts of EU-CEE, convergence relative to Germany has been limited at best since the crisis. By 2019, the Czech per capita GDP reached 77 percent of the German level (from 71 percent in 2008), while Slovenia actually became relatively poorer compared to Germany over the same period. Progress made against Germany by other members of the region (the Baltic countries and Romania especially) were more substantial, although these countries had lower starting points.

Looked at in this way, there are several observations about EU-CEE's economic performance since the global financial crisis that we'd like to mention. First, overall real GDP growth has slowed considerably. This is, to a large extent, reflected in generally subdued performance in key markets in Western Europe. Second, real convergence in per capita terms with Western Europe overall has continued at a robust rate. Third, EU-CEE countries have generally shown a substantially higher degree of resilience to the many challenges that the continent's economies have faced since 2008 than Southern Europe. Although some parts of EU-CEE — especially the Baltic states — suffered badly in the immediate aftermath of the global financial crisis, they have rebounded very strongly.

Finally, the data show a large degree of differentiation across both Western and Eastern Europe, and the particular comparator chosen to access convergence dictates the story. On any measure, even compared with Germany, some parts of EU-CEE (especially Romania, Lithuania, and to some extent Poland) show respectable rates of convergence since 2007. However, this not so much the case for Slovenia, Croatia, Slovakia, and the Czechia. For the former three countries, even against the EU15 average, which is weighted towards Southern Europe, total percentage-point convergence between 2007 and 2019 was in the single digits. Against Spain or Greece, the convergence performance of all EU-CEE countries over this period looks strong.

The fact that poorer countries can advance faster than the more affluent states is not unexpected. It is consistent with the (unconditional) beta-convergence thesis elaborated by the neoclassical growth theory. The theory predicts that as the less affluent countries (in this case, EU-CEE countries) move upwards, their further advancement normally slows down progressively. Calculations consistent with the neoclassical growth theory conducted at the Vienna Institute for International Economic Studies (Astrov et al. 2017), based on the data about EU-CEE's performance since 1995, show that it would take well over 25 years (until at least 2045) to halve the income distance separating their inhabitants from that of the average EU citizen. This creates a rather urgent need to think about new growth strategies for the region.

Figure 2.3 / Real per capita GDP, PPS, EU15 = 100 (top left); Germany = 100 (top right); Spain = 100 (bottom left); Greece = 100 (bottom right)



Source: AMECO, wiiw.

2.3. IS THE EU-CEE GROWTH MODEL HITTING ITS LIMIT?

The 'Washington Consensus' and the general liberal economic model pursued in EU-CEE in the last 30 years have many different facets. Moreover, the way and extent to which this model was and is applied in EU-CEE differs somewhat between countries. A full examination of these nuances is beyond the scope of this study. Nevertheless, in thinking through the region's convergence performance and attempting to understand the current and future challenges it faces, two key macroeconomic aspects of the variations on the model are key to understanding the EU-CEE perspective: the roles of foreign trade and fiscal policy. In the context of the above-mentioned slowdown in growth in Western Europe, these issues take on an added layer of importance.

2.3.1. Foreign trade

Developed industrial countries are at risk of, or have already entered, secular stagnation. The euro area, with which EU-CEE is heavily integrated, is maybe the best example of this (De Grauwe 2015). The concept of secular stagnation originated in the depression of the 1930s and was revived by Larry Summers in 2013 to describe rich countries in the post-crisis period.[10] Secular stagnation is characterised by very low inflation combined with very weak (or stagnant) growth in aggregate consumption (both private and public) and aggregate investment. With stagnant growth of domestic demand, foreign trade emerges as the decisive factor behind domestic growth and employment. Countries that are capable of creating growing trade surpluses fare better than those that are not. Moreover, as the trade surpluses of some countries mean trade deficits for their partners, the surplus-related GDP gains of the former indicate deficit-related GDP losses for the latter.

Good performance in foreign trade is thus essential for maintaining growth. Also, it is of paramount importance to countries that are compelled to service their foreign debts accumulated earlier. Securing external competitiveness is a key requirement. However, under the continuing allegiance to the principle of free international trade (which is the case with respect to internal trade within the EU), the easiest way to secure a competitive advantage is through the suppression of the labour costs in general and of wage rates in particular.[11]

Large foreign direct investment (FDI) inflows (motivated by low labour costs, an available skilled labour force, tax advantages, and proximity to the West) that had characterised EU-CEE prior to 2008–2009 have led to the establishment of production facilities for finished and intermediate goods for international markets (as well as the domestic markets of the FDI's home countries). Thanks largely to the foreign trade activities of the FDI firms, EU-CEE, which had been running trade deficits prior to 2008, has since tended to produce growing trade surpluses. These surpluses serve to cover the repatriated FDI's profits. At the same time, the surpluses have supported the GDP growth and kept unemployment in check.

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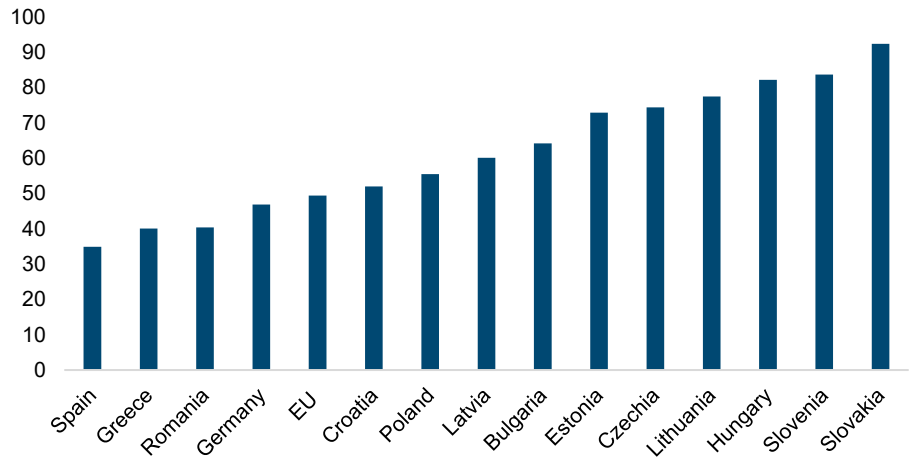
[10] Larry Summers' speech at the 14th Annual IMF Research Conference on November 8th, 2013 can be found on YouTube; https://www.youtube.com/watch?v=KYpVzBbQIX0.

[11] In the pre-euro era of national flexible exchange rates, the easiest way of securing competitive advantages involved manipulated devaluations. A successful example of this practice is found in Italy's economic history from 1973 through 1988.

This all suggests that EU-CEE would be unwise to fundamentally alter the FDI-driven export model. As the data in the previous section highlighted, EU-CEE countries have been able to continue to grow reasonably well in the post-crisis period with this model, particularly when compared with Southern Europe. EU-CEE countries are very successful exporters; all except Romania have an export/GDP ratio above the EU average and Germany (Figure 2.4), and considerably higher than Southern European countries such as Spain and Greece.

Figure 2.4 / Exports of goods and services, % of GDP, 2019



Source: Eurostat.

However, this is not without its disadvantages. The first trouble is that the FDI profits are often repatriated to home markets instead of being spent domestically. Under the principle of free movement of capital, there is no restraint on what happens to FDI profits. In contrast to Germany, which is in the black when it comes to this income, every EU-CEE country systematically surrenders parts of their GDP to external parties. And while large incomes are remitted by their nationals working abroad, it does not make up for the loss of FDI profits; see[12]. The second dilemma is that EU-CEE wage rates relative to productivity must stay 'attractive' enough (i.e. sufficiently low) to keep the FDI activities from migrating to places offering even lower wages and more 'friendly' tax conditions such as Ukraine, Turkey, or South-East Asia. Although constant improvements in productivity offset higher wages, and there is some evidence that this is exactly what has happened in EU-CEE in recent years (Schröder 2020), there is a danger of being caught in a 'race to the bottom' on worker compensation, or at least, this model puts a lid on how much earnings can rise.

The excessive dependence on foreign trade, foreign markets, and foreign capital limit output growth in EU-CEE (as it does elsewhere). Final goods and services that are tradable internationally account for 20–30 percent of GDP and total employment. Suppressing wages in the sector directly exposed to foreign trade implies the suppression of wages also in the remaining sectors.[13] This keeps the overall domestic purchasing power suppressed and limits domestic demand, also for non-tradable goods and services. This limits the overall GDP growth and employment.

[12] For a more detailed consideration of the issue, see Chapter 3.2 below.

[13] For more on this, see Laski / Podkaminer (2011).

2.3.2. Fiscal constraints

The second paradigm underlying the basic post-1989 growth model is the alleged necessity of 'sound' fiscal policies. In normal times, EU-CEE countries are expected to systematically reduce, or even eliminate, fiscal deficits and control the level of public debt relative to GDP. The maintenance of fiscal discipline in the euro-area is policed by the European Central Bank (ECB), which has the power to deny access to fresh cash to countries guilty of a blatant breach of the rules. Countries that have retained national currencies (such as Poland) may conduct relatively relaxed fiscal policy for extended periods of time, but even in these contexts, aversion to fiscal deficits and rising public debts finally prevails.

As long as fiscal deficits are suppressed, growth of public consumption, public investment, and social transfers will remain suppressed as well. This can help to explain the generally much lower rates of real GDP growth post-2008 in both Western Europe and EU-CEE.

The paradigm change must first take place at the EU level. Unless there is lasting change in the thinking on these issues in countries such as Germany and the 'frugal four' euro countries (Podkaminer 2015), the hands of policymakers in EU-CEE will be at least partly tied. Particularly since the 2008 financial crisis, Germany has implemented restrictive fiscal policies and produced sizeable budget surpluses from 2012 to 2019. There is not much reason for this; large, developed countries facing historically negligible borrowing costs during times of persistently weak growth should run deficits. Elimination of these surpluses would mean higher growth not only in Germany but also less of the competitive pressure on others, including in EU-CEE countries. Less pressure would allow for faster output of growth in EU-CEE as well.

Here, there is certainly some reason for optimism. In the context of the current pandemic, fiscal policy has become significantly looser in order to cushion the negative fallout, and this will likely last through at least 2021. The pandemic has shown the scale of financial resources that can be mobilised when the socioeconomic context demands it. It will now be harder in the future for fiscal hawks to argue that deficit spending, for example, to meet the challenge of climate change, is unfeasible or dangerous. The massive mobilisation of financial resources at the EU level as a result of the pandemic is a step change, and EU-CEE may well end up benefiting disproportionately as a result.

3. Analysing the megatrends

In the previous chapter, we explained the historical context of EU-CEE economies, defined the endogenous aspects of the current growth model, and identified the major challenges that these countries face. In this chapter, we turn our attention to exogenous trends impacting the region's economic model, split across six important areas.

3.1. FUNCTIONAL SPECIALISATION PATTERNS

Key Messages

The EU-CEE countries are strongly specialised as factory economies across most manufacturing industries, which complements German and other key EU15 economies. Exceptions to this general pattern are rare and found, for example, in the pharmaceutical industry where some EU-CEE economies can be described as incipient headquarter economies.

An adjustment of EU-CEE's functional specialisation pattern is overdue given the income level they have obtained. However, the pace of this adjustment process has been rather slow over the past one and a half decades, which risks derailing the solid convergence process of the past.

For the shift towards more knowledge-intensive value chain functions, EU-CEE countries cannot rely on market forces alone. Rather active industrial policies are warranted, including (but not limited to) the strengthening of the national innovation systems, ideally supported by a more efficient use of the substantial amount of money flowing in from European Regional and Cohesion funds.

The emergence of global production networks gave rise to an ever more granular international division of labour. In particular, it led to geographically-dispersed production processes for manufactured goods, spreading across a number of different locations. This mode of production, also known as the fragmentation of production (Jones / Kierzkowski 1990, 2001) or vertical specialisation (Hummels et al. 2001), is particularly advanced in Europe because the EU is the most integrated trading bloc in the world.

The dispersion of different activities within value chains across different locations has many facets. Functional specialisation is key to the analysis of the growth models of EU-CEE member states. It highlights the different business functions, or value chain functions, that firms have to perform in order to generate value added. For manufacturing firms, the actual production process is certainly one of the key functions. But, it is by no means the only one. And according to the smile curve hypothesis,[14] it is not even the most promising value chain function with respect to its potential for value creation. The smile curve has become something like a stylised fact (e.g. Mudambi 2008; Shin et al. 2012; Milberg / Winkler 2013). The curve predicts that knowledge-intensive business functions such as R&D and various

[14] The concept of the smile curve was first introduced by Stan Shih, the former CEO of the Taiwanese IT company Acer (Shih 1996) who found that in his industry, firms that actually produce the electronic good in question earn lower profits and pay lower wages, i.e. create less value added, than firms responsible for the more knowledge-intensive functions in the value chain, such as R&D in the pre-production segment or certain marketing services at the post-production stage.

headquarter activities (e.g. controlling) generate higher value added. The same is, to some extent, true for post-production services such as branding, specialised business services and certain technical customer support activities, or even design and marketing. Such an allocation of value added margins across value chain functions gives rise to a broad U-shaped curve (the smile) when these functions are plotted against value added.

Technological asymmetry is one of the defining elements of a functional division of labour (Baldwin / Lopez-Gonzalez 2015). While slightly oversimplifying, these authors note that countries can be grouped into two types of countries: those with headquarter economies and those with factory economies. In their words, 'the headquarter economies […] arrange the production networks' while 'factory economies provide the labour' (Baldwin / Lopez-Gonzalez 2015: 1696).[15]

The technological asymmetry implicit in functional specialisation patterns across countries is highly relevant for the long-term growth prospects of EU-CEE and even their growth model as such. Based on the type of greenfield FDI projects that foreign investors realised in EU-CEE, Stöllinger (2021) concludes that essentially all countries in the CEE-region are specialised as factory economies.[16] It is also shown that factory economies, including EU-CEE countries, on average, capture less value added per unit of output produced. This naturally has potentially worrying implications for their further convergence after a certain degree of catch-up with Western Europe.

The remainder of this section is structured into two parts. Section 2.1.1 investigates in detail the functional specialisation patterns of EU-CEE countries in the EU- context, including developments over time. Then, in Section 2.1.2, the analysis proceeds by discussing the possibility of a functional specialisation trap and the related relevant implications of the functional specialisation profiles of the region for its growth model.

3.1.1. Still factory economies: functional specialisation in EU-CEE

EU accession and extremely liberal trade and FDI policies allowed EU-CEE to integrate tightly into European production networks. This led to an astonishing degree of convergence in the production and export structures. This is particularly true for the Visegrád countries, which are part of the Central European Manufacturing Core (IMF 2013; Stehrer / Stöllinger 2015; Stöllinger 2016). This convergence is a welcome development for EU coherence and confirms that the manufacturing activities of EU-CEE are not limited to low-tech industries (e.g. food and beverages) or resource-intensive industries (e.g. wood or basic metals) but expand well into sophisticated industries, including electronics and motor vehicles, an industry that has become particularly important for the region (see Section 2.3).

Parallel to these impressive convergence processes in industrial specialisations, the emergence of international value chains led to an often-overlooked divergence in functional specialisations, that is, the specialisation in different functions along the value chain within industries. More precisely, it is generally the case that the EU-CEE countries, as factory economies, are mainly responsible for the actual

[15] Note that there is some similarity between this characterisation of the international division of labour with those of core-periphery frameworks in dependency theory (Prebisch 1950) and world system analysis (e.g. Wallerstein 1974, 2004).

[16] For an alternative method of identifying functional specialisation based on jobs embodied in international trade flows, see Timmer et al. (2019).

production activities, while Germany and several other Western EU member states take the position of headquarter economies, specialising in knowledge-intensive pre-production functions and, to varying degrees, in selected post-production functions (Table 3.1).

This development takes place because foreign investors, and especially European multinational firms (MNEs), are attracted primarily by the comparatively low wage levels (by European standards) and well-educated workforce in EU-CEE (Drahokoupil / Piasna 2018). For this reason, the region serves mainly as a location for labour-intensive production facilities. Second, EU-CEE economies themselves feature few 'domestic' multinational firms that operate globally or even EU-wide. In contrast, actual production is perceived to have become too expensive in many 'high-wage' member states in many industries (e.g. wearing apparel, wood, paper). However, these locations have become attractive as regional headquarters or for other value chain activities such as design, R&D, marketing, and a series of modern business services. Based on the inward greenfield FDIs undertaken in EU member states, Table 3.1 shows the functional specialisation patterns of EU-CEE compared with a selection of other member states. The values for the functional specialisation indicate how intensively the respective country is used as a location for FDI projects that serve the respective value chain function relative to the EU average. As can be seen, all EU-CEE economies have relative functional specialisation values exceeding that of the value chain function production, which indicates comparative advantages in this segment of the value chain. In contrast, such functional comparative advantages are rare outside production and are essentially limited to sales, logistics, and support services in just a few countries (Croatia and Latvia). Deviations from this general pattern of a marked specialisation in the value chain function production include the relatively high values for Romania and Latvia in R&D activities.

An important aspect to note is that, in general, the functional profiles of the Viségrad countries are more pronounced than those of the other EU-CEE countries. That is, they are prime examples of factory economies. This may seem surprising, given that the functional profiles tend to change with rising incomes and the fact that the Viségrad countries, on average, have obtained higher per capita income levels than the other EU-CEE states. The reason for this pattern is that the Viségrad countries are more integrated in European production networks, which is the driver for the functional division of labour.[17]

In order to show that the pattern of functional specialisation of EU-CEE is not found for the entire EU, Table 3.1 also lists select other member states. Given their rather high values in the knowledge-intensive pre-production functions (headquarter services and R&D), these economies can be characterised as headquarter economies within Factory Europe. Austria may be a mixed case, as it not only scores high in pre-production activities but also has a functional specialisation in the value chain function production that is close to one.

[17] This is a pattern is also found outside the EU-CEE region. Globally, countries that fail to get a foothold in global value chains typically do not have pronounced functional specialisations.

Table 3.1 / Functional profiles of EU-CEE, all industries, average 2003–2020

country	Value chain function	Headquarter services	R&D and ICT* services	Production	Sales, logistics, marketing and support services	Business services and technical support
	Visegrád countries					
CZ		0.14	0.57	1.54	0.52	0.25
HU		0.09	0.43	1.53	0.55	0.39
PL		0.19	0.45	1.21	1.00	0.87
SK		0.08	0.30	1.64	0.44	0.26
Average		*0.16*	*0.46*	*1.44*	*0.80*	*0.69*
	EU Balkan countries					
BG		0.16	0.62	1.36	0.67	0.80
HR		0.13	0.75	1.11	1.28	0.37
RO		0.28	1.01	1.34	0.59	0.63
SI		0.40	0.69	1.39	0.58	0.67
Average		*0.26*	*0.93*	*1.34*	*0.66*	*0.68*
	Baltic countries					
EE		0.16	0.74	1.26	0.89	0.59
LT		0.16	1.37	1.04	0.88	1.16
LV		0.19	0.58	1.07	1.28	0.74
Average		*0.17*	*1.16*	*1.11*	*1.00*	*0.99*
	Selected EU15					
DE		1.75	1.25	0.81	1.20	0.87
FR		0.96	1.17	0.68	1.15	2.16
IT		0.52	1.52	0.89	1.16	0.87
UK		1.73	1.43	0.60	1.32	1.49
AT		1.96	1.63	0.96	0.86	0.48

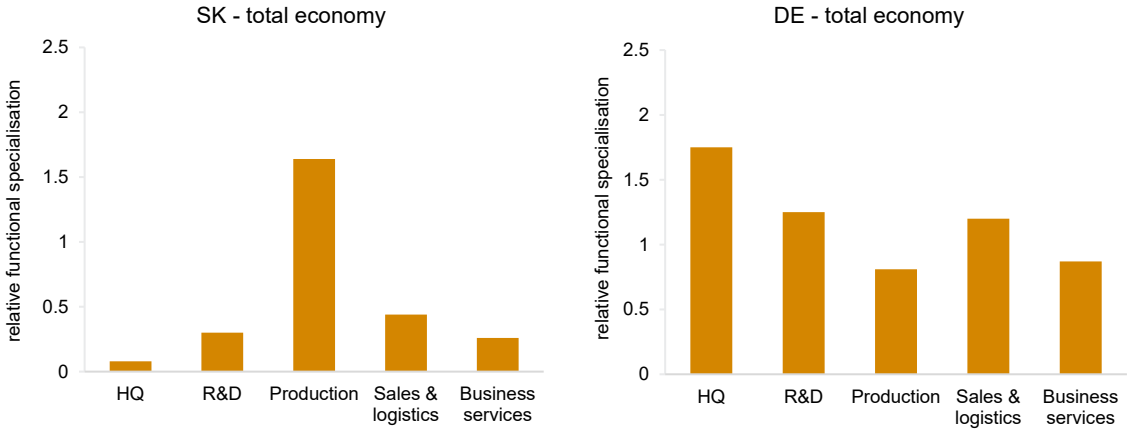
Note: The functional profiles are the relative functional specialisation (RFS) measures (relative to the EU average) based on jobs created by the inwards FDI projects in each country. Group averages are weighted by the number of jobs created by inward projects in each value chain function. A country with a functional share in any of the value chains functions equal to that of the EU average will have an RFS of 1 in that particular value chain function. * ICT = Information and Communication Technology.
Source: fDi markets database; own calculations based on an adjusted methodology from Stöllinger (2021).

Importantly, these opposite functional specialisation patterns between EU-CEE and major EU15 economies are inextricably interlinked and, in fact, constitute complementarities in production networks that have certainly supported EU competitiveness in manufacturing in a global context.[18] To illustrate this point, Figure 3.1 visualises these functional complementarities. The specific country pairs are chosen rather randomly (within the group of CESEE and other EU member states) and do not signify that Germany is particularly linked to Slovakia, for example. Rather, the country pairs serve as representative examples for headquarter and factory economies, respectively, by mixing pairs of EU-CEE with Western Europe. These profiles are noteworthy because, despite some differences, it is still true that the functional profiles of Germany and, say, France, are more similar than those of Germany and Slovakia, despite the fact that Slovakia is part of the German-led Central European Manufacturing Core (IMF 2013; Stehrer / Stöllinger 2015; Stöllinger 2016). This low specialisation in production in Germany may seem surprising given its reputation as Europe's manufacturing powerhouse. However,

[18] Compared to the US or Japan, the EU has been more successful in defending world market shares in global exports, see Stöllinger et al. (2018).

Germany's functional profile simply reflects that within Germany's strong manufacturing sector, it primarily provides headquarter services, R&D, and design activities and is responsible for the actual fabrication to a lesser degree in comparison. This functional pattern explains why consumers find indications of origin such as 'Designed in Germany' or 'Developed in Germany' on various products ranging from household appliances to bicycles.

Figure 3.1 / Slovakia and Germany: Examples for functional complementarities in the EU, all industries, average 2003–2020



Note: The functional profiles are the relative functional specialisation (RFS) measures (relative to the EU average) based on jobs created by the inwards FDI projects in each country. Group averages are weighted by the number of jobs created by inward projects in each value chain function. A country with a functional share in any of the value chains functions equal to that of the EU average will have an RFS of 1 in that particular value chain function.
Source: fDi markets database; own calculations based on an adjusted methodology of Stöllinger (2021).

While the investment inflows and the associated integration in European production networks fed into the growth process, the wage differential-based incentive system for attracting FDI in the EU-CEE integrative growth model is not without problems. The specialisation as a factory economy that has turned EU-CEE into workshops of Western MNEs is potentially unfavourable in the grand scheme of things. It could be unfavourable because the more granular division of labour in GVCs made it easier to get a foothold into manufacturing industries not only for firms in EU-CEE but also for firms in numerous developing countries.[19] This way, global value chains have led to what is called a 'commodification' of manufacturing production (Milberg / Winkler 2013). As assembly and other simple production activities can be performed by a wide array of firms in almost any country, competition in this segment of the value chain increased, leading to lower profits and wages, that is, to lower value added capture. According to Kaplinsky (2010), this development has contributed to the relative decline in terms of trade of manufactures. The growing competition in segments of the value chain in manufacturing industries that are less technologically challenging – mainly production itself – can be seen as a contemporary version of the Prebisch-Singer dilemma (Milberg / Winkler 2013; Szalavetz 2017). The situation is rather different for headquarter economies that are home to the majority of MNEs that manage and control complex production networks. These internationally operating MNEs build their ownership-specific advantages (Dunning 1977) on intellectual property rights, knowledge-intensive intangible assets, and

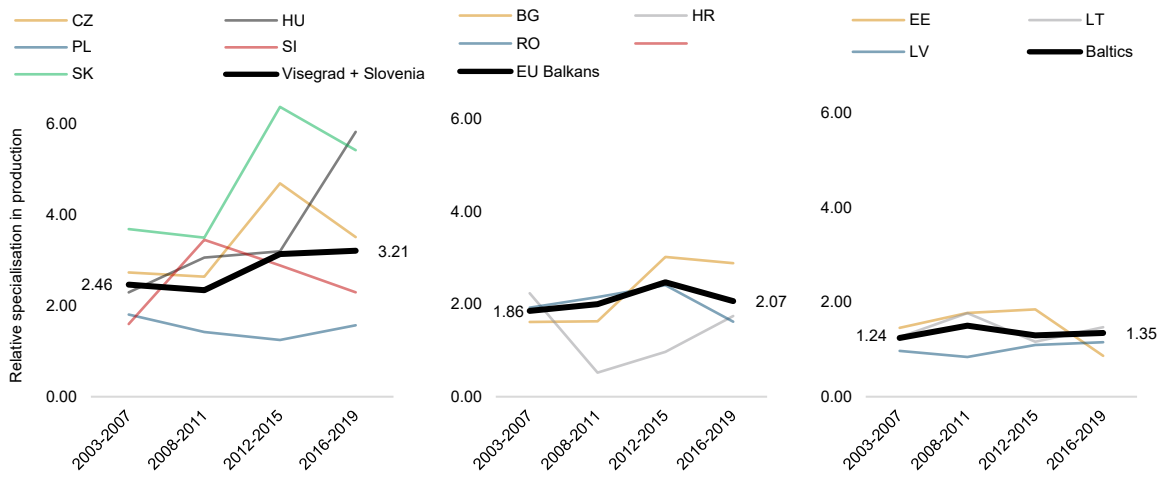
[19] In a world of GVCs, it suffices for a country to master a only particular segment of the value chain. Economies no longer have to develop the entire range of capabilities needed for the manufacturing process of a product to get a foothold in a new industry (Collier / Venables 2007).

organisational capabilities, which are hard to emulate. The key economic implication of ownership-specific advantages is that there is less competition, allowing the 'lead firms' to earn significant economic rents (Kaplinsky 2010).

Accepting that EU-CEE economies serve predominantly as factory economies in European production networks, an essential question is whether the region or some countries are showing signs of emancipation from this role. Breaking free of this role a necessary step for the countries to truly catch up with Western European per capita income levels, and especially so in the more advanced EU-CEE countries, such as in the Czechia and Slovenia.

To track the functional developments over time, specialisations in specific value chain functions are mapped into a single metric by taking the ratio between the functional specialisation in production and that of all non-production activities (headquarter functions, R&D, sales and support services, and business services). The relative specialisation in production thus derived clearly rejects the idea the EU-CEE region has embarked on a trajectory of functional change (Figure 3.2). If anything, the trend in the relative specialisation in production for the three sub-regions (Visegrád countries, EU Balkan countries, and the Baltic states) suggests that the current mode of functional specialisation is being reinforced. This trend is a reason for concern in the Visegrád countries in particular for at least two reasons. First, this is the country group for which the functional specialisation in production is the most pronounced. Second, the members of this group also have among the highest GDP per capita within EU-CEE; it's high time for them to change their functional specialisation patterns. Typically, comparative advantages change as countries grow richer. This is also true for functional specialisation patterns that reflect functional comparative advantages. With the notable exception of Slovenia, and potentially Poland, this does not seem to be the case. We will return to this issue in Chapter 2, Section 2.1.2.

Figure 3.2 / Functional specialisation in EU-CEE over time, 2003–2020



Note: Relative specialisation in production is derived from the relative functional specialisation (RFS) measures. It is defined as the ratio between the RFS in production and that in all non-production activities (headquarter services, R&D, sales and support services, and business services). A country with a relative specialisation in production identical to that of the EU average will have a value of 1. Group averages are weighted by the number of jobs created in each country.
Source: fDi markets database; own calculations based on an adjusted methodology of Stöllinger (2021).

An interesting feature of the functional specialisation patterns described above is that they are largely independent of the industrial specialisations. Therefore, they can be derived from individual manufacturing industries (Table 3.2). When focusing on the industries that have shaped global value chains the most and the Visegrád economies, the specialisation as a factory economy is also discernible within these industries, such as in the automotive industry (labelled as vehicles in Table 3.2). This is especially pronounced in the equally important electronics industry. In general, functional comparative advantages (value of 1 and above) are rare outside the actual production activities.

Table 3.2 / Industry-level functional profiles in the Visegrád countries, average 2003–2020

Country	Industry	Headquarter services	R&D and ICT services	Production	Sales, logistics, marketing and support services	Business services and technical support
CZ	*pharmaceuticals*	0.72	1.15	0.65	1.88	2.71
	Electronics	0.30	0.51	1.49	0.45	0.78
	Electrical eq.	0.16	0.32	1.12	0.49	0.45
	machinery	0.26	0.88	1.26	0.22	0.73
	vehicles	0.01	0.40	1.15	0.47	0.50
HU	*pharmaceuticals*	0.08	0.99	1.19	0.67	2.28
	Electronics	0.01	0.12	1.73	0.27	0.39
	Electrical eq.	0.25	0.59	1.11	0.46	0.14
	machinery	0.15	0.13	1.17	1.14	0.13
	vehicles	0.17	0.36	1.11	0.84	0.91
PL	*pharmaceuticals*	0.00	0.43	0.91	2.22	2.84
	Electronics	0.06	0.47	1.34	0.91	0.22
	Electrical eq.	0.32	0.35	1.10	0.60	0.68
	machinery	0.09	0.40	1.16	1.01	0.25
	vehicles	0.16	0.47	1.08	0.87	1.86
SK	*pharmaceuticals*	0.00	0.93	1.10	1.26	0.00
	Electronics	0.18	0.69	1.36	0.61	1.16
	Electrical eq.	0.05	0.24	1.17	0.16	0.00
	machinery	0.11	1.69	1.19	0.28	0.33
	vehicles	0.14	0.10	1.18	0.56	0.10
Average	*pharmaceuticals*	*0.62*	*0.90*	*1.00*	*1.91*	*2.65*
	Electronics	*0.22*	*0.52*	*1.49*	*0.72*	*0.78*
	Electrical eq.	*0.28*	*0.40*	*1.12*	*0.53*	*0.61*
	machinery	*0.19*	*1.03*	*1.20*	*0.96*	*0.52*
	vehicles	*0.16*	*0.39*	*1.13*	*0.74*	*1.35*

Note: The functional profiles are the (industry-level) relative functional specialisation (RFS) measures (relative to the EU average) based on jobs created by the inwards FDI projects in each country. Group averages are weighted by the number of projects in each value chain function in a country-industry. A country with a functional share in any of the value chains functions equal to that of the EU average will have an RFS of 1 in that particular value chain function.
Source: fDi markets database; own calculations based on an adjusted methodology from Stöllinger (2021).

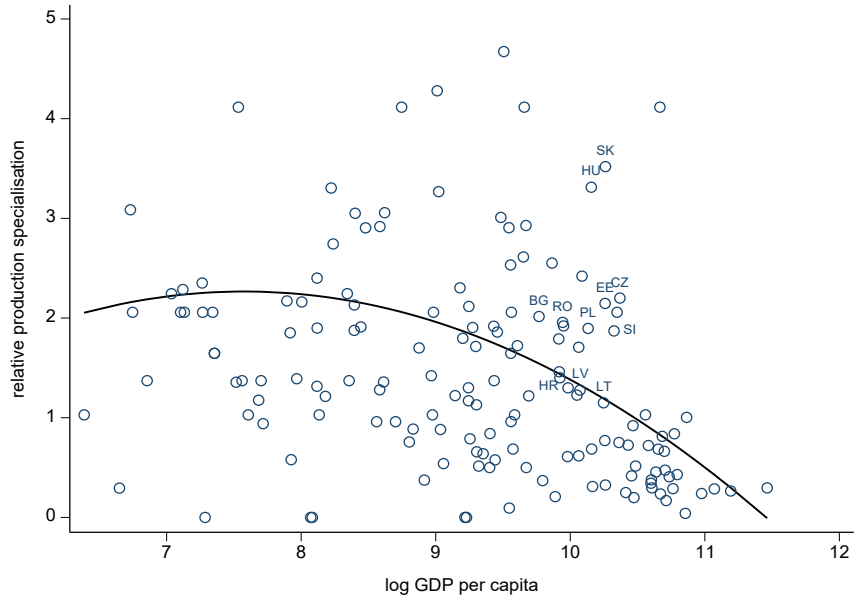
The pharmaceutical industry is one notable exception. Here, the Czechia and Poland are functionally specialised in the post-production services segment of the value chain and in R&D in the case of the Czechia. The pharmaceutical industry in some of EU-CEE hence defies the region's overall functional profile. Instead of factory economies, within the pharmaceutical industry, several countries in the region, including all of the Visegrád countries, could be described as incipient headquarter economies. This

industry could be an interesting avenue for many EU-CEE countries, including, but not limited to, Poland and the Czechia.

3.1.2. A functional development trap and its implications for the region's growth models

It is high time for EU-CEE countries to change their functional specialisation patterns. In general, as countries develop, they increasingly shift their functional specialisation profile from that of a factory economy to a headquarter economy. As was shown in Section 2.1.1, however, this trend has been largely absent in the EU-CEE economies during the period 2003–2020 (first half). The reason for this can be found in the specific constellation of the EU. Since EU-CEE jointly produce and trade predominantly with their more developed EU partners (e.g. Germany, France, or Italy), it is comparatively difficult for them to change their specialisation pattern. This does not imply that the integration of EU-CEE economies into European value chains should be reversed, nor that it is an insurmountable barrier.[20] Rather it points to the fact that, apart from numerous opportunities, there are also challenges associated with deep economic integration of which policy makers should be aware. The necessity of changing the overall functional specialisation of EU-CEE becomes abundantly clear when looking at a global comparison (Figure 3.3).

Figure 3.3 / Expected versus actual specialisation in production activities globally, average 2003–2018



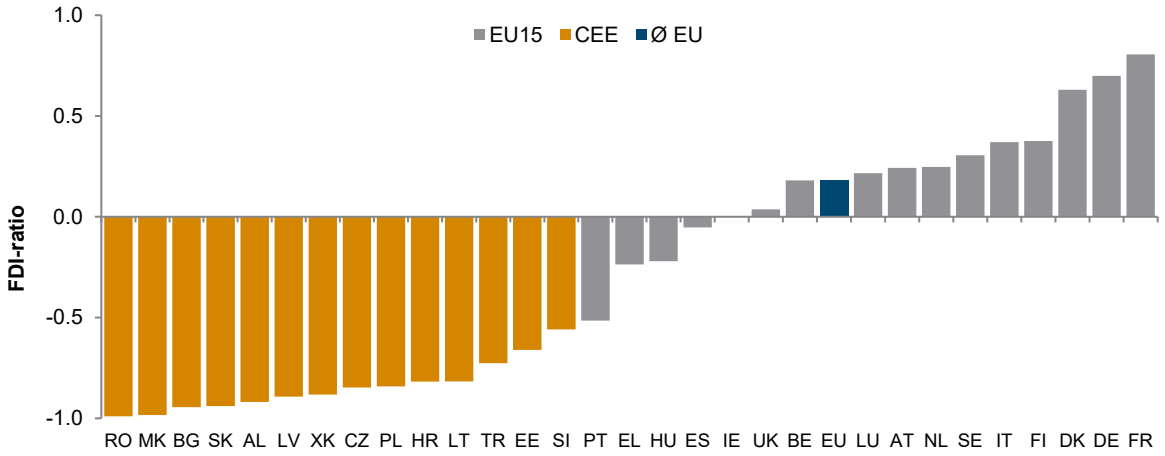
Note: Relative specialisation in production is derived from the relative functional specialisation (RFS) measures, in this case calculated relative to the global sample and based on the number of projects. It is defined as the ratio between the RFS in production and that in all non-production activities (headquarter services, R&D, sales and support services, and business services). A country with a relative specialisation in production identical to that of the world average will have a value of 1. Group averages are weighted by the number of projects in each country. GDP per capita data are from 2014.
Source: fDi markets database; Penn World Tables PWT) Version 9.0; own calculations based on an adjusted methodology from Stöllinger (2021).

[20] This is evidenced by, for example, the situation in the pharmaceutical industry.

For this purpose, the tight relationship between the stage of development (approximated by GDP per capita) and the relative specialisation in production are used to obtain the predicted specialisation in production given a certain GDP per capita (the hump-shaped line in Figure 3.3). According to estimates by Stöllinger (2021), which are based on relative functional specialisations for the period 2003–2015, a specialisation as factory economies begins to act as a drag on value added generation at a GDP per capita of around USD 8,460. Since all EU-CEE are clearly beyond this threshold, a stepwise adjustment of the functional profile is warranted. This is all the more true since, with the exception of Croatia, Latvia, and Lithuania, all EU-CEE economies have a relative specialisation in production that is far above the level predicted given their income level.[21]

These findings point to the real possibility and danger of a functional growth trap for EU-CEE countries. As mentioned, the functional division of labour has severe implications for value added creation and, therefore, growth prospects. Simplifying matters, the current functional division of labour within the EU can be described in the following way: in line with their functional comparative advantages, EU-CEE engages in the value chain function production, while major EU15 economies enjoy comparative advantages in knowledge and intangible assets that allow them to specialise in headquarter functions, R&D, and profitable post-production services, including retail services. This lack of a sufficient knowledge base and intangible assets, which form the basis for ownership advantages of firms, is confirmed by data on overall FDI activities in Europe. Countries in Central and Eastern Europe, including EU-CEE countries, have just very few MNEs that undertake FDI abroad; as a result, the ratio between outward and inward FDI is very low and, in some instances, close to minus one (indicating no outward FDI).

Figure 3.3b / Ratio between outward and inward FDI in European countries, 2016



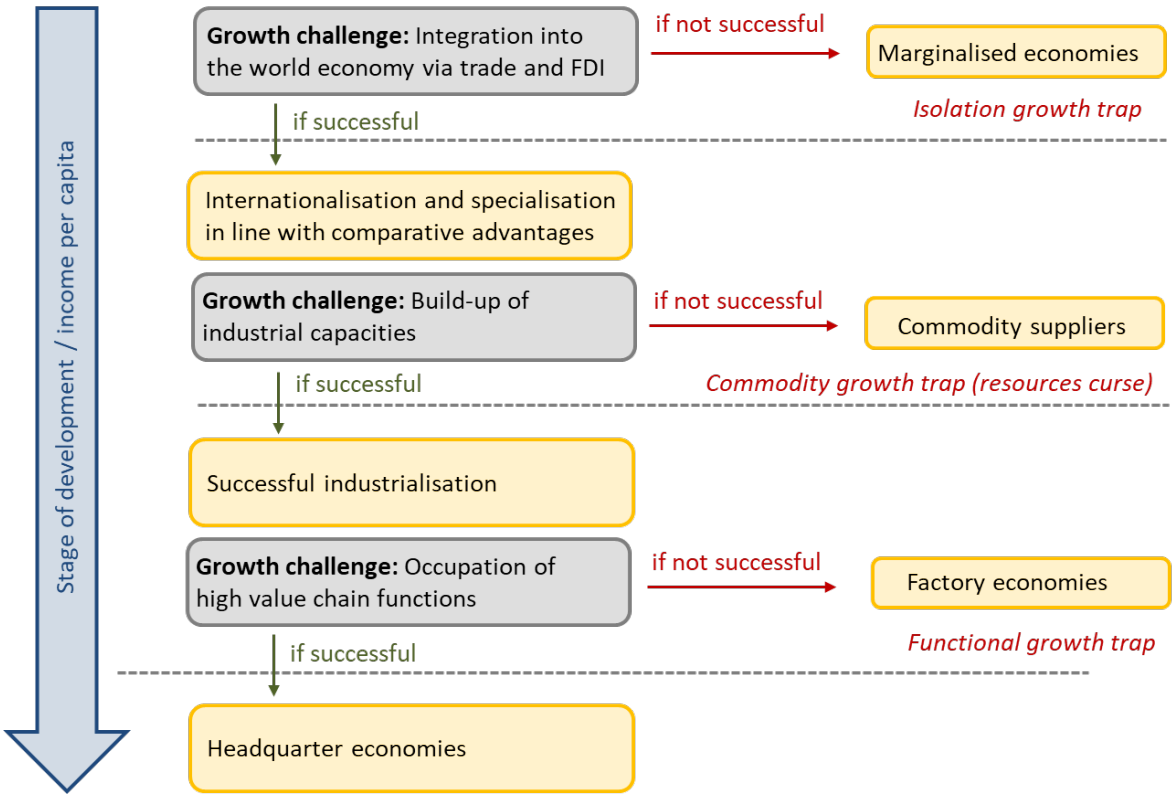
Note: FDI-ratio = ratio between outward and inward FDI (minus 1). Data shown is based on FDI stocks. A value of 0 indicates that inward and outward FDI are balanced.
Source: Eurostat.

[21] The results are qualitatively similar when predicted and actual functional specialisations are calculated on the basis of jobs created by inward greenfield FDI (instead of the number of projects as is done in Figure), though more EU-CEE have a functional specialisation that is more or less in line the expected level given their GDP per capita.

If the premise that a country's development processes are dependent on its underlying endowments and capabilities is accepted, then the key to development, including functional upgrading, is to nurture capabilities and to expand the knowledge base. Otherwise, the growth process will be primarily driven by the expansion of production factors (extensive growth) and risks running out of steam. Countries can increase their chances of realising sustained growth if the growth process is mainly of an intensive nature, that is, driven by innovation and technological change.

Importantly, in an open economy setting, endowments and capabilities also determine the role of countries in the world economy. Ideally, integration processes help countries to switch to a knowledge and innovation-driven growth process and gradually change adjust their functional specialisations to end up as headquarter economies. However, on this route towards headquarter economies, countries may face several 'development traps' (Figure 3.4).

Figure 3.4 / Growth challenges and specialisation patterns



Note: Schematic representation.
Source: Stöllinger (2019).

Thanks to the European integration process and the EU as an institutional anchor, the EU-CEE countries have developed quite successfully. All of the EU-CEE countries have managed to integrate into the regional EU economy as well as the world economy, thereby avoiding the first development trap and ending up as a marginalised, largely isolated country. Marginalised economies typically suffer from desolate infrastructure and dysfunctional institutions (failed states), which prevents them from getting a foothold in international trade, let alone from attracting FDI. Moreover, as was shown earlier, the EU-CEE region has been very successful in the development of modern industrial production capacities,

thereby avoiding becoming pure commodity suppliers, a destiny that is tightly related with the so-called resource curse that haunts many economies in South America, North Africa and the Middle East. The results from Section 2.1.2, however, suggest that EU-CEE economies, while having undergone an industrialisation (or-reindustrialisation) process, have yet to make the transition from factory to headquarter economies. That is, they have to adjust their functional specialisations and occupy additional, knowledge-intensive segments of the value chain with high value added potential. Promising signs of such a transition are noticeable in the pharmaceutical industry, but so far, they do not seem to have spread to a large number of other industries.

3.2. FDI AND THE COVID-19 PANDEMIC

Key Messages

EU-CEE has remained a stable destination for foreign investors, but there is little potential for a significant increase from current levels. The future of foreign subsidiaries integrated in international value chain depends on their ability to upgrade within the multinational corporate networks.

The repatriated income of investors is an increasingly important political topic in EU-CEE, one often viewed negatively. However, it is at least partly offset by reinvested profits and trade surpluses.

Following the pandemic-driven supply shock of Q2 2020, production chains were restored remarkably quickly. Over the medium-term, EU-CEE may benefit from near-shoring by German and other Western European multinationals.

3.2.1. FDI trends in EU-CEE in the 2010s

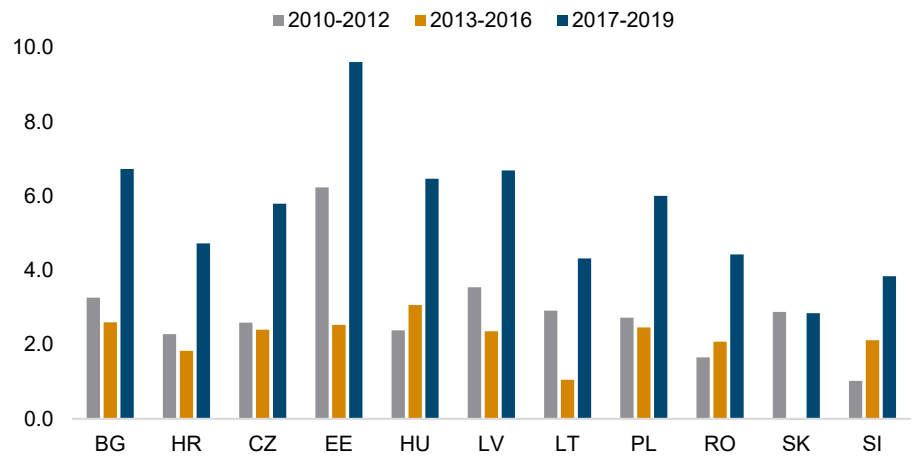
FDI capital was a major source of investment financing in EU-CEE during the last decade. It was also a key source of technology and knowledge in the transition to a market economy and underpinned economic growth and structural upgrading after EU accession. FDI inflows have continued since the global financial crisis, although at a slower pace than before, following the global trend of weaker cross-border investment activities.

The region received an annual average amount of FDI of 2.6 percent of GDP in 2010–2019.[22] These ten years can be split into three periods with different inflow intensities (see chart below). This incorporated post-crisis reconstruction, followed by a lull in 2013–16, and then an improvement in 2017–19. Economic growth was the strongest in the third, most recent period of years (2017–2019). However, 2019 was also marked by a slowdown in both FDI and economic growth. The COVID-19 crisis hit economies with decelerating growth and faltering optimism of investors.

[22] All FDI data is taken from the wiiw FDI database, which draws from National Bank publications of the host economies. Inflow is in net terms, gross inflow minus disinvestments, using the directional principle and excluding data on special purpose entities. For detailed methodological notes, see the wiiw FDI Report (Adarov et al. 2019) and the IMF Balance of Payments Manual Fifth Edition (BMP5).

Countries with above the average inflows over these ten years were Estonia,[23] the Czechia, Hungary, Latvia, and Bulgaria; less than 2 percent of GDP was invested in Slovenia, Slovakia,[24] Latvia, and Croatia. Differences reflect conditions of doing business, the governments' FDI policy as well as the national economic growth cycles. Economic growth and increasing purchasing power attracted local-market-oriented investors. Governments were in competition for large export-oriented or technologically advanced FDI projects and provided subsidies and other preferences to investors within the limits of EU competition policy.

Figure 3.5 / FDI inflow in % of GDP in EU-CEE, in three periods between 2010–2019, %



Source: wiiw FDI database. This database relies on National Bank statistics.

The industrial structure of FDI has undergone important changes, including the growing importance of industry-related services. Services account for the bulk of FDI in most EU-CEE countries. Their share of economic activities is highest in the Baltic States, with more than 70 percent of the FDI stock in these countries. The figure even reaches 82 percent in Estonia. Market-seeking appears to be the main goal of FDI in the region: financial and insurance activities, as well as wholesale and retail trade, remain the key sectors attracting investors. Hungary, Poland, Estonia, and the Czechia have the highest shares of the mainly export-oriented professional, scientific, and technical activities in FDI, in the range of 7–9 percent. Specialisation in these types of services could promote technological leap-frogging. The manufacturing sector has received about 30 percent of the FDI stocks in the Czechia, Hungary, Poland, Romania, and Slovakia (the Central European manufacturing hub).[25]

Business process outsourcing and shared service centres have been identified as important targets for investors across the region in recent years. This industry covers a wide range of services activities from call centres to software development. Such activities are skill-intensive, are based on skills and clustering, but do not necessitate large capital investments. Poland, Bulgaria, the Czechia, and Romania are among the global top 20 business service locations, according to the 2017 Global Services Location

[23] The exceptionally high figure for Estonia in 2019 is due to the concentration of Swedish banks in the country. These banks serve all the three Baltic countries.

[24] Negative inflows occurred in Slovakia in 2013 on account of disinvestments.

[25] In practice, it is often hard to tell which individual companies are part of the automotive industry and which are in the electronics industry, when it comes to producing components and software for cars.

Index (kerney.com 2018). FDIs in these services are not capital intensive, meaning that they do not boost FDI inflows. Instead, they increase the demand for qualified labour. At the same time, these low-wage jobs are now at risk of being lost to automation.

There have been fewer large new investors entering the more advanced economies of the region in recent years, as most of the important European multinational companies were already present and the number of Asian investors remains small, albeit rising slowly. The number of investors leaving is even smaller. Although some do leave, closedown and re-shoring of foreign affiliates occurred sporadically when labour costs rose. This is especially true in the shoe and clothing industries and in simple car component manufacturing. Their place was usually taken by more productive activities. Investors have, in general, long-term goals and consider EU-CEE to be an integrated location in their international value chains. The adaptation of new technologies takes place in the existing subsidiaries. The future of subsidiaries depends on their ability to upgrade their role in the value chain through product and process development and by increasing efficiency. Reflecting on this process, FDI policy has, in part, changed from being oriented towards attracting new companies to focusing on supporting the growth of established subsidiaries. On a positive note, in light of the issues identified in the previous section, there is also a trend to support innovation and investments in export-oriented services.

3.2.2. Foreign ownership, income transfer and the role of governments

The significance of FDI in EU-CEE economies is above the EU average when measured by the share of foreign affiliates in value added (Figure 3.6). Germany and other large, advanced member states are naturally less dependent on inward foreign investment. They are, in fact, the main investors in other countries. But the position of EU-CEE is not unique in a European comparison; Ireland is more FDI-dependent than any other member state, and small yet advanced countries such as Austria and Belgium have similar indicators to the less FDI-dependent EU-CEEs, such as Poland or Slovenia. Moreover, Belgian manufacturing is even more foreign-dominated than Polish or Hungarian manufacturing.

The contribution of foreign affiliates to the non-financial business value added is the highest in Slovakia and Hungary (nearly 50 percent), followed by Romania (45 percent) and the Czechia (42 percent). These are countries that are among the top also based on FDI stocks in per cent of GDP. Poland has relatively low foreign penetration due to its large and diversified economy; domestically owned companies have preserved dominance in value creation. The foreign share is also around 30 percent or below in a number of smaller economies. Therefore, the problem is not generalised foreign dominance in EU-CEE. It must be noted, however, that financial services, which have been a major target of FDI in EU-CEE, are not covered by these statistics.

Foreigners' share in the manufacturing sector tends to be higher than in the total economy. Foreign affiliates are in a dominant position, contributing more than 50 percent of the value added in the Czechia, Lithuania, Romania, and Slovakia. They provide only 40 percent in Hungary, where a few large companies have foreign shareholders. Nevertheless, these companies are not in the majority. It is important to note in this context that all these economies are assemblers of imported parts and manufacture products with often low domestic value added. Therefore, foreign affiliate's shares in production value are around ten percentage points higher than in value added.

Figure 3.6 / Value added by foreign affiliates as a share of the total value added in the business economy, excluding finance and insurance activities, in selected EU member states, 2018, in, %

Note: Foreign affiliates statistics (FATS) refer to companies with at least 50 percent foreign ownership; total business economy based on structural business statistics (SBS).
Source: Author's computation based on Eurostat FATS and SBS.

Foreign investors have organised their affiliates into international value chains and account for about 80 percent of the exports in Hungary and Slovakia. The foreign-owned sector is, on the whole, more capital intensive, more productive, and pays higher wages than the domestic companies conducting the same activities. The locally-owned economy is dominated by SMEs with limited international competitiveness and low integration in international value chains, even at the third-tier supplier level. Foreign dominance indicates the weakness of domestic firms and the presence of an economic dualism between the two sectors (Hunya 2017). The knowledge gap is deep between foreign and domestic companies, although some rising stars can be found among domestic firms.

The political discussion about the dominance of foreign ownership in EU-CEE intensified in the 2010s. This happened despite the fact that the share of foreign affiliates in value added hardly increased. Exceptions were economies where the foreign share in the economy had been lower than average earlier, namely Croatia, Slovenia, and Slovakia. Slovakia in particular has had a significant lack of domestic firms.

A discussion was opened on investors' profits transferred abroad. However, this is a complex, multifaceted reality that defies easy explanations and conclusions. Piketty (2018) made an arbitrary comparison of foreign investors' income with the transfers that EU-CEE countries receive from the EU budget, concluding that investing EU member states, which are also net payers to the EU budget, take more from the CEE members in terms of FDI income than they transfer as capital. This comparison has long served in the populist media of EU-CEE countries as an argument for economic nationalism and raising anti-FDI sentiments. That Piketty made methodological mistakes and compared apples to pears has been pointed out by Darvas (2018) and others (including Hunya 2017a).

While foreign investors' earnings are the necessary result of investments, there is a fair debate to be had about the level of profits and the extent to which they are reinvested. Foreign investors realise profits on their investments that make the investments viable.[26] In the first part of the 2010s, investors often made losses. In recent years, the calculated average profit rate of investors amounted to about 10 percent of the FDI stock. It reached 12 percent in the Czechia, Hungary, and Lithuania in 2017–2018, which is a rather high rate of profit for investors. Investors earned 8 percent in most other countries, which is also somewhat above the average in international comparison (see, for details, Adarov et al. 2019).

The question, then, revolves around what happens to the income earned. A large part of FDI-related income, about 60 percent on average, is repatriated from the country where it was earned. Hungary, an extremely low-tax country, manages to retain more than 60 percent of foreign profits while other EU-CEE economies retain less. Repatriated FDI income amounted to about 2.4 percent of GDP in EU-CEE on average in a year, close to the annual FDI inflow in 2010–2019. However, despite high income outflow, reinvested earnings have become the most important component of FDI inflow in the more advanced economies. Foreign affiliates in Hungary, the Czechia, Poland, and Slovakia are by and large self-sustaining; new investments can be financed from retained profits. The balance of payments related benefits of FDI show up in the positive trade balance generated by export-oriented foreign affiliates. Revenues on trade (1.9 percent of GDP) compensate for a large part of the losses made on the FDI income account (2.2 percent of GDP). According to this logic, FDI that generates exports is superior to domestic market-oriented FDI. But, much of the services provided by local market-oriented FDI is indispensable for the efficient functioning of export generating firms.

Most FDI contributes to long-term economic growth and sustainable development, but some investments have no positive spill-overs, seek rents from state subsidies, cream off the profits, and then leave (Alfaro 2013, OECD 2019). Such FDI projects cannot be prohibited in the EU market, but FDIs can be directed through incentives and other policy measures (UNCTAD 2018). The general attitude of FDI policy, in conformity with EU competition rules, has been to give advantage and subsidies to technologically advanced large investment projects in manufacturing, while shared service and domestic investors get additional help through SME policy. Incentives could be better targeted and institutions more efficient. It is not difficult to find international best practices for increasing the local benefits of FDIs (UNCTAD 2015). Problems emerge when governments stray from their task to support development and instead serve the interests of specific political and economic elites.

Negative attitudes towards FDI-based modernisation in several EU-CEE countries in the 2010s went hand in hand with the criticism of the post-communist economic and political transformation and the emergence of the notion of 'illiberal democracy' (Kornai 2015). Economic nationalism, re-nationalisation of foreign-owned assets, concentration of state power, and anti-EU propaganda emerged in Hungary and Poland. These factors also emerged, albeit to a lesser extent, in the Czechia and Romania. Populist elites came into power, in Hungary more permanently than elsewhere, and undermined democratic institutions. Strong political power has been used for business capture, exercised through regulatory tools offering selective advantages and disadvantages (Szanyi 2019). Mafia-type rent-seeking has reduced efficiency and re-distributed profits and EU-funds to cronies (Magyar 2016). Bulgaria and

[26] Profits made by the foreign investor are defined in gross terms according the Balance of Payment position; 'primary income, FDI income, debit' (Adarov et al. 2019).

Romania have not taken a U-turn but show limited progress in establishing the rule of law as indicated by the Cooperation and Verification Mechanism.[27]

The decreased predictability of business conditions in host economies, coupled with financial problems of investors inflicted by the euro-crisis, prompted disinvestments. This was especially the case in countries where host country investors offered a relatively high price (Voszka 2018). Governments supported domestic investors to acquire foreign assets or invested themselves in Hungary and Poland. The strength of domestic owners increased by the takeover of former foreign affiliates, mainly in domestic market-oriented activities with limited competition. In Hungary, the state acquired foreign capital in companies such as E.ON, Antenna Hungária, Főgáz, Budapest Bank, and others in 2016–2017. As a consequence, the equity component of the FDI inflow shrank to low sums after 2014 and turned negative in 2015, 2018, and 2019. Some of the nationalised companies were later resold to local cronies (Civitas Institute 2018 and Reuters 31.10.2020). The political target of achieving Hungarian dominance in the banking system in terms of assets has been achieved (GlobalMarkets 2019). The national recapture of the media brought domestic investors close to the government in a dominant position.

In Poland, the sale of foreign assets and capital restructuring also benefited locals in the banking sector in 2017. Italian UniCredit sold its 32.8 percent stake in Pekao Bank for EUR 2.4 billion to the state-owned insurance company PZU and the Polish Development Fund. The Polish government was engaged in reasserting domestic control (re-Polonisation) in the financial sector. UniCredit took advantage of this policy, as they were eager to strengthen the capital position of the Italian parent bank (Goclowski 2016 and Rohac 2017). Because of this and other transactions, half of the previously foreign-dominated Polish banking sector became domestically owned. In the Czechia, the information and communication sector showed negative FDI inflow in 2017; this indicates a sale of foreign assets to domestic investors prone to government interference. In Romania, the state-owned special financial institution EximBank acquired the commercial bank Banca Romaneasca, the local subsidiary of the National Bank of Greece, after the Romanian National Bank blocked the purchase request of the Hungarian commercial bank OTP.[28]

In this context, the role of FDI has diminished as a source of external financing. The abundant transfer of EU funds under the 2014–2020 financial framework further weakened the political status of FDI. It goes without saying that governments appreciate the freedom they have in distributing foreign grants to direct capital inflows by companies where they have only weak and indirect control. EU grants thus increased the role of governments in the economy and supported political (Civitas Institute 2018 and Innes 2014).

Foreign investors have a generally positive opinion of countries with a liberal economic environment and dislike unpredictable state interventions. This can be seen in the annual survey of the German Chamber of Industry and Trade (tschechien.ahk 2019). The scores given to EU-CEE in the 2019 survey are quite close to each other: between 2.8 and 3.5, on a scale of 1–6, where 1 is the best. There was a change in the top raking compared with the previous year from the Czechia to Estonia. The advantage that the top two have over all the other countries is the quality of the workforce and the quality of government. Poland, Slovakia, and Slovenia follow, in that order, in strong positions. Investors see relatively more problems in the second half of the top-ten list, especially in Hungary, Romania, and Bulgaria, which have

[27] https://ec.europa.eu/info/policies/justice-and-fundamental-rights/upholding-rule-law/rule-law/assistance-bulgaria-and-romania-under-cvm/cooperation-and-verification-mechanism-bulgaria-and-romania_en

[28] https://www.romaniajournal.ro/top_news/eximbank-concludes-banca-romaneasca-takeover/ 28.1.2020

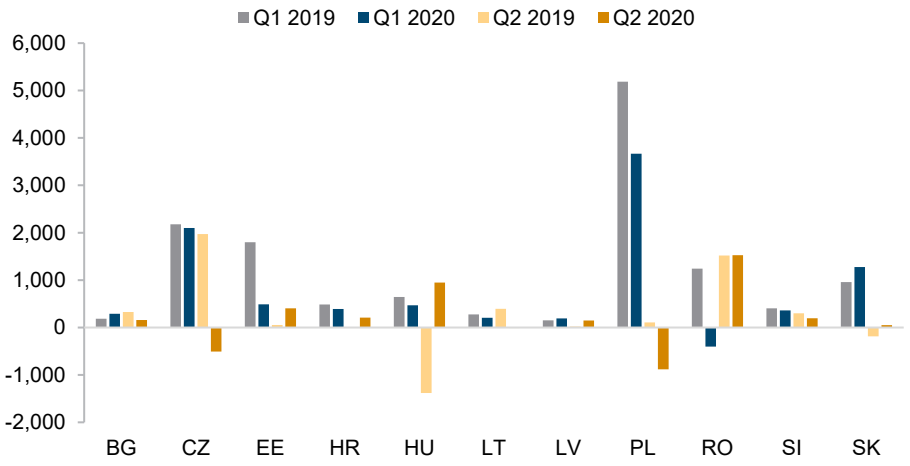
the worst scores. This does not mean that investors would leave these countries; they keep investing as long as factor costs are attractive, local markets are growing, and governments do not infringe their freedom of movement.

3.2.3. Impact of COVID-19 and technological change

The coronavirus pandemic has triggered restrictive measures on societies to limit the spread of the virus. The result was production collapse, disruption of supply chains, and the closure of several industries in the first half of 2020. Cross-border investments were immediately affected, although financial flows in new projects stopped with a time lag. FDI projects that had been scheduled to be implemented suffered delays. Earnings from previous years were often channelled back to home countries. Investors initiated programmes to shorten the supply chain, and governments were eager to increase local self-sufficiency, especially with regards to the production of medical products.

Global FDI inflow data comparing the first half of 2020 with the same period in 2019 shows a 49 percent decline (UNCTAD 2020a). Developed economies saw the biggest fall, with a decline of 75 percent compared to 2019. Inflows into Europe were negative, and flows to North America fell by 56 percent. These changes reflected the disruption of value chains under the pressure of a sudden economic lockdown.

Figure 3.7 / FDI inflow in the first and second quarter of 2019 and 2020, EUR million



Source: wiiw FDI database relying on National Bank statistics.

In the same comparison, FDI inflows to EU-CEE declined by 35 percent, a less drastic decrease than the global average. However, it usually takes investors a long time to decide upon cross-border investments, and the actual capital flow may take place later than the start of an investment. It will, therefore, take some time for a clearer picture to emerge.

Greenfield investments only experienced a belated and less significant decline (Table 3.3).[29] The number of announced projects was the same in the first quarter of 2020 as a year before. The committed amount of investment and job creation was even higher. The decline came in the second quarter, a 46 percent decrease in terms of the number of projects, 31 percent less capital investment, and 48 percent in terms of job creation. The third quarter brought some recovery in comparison with the second in terms of project number and the pledged number of jobs, which indicates that the decline has levelled out.

Table 3.3 / Impact of COVID-19 on greenfield investments in EU-CEE – Number of announced projects, Pledged capital investment, Number of jobs to be created, by 2019 and 2020, by quarter

	Project number		Capital EUR m		Jobs	
	2019	2020	2019	2020	2019	2020
Quarter 1	383	349	12792	13880	75432	74403
Quarter 2	427	235	18369	10209	107752	51017
Quarter 3	397	251	26352	9865	98112	81212
Quarter 4	456		19082		106810	

Source: fdimarkets.com.

In the second half of 2020, governments initially tried to avoid a total lockdown of the economy. However, they gradually changed their minds in light of rapidly rising infection and mortality in the autumn. Restrictions in the third and fourth quarters different did not impact production and transport as much; thus, the renewed economic decline mainly hit the services to the population in the fourth quarter. Measures introduced to cushion the effects of the pandemic affected foreign and domestic companies alike. These were much less generous than in Germany, which caused dissatisfaction among investors (tschechien.ahk 2020). Large foreign companies made use of temporary closures and reduced work time on a mass scale, often compensating their workforce more generously than local SMEs.

The consequences for local market-oriented FDI projects were more mixed than those that impacted value chain production in the second quarter. Retail companies specializing in food could maintain sales while those in other segments suffered under depressed demand during the lockdown. Meanwhile, e-commerce boomed. Construction projects were among the more resilient economic activities, while transport, logistics, and value chain production all shrank.

As a result of these disruptions, export-oriented investors could seek to shorten the value chain by re- or near-shoring some of the activities. Companies will think about increasing the resilience of their supply chains (reducing risks of supply chains disturbances) and increasing the degree of self-sufficiency and autonomy in production, which will lead to shorter supply chains and closer geographic locations. It remains to be seen, however, how lasting and how powerful the effects will be. That companies are not under pressure to act fast can be demonstrated by survey results. Only about 8 percent of the German investors faced partial disruption of value chains and another 40 percent faced minor disruption according to a survey carried out in Hungary in the second half of September (ahkungarn 2020).

[29] The data is from the fDi Markets database (a division of Financial Times Ltd. www.fdimarkets.com), and are based on media and company reports of individual investment projects (excluding the financial sector). The database includes data on the number of announced projects, the value of investment commitments, and the number of jobs that are expected to be created. Compared with the balance of payments, which records financial flows in a given period of time, fDi Markets data refer to announced real investment projects that are to be realised over a longer period of time.

German investors see only a minor probability that they will re-shore from Asia. Should they decide to relocate, they think they will most likely move to CEE.

The pandemic came on top of significant technological changes that necessitate the restructuring of value chains and changing of several features of FDI in the future. UNCTAD (2020b) observed a slowdown in international production and global FDI after 2010 and forecasted it to continue even after recoveries are made from the current slump. Increasing protectionism and emergent technologies are two causes of this trend. Technological change has started to restructure the automotive industry (see Chapter 2.3). Nevertheless, the EU-CEE locations of subsidiaries seem to be on firm grounds for now.

EU-CEE may be on the winning side of a global near-shoring process. Most of the foreign investments in the region originate in the EU. If EU investors bring production closer to home, they will look for production locations in Europe. The location of main markets may put limits to this process; only the production for the regional demand would be re-shored. Production will stay concentrated in Asia if this continent continues to be the fastest growing segment of the global economy. New technologies may, in the long run, make the segmentation of production fully redundant and some investors may backshore some activities from the EU-CEE economies to their home countries.

Key Messages

The automotive industry plays a central role in the economies of Slovakia, the Czechia, Hungary, and Romania. It also plays an important role in Poland and Slovenia.

Due to strong inflow of FDI and thus integration into global supply chains, the sector is highly dependent on exports to Western European countries in general and Germany in particular.

The sector now has to cope with global trends on the one hand and regionally specific challenges on the other. So far, little progress has been made towards production of electric cars in the EU-CEE region. However, change is ahead. Stricter CO_2 regulations in Europe will push firms towards the production of electric vehicles.

3.3. STRUCTURAL CHANGE IN THE AUTOMOTIVE SECTOR

3.3.1. Importance of the EU-CEE automotive industry

The automotive industry[30] is a very important sector of EU-CEE economies; in 2018, it achieved a production volume of EUR 170 billion and employed 828,000 persons in the region. EU-CEE's automotive industry accounted for 20 percent of total EU (27) automotive production and 33 percent of total EU (27) automotive employment in that year (see Table 3.4). The sector accounted for 38 percent of manufacturing production in Slovakia, 28 percent in the Czechia, 26 percent in Hungary, and 23 percent in Romania. In Slovenia and in Poland, the automotive industry also played an important role (13 percent and 12 percent, respectively). The automotive industry is rather small in other EU-CEE countries.

[30] This report draws on the definition of the industry as outlined by the NACE rev. 2 classification for sector C29, the 'manufacture of motor vehicles, trailers and semi-trailers.'

The automotive sector accounts for 16 percent of manufacturing jobs in Slovakia and Romania, 14 percent in the Czechia and Hungary, 7.5 percent in Poland and Slovenia and smaller shares (1–4 percent) in the other countries. High capital intensity and strong robotization are characteristic for the sector. In fact, the level of automation in the automotive industry is typically very high when compared to total non-automotive manufacturing. Robot density (the number of robots installed per 10,000 employees) ranged from 165 robots per 10,000 employees in the Polish automotive industry in 2017 (compared to 24 in total manufacturing), 338 robots in the Hungarian automotive sector (compared to 43), 483 in the Czech automotive sector (compared to 56), 761 in the Slovak automotive sector (compared to 35), to 1075 in Slovenia (compared to 80 in total non-automotive manufacturing). In the German automotive sector, about 1160 robots are installed per 10,000 employees compared to 48 per 10,000 in total non-automotive manufacturing (see IFR, 2018/2019).

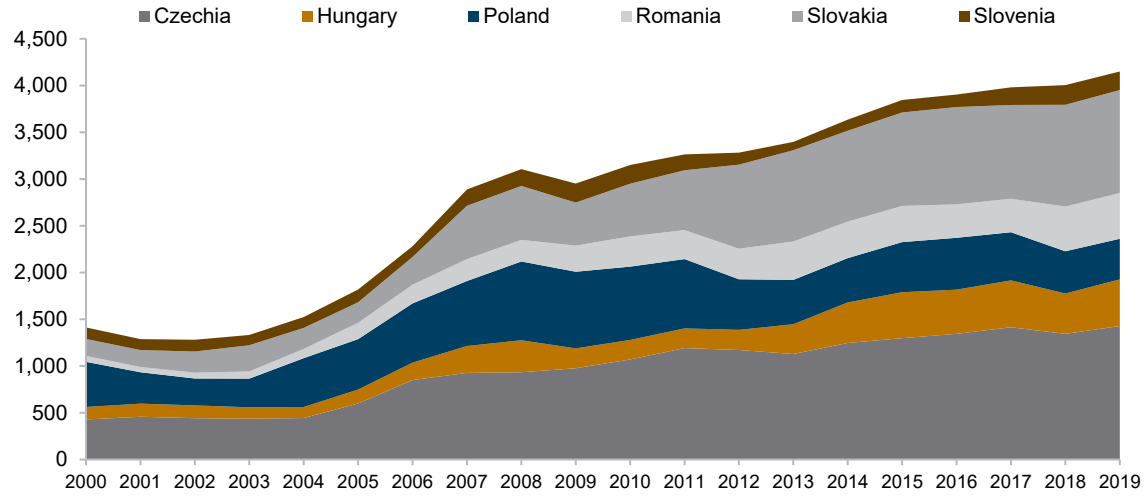
Table 3.4 / Overview: Production and employment of the automotive industry, 2018

		Production		Number of persons employed	
		in EUR m	in % of manufacturing	in number	in % of manufacturing
Bulgaria	BG	1,122	3.3	23,836	4.3
Czechia	CZ	50,093	27.7	181,488	13.7
Estonia	EE	404	3.2	2,870	2.6
Croatia	HR	221	1.1	2,910	1.1
Hungary	HU	26,498	25.7	101,908	12.8
Lithuania	LT	402	1.9	6,216	2.8
Latvia	LV	259	2.9	2,316	1.9
Poland	PL	36,652	11.6	214,642	7.5
Romania	RO	21,340	23.4	194,787	15.7
Slovenia	SI	3,780	13.2	15,888	7.4
Slovakia	SK	29,892	38.3	80,963	15.7
Germany	DE	401,872	19.9	919,002	11.3
EU(27)	EU(27)	848,153	12.6	2,519,250	8.6

Note: EU(27) without the UK.
Source: Eurostat Structural Business Statistics [sbs_na_ind_r2]

The development of the automotive industry has been driven by the inflow of foreign direct investment since the collapse of communism. The German firm Volkswagen was one of the first companies to enter the region and became a frontrunner. In the early 1990s, it formed joint ventures with pre-existing companies that produced passenger cars in the Czechia and Slovakia. Audi arrived in Hungary in 1993 and made a greenfield investment producing engines. In Poland, Volkswagen Poznan specialised in the production of commercial vehicles. Other investors in the EU-CEE region included Renault in Slovenia and Romania, Daewoo in Poland and Romania, Fiat in Poland, and GM/Opel (engines) and Suzuki in Hungary. Accession to the EU led to another wave of foreign investors rushing into the region in the 2000s. In Slovakia, PSA Groupe, Peugeot, Citroen, and Kia started passenger car production in 2006, while Toyota, Peugeot, Citroen, and Hyundai settled in the Czechia (see Hanzl 1999 and Dachs / Hanzl-Weiss 2014). After the global and financial crisis, selected inflow of FDI in the automotive sector took place: Mercedes started passenger car production in Hungary in 2012, Jaguar Land Rover in Slovakia in 2018, while BMW announced an investment in Hungary in 2018. Overall, the Czechia and Slovakia are now the largest passenger car producers in the region, with 1.4 million and 1.1 million cars produced in 2019, respectively (see Figure 3.8). With large original equipment manufacturers (OEMs) entering the region, car-part suppliers also followed, setting up a dense network of car companies in the region.

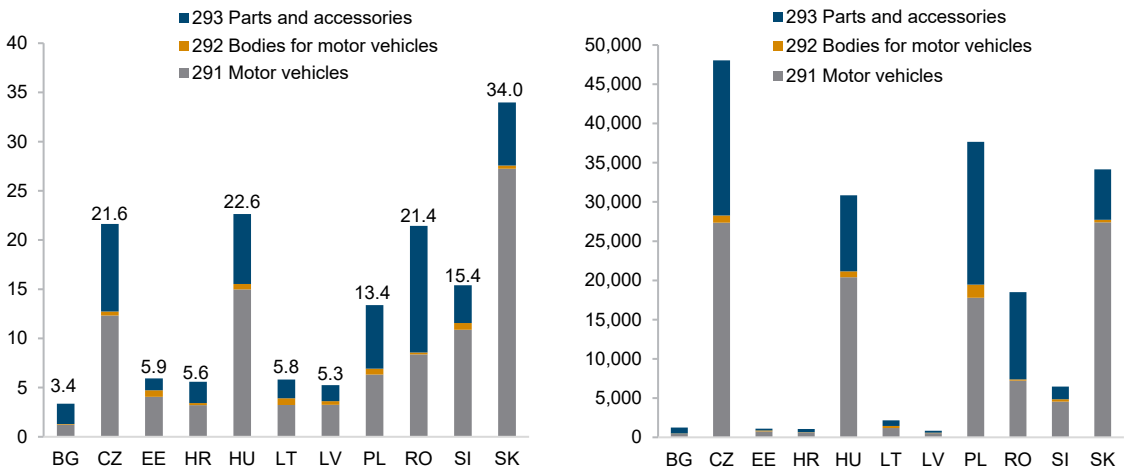
Figure 3.8 / Passenger car production, in thousands



Source: OICA – International Organization of Motor Vehicle Manufacturers, www.oica.net.

The crucial role of the automotive sector becomes clear again when looking at automotive exports and their share in total exports (see Figure 3.9, left). In Slovakia, the automotive sector contributed 35 percent of total exports in 2019. In Hungary, the Czechia, and Romania, the sector made up about 22 percent of total exports in the same year. Also, the relative size of sub-industries is of interest (motor vehicles (291), bodies for motor vehicles (292) and parts and accessories (293)). Motor vehicle exports dominate in Slovakia, Slovenia, and Hungary. Motor vehicles and parts are both important in the Czechia and Poland, while Romania focuses more on parts and accessories. In absolute export volumes (Figure 3.9, right), Slovakia, the Czechia, Hungary, and Poland are the largest motor vehicle exporters, while the Czechia and Poland are the largest exporters of parts and accessories.

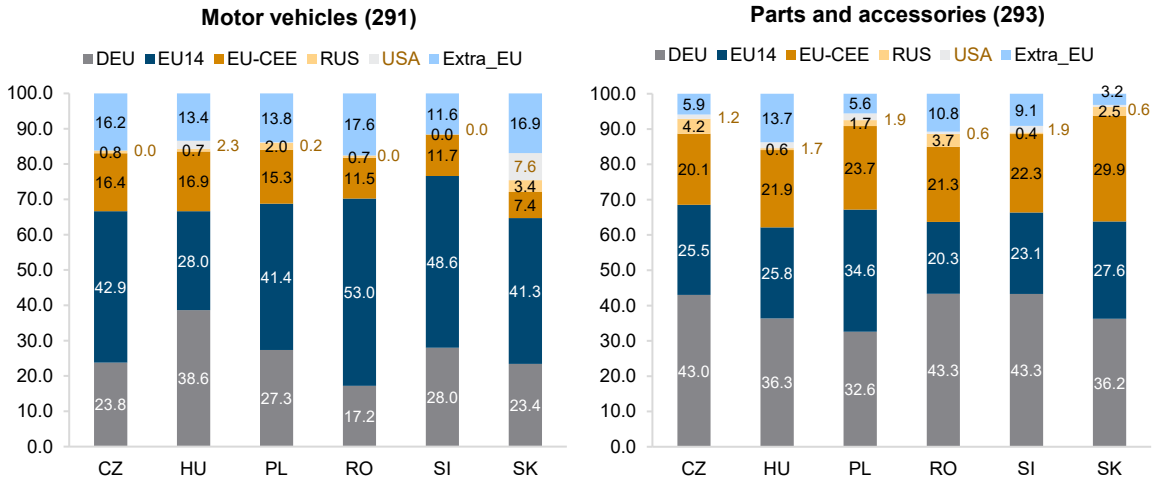
Figure 3.9 / Automotive industry exports (NACE rev. 2), in % of total exports (left) and in EUR m (right), 2019



Source: UN Comtrade.

EU-CEE exports head primarily towards EU countries. Germany is a particularly significant destination. Figure 3.10 shows exports of motor vehicles on the left side and exports of parts and accessories on the right. About 80–90 percent of motor vehicle exports were exported to the EU countries in 2019 (for Slovakia, the figure came to about 70 percent), whereby Germany (20–40 percent) and the Western European countries (EU14, 30–50 percent) were the major recipients. Motor car exports to the EU-CEE countries were rather small (10–28 percent). Integration into German value chains becomes apparent when looking at exports of parts and accessories. Germany was the main destination for EU-CEE car parts exports (30–43 percent). Moreover, EU-CEE takes a larger share (20–30 percent) while exports to the Western European countries have decreased (20–30 percent).

Figure 3.10 / Main destination of exports, in % of total exports, motor vehicles (left) and car parts and accessories (right), 2019



Source: UN Comtrade.

3.3.2. Main global trends affecting the automotive industry

Major disruptive trends are currently affecting the automotive industry globally, with major implications for their value chains and employment. These include the rise of electric cars, technological change (such as autonomous and connected driving) and shifts in preferences among consumers away from ownership towards shared services and ride-hailing (European Commission 2017 and PWC 2018). EU-CEE countries need to face these trends while simultaneously dealing with regional challenges, including the shortage of skilled labour, growing unit labour costs, low R&D, a high level of external dependence, a high level of dependence on Germany, and strong overspecialization.

Electric cars have had a rather modest share of the European car market in the past; at only 3 percent of sales, the share in 2019 was tiny. However, 2020 will be the year of the electric vehicle in Europe: electric car sales are forecast to surge to a sizable 10 percent by the end of 2020, and even more to an impressive 15 percent share in 2021 (Transport and Environment 2020). Climate change is a major concern around the world, and thus the reduction of greenhouse gas emissions a core target. In fact, road transport contributed 21 percent of the EU's total emissions of carbon dioxide (CO_2) in 2017, with cars responsible

for around 12 percent of total EU emissions of CO_2.[31] In 2009, Regulation (EC) 443/2009[32] set mandatory emission reduction targets for new cars as of 2015 onward and as of 2020-2021 (phased-in in 2020, full application as of 2021). The first target for 2015 was already met in 2013.[33]

European automotive companies initially counted on diesel cars and the improvement of internal combustion engines to meet the targets in 2020–21. In 2015, however, Dieselgate hit the automotive world. The scandal broke in the US in September 2015 when Volkswagen admitted to cheating on emission tests on its diesel vehicles. As a consequence, diesel car sales declined while sales of sport utility vehicles (SUVs) have been on the rise since 2013. Thus, emissions increased between 2016 and 2019 (Transport and Environment 2020: 23). Moreover, diesel cars emit less CO_2 than SUVs. As of 1 September 2017, new car models are required to pass new and more reliable emissions tests in real driving conditions ('Real Driving Emissions' or RDE) as well as an improved laboratory test ('World Harmonised Light Vehicle Test Procedure' or WLTP).[34] In EU-CEE, the scandal affected main engine producers in Hungary and Poland.

The 2020–2021 CO_2 fleet emission targets were implemented in stages during 2020, becoming fully operational in 2021. Not meeting the targets will mean that carmakers have to pay huge penalties. The target establishes out 'that mass-market manufacturers have to ensure that on average, the cars sold over the year emit 95g of carbon dioxide per km driven' (Miller 2020). Based on the weight of its vehicles, each carmaker is faced with its own CO_2 target. As such, at the last minute, automotive companies had three compliance strategies at their disposal to meet their targets: using regulatory flexibilities, improving fuel efficiency of internal combustion engines, and increasing sales of electric vehicles (this is comprised of both battery electric vehicles and plug-in hybrid vehicles). Regulation flexibilities were granted in 2020 and include: 95 percent phase-in (only 95 percent of sold cars count towards the 2020 target), pooling (car makers with compliance gaps can average sales with frontrunners), super-credits (electric vehicles count twice in 2020), and eco-innovation credits (gained for special technology fitted to cars which are reducing emissions). Bannon's report estimates that flexibilities contributed to closing half of the compliance gap, improvements about 30 percent, and electric vehicle sales added another 19 percent (Transport and Environment 2020). The report also states that as of half-year 2020 data, four companies are compliant with the targets (the PSA Group, Volvo, FCA-Tesla and BMW Group), four companies show a small gap (Renault, Nissan, the Toyota-Mazda pool and Ford), and five have a larger gap (Kia, Volkswagen Group, Hyundai, Daimler and Jaguar Land-Rover with the largest gap). The COVID-pandemic hit the automotive industry at the beginning of 2020 when car sales tumbled, making the race to the targets narrow. Generous subsidies for electric vehicles were posited as a potentially helpful method to aid the companies in meeting the target, especially in Germany.

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31 Information about the contributions of vehicles to CO_2 emissions can be found on the European Commission website, under EU Action — Transport; https://ec.europa.eu/clima/policies/transport/vehicles_en.

32 Regulation (EC) 443/2009 sets emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO_2 emissions from light-duty vehicles.

33 https://ec.europa.eu/clima/policies/transport/vehicles/cars_en

34 https://ec.europa.eu/growth/content/new-and-improved-car-emissions-tests-become-mandatory-1-september

The shift towards electric cars will continue in the future. On 17 April 2019, the European Parliament and the Council adopted Regulation (EU) 2019/631[35], which introduces CO_2 emission performance standards for new passenger cars and new vans for 2025 and 2030. In December 2019, the EU's strategy for a climate neutral Europe in 2050, the European Green Deal, was announced by the new commission (European Commission, 2019a). Focusing on 'accelerating the shift to sustainable and smart mobility,' the strategy included a mandate to 'ramp-up the production and deployment of sustainable alternative transport fuels by supporting the deployment of public recharging and refuelling points' (European Commission, 2019a). The Commission will also propose to review the legislation on CO_2 emission performance standards for cars and vans by June 2021 in order to ensure a clear pathway from 2025 onwards towards zero-emission mobility.

3.3.3. Electric vehicle production in EU-CEE

In order to look at electric vehicle production in EU-CEE more closely, we conducted a case study of Slovakia, a country with an extreme specialisation in and reliance on the automotive sector. Here, electric vehicle production has been lagging behind and just starting to take off. Slovakia is the largest producer of passenger cars per capita in the world. Four large OEMs operate in the country: Volkswagen Bratislava (about 400,000 cars produced in 2018), PSA Peugeot Citroen (370,000 cars produced in 2019), KIA Motors (340,000 cars produced in 2019), and Jaguar Land Rover (plant capacity of 150,000 cars). Looking at the production of electric cars so far, production has been modest: Volkswagen Bratislava started producing the Touareg hybrid in 2010 and the small Volkswagen e-up! in 2013. Peugeot Citroen showcased the electric Peugeot 208 model at the beginning of September 2019, which it will only manufacture in Trnava. Also, Kia plans to produce plug-in hybrid cars.[36] However, Volkswagen Bratislava and Jaguar Land Rover produce sport-utility vehicles which are considered to be the type of cars that emit the most CO_2 (Technology and Environment 2020). In 2019, the first concerns were discussed regarding Volkswagen Bratislava getting new models for the new product cycle after 2022. According to recent reports, it seems that Volkswagen Bratislava will receive new investment from the parent company and produce models which were previously assigned for the plant in Turkey, which will now not be built.[37]

Production of electric vehicles will have severe implications on the value chains and employment, as 60 percent of the materials come from outside the traditional automotive supply chain (such as electronics and batteries). The electric vehicle has less mechanical complexity and requires less maintenance[38] while also needing more software. One core component, the batteries, are an important part of electric vehicles and contribute up to 40 percent of the total costs of an electric vehicle. Currently, however, Europe depends on imports of battery cells and raw materials from Asia. The EU has recognised the importance of batteries (not only for electric vehicles) and set up the European Battery Alliance (EBA) in October 2017. The EBA supports investment and innovation in this field and is working towards creating manufacturing capacity and a functioning value chain (from scarce raw materials to the problem of

[35] Regulation (EU) 2019/631 set CO_2 emission performance standards for new passenger cars and for new vans in the EU.

[36] https://spectator.sme.sk/c/22092283/groupe-psa-will-produce-electric-peugeot-208-exclusively-in-trnava.html as of April 4, 2019.

[37] https://spectator.sme.sk/c/22530817/new-car-models-for-bratislava-volkswagen-will-make-a-big-investment-in-slovakia.html as of November 9, 2020.

[38] For a discussion of a wider definition of the automotive industry including wholesale and repair of motor vehicles, see Fredriksson et al. (2018).

waste/recycling). In May 2018, the Strategic Action Plan on Batteries was adopted. Demand will surge in the future; about 20–30 giga-factories for battery cells will be needed to meet European demand (European Commission 2019b). In EU-CEE, large foreign direct investment of major Asian battery producers occurred recently in Hungary (Samsung SDI, Japanese GS Yuasa Corporation, South Korea's SK Innovation, and South Korea's Inzi Controls) and Poland (South Korea's LG Chem), while in Slovakia there has only been some recent, small-scale investment. According to InnoEnergy forecasts, EV battery demand in Europe is expected to reach 400 GWh by 2025; however, 2021 battery pack production is estimated at 25 GWh in Hungary, 52 GWh in Poland, but only at 100 MWh in Slovakia (European Commission 2020: 16).

Automated and connected driving will be the future of the automotive industry. As already established in this report, R&D in new technologies is rather low in the EU-CEE region. Total business expenditure on R&D (BERD) ranged from 0.3 percent of GDP in Romania to 1.45 percent in Slovenia in 2018 (EU27 average at 1.45 percent and Germany at 2.15 percent). While the automotive sector has a large share of BERD in total manufacturing, it is foreign direct investment of automotive suppliers that brought R&D into the region. OEMs often perform their R&D activities at their headquarters in their home countries (exceptions are R&D in Škoda Auto in the Czechia and Renault in Romania, see Dachs / Hanzl 2014). Selected examples in the field of automated and connected driving include the ZalaZone test facility and autonomous mobility research centre around it in Hungary. The first phase of the facility opened at the beginning of 2019 (Hungarian Investment Promotion Agency 2019). In the Czechia, Valeo established a research and development centre in Prague in 2002 focusing on the development of air conditioning units and control panels first. Since 2013, it has been developing advanced systems for autonomous driving: sensors, cameras, driving assistance, and safety systems.[39] Connected and Automated Driving (CAD) is considered a flagship use case for 5G deployment along European transport paths. Of the eleven cross-border corridors established, three are in EU-CEE: (1) EE-LV-LT Via Baltica (E67) Tallinn (EE) – Riga (LV) – Kaunas (LT) – Lithuanian/Polish border (2) LT-PL via Baltica Kaunas-Warsaw and (3) München-Praha.[40]

3.4. DEALING WITH THE GREEN TRANSITION

Key Messages

Historical, economic, and political circumstances impact the willingness of EU-CEE to embrace the green transition and sometimes fuel disagreements with the rest of the EU.

While EU-CEE countries are lagging behind the rest of the EU in progress and pace of the green transition, the differences are not always dramatic and trends are generally pointing in the right direction.

The green economy in EU-CEE is developing, albeit slowly, and will require state support to prevent it from falling behind the rest of the EU, and to realize its full potential in introducing greener value chains, innovation, and employment.

[39] https://valeo.cz/en/valeo-opens-new-rd-center-czech-republic/

[40] http://5gobservatory.eu/5g-trial/5g-connected-and-automated-mobility-cam/

The European Green Deal (EGD) outlines the key approaches for transforming the EU into a carbon neutral economy by 2050 and for reaching the intermediate goal of lowering its greenhouse emissions 55 percent from 1990 levels by 2030:

› Decarbonising the energy supply as well as all other spheres of human activity;
› Developing a resource efficient, circular economy that produces less waste;
› Lowering all kinds of pollution generated through economic activities; and
› Maintaining biodiversity and preserving natural habitats.

These are the pillars of a greener economic model, which aims to decouple economic growth from resource use and greenhouse gas emissions (GHGs).[41] The process of reorienting European economies will require a substantial mobilization of financial and human resources and is dependent on the political (and social) will to face the challenges and costs of the transition.

The environmental ambitions of the new Commission have again shed light on an ongoing source of division among the member states, namely the disagreements on the speed, brevity, and distribution of costs, and benefits of this transition between the (on average) richer and keener member states, comprised of the EU15 group, with the exception of its Southern members, and EU-CEE, where the transition tends to be seen more as a cost than as an opportunity (Wurzel / Liefferink / Di Lullo 2019). One such example was put on display in Poland, where the state vied for exceptions to the carbon neutrality goal.[42]

More generally, while Green Parties have seen surges in some of the EU15 member states, and the broad outline of the Green agenda has been adopted by most non-far-right parties in Western Europe, this is much less the case in EU-CEE. In some EU-CEE countries, populist governments are hardly champions of sustainable development. The issue's roots are deep: EU-CEE's economic model, marked by a higher reliance on fossil fuels and less environmentally friendly production capacities, is still oriented towards standard goods, such as combustion-engine cars in contrast to electric ones (see the previous section). This orientation can be perceived as under threat by the requirements of the green agenda due to the costs of the energy transition, green technologies, overhauling mobility systems, and developing the needed human capacities (and changing minds).[43]

Although there are considerable differences in the social, political, and historical contexts that shape each individual country's perception of threats and opportunities of the green transition, all EU-CEE countries are connected by the common experience of having had state-planned economies, a transition period marked by a gradual retreating of the state, privatization and deregulation, and then the appearance of the so-called integrative growth model (see Introduction and Section 3.1). This economic development has shaped, and was shaped by, environmental factors and consideration for environmental sustainability. This chapter presents the notion that the EU-CEE countries face

[41] Whether or not this is possible is an ongoing debate, with the majority of criticism coming from the degrowth movement.

[42] https://www.theguardian.com/environment/2019/dec/13/european-green-deal-to-press-ahead-despite-polish-targets-opt-out

[43] With functional specialization resulting in factory economies, a relevant question to ask is whether the core economies manage to achieve better results in environmental indicators because they have offshored their emission-intensive capacities to the east. While empirical studies tend not to confirm the leakage of emissions outside of the EU due to climate change regulation (see Abbasi / Bouman 2020; Dechezleprêtre et al. 2020; Brunel 2017), they leave open the question of intra-EU emission leakage.

challenges now and in the future in combining further economic development with meeting the realities of the EU's green agenda. Therefore, the goal is to show if and how EU-CEE can build a new growth model that can both escape the functional specialization trap and be more sustainable. Understanding both the past and recent trends is imperative to developing appropriate policy insights related to the development of the green economy in EU-CEE in the future. The first part of the chapter will thus briefly cover the history of environment-related economic development, and the second part consists of an analysis of key dynamics.

3.4.1. Historical context

In the 1950s, several economies of what is now the EU-CEE bloc, such as those of Yugoslavia, Bulgaria, Romania, and Poland, were still predominantly agricultural. The ruling communist parties pursued swift and heavy coal-powered industrialization (Josephson 2016) and thus managed to achieve high growth rates in some of the least developed parts of Europe (Gomulka 1983). Unsurprisingly, little or no regard was put on environmental matters.

As the economic fortunes gradually took a turn for the worse and communist regimes collapsed in the late 1980s, they left a legacy of excessive centralism in planning, weak administrative capabilities, weak civic culture, and low policy priorities on environmental protection (Baker / Jehlicka 1998; Waller 1996). Ironically, while the environmental standards developed through the years were, in some cases, stricter than elsewhere in Europe, few adhered to them in practice. Furthermore, many regions were left heavily polluted, although the relative overall level of pollution output was less than in Western Europe (Danchev 1994).

The region began the EU accession process in the mid-1990s, lagging behind in environmental policy. This process attempted to deal with the old and inefficient industrial installations, many of which closed down in the 1990s. While this temporarily improved the overall picture in terms of emissions and had a positive impact on air quality in particular, the CEE-EU region remained heavily dependent on low-quality energy resources. In the period of 'wild capitalism' that followed, regulation was often seen as a barrier to high profits, and state-imposed policy instruments became unpopular (Danchev 1994). Eventually, a relatively cleaner but production- and export-oriented model of growth,[44] supported by an inflow of FDI and offshoring of production from Western EU member states, appeared. As consumption levels increased, new sources of emissions appeared, such as those from personal transport. This led to a convergence in the composition of GHG emissions with Western Europe.

The accession process required the adoption of over 300 pieces of environmental legislation (ten Brink et al. 2002). On the other hand, the 2004 expansion also made unity among member states when debating environmental matters harder to come by. On issues such as climate change, member states dependent on coal and with concerns about energy security, such as Poland, have adopted a sceptical position (Jankowska 2016). They might have accepted the legislation, but for the most part, they regarded climate change as a rich man's concern, a goal that is irrelevant and ill-suited for developing economies such as themselves. While these concerns were shared to some extent, differences do exist between EU-CEE countries regarding their strategic interests in renewable energy and overall identification with green policy causes.

[44] As noted in previous sections, this manufacturing model was less prevalent in the Baltic states.

The technological and energy-related lock-ins, as well as the political-economic relationship to sustainability as a pathway for economic development, are the legacy of the previous system and the transition period. This means that EU-CEE in general sees this issue differently than Western European countries do. Today, they are joined by the phenomenon of right-wing populist governments in some countries, keen to form Eurosceptic coalitions and put pressure on the EU to decrease the costs the transition imposes on them. The developments, such as the creation of the EUR 40 billion Just Transition Fund, meant to support the transition of regions whose economy depends on coal, show that the EU knows its green agenda will depend on the acceleration of the green transition in EU-CEE.

3.4.2. The emergence of a low-carbon circular economy in EU-CEE

Whatever the history and the contemporary political context, EU-CEE faces the same challenge as the rest of the EU: how to achieve the decoupling of economic growth from environmental impacts (UNEP 2011). These environmental impacts namely come from the production of GHG emissions and resource use in all stages of production, from the extraction of materials to the handling of waste.[45] Policies where environmental concerns are linked to economic development are already having an effect on the economies of EU-CEE. This is not a surprise, as they are not only mandated by the EU but are also incentivized by large amounts of funding. In the 2014–2020 period, the Cohesion Fund allocated EUR 150 billion for green development. The EU is not the only push factor: decreasing prices of renewables, new technologies and reorientation of GVCs all contribute. The following analysis is an attempt to see how much effect they have had thus far and how they fare compared to the rest of the EU. Contrasting the EU-CEE against a group of countries representing Europe's industrial core as well as some of the most developed and environmentally conscious societies, namely Sweden, Netherlands, Finland, Denmark, and Germany (denoted as SE, NL, FI, DK, DE) in Figure 3.11 shows that the latter group has achieved absolute decoupling from a (territorial) production standpoint in emissions (meaning that the growth rate of emissions was negative while that of GDP was positive), and has mostly stabilized their resource use.[46] In comparison, the EU-CEE made smaller reductions in emissions and saw an increasing rate of resource use, albeit growing more slowly than GDP (i.e. relative decoupling). The largest reductions were achieved by Slovenia, Estonia, Bulgaria, and Poland, while Lithuania and Latvia saw substantial increases in emissions. Grouping EU-CEE countries further reveals interesting facts: Romania, Bulgaria, and the three Baltic States have increased their resource intensity, while the others managed to slow down the growth rate of resource use.

Decoupling, to the extent that it has been achieved, is usually accompanied by structural changes, often by a changing structure of industrial production. While gradual deindustrialization has been the trend in Western Europe, certain EU-CEE countries also moved away from heavy industry, reduced consumption of coal, and modernized transport, heating and other emissions-generating activities through investments.

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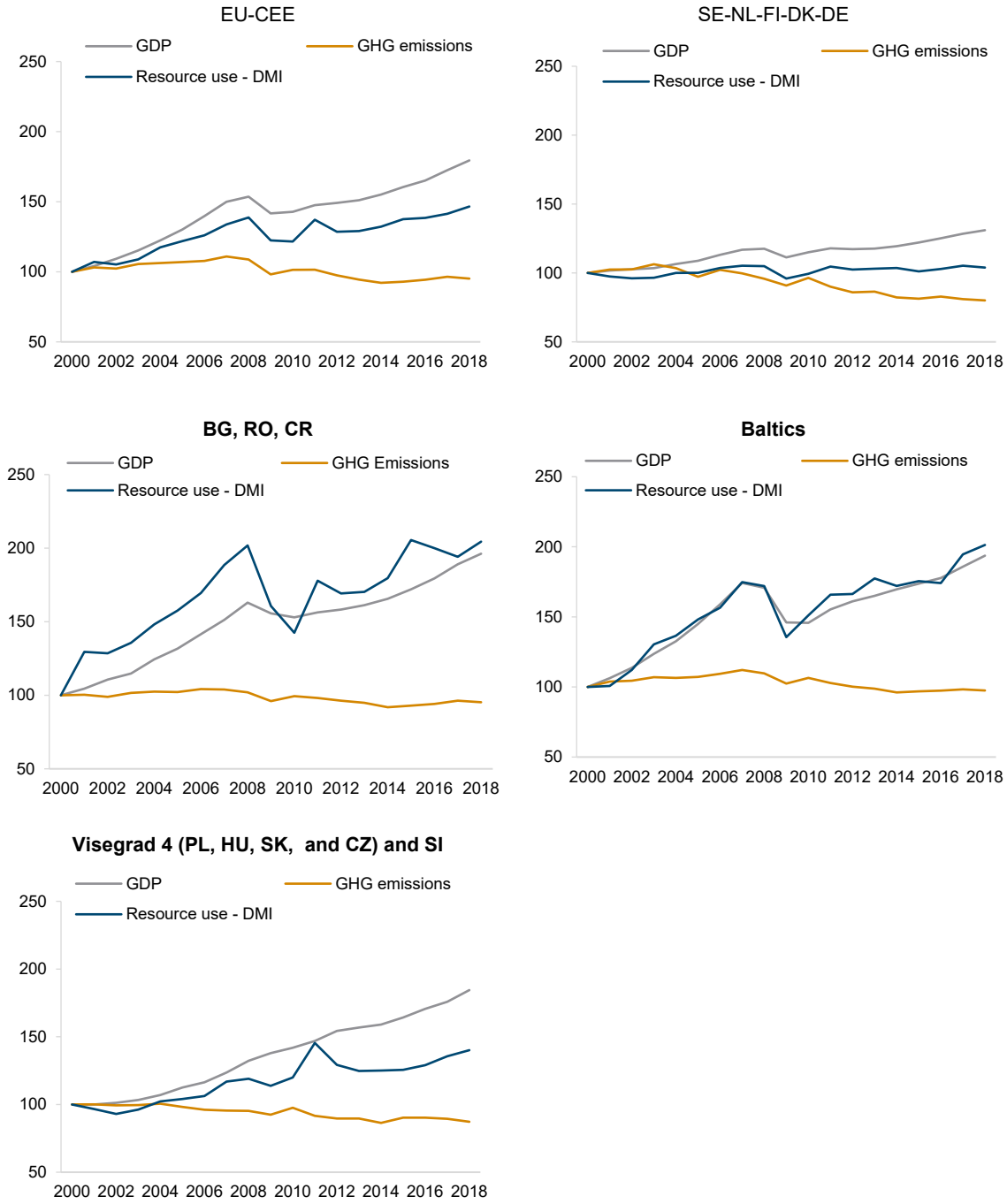
45 Other concerns, such as pollution, biodiversity, preservation of key habitats, elimination of toxic chemical, are no less important, although it is less clear how they interplay with a changing economic model.

46 Looking at decoupling from a consumption standpoint paints a much more complicated picture (Haberl et al. 2020).

Figure 3.11 / Decoupling: Comparing GDP (ppp, current international USD billion), GHG emissions (CO_2e) and resource use (Domestic Material Input, tons); 2000 = 100



Note: DMI refers to Domestic Material Input, measuring both extracted and imported materials. CO_2e = CO_2 emission equivalents.
Source: Eurostat, World Bank.

Dynamics of industrial emissions

The basic composition of emissions between energy, industrial production, agriculture, and waste management remained stable over the years. However, comparing the changing volumes of industrial emissions over time shows that, while the SE-NL-FIN-DK-DE countries emitted considerably more (no surprise due to the presence of Germany) in the 1990s, their volume fell by 44 percentage points since reaching a high point in 1996 to 2018 (about 91,000 thousand tons of CO_2e), and have been converging with those of the EU-CEE countries (about 86,000 thousand tons CO_2e), which fell by 25 percentage points since 1990.

Emissions embodied in trade

The structure of carbon emissions embodied in exports in 2011[47] shows that almost half were contributed by energy generation, mainly through the export of coal-powered electricity, followed by basic metals and chemicals, transport service, and wholesale and trade ranging between 9–12 percent. It also shows that lighter forms of manufacturing, such as the assembly of automobiles or electronics, add a minimal share of about 1 to 2 percent to the full emissions embodied in the final product. Interestingly, similar results can be seen when looking into consumption-based emission statistics which include imported and domestically generated emissions. Across the region, this structure has not changed much since the 1990s.

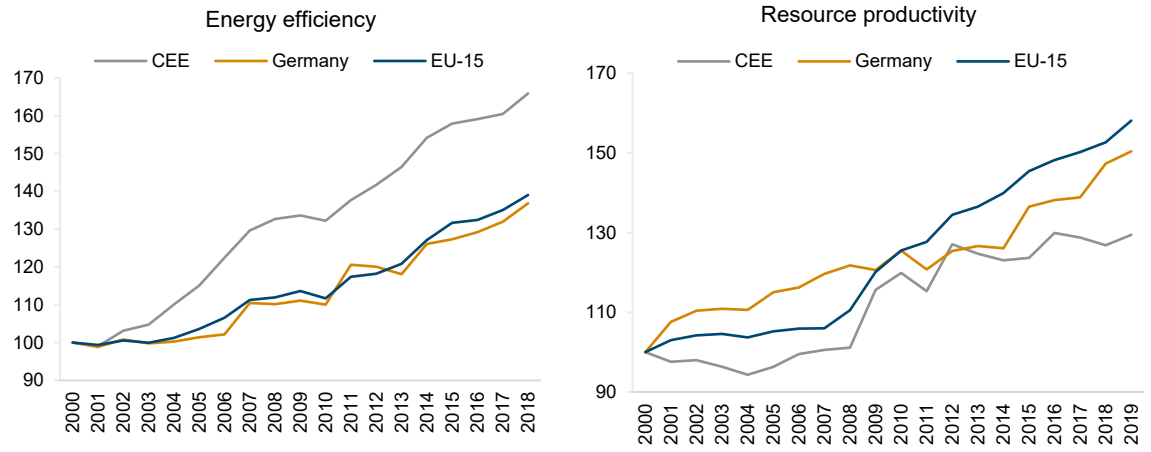
Environmental efficiency of industrial production

The sustainability of a growth model should take into account the capacity of industry to produce value measured against environmental impacts. One such measure is resource productivity, the ratio between GDP and domestic material consumption (DMC), measured in EUR per ton of materials. When comparing EU-CEE to the EU15 and Germany as Europe's industrial centre in Figure 3.12, the data shows improvements across the board. It also shows that there has been a growing divergence since the rates nearly converged in the post-crisis years, with EU-CEE maintaining practically the same rate since 2011, while the EU15 managed to keep raising their resource productivity. In 2018, the difference in resource productivity was about 17 percent.

The trends in energy efficiency, or the GDP produced over a unit of gross available energy, show a different picture. Here, EU-CEE managed to achieve vast improvements, which shows not only the switch from heavy industry to lighter forms of manufacturing but also the progress made in improving heating efficiency. Romania has made by far the most progress, where energy efficiency increased almost by a factor of 4 between 1990 and 2018. Nevertheless, not only did EU-CEE start from a much lower baseline, their energy efficiency is still almost 20 percent lower than in the EU15.

[47] https://stats.oecd.org/Index.aspx?DataSetCode=TRADEENV_IND4#

Figure 3.12 / Energy efficiency (EUR/Mtoe) and resource productivity (EUR/DMCkg); 2000 = 100



Source: Eurostat.

Energy transition

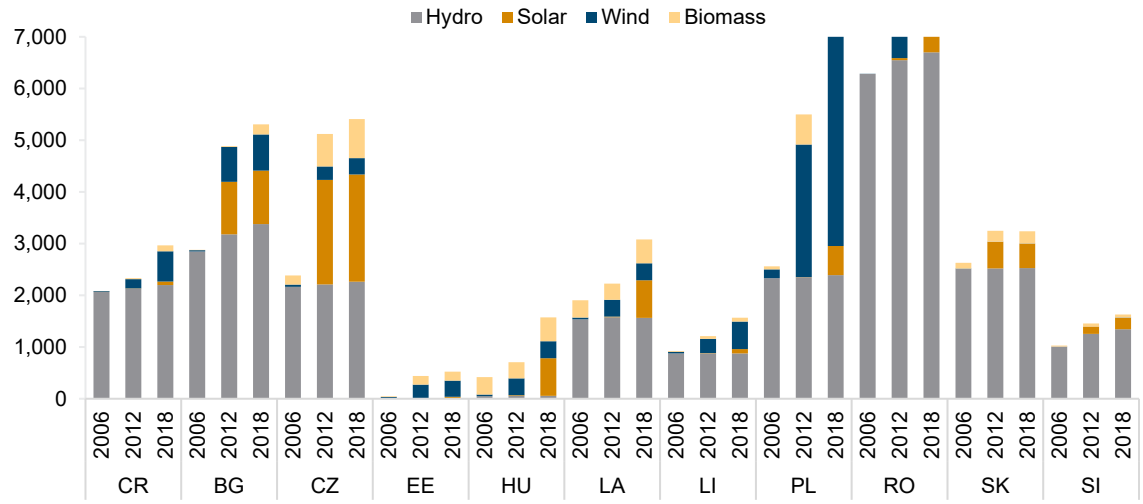
Energy is an especially delicate issue in EU-CEE. Not only are certain member states still dependent on coal, such as Poland, where it is the source of 75 percent of all energy production, but the question of energy security is also important. Buchan recalls a statement by a Polish minister: 'We are caught between the rock of western Europe's carbon obsession and the hard place of our own energy security' (2010: 6).

The share of renewables has been growing steadily: from 2004 to 2018, EU-CEE countries have increased the overall share of renewable energy from 14.4 to 21.7 percent. In comparison, EU15 have doubled their share from 11 to 22 percent. Figure 3.13 shows added contribution from renewables by technology. While hydropower remains by far the largest source, significant capacities were developed in wind (PL, BG), solar (CZ, BG), and biomass (CZ, EE, LA, HU) power generation.

Several Eastern member states are not on a path to reach the 2030 Energy Efficiency targets (European Commission 2020c). By 2030, the share of renewable energy is supposed to reach at least 32.5 percent; however, while there has been progress among EU-CEE, with the Baltic States, Slovenia, and Croatia forming one group where renewables amounted to almost 28 percent of the final energy consumption and about 35 percent of all electricity generation in 2018, others are currently reaching only about 15 percent in both categories. Plans for transitioning away from coal were made in Slovakia and Hungary and are currently being prepared in the Czechia, while Poland plans to keep using coal until the mid-century[48] (Heilman et al. 2020). Nuclear capacities are being expanded (planned or under construction) in Slovakia, Hungary, Bulgaria, and the Czechia, while the Baltic states possess no working nuclear reactors (World Nuclear Association 2020).

[48] In 2020, plans were made to cut coal's share of electricity generation to 11–28 percent.

Figure 3.13 / Total installed capacity from selected renewable energy technologies in MW



Circular economy

The updated Circular Economy Action Plan (CEAP) was introduced as part of the EGD and puts emphasis on the design and manufacturing of more resource-efficient products. It also directly addresses value chains, such as vehicles, batteries, plastics, and electronics, all of which are relevant for EU-CEE. Most EU-CEE countries are in the process of creating a national roadmap (or strategy) for the circular economy, with Slovenia being the first in 2018, followed by Poland. Several others are expected to deliver similar strategies by 2021 (EESC 2019). This shows that the circular economy is of growing interest to the governments in the region, not in the least because of the large amounts of funding available for business and research through the EU's various institutions.

The share of materials recovered and returned into the economy (also known as circular materials use) in EU-CEE amounts to 6 percent, significantly lower than the average of EU15, which is almost 11 percent, or of the Netherlands, where almost 30 percent of waste materials are recovered. While this indicator puts a heavy emphasis on recovery and recycling and points to deficient waste management and recycling systems, it also signals an area rich in new business opportunities. The market for secondary raw resources (residuals to be recycled and reused as industrial inputs) is growing and starting to lean towards the East. However, the difference in volumes is still large. In 2019, it still surpassed the factor of 10. Imports of recyclable raw materials in EU-CEE rose by 25 percent from 2004 to 2019 while falling by 40 percent in EU15, potentially indicating a restructuring of the recycling industry towards the East.

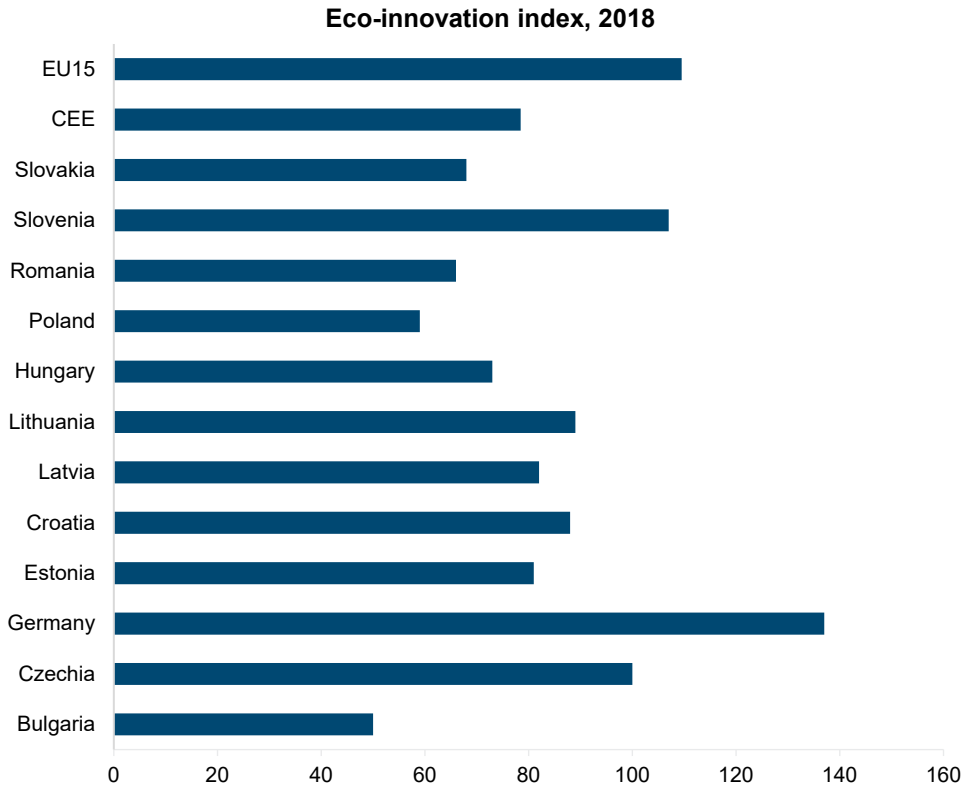
Green factory economies?

As is shown thus far, not only are EU-CEE countries starting from a worse position than countries in Western Europe, they are also lagging behind in the green transition. One reason for this discrepancy may be the inability of domestic research and innovation (R&I) systems to produce the necessary technological change and identify economic opportunities of the green transition. One way to assess this is through the Eco-Innovation Index, which shows how much below or above the European average

innovation activities related to sustainability are in a specific country. All countries apart from Slovenia and the Czechia score below average (Germany's score is at 140 percent of the EU average). Assuming that a higher score points to a larger concentration of R&I activities, Figure 3.13 implies that the functional specialisation of EU-CEE as factory economies (see Section 2.1) could also be developing in the green economy with R&I activities located in core areas while production takes place in the East. The automotive industry's turn to electricity is one such example: FDIs have been made to produce car batteries in Poland, Slovakia, and Hungary, and electric car manufacture is already set up in the Czechia and Slovenia. Out of those examples, the strategic alliance between Slovak InoBat Auto firm and the US company Wildcat Discovery Technologies combines R&I and production (Hunya and Adarov, 2020). Looking at the production of environmental goods and services as defined by Eurostat, the volume produced in EU15 and adjusted for GDP differences is 25 times larger than in EU-CEE.

The disparities in green innovation and production of environmental goods seem to confirm the notion that the potential for developing clean technologies and raising capital for 'green investments' is unevenly distributed across the EU (Lucchese / Pianta 2019). Moreover, recent studies suggest that diversification towards green technologies is skewed towards countries with pre-existing competences, meaning that due to different starting points between EU15 and EU-CEE, this process could lead to further divergence (Perruchas et al. 2019). State support is key to overcoming this uneven dynamic. One way to bridge this gap is with a 'mission-oriented' industrial policy.

Figure 3.14 / Eco-innovation index (% of EU average), 2018



Source: Eurostat.

Green industrial policy

Funding aimed at accelerating the transition of industries in EU-CEE is increasing. The EU spends about 40 percent of its industrial policy funds on the green transformation and has unveiled a new Industrial Strategy in March 2020, which puts heavy focus on the green transformation (the EGD being a key part of it). Besides the EU, member states themselves also fund parts of the Industrial Strategy. The most prominent category of funding provided by member states is state aid for the ecological transformation (Stöllinger / Landesmann 2020). Although the data does not correlate directly with support for R&I, state aid in the form of funding for environmental protection and energy savings had increased over the years, especially after 2010 when it doubled on average. In 2018, Bulgaria, the Czechia, and Estonia contributed more than 0.5 percent of GDP, while the region contributed 0.41 percent on average, compared to 0.34 percent in EU15.

A potential issue to keep in mind is the possibility of tension between the EU's cohesion goals and their environmental objectives. The costs of moving away from environmentally problematic practices and especially from coal could serve as an impeding factor, especially if, as shown above, comparative advantages in green technology are difficult to achieve. One way to bridge this is by increased funding targeting vulnerable sectors in EU-CEE and cushioning potential negative effects on employment. For this purpose, the Just Transition Fund, although not an industrial policy in the classical sense, allocates 56 percent of its budget to EU-CEE.

Green jobs

The creation of green jobs[49] is one of the benefits of the green transition (European Commission 2019). Achieving the goals of the Paris Agreement by 2030 is estimated to improve employment results in EU-CEE by 0.36 percent on average compared to the baseline. Only Poland would see a minimal drop in employment (European Commission 2019).

Here too, EU-CEE countries are lagging. According to Eurostat, the growth of green jobs in EU15 (about 1.2 percent per annum) between 2014 and 2017 was twice as high as in EU-CEE[50] (2.4 percent per annum). Nevertheless, there was considerable growth of FTEs in the renewable energy sector. In 2018, there were 348,500 jobs in the renewable energy sector in EU-CEE countries, a 20 percent rise compared to the previous year (EurObserv'ER 2020)

Social and economic issues related to the energy transition are strongly linked to regions whose economy has traditionally relied on coal. Ideally, a significant share of job loss due to the abandonment of fossil fuels would be compensated by new green jobs. A study by Kapetaki et al. (2020) assesses the decarbonisation-related employment potential of the EU's coal regions. EU-CEE dominates the list of regions showing a comparatively small potential for replacing coal-dependent jobs. For example, it is estimated that out of 12,000 such jobs in Bulgaria's Yugoiztochen region, only 2,200 new FTEs could be provided through decarbonisation projects, such as renewables or refurbishment of buildings. This points to the need for active state policies to build up capacities and skills needed for low-carbon projects.

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[49] Although there is no common definition of green jobs, current common practice is to include jobs in the renewable energy sector, activities related to energy efficiency, recycling, and environmental protection.

[50] The figures exclude Slovakia and Hungary, who did not report data on green jobs.

3.5. DIGITAL TRANSFORMATION

Key Messages

Digital transformation has the potential to boost economic growth in EU-CEE. While Estonia is already very advanced in broad digitalisation of its economy, for other EU-CEE countries, success in particular dimensions is a starting point to build upon.

The Czechia, Hungary, Poland, Romania, and Slovakia have better preconditions than other EU-CEE countries to develop a new growth model based on value chains related to advanced digital production (ADP) technologies and industry 4.0 diffusion. Despite the risk that countries will be further stuck in an EU-'factory' model, new industrial ecosystems offer a chance to expand specialisation towards the digital services required to enable ADP technologies.

Good education systems and the advanced digital skills of the young population are advantageous human capital conditions in many EU-CEE countries. These conditions could underpin economic growth based on innovative digital services. However, this transformation is endangered by shortages of IT-professionals owing to strong outward migration.

As a response to the COVID-19 pandemic, more public investments to accelerate digitalisation are expected, with financing coming both the national and EU level. Although common EU rules restrict some forms of state support to digital technology development by national states, every country in EU-CEE benefits from common EU-regulation on data protection, standardisation, interoperability, e-commerce and digital payments, and cyber-security.

Ongoing digital transformation brings changes in consumption and production, creates new business models, disrupts labour markets, and makes some jobs redundant while creating new occupations. Diffusion of digital technologies has the potential to improve access to public and financial services, new markets via eCommerce (UNCTAD 2015), and to create remote jobs in the gig economy. While digitalisation is an opportunity for boosting productivity and growth, it creates the risk that the products of this growth will be unevenly distributed. The ability for people to benefit from digital growth is affected by their skills, access to infrastructure, the rural/urban divide, asymmetric information about platform-based business, a concentration of power in big tech and data-driven firms, and poor working conditions in the gig economy. Risks related to cyber-security, data protection, the spread of disinformation, which have recently become more visible due to an increased uptake of digital technologies during COVID-19 lockdowns, also require an appropriate policy response.

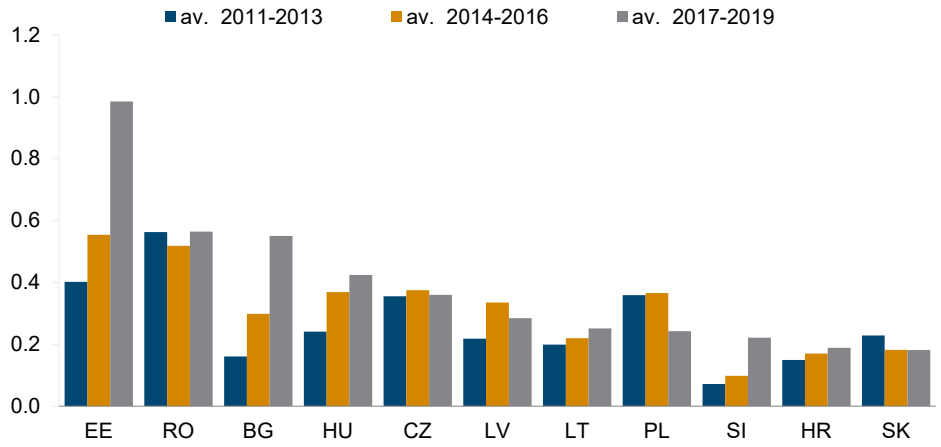
Several studies confirm that a higher digitalisation of firms boosts productivity growth. The Industrial Report by UNIDO (UNIDO 2019) confirms this for industrial producers on a global level. A study of EU firms reveals that more digitally-intensive firms proved to be more resilient during the Global Financial Crisis (Bertschek et al. 2019). This will likely also be valid in the COVID-19 crisis. On a sectoral level, an econometric model for the EU, the US, and Japan confirmed that information and communication technology (ICT) capital and especially intangible digital capital were important for productivity growth until 2017, with larger effects for several manufacturing sectors (Adarov / Stehrer 2020). Broader adoption of industry 4.0 technologies will likely amplify this impact in the next years. Especially in industry 4.0, the development of new technologies such as blockchain technologies, artificial intelligence (AI), robotics, machine learning, additive manufacturing processes (3-D printing), nanotechnology, biotechnology, and

quantum computers could lead to a far-reaching fusion of the physical, digital, and biological worlds, with massive effects on industries and entire economies (Schwab 2017).

3.5.1. Digital transformation as part of a new growth model for EU-CEE

For EU-CEE countries, digitalisation could add up to 1 percentage point per year to real GDP (McKinsey 2018). Estonia is already a digital front-runner, measured by various multidimensional rankings. It is ranked third globally in the UN E-Government Development Index, 23d in the Network Readiness Index (NRI), and seventh among EU countries in the Digital Economy and Society Index (DESI). Its status as a leader in digitalisation in EU-CEE is becoming more visible. The contribution of the ICT sector[51] to GDP growth in Estonia has been rising faster than in other EU-CEE countries and was visibly higher in the region over the last three years (Figure 3.15).

Figure 3.15 / Contribution of information and communication activity to GDP growth, in pp

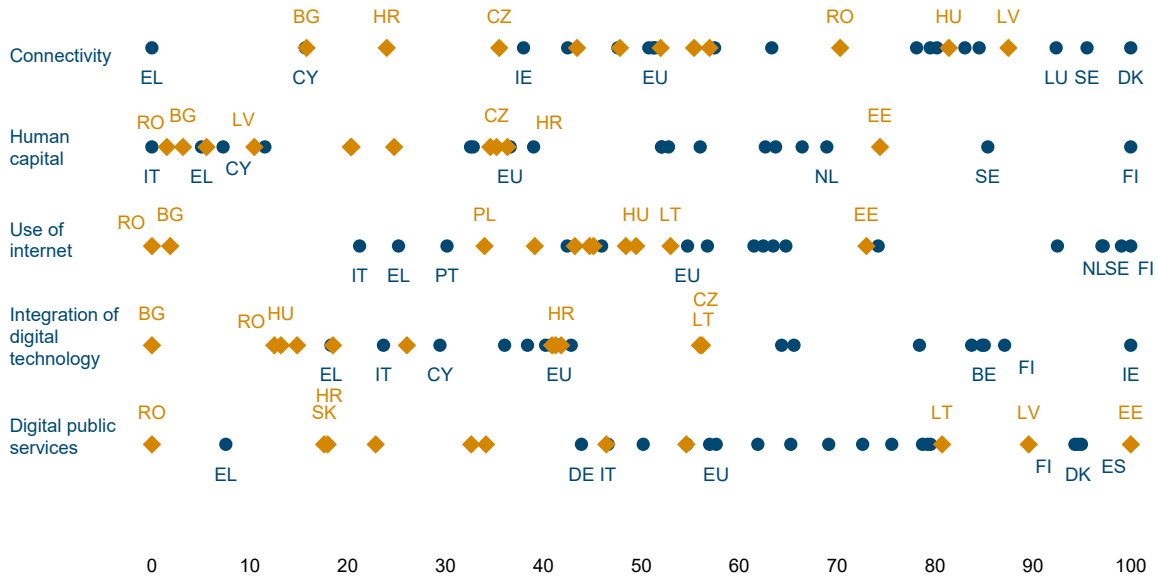


Note: countries sorted ascending by average annual contribution in 2017–2019.
Source: wiiw Annual Database incorporating Eurostat.

However, apart from Estonia, none of the EU-CEE countries are among the top ten in the Digital Economy and Society Index (DESI) ranking. Despite that, some of them are quite successful in particular dimensions of digitalisation (Figure 3.16). Although Estonia is a leader in EU-CEE in internet use, human capital, and digital public services (and even is an overall EU leader for the last dimension), other EU-CEE countries have leading positions in connectivity and integration of digital technologies. Good digital infrastructure in Latvia, Hungary, and Romania brings them high connectivity scores and fourth, seventh, and eleventh positions among EU countries, respectively. All Baltic countries are advanced in digital public services. The integration of digital technology in EU-CEE has been the most successful in the Czechia, Lithuania, and Croatia. Despite room for improvement in the human capital dimensions among all EU-CEE countries, Latvia, Croatia, and the Czechia still have positions around the EU average. While all countries have on their agenda measures to close gaps for broader digitalisation, a differentiated approach to digitally-driven growth could be more appropriate for building on success areas where spill-overs are likely to spread to the rest of the economy.

[51] ICT sector is defined here in a narrow sense as only a service activity; J - information and communication of the NACA Rev.2.

Figure 3.16 / EU countries comparison by main dimensions of Digital Economy and Society Index 2020



Note: scores (0–100) are normalised for each dimension between minimum and maximum values; orange diamonds depict CEE countries, blue circles are other EU countries. Top and bottom three positions and EU average are labelled with a country code.
Source: European Commission, Digital Scoreboard, own calculations.

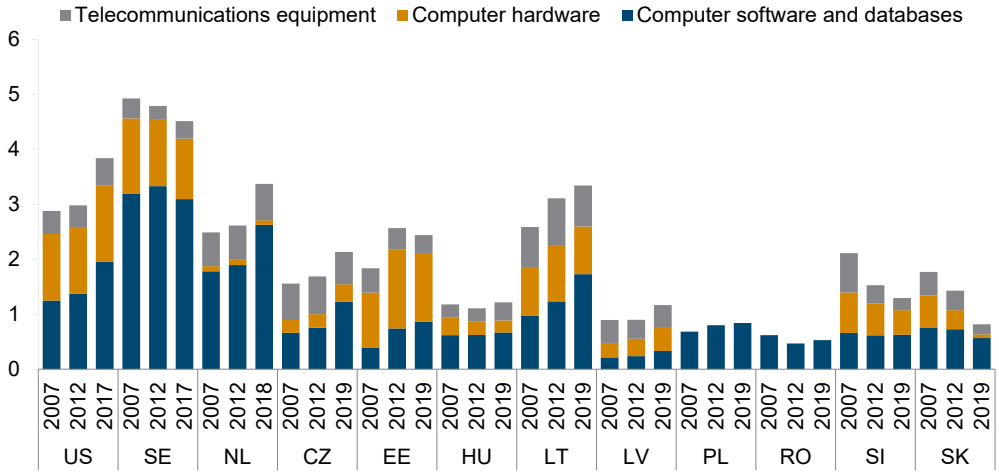
In EU-CEE, Bulgaria and Romania have the largest deficiencies for many dimensions of digitalisation. While Romania's advanced infrastructure is a good basis for further development, Bulgaria's modest performance correlates with its lower income level and requires more resources to close the existing gaps. The National Strategy in Bulgaria sets broad priorities, but a successful uptake of digital technologies will depend on resolving connectivity and low digital skills issues.

A sustainable digital transition requires policies to mitigate existing disparities in EU-CEE. Although in the EU, on average, the gap in internet access between urban and rural areas is small, for most EU-CEE countries, disparities are clearly visible, with the largest gaps observed among households in Bulgaria (20 pp), Romania (14 pp), and Croatia and Slovenia (11 pp). Better internet access in rural areas offers improved opportunities for employees to work remotely and for digital self-employment in Estonia, the Czechia, and Poland. The gap between the digitalisation of SMEs and large firms is a general issue in the EU, but in Slovenia and Poland, this is particularly striking when looking at the shares of enterprises with a high level of digital intensity by firm size: 21 percent for SMEs and for 66 percent large firms in Slovenia, 9 percent for SMEs (the lowest in the EU), and 50 percent for large firms in Poland.

3.5.2. ICT capital as a driver for digitalisation

The share of ICT capital in total capital is historically lower in EU-CEE countries compared to Japan, the US, and European digital front-runners like Sweden and the Netherlands (Figure 3.17). Inside the region, ICT capital shares are larger and faster growing in Lithuania, Estonia, and the Czechia.

Figure 3.17 / Development of ICT capital share in total capital, in %



Note: data for ICT capital for Poland and Romania are available only for computer software and database component.
Source: EU KLEMS 2019, Eurostat.

A bottleneck for many EU-CEE countries is a lack of public financial resources and private demand for large ICT investments. According to available data, only Lithuania and the Czechia allocated more than 4 percent of GDP to ICT investments in recent years.[52] As an immediate pandemic response, more public investments are expected in the digitalisation of education, health system, and provision of e-government services.

3.5.3. Economic growth based on advanced digital production technologies

Several CEE countries already record-high engagement with advanced digital production (ADP) technologies in manufacturing, which are built on a fusion with digital tools. Nevertheless, none of them is among the global top ten economies,[53] the UNIDO 'front-runners' (2019). The next group of countries are classified as 'followers' based on data for patent activity, export and import market shares of ADP-related goods, and revealed comparative advantages (RCA) in them.[54] Hungary and Romania are assessed as ADP users based on their relative specialisation in importing ADP capital goods, and the Czechia, Croatia, Lithuania, Poland, and Slovakia are producers.

[52] Data for Estonia for investment (GFCF) in ICT/non-ICT breakdown are only partly available.

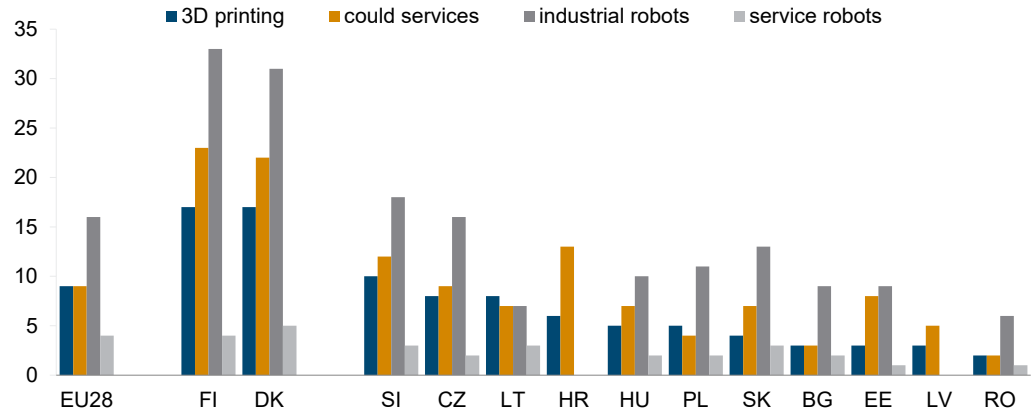
[53] China, France, Germany, Japan, Korean, Netherlands, Switzerland, Taiwan, United Kingdom, and United States.

[54] ADP may include a broad range of technologies. In an UNIDO report, an analysis of trade flows focused on an additive manufacturing (3D printing), computer assisted design/manufacturing (CAD-CAM), and robotics.

This implies that these groups of countries have better potential among EU-CEE economies for developing a new growth model based on an ADP-related value chain. The Czechia, Croatia, Lithuania, Poland, and Slovakia have better preconditions to specialise in the production and export of capital goods for ADP technologies. Despite a risk of deepening their specialisation in production activities in this case and being further stuck in an EU factory model (see Section 2.1), participation in these new production value chains may offer a chance for the development of industrial ecosystems by expanding a provision of digital services required to enable ADP technologies.

Hungary and Romania have better preconditions for faster diffusion of industry 4.0 (historically good manufacturing capabilities coupled with an existing high-speed internet network).[55] Other EU-CEE countries with good manufacturing capabilities, like the Czechia, Slovakia, and Poland, could also profit from industry 4.0 if they quickly upgrade their internet infrastructure. The rise of industry 4.0 requires higher speed connectivity and especially broader 5G adoption. In turn, the development of industry 4.0, especially the deployment of the internet of things (IoT) technologies in factories and warehouses, may facilitate the spread of digitised logistics hubs such as ports and train terminals that automatically process larger volumes of goods more quickly. Higher uptake of industry 4.0 technologies may also boost demand for related digital services.

Figure 3.18 / Share of enterprises using ADP technologies in manufacturing in 2018, in %



Note: Selected ADP technologies include industrial and service robots, additive manufacturing (3D printing), and cloud computing services reserved for enterprises. EU-CEE countries are sorted by the share of 3D printing.
Source: Eurostat.

A broad diffusion of ADP in manufacturing has yet to be realised in EU-CEE. The share of enterprises using industrial robots and additive manufacturing processes (3D printing) was slightly above the EU average only in Slovenia in 2018, and the use of service robots was below the EU average in all EU-CEE countries. The share of manufacturing enterprises using cloud computing services reserved for them was above the EU average in Croatia and Slovenia. In Hungary, the respondents to a survey by 'The Industry 4.0 National Technology Platform Association' considered a lack of skilled labour force to

[55] Hungary and Romania are ranked fourth and fifth in the EU according to the percentage of households subscribing to fixed broadband of at least Megabit per second (Mbps). Romania and Hungary had the third and seventh fastest broadband internet speed (193.47 and 161.51 Mbps) in September 2020 according to the Speedtest Global Index, based on tests performed by internet users in those countries; https://www.speedtest.net/global-index.

be a major challenge for technological transformation. A vast majority of respondents (70 percent) believed that being a member of a cluster is beneficial for horizontal integration, but 56 percent of respondent companies were not members in any cluster, 34 percent were members in one cluster, and only 11 percent are members of more than one cluster.

3.5.4. Human capital as a driving force for leap-frogging towards high-tech services

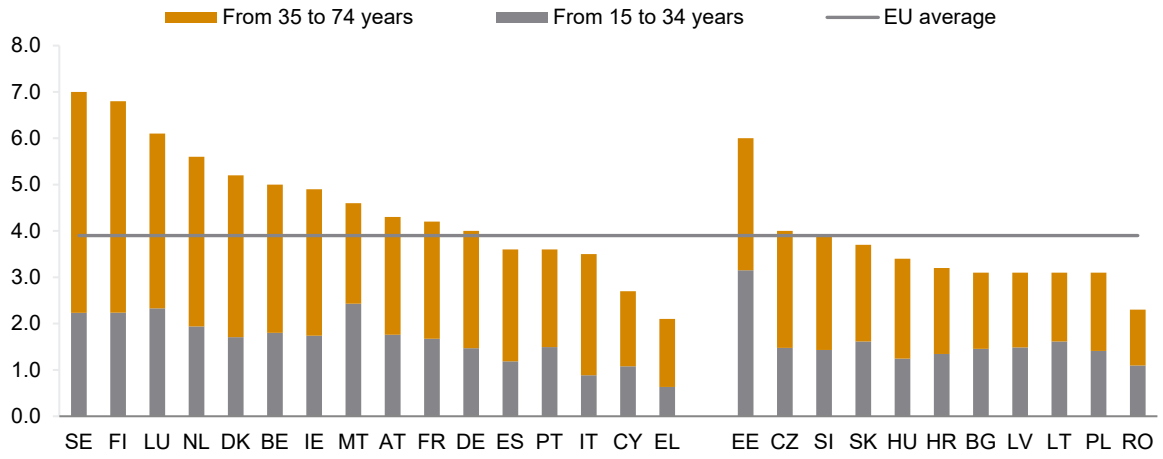
Adoption of new technologies in EU-CEE economies traditionally mostly happened through technology transfer with large FDIs from Western European countries in manufacturing. Relatively low R&D intensity and modest innovation capabilities limit the possibilities for innovation-driven growth in industrial production in many countries of the region. Digitalisation potentially offers a different path with more upsides for EU-CEE. The diffusion of digital innovations, which are, in many cases, less capital intensive as many free open source solutions are available for developers, could be led by the human capital factor. For countries with favourable human capital conditions, it opens an opportunity for leap-frogging towards innovative digital services.

The quality of human capital correlates with better education. Among EU-CEE countries, Estonia, Poland, Slovenia, and the Czechia have PISA scores for maths and science above the OECD average (Latvia has an above average score in maths). Croatia, Bulgaria, and Romania are more than 10 percent below the OECD average scores for science and especially for maths. Out of all the countries in Central and Eastern Europe, only in Slovenia and Poland was the number of tertiary graduates in science and technology higher than the EU average of 19 per 1000 inhabitants aged 20–29 years in 2016. Unlike Poland, where there is a more gender-balanced profile of graduates, in Slovenia, a large gender gap was observed (45 male and 21 female graduates per 1000 inhabitants aged 20–29 years). Romania, Bulgaria, Latvia, and Hungary have fewer graduates from STEM per 1000 inhabitants than other countries. All EU-CEE countries score well below the EU average.

The availability of ICT specialists in the labour market is also important for the development of digital services. In Estonia, the share of ICT specialists employed in the economy was comparable with digital frontrunners in Western Europe in 2019. In the Czechia and Slovenia, it was near the EU average of 3.9 percent. Average employment growth in the ICT sector over the last three years was highest in Lithuania (9 percent), Croatia (7 percent), and Poland (6 percent). Age structure reveals a large proportion of young professionals in ICT occupations in all CEE countries (Figure 3.18). Especially encouraging for many EU-CEE countries is the fact that the young generation, which is generally more digitally literate, performs well in ‘above basic’ ICT skills[56] in the European comparison, with Croatia and Estonia holding overall leading positions in the EU (Figure 3.20).

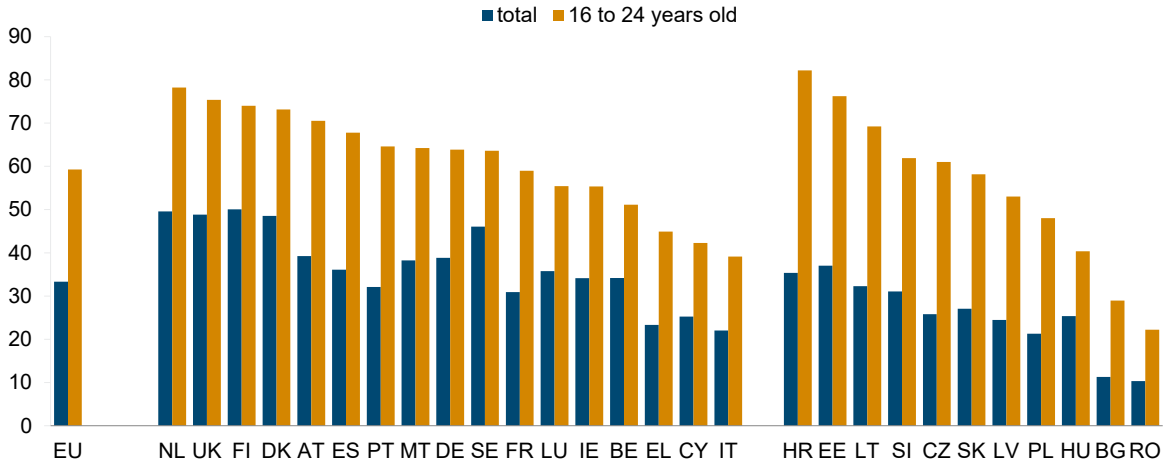
[56] Digital skills are self-assessed by individuals based on a list of skills under four ‘Digital Competence’ domains: information, communication, content-creation, and problem-solving. ‘Above average’ skills in all four categories are necessary to obtain an overall ‘above average’ assessment, the methodology is described in the methodological introduction from 2015 to the Digital Skills Indicator; https://ec.europa.eu/digital-single-market/en/news/new-comprehensive-digital-skills-indicator.

Figure 3.19 / Share of ICT specialists in total employment in 2019, in %



Source: Eurostat.

Figure 3.20 / Individuals with an above basic level of digital skills in 2019, in % of respective age group



Source: European Commission, Digital Scoreboard.

Labour shortages due to demographic challenges and emigration (see Section 2.6) in many EU-CEE countries are a potential bottleneck for a growth model based on innovative digital services. Above 5 percent of enterprises reported hard-to-fill vacancies for jobs requiring ICT specialist skills in the Czechia (6.5 percent), Hungary (5.7 percent), and Slovenia (5.1 percent) in 2019.[57]

Under already tight labour market conditions, the outward migration of highly skilled and/or well-educated workers (the so-called 'brain drain') is an additional impediment to growth in several EU-CEE countries. For example, among citizens of Slovakia, the Czechia, Hungary and Slovenia aged 20–64

[57] Although labour shortages may subside somewhat in the near term due to the COVID-19 shock and rise in unemployment, the topic is likely to return to EU-CEE in the fairly near future. See Section 2.6 for more details.

and living in other EU countries, the share of those with tertiary education in total employment is larger than in their home labour markets. In 2019, the highest gap was observed in Slovakia, with 39 percent of Slovaks living in the rest of the EU having at least a tertiary level of education, compared with only 25 percent of those living in Slovakia.

There is tough global competition for IT talent, which has likely increased as a result of the current pandemic. However, the outward migration of IT-professionals from EU-CEE can be restricted by remote work possibilities. The outsourcing of software development jobs is getting more widespread, with many EU-CEE countries being attractive due to both the price and quality of labour. According to the 2019 State of European Tech Survey on the share of freelance workers among professional software developers, four countries in EU-CEE are among the top ten countries in Europe.[58] The proportion of freelancers amounted to 18.1 percent in the Czechia, 17.2 percent in Poland, 12 percent in Romania, and 11.8 percent in Hungary, compared with a European average of 10.7 percent.

IT jobs in EU-CEE, as in the rest of the world, tend to be concentrated in major cities with an already existing tech ecosystem, which is advantageous for start-up development. This is an additional factor that is likely to prevent the large outward migration of IT specialists from EU-CEE in the future. According to the 2019 State of European Tech Survey, the capital city hosted 54 percent of all IT developers in the Czechia, 49 percent in Romania, and 33 percent in Poland. In Poland, which was ranked 7th by CEOWORLD Magazine's ranking of most favourable startup locations in the world in 2019, not only Warsaw, but other cities such as Wroclaw and Krakow are also attractive locations for the founders of innovative digital services firms (Beauchamp et al. 2018).

3.5.5. Impact of the pandemic on the digital transformation

A spike in online activities due to COVID-19 and lockdown measures have accelerated the adoption of digital technologies, especially in remote working, education, public services, and banking. This represented a stress-test for digital capabilities such as connectivity infrastructure, employee skills, and organisational processes. In EU-CEE, a larger switch to remote work was reported in countries with higher adoption of remote working also before the crisis, with the exception of Lithuania (Figure 3.21).

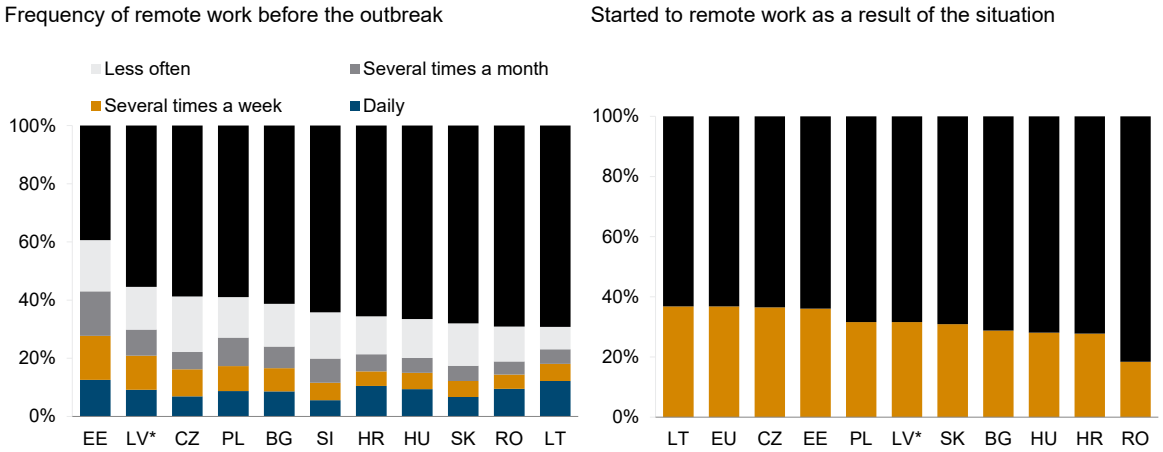
As a consequence of the crisis, more public investment in the digitalisation of education, government and medicine are to be expected. National support for the digitalisation of SMEs, which were especially hit by the pandemic, is likely to be augmented. A further upgrading of digital skills of employees, which has started due to more remote work, and more private and public spending on it is also to be expected. Larger acceptance of remote work by employers, induced by pandemic mobility restrictions, can offer better job chances for skilled labour from EU-CEE countries on the global labour market and prevent, to some extent, emigration.

A trend of growing use of digital technologies during the lockdown was partly reversed after restrictions were lifted. This suggests that without respective strategies and targeted policy measures, a return to 'business as usual' is most likely in the post-pandemic period. In addition to national budgets and the new EU budget, the new Recovery and Resilience Facility of the EU could provide additional resources to implement digitalisation incentives. Croatia, Bulgaria, Romania, Slovakia, and Latvia may have more

[58] The ranking includes the EU and other developed parts of Western Europe such as the UK, Switzerland, and Norway.

fiscal room, as they are among the largest beneficiaries relative to their GDP from overall recovery fund grants (above 5 percent in 2018 prices over 2021–2023).

Figure 3.21 / Remote work before and during the outbreak in EU-CEE



Note: * low reliability.
Source: Eurofund survey data (Eurofund 2020).

3.5.6. Implications of EU-policies on digital transformation in EU-CEE

The European Digital Strategy and Digital Single Market agenda, which aim to foster a sustainable digital transition,[59] set up a framework to address broad common aspects of digitalisation at the supranational level. In this way, every country in EU-CEE benefits from common regulation on data protection, standardisation and interoperability, e-commerce and digital payments, and cyber-security.

An additional boost to a digital transformation for EU-CEE countries may come from participation in the Digital Europe Programme, which starts in 2021 with a budget of EUR 9.2 billion. It provides funding for special aspects of digitalisation (supercomputing, artificial intelligence, cybersecurity), advanced digital skills and connectivity along the digital value chain. This includes measures to 'support the uptake of advanced digital and related technologies by industry, notably small and medium-sized' and to 'build up and strengthen the network of European Digital Innovation Hubs, aiming to have a Hub in every region, to help companies benefit from digital opportunities.'[60] Overall, the Multiannual Financial Framework 2021–2027 and the Next Generation EU envisage allocations of EUR 143 billion for 'single market, innovation and digital direction,' which is partially dedicated to digital transformation projects.

On the other hand, common EU policies impose certain restrictions on states on the stimulus available for digital technologies. State aid rules limit volumes of direct national funding. As venture capital private funding is traditionally less developed in the EU, more public-private partnership schemes or direct public procurements and more state interventions would be beneficial for countries aiming to participate in technological leap-frogging or develop advanced industrial ecosystems. Large data-driven firms,

59 https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age_en#background

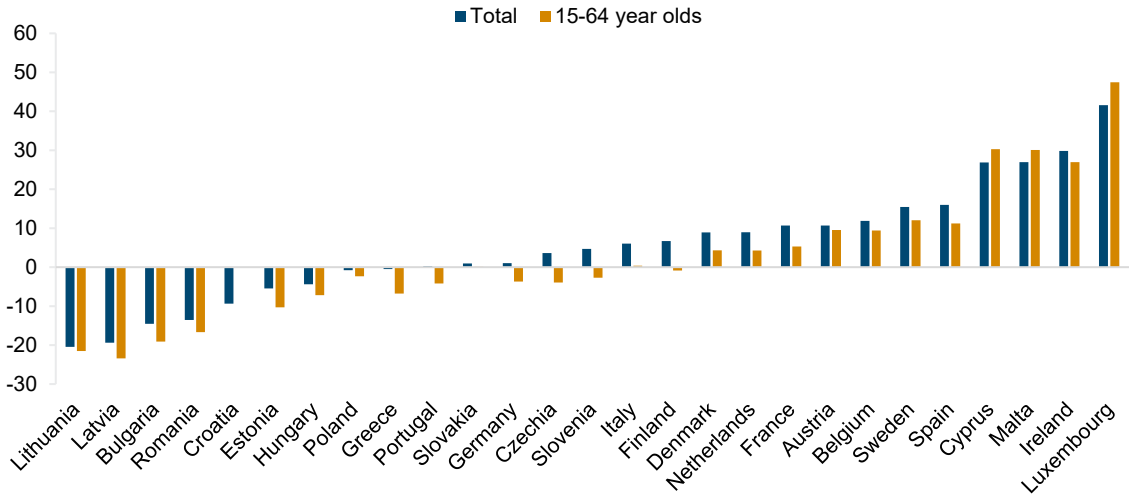
60 https://ec.europa.eu/digital-single-market/en/europe-investing-digital-digital-europe-programme

platforms, or marketplaces with high global market power, like in the US or China, are unlikely to arise in Europe given common market competition regulation. Strict data protection may be a barrier to the deployment of particular technologies based on biometrics and artificial intelligence.

3.6. DEMOGRAPHIC DECLINE

In most of the EU, populations grew in the last two decades. However, almost everywhere, the working-age population grew more slowly, and in many cases, didn't grow at all. Consequently, dependency ratios increased in the vast majority of countries, meaning those of working age increasingly facing a higher burden in supporting those of non-working age. Particularly strong discrepancies between the total and working-age population growth rates were recorded in parts of EU-CEE, including the Czechia, Slovenia, and Poland. Meanwhile, the working-age population outright contracted particularly strongly in Latvia, Lithuania, Bulgaria, and Romania (all in the range of 1–1.5 percent per year).

Figure 3.22 / Change in population in EU countries, 2000–2019, %



Source: Eurostat.

In very recent years, these trends have changed somewhat, thanks in part to major intra-CESEE migration. Especially large numbers of Ukrainians have moved to work in Poland and other Visegrád countries, while workers have also arrived in EU-CEE from Belarus and the Western Balkans. This represents an attempt to deal with labour shortages and rising wages. However, this does not seem to be a lasting solution. Ukraine, Belarus and the Western Balkans are themselves faced with negative demographic trends. Meanwhile, EU-CEE countries have continued to record historically low unemployment rates, high vacancy rates, labour shortages even for low-skilled jobs. Moreover, unit labour costs are rising.

Eurostat projects indicate that the working-age population will decline rapidly across EU-CEE in the coming decades. The region is projected to experience an overall population loss that is unprecedented outside of a war or famine. This, in turn, will have a serious impact on the economy, as well as important political consequences. Holmes and Krastev (2020) argue that it is actually this population decline,

rather than fears about immigration, which is really at the heart of the populist-nativist trends in regional politics and the rise of ethnonationalism.

Before the current pandemic hit, the Vienna Institute for International Economic Studies (wiiw) calculated that the tipping point at which EU-CEE countries would run out of labour was imminent. Our pre-pandemic calculations suggested that, along with Germany, most of EU-CEE would run out of workers by 2026 (Table 3.5). The only exceptions to this were Croatia and Romania.

Table 3.5 / Year at which labour supply will equal labour demand for six Eurostat population scenarios; pre-COVID

	Baseline	High migration	Medium migration	No migration	Low fertility	Low mortality
BG	2022	2022	2022	2023	2021	2022
CZ	2021	2021	2020	2020	2020	2021
EE	2024	2025	2024	2023	2023	2024
HR	2041	2042	2040	2038	2037	2041
HU	2024	2025	2023	2022	2022	2024
LT	2021	2021	2022	2025	2021	2021
LV	2026	2025	2027	2033	2025	2026
PL	2021	2021	2021	2021	2021	2021
RO	2032	2029	2034	2040	2029	2032
SI	2023	2024	2023	2022	2022	2023
SK	2024	2024	2024	2024	2023	2024
DE	2024	2025	2023	2021	2022	2024

Sources: Own calculations, Eurostat. Note: Based on pre-COVID economic projections.

For the current study, we have re-done our calculations taking the most recent developments and our near-term projections for EU-CEE countries into account. These new projections naturally assume a much worse economic scenario for 2020–22 and thereby push the date back at which labour supply will equal labour demand by an average of 6.5 years (Table 3.6). However, this still means that most countries will run out of workers by the end of the current decade.

Table 3.6 / Year at which labour supply will equal labour demand for six Eurostat population scenarios; post-COVID

	Baseline	High migration	Medium migration	No migration	Low fertility	Low mortality
BG	2029	2029	2030	2032	2029	2029
CZ	2031	2033	2030	2028	2030	2031
EE	2032	2033	2031	2030	2030	2032
HR	2047	2049	2045	2043	2041	2047
HU	2031	2032	2030	2028	2029	2031
LT	2024	2023	2025	2029	2023	2024
LV	2030	2028	2033	2047	2029	2030
PL	2028	2028	2028	2028	2027	2028
RO	2040	2037	2043	>2050	2036	2040
SI	2029	2031	2028	2027	2028	2030
SK	2033	2034	2032	2031	2032	2033
DE	2028	2030	2027	2025	2027	2028

Sources: Own calculations, Eurostat.

4. SWOT

This chapter attempts to bring together the various themes introduced in Chapter 3 into a SWOT analysis to serve as a basis for the policy proposals in Chapter 5. Here, we attempt to address both EU-CEE at large while acknowledging the major country differences and individual exceptions. A key takeaway from Chapter 3 is that we often cannot treat the EU-CEE region as a monolith. All general statements in this section should be understood as generally applicable to most or all of EU-CEE. Where clear differences or exceptions exist, these will be explicitly mentioned.

4.1. STRENGTHS

High level of income convergence with Western Europe and broad-based stability by CESEE standards: As the introduction to this paper showed, the growth model pursued in EU-CEE over the past decades has deficiencies. Nevertheless, looked at from the Western Balkans or the non-Baltic Former Soviet Union, it looks like at least a partial success. Most EU-CEE countries have achieved a relatively high level of per capita income convergence with Western Europe (much of EU-CEE is now wealthier than Greece and Portugal), have quite good (largely EU-financed) public infrastructure, access to a large share of the EU budget relative to their GDP, various other advantages conferred by EU membership, and are generally situated quite close to the EU's wealthiest countries. They have achieved this with some low levels of income inequality.[61] EU-CEE's broader integration into Euro-Atlantic institutions has conferred a high degree of stability in domestic and international politics that would also be the envy of most other parts of CESEE.

Sophisticated and high value export sector: The Visegrád countries and increasingly Romania have converged in terms of their export structure with Western Europe, including in high-tech industries. Their export basket is sophisticated and includes automotives and electronics. High value FDI from Western Europe has improved production technology and driven knowledge transfer. The region has retained its attractiveness as a destination for FDI since the global financial crisis.

Certain functional comparative advantages: Apart from the generally successful case of Slovenia, the key strength in terms of functional specialisation that we identify is in the pharmaceutical industry. Here, especially the Czechia and Poland are functionally specialised in post-production services, and the former also in R&D. Although otherwise very limited outside of production, both Croatia have Latvia have functional comparative advantages in sales, logistics, and support services. Meanwhile, Romania and Latvia have relatively high results in the value chain production function for R&D activities.

Environmental progress: EU-CEE as a whole has managed to significantly increase energy efficiency since 1990 and made significant progress towards lowering emissions. In energy production, we identify

[61] There are various important caveats to this statement. Income inequality is rather higher in some parts of EU-CEE, such as the Baltics, Bulgaria, and Romania. Despite generally low inequality in the Visegrád countries, certain minority groups (e.g. the Roma) are affected by deprivation.

clear progress in the Baltic States, Slovenia, and Croatia, for whom renewables amounted to almost 28 percent of the final energy consumption and about 35 percent of all electricity generation in 2018.

Quality of workforce: The Czechia and Estonia in particular have a high quality workforce, with Poland, Slovakia, and Slovenia not far behind. Estonia, Poland, Slovenia, and the Czechia have PISA scores for maths and science above the OECD average, while Latvia also does in maths. Slovenia and Poland have a share of tertiary graduates in science and technology above the EU average.

Digital economy: Estonia is a frontrunner, not only in EU-CEE but in the whole of the EU, as evidenced by its large ICT sector, the high share of ICT specialists employed, and extensive digital public services. Latvia, Hungary, and Romania are also among the top eleven in the EU for digital infrastructure, while Latvia and Lithuania are strong in digital public services. Croatia and Estonia score highly in the whole EU for above basic ICT skills of young people.

4.2. WEAKNESSES

Shrinking working-age populations: EU-CEE is in the midst of a decline in its working-age population that is unprecedented in peacetime. Despite high immigration in recent years, leading some parts of EU-CEE to become net immigration countries, significant labour and skills shortages persisted in the pre-pandemic period. Eurostat projections suggest that working-age populations will shrink precipitously in the coming decades. There is probably no solution to this; EU-CEE countries will have to learn to live with it. Increased unit labour costs driven by shortages is a particular problem for a region where cheap workers have formed a key pillar of the growth model until now. High emigration rates of qualified workers (both blue and white collar) are a particular problem.

Over-specialisation in production: EU-CEE countries are functionally specialised in relatively low-value production and have struggled (with a few limited exceptions) to progress towards headquarters functions, where more value is created. Except for Croatia, Latvia, and Lithuania, EU-CEE countries have a specialisation in production that is far above what would be predicted by their income level. However, the region has few multinational firms, particularly in manufacturing. Our findings suggest that this over-specialisation in production shows few signs of changing and may even be becoming stronger. The fact that EU-CEE countries trade predominantly with the most highly developed countries in Europe (e.g. Germany), means that it is particularly difficult for them to change their functional specialisation pattern.

Slow adaptation to structural change in the automotive industry: The region is heavily exposed to the fortunes of the German automotive industry in particular, which has been buffeted by the diesel emissions scandal, structural change in demand, and tougher environmental standards. This combines with local challenges to automotive production, including shortages of skilled labour and rising unit labour costs. In the Czechia, Hungary, Romania, and Slovakia, the automotive sector accounts for an unusually high share (by EU or global standards) of both production and employment. EU-CEE's specialisation in production rather than headquarter services means that it is less insulated from change and has less influence over it.

Low levels of R&D: Total business expenditure on R&D is roughly equal to the EU average in Slovenia and below the EU average in all other parts of EU-CEE. The EU's Innovation Scoreboard shows a clear East-West split, with Estonia being the only EU-CEE country classed as a Strong Innovator.

A long way to go in the green transition: Despite some progress, EU-CEE countries are on average much more carbon- and resource-intensive than the EU15. Moreover, they rely to a greater extent on fossil fuels for energy. Energy efficiency is around 20 percent below the pre-2004 member states, and several EU-CEE countries are not on track to meet the 2030 Energy Efficiency targets. In Poland, 75 percent of energy production comes from coal. Only 6 percent of materials in EU-CEE are recovered and returned into the economy, compared with 11 percent in the EU15. All EU-CEE countries except Slovenia and the Czechia are below the EU average on the Eco-Innovation Index.

Digital deficiencies: Bulgaria and Romania have particularly low scores for various metrics of digitalisation. Across EU-CEE, the rural/urban divide in terms of internet access is bigger than for the EU as a whole, and especially in Bulgaria, Romania, Croatia, and Slovenia. Labour shortages have created particular difficulties for firms seeking ICT specialists in the Czechia, Hungary, and Slovenia.

Some have weak education systems: Croatia, Bulgaria, and Romania are more than 10 percent below the OECD average for PISA scores, especially for maths. Romania, Bulgaria, Latvia, and Hungary have a share of STEM graduates well below the EU average.

4.3. OPPORTUNITIES

Building on existing success in the pharmaceutical industry: The Visegrád countries appear to have bucked the functional specialisation trap in the case of the pharmaceutical industry. This could be an interesting avenue for further expansion in higher-value headquarter services.

Near-shoring potential: It is likely that EU-CEE will benefit from some near-shoring in the coming years, although hopes in this direction may be higher than justified by reality. At least some German firms are likely to reassess extended supply chains in light of the pandemic. Available surveys seem to show that if near-shoring happens, it will be in the direction of EU-CEE.

Attraction of further FDI in the service sector: Hungary, Poland, Estonia, and the Czechia have relatively high shares of professional, scientific, and technical activities in FDI (in the range 7–9 percent). Specialisation in these types of services could promote technological leap-frogging. Poland has become a key European centre for the outsourcing of services. The current pandemic has shown that a much larger share of work in the services sector can be done remotely, which could benefit EU-CEE countries that already have a strong start in attracting services FDI.

Opportunities for the digital economy in the pandemic: The current pandemic produced a unique positive shock for the digital sphere, with large swathes of the economy being moved online almost overnight in Spring 2020. This accelerated the adoption of digital technologies across a host of sectors, including education, public services, and banking, and acted as a stress-test for connectivity infrastructure, employee skills, and organisational processes. Both employee digital skills and firms' digital capabilities will be upgraded as a result. The EU's Recovery and Resilience Facility (RRF) could

provide significant funds in this direction, especially in countries with particularly high allocations as a share of GDP, such as Croatia and Bulgaria. The positive shock to the digital economy may well be the most lasting legacy of the current pandemic crisis. The digital shock may change the economic geography of Europe, reducing the importance of proximity to Germany in a way that could benefit countries such as the Baltic States, Romania, Bulgaria, and Croatia.

Digital opportunities beyond the pandemic: Transition to a more digitalised economy could significantly boost EU-CEE's growth potential. For a region with a specialisation in just-in-time manufacturing, both the transition towards industry 4.0 and the development of IoT technologies are particularly significant opportunities. Particularly in those countries with high levels of human capital, digital services represent the opportunity for leap-frogging. Starting in 2021, the EU's Digital Europe Programme will provide EUR 9.2 billion to support certain aspects of digitalisation, with a particular focus on SMEs.

Green transition: Although there are reasons to see the green transition is a threat from an EU-CEE perspective, for some it is also an opportunity. This can also go way beyond the obvious, such as the recycling industry. In the case of EU-CEE's very low level of 'circular materials use,' there seems to be major growth potential in the establishment of a wider circular economy. The Just Transition Fund is a promising development for EU-CEE and will likely go a long way to pacifying resistance in countries like Poland. The switch to renewables and improvements in energy efficiency are likely to act as a small net benefit for overall employment. New global value chains based on renewable energy, e-mobility, and environmentally friendly goods could place their production and R&I capacities in the region, providing further growth and job creation potential.

Automation: EU-CEE countries have imported robotics for use in industry at a higher rate than almost anywhere else in the world in the last few years. This is a natural response to rising labour costs, as firms choose to invest in labour-saving technologies. This is also potentially important in the context of declining working-age populations. Automation can be seen as an opportunity for EU-CEE to retain its strong position in manufacturing despite the demographic shift.

4.4. THREATS

The functional specialisation trap: Our analysis suggests that many EU-CEE countries are way more specialised in production than their income levels would suggest. This implies that they are stuck in a functional trap as workshops? contract manufacturer? of Western European multinationals, without viable options via headquarter activities to develop a greater relative specialisation in more lucrative parts of the value chain. The production that manufacturers in the EU-CEE region specialise in can be conducted by many firms in many countries, meaning that competition is high, margins are low, and the threat of production being moved to a cheaper location (or due to big government incentives) is quite elevated. As countries specialised in production rely on relatively low wages, EU-CEE economies are especially exposed here.

Reliance on low labour costs in a changing world: It is clear that, despite major other advantages, cheap labour constitutes a major part of the EU-CEE appeal to foreign direct investors. In the current context, there are two very concrete threats in this area. First, labour shortages have pushed up unit

labour costs in recent years, reducing EU-CEE's advantage here. Second, an over-specialisation in production leaves EU-CEE countries exposed to competition from even lower-wage countries further south and east.

Back-shoring due to full automation of production: For now, the fundamental incentive for German and other Western European firms to outsource labour-intensive production remains extant. However, as technological improvements continue to support automation and a greater share of production is done with little or no human involvement, Western firms may decide to bring production not only nearer but even to their home country.

A barrage of threats for the automotive sector: One of EU-CEE's most important sectors is facing a large number of threats, which have only been added to by the pandemic. These include skills shortages, rising unit labour costs, changing consumer demand, and new regulations.

Demographic decline creates imbalances and FDI goes elsewhere: Although the pandemic has pushed back the point at which economies effectively run out of workers somewhat, fundamental factors suggest that it will still come. If wage pressures increase without productivity improvements amid a shrinking pool of workers, there is a risk that macroeconomic imbalances will emerge, and foreign direct investors will look elsewhere.

Political backlash against foreign investors: In the last ten years or so, the large repatriation of profits by foreign firms in EU-CEE has received increased (and increasingly negative) attention in local debates. Economic nationalism has already crossed into the political mainstream in Hungary, with large parts of the economy being taken back under state control. State capture and rent-seeking are key parts of this new agenda, which could harm economic development in the medium and long-term. The new agenda may discourage further important FDI projects in parts of EU-CEE.

Unequal distribution and economic insecurity in the new digital economy: Much of EU-CEE is characterised by fairly low income inequality in the EU context. There is a danger that the rise of the digital economy will threaten this, as a small number of high-paid ICT jobs in capital cities might push the ceiling higher without spilling over to the rest of the economy. This may reinforce the existing urban/rule digital divide in EU-CEE. Many digital jobs are insecure, with a lack of labour protection of lower-income employment.

Societal lock-in on fossil fuels and falling behind in green technologies: The slow pace of decarbonisation, obsolete technologies, inadequate waste management systems and discouragement of environmental values in the society are all threats from the perspective of many EU-CEE countries. This could prevent the region from reaping the economic rewards of the green transition through the development of comparative advantages and capabilities.

5. Policy proposals

This paper has shown that much of EU-CEE has achieved significant convergence with Western Europe over recent decades. The sophistication of the Czech manufacturing sector, the level of EU transfers received by Hungary, the convergence performance of Poland, or the technological strides made by Estonia would all be the envy of most non-EU countries in CESEE. Any realistic counter-factual for EU-CEE during these years is probably worse than what happened. Nevertheless, as we outlined in the Introduction and Chapters 2, 3, and 4 of this study, the current growth model may well have run out of steam, especially for the more developed parts of the region. Moreover, the region faces a large number of exogenous challenges in the short, medium, and long-term.

This final section of our paper looks at various possible policy solutions. We do not argue that the current setup should be abandoned completely; rather, we posit that it should be rethought and reformed in a way that both makes significant and quicker convergence more likely, and which best helps the region to meet the challenges and threats of the global economy. Completely abandoning the current model within the EU is unfeasible, and any proposal along the lines of quitting the bloc could hardly be taken seriously.

5.1. CHANGE THE DEBATE AT THE EU AND LOCAL LEVEL

Step 1 is to contribute to changing the debate at the EU and local level around macroeconomic policy, both fiscal and monetary. The architecture of the EU, for example, via the Stability and Growth Pact, enforces insufficient demand, particularly at times of economic weakness more generally (Heimberger 2020). As we outlined at the beginning of this study, any reforms that EU-CEE countries undertake to adapt their growth model to the conditions of the new global economy will be much easier if aggregate demand is higher. EU-CEE countries should:

› **Be a constructive voice for permanent change in the EU's fiscal stance:** This may be easier now than in the past, with even the IMF calling for loose fiscal policy to mitigate the current crisis.[62] As outlined in the introduction, the euro area crisis forced a big change in monetary policy at the ECB, and the current crisis has driven a potentially game-changing shift in fiscal policy. Particularly German support for a EUR 750 billion fund, financed by common borrowing and over half of which is in the form of grants, is a major step in terms of both scale and risk-sharing in the EU. Many EU-CEE countries will benefit disproportionately from this. However, it remains to be seen how permanent these fiscal and monetary developments will be. EU-CEE countries must use their weight to contribute positively to these debates within the EU. Poland is itself an important country; collectively, EU-CEE has a powerful voice.

› **Run the domestic economy 'hot':** Even if a change at the EU level doesn't become permanent, EU-CEE countries have some domestic policy levers they can use. Those with monetary flexibility should be relaxed about periods of above-target inflation and keep real rates low or negative with a target of full employment. Current long-term rates on public debt for EU-CEE countries are at historically low

[62] https://www.imf.org/en/Publications/WEO/Issues/2020/09/30/world-economic-outlook-october-2020

levels in both real and nominal terms. As long as the ECB keeps its own rates low (which seems very likely), there are few risks to loose monetary policy in EU-CEE.

5.2. FOCUS ON WHERE EU-CEE HAS ESCAPED THE SPECIALISATION TRAP AND SEEK NEW PATHS

Perhaps the most concerning finding in this paper is that EU-CEE has an extreme level of specialisation in industrial production, way above what would be predicted given its development level, and that there are few signs of diversification. EU-CEE lacks activity in more the profitable and secure headquarter, R&D, and post-production functions. We identify this as a type of trap that leaves the region exposed to competition from lower-cost locations. Realistically, the functional specialisation trap cannot be broken, or at least not quickly and decisively. Rather, countries should focus on:

› **Make the most of areas where the trap has been broken:** Our findings in this paper show this to be particularly true in the pharmaceutical industry.

› **Pursue an active industrial policy:** Market forces alone are unlikely to fundamentally change these patterns. Instead, specific policies aimed at attracting knowledge-intensive segments of the value chain will be required. This points to the need for an advanced development state or, ideally, an entrepreneurial state to handle and guide the economic integration process. The Asian Tiger model is not possible within the EU, but other options are still available (see below).

› **Redirect existing industrial policy towards a National Innovation System (NIS):** Together with domestic state aid provided, EU-CEE spends between 1.7 percent of GDP (EU Balkan countries) and 3.7 percent of GDP (Visegrád countries plus Slovenia) on industrial policy-related measures (Landesmann / Stöllinger 2020). However, redirecting these policies towards functional upgrading would be desirable. This is particularly true of the Visegrád group and Slovenia, which have reached an appropriate income level to make the switch from an imitation-based growth model (fuelled by foreign technologies) to an innovation-driven growth model relying on a NIS. Comparatively low levels of R&D (given the income level), the allocation of most R&D expenditures directly to MNEs, and an underdeveloped NIS mean that functional upgrading is a major challenge for EU-CEE.[63] Overcoming this challenge is necessary, though, if the EU-CEE economies are to avoid a functional development trap.

  Build an entrepreneurial state: Developing an entrepreneurial state is particularly important given the present context. As outlined in the introduction, this is difficult and requires dedicated public officials and high quality specialised agencies to provide research and technical support. These, in turn, should be part of a network with universities and potential lead firms in the relevant sector. The state should step in to provide basic research to support these potential lead firms. The institutional regression in some countries in EU-CEE makes this is especially challenging. Yet, for at least some EU-CEE countries, institutional standards are at a reasonable level, meaning that the pursuit of elements of an entrepreneurial state could produce positive results.

› **Use the room available within EU rules and take advantage of funds from Brussels:** Reinforced World Trade Organization rules and (especially) the strict corset of EU competition rules do not give the EU-CEE countries the policy space they need to implement active industrial policies, even if they wish to do so. However, it is also true that EU state aid rules provide numerous exceptions for R&D

[63] System-oriented innovation theory stresses that MNEs in developed countries derive their ownership advantages, inter alia, from the benefits for their R&D activities arising from more sophisticated National Innovation Systems (Pavitt 1995).

and innovation aid. Moreover, all EU-CEE countries receive considerable transfers from the various EU Regional Funds.

5.3. FOCUS ON AREAS WHERE THE ADVANTAGES OF RICH COUNTRIES ARE NOT SO INGRAINED

Very few countries are truly advanced in the digital economy, and overall, Western Europe has a much more limited head start over EU-CEE than in other sectors. Barriers to entry are generally lower, with the infrastructure required for a modern digital economy easier to introduce than for manufacturing. Human capital in the digital economy is also extremely important, and, as we have shown, this is an area of relative strength for EU-CEE. Physical geography, and specifically proximity to Germany, is less important in the digital sphere. Finally, the digital economy has received a huge positive shock from the pandemic. EU-CEE should:

› **Estonia as a blueprint:** This is a basic but potentially important point. One of EU-CEE's very few true economic success stories in the global comparison is Estonia with its digital economy. Other governments in the region should take what Estonia has done well into consideration.

› **Make sure that workers share in the gains of digital growth:** The major positive digital shock provided by the pandemic could significantly increase the efficiency and productivity of labour. However, for that to translate into faster and inclusive growth, it will need to be accompanied by wage increases (see below for more on wages in general).

› **Focusing support on smaller firms:** While big firms should have few issues making the transition to digitalisation, support should be provided for SMEs. EU-CEE countries should combine national resources and EU funding in the framework of the Digital Europe Programme, in line with a new SME strategy for a sustainable and digital Europe. These funds should then be used for training and helping SMEs adopt remote work practices, digitise business processes, establish and maintain online sales channels and advertising, and improve social media for branding and marketing.

› **Helping workers make the transition:** Policy measures to upskill and re-skill employees for a more sustainable digital transformation should be prioritised in national strategies. This is a joint task for the private sector and national labour market policies, with possible additional funding from the EU Just Transition Fund and the new Recovery and Resilience Fund. National policies focusing on boosting the attractiveness of STEM education and addressing gender imbalances in education (especially in Slovenia and Lithuania) could counteract labour shortages in this field.

5.4. MAXIMISE ALL RESOURCES AVAILABLE, ESPECIALLY AS PART OF THE GREEN TRANSITION

EU-CEE countries are entitled to an enviable amount of financial support relative to non-EU countries in CESEE. In recent years, Hungary has netted around 4 percent of its gross national income per year from the EU budget. Some of the current funds are tied to the pandemic and, therefore, will only last for a couple of years, but structural and cohesion funds are more permanent. Significant resources are also being made as a part of the green transition in the EU. EU-CEE should:

› **Understand where they are in the transition:** EU-CEE countries are behind in some ways but are not extreme laggards. The divide is not necessarily between east and west or old and new, but rather

between a handful of advanced countries in Northwest Europe and the rest, including Southern Europe. Therefore, EU-CEE is not particularly disadvantaged in the EU context.

› **Focus on the energy transition:** The majority of GHG emissions can be attributed to the energy sector. Transitioning from coal and improving the energy efficiency of existing installations are sensitive topics. Programmes such as the Just Transition Fund should be extended, and more help should be offered to compensate the costs of switching to cleaner energy.

› **Don't miss the bandwagon:** As we showed above, even in recent years, the EU commitment to the green transition has strengthened, and huge resources have been made available. Especially for EU-CEE, this is not necessarily a threat but an opportunity, with material potential growth in markets and jobs as a positive result. It will be better to focus on making the most of these opportunities rather than trying to resist. Governments in EU-CEE should identify companies, including SMEs, with high potential for innovation, work to create R&I capacities in large firms and adjust higher education to create expertise in the green economy. Special attention should be put on identifying sectors where there is 'leap-frogging' potential. This should be done as soon as possible to avoid divergence between member states.

› **Develop expertise early to prevent the emergence of 'green factory economies':** EU-CEE must try to avoid the functionalist specialisation trap from emerging in the green economy. A more active and domestic-oriented industrial policy, as part of a more sophisticated NIS, would certainly help the region get closer to the frontier in select technological niches. The region's apparent strength in pharmaceuticals may point in this direction.

5.5. TURN WEAKNESSES INTO STRENGTHS

The demographic challenges facing EU-CEE are undoubtedly tough, and it is fairly easy to spin this into a negative scenario for the region. As Holmes and Krastev (2020) write, 'why should a young Pole or Hungarian wait for his country to become one day like Germany, when he can start working and raising a family in Germany tomorrow?' The fact that mostly younger and better-educated people leave both reinforces the negative impact on the economy of outward migration and reduces the share of people in the population likely to vote for non-populist parties. EU-CEE countries have four main options to counter these challenges: increase a) productivity (relying heavily on automation), b) immigration, c) activity rates, or d) fertility (Leitner et al. 2019). All of these are already being tried to a certain extent across EU-CEE. The first three are feasible solutions to this problem. However, our contention is that automation is by far the most promising.

There is a lot of alarmism about automation in EU-CEE; specifically, people fear that many jobs will disappear. A 2019 study by the OECD found that around two-thirds of jobs in Slovakia are at either high or significant risk of automation.[64] However, combining the information about demographic and automation trends, it is possible to create a much more positive narrative. In a sense, negative demographic trends can even stimulate automation, as a shortage of workers leads to tighter labour markets, higher wages, and more incentives for firms and the public sector to invest in labour-saving technologies. Moreover, automation is not only a solution to demographic decline but can be much more ambitious in forming a core element of much more sustained per capita income convergence with Western Europe, and therefore part of a general improvement in productivity and living standards in the

[64] http://www.oecd.org/employment-outlook/2019/

region. However, ensuring that the outcomes are socially and economically positive will require governments to:

› **Encourage automation via higher minimum wages:** The process of automation cannot be left to demographic and market forces alone. Scandinavia offers a powerful and practical example of how higher minimum wages discourage the extensive use of low productivity labour and force firms to automate these tasks. In his recent book *The Economics of Belonging*, Martin Sandbu uses the illustrative example of comparing car washing between the US and Norway (Sandbu 2020). In the US, this is done by hand, whereas in Norway, car washing has been automated since the 1970s. In the US, wages are so low that it still makes sense to have this extremely low productivity job carried out by humans. In Norway, a high minimum wage means that it makes no sense for a human to wash a car. Firms simply automate this process.

› **Target a minimum wage at a relatively high share of the median wage:** This will make it highly unattractive to keep paying people to do very low productivity work. This is clearly an issue in EU-CEE at present; Eurostat data show that over 25 percent of workers in Latvia earn less than two-thirds of the median wage, and over 20 percent do in Romania, Lithuania, Poland, Croatia, and Estonia. Meanwhile in Sweden, the share is 3.6 percent. Maybe surprisingly, the UK (a country with many of the same issues as those in EU-CEE in this regard) introduced something like this in 2015, targeting a minimum wage of 60 percent of the median wage. This has had promising early results, albeit clouded by Brexit effects (Sandbu 2020; Eurofound 2020).

› **Make it easier for workers to change jobs:** Various preconditions are necessary in order to make sure that those who lose their low-productivity jobs due to automation do not end up as long-term unemployed and that higher-productivity jobs are created. These include enough demand for firms to feel comfortable about investing to expand and a financial system that works for the real economy (Sandbu 2020). A key element is that workers should be able to move easily between jobs and sectors. Again, the Nordic economies provide a clear positive example, with Sweden, Denmark, and Finland having the highest rate of job churn in the EU. The nine countries with the lowest job churn are all in EU-CEE except for Greece; only the three Baltic countries are above the EU average.

› **Active labour market policies:** Facilitating this churn will require high adult cognitive skills (where all of EU-CEE except the Czechia currently scores below the OECD average[65]), which necessitates more investment in education in general. It will also require active labour market policies, including increasing employment rates among older workers and women. The costs of hiring (but not firing) must be kept low. Retraining schemes must be extensive, well-funded, tied to the needs of the modern (digital, automated) economy, and provide sufficient income support to cater for longer periods of retraining.

› **Don't worry too much about the impact of higher wages on foreign investors:** It could be argued that FDI will flee EU-CEE in this scenario. However, these risks are probably overstated. FDI decisions are long-term in nature, and from the perspective of Western investors, EU-CEE countries have plenty of advantages beyond just relatively cheap labour, including high labour quality, good infrastructure, proximity to FDI sources in Western Europe, and the existing sunk costs (Grieveson 2018).

[65] https://www.compareyourcountry.org/adult-skills

5.6. USE THE LEVERS AVAILABLE TO REDUCE VOLATILITY AND SPREAD THE GAINS

The various transitions outlined above have the potential to be economically and socially disruptive at the global level. Some measures feel like a lot to ask, especially of older people in EU-CEE who have already experienced one wrenching socioeconomic shock in their lifetimes. This is why it is especially important to use the policy options available to reduce the volatility of the transition and make sure that the gains are distributed properly across the population this time. As generally open economies (and extremely open, in some cases), EU-CEE countries could be disproportionately affected by the various transitions outlined in this paper. In the coming years, EU-CEE countries should:

› **Make sure that transition risks and costs are borne by the welfare system and not workers themselves:** Labour markets in EU-CEE are increasingly liberalised, the share of employees covered by a collective agreement has fallen across the region and is quite low by EU standards (Astrov et al. 2019). Unemployment benefits are limited and short in duration, albeit with some temporary adjustments in the current pandemic. Changing this should be a priority, with more comprehensive welfare support to help workers through periods of unemployment that the upcoming transitions will necessarily entail. Apart from wage and tax policies, adequate welfare institutions should provide for more equal opportunities of the population. This includes (public) housing, affordable quality health services, an appropriate elderly and child care system, public transportation, and other social aspects.

› **Change tax policy to fund these transition costs:** High-quality provision of welfare and re-training programmes require substantial funding. Taxes on robots themselves have also been proposed and should be considered. However, maybe the most obvious and useful step would be a move towards a progressive income tax. This is advisable anyway, considering the general extra costs of dealing with the current pandemic. Slovakia and the Czechia already exited flat tax regimes in 2013, and others in EU-CEE which still have such a system should follow. This will increase government revenues and reduce inequality without harmful economic effects (Jovanovic 2020).

› **Targeting intranational disparities:** Urban/rural disparities in economic structure and income levels within countries are problematic, and disenchantment among those who have not shared in the gains of big cities in recent decades contributes to support for populist parties. Targeting infrastructure investment towards more remote regions to help them integrate into production networks would help, as would more local transfers and regional development policies. In the 1980s in Western Europe, the decline of industry as a source of jobs was met with an assumption that as factories, mines, and shipyards closed, workers would move elsewhere to find work. As the economists Abhijit Banerjee and Esther Duflo have shown, this did not happen (Banerjee / Duflo 2019). During the current transition, policymakers must accept that people will not move and that support should be targeted to help workers in the regions where they live. This includes training, setting up public research facilities that cater to the needs of local firms, transport and logistics, and IT infrastructure.

› **Provide the means for a good life to young families:** Introduce large and high-quality public housing projects and offer inexpensive flats to young families. Provide related high-quality support facilities such as 24/7 child care, a dense network of medical stations, and increase the number of parks. The aim of this is to keep the remaining young people in the country and encourage emigrants to return. Moreover, affordable housing has the potential to both reduce gross wages and increase disposable income for household consumption at the same time.

6. Conclusions

This paper set out to evaluate the historical development patterns of what is now EU-CEE, establish whether or not the current growth model is still capable of delivering sustained convergence, analyse the impact of current and future megatrends on this growth model and to provide policy prescriptions. We find that much of EU-CEE has now reached a development level higher than in the poorer pre-2004 member states and has achieved a decent level of income convergence relative to Germany. However, a gap still exists. We found that, especially for the more advanced parts of EU-CEE, the current growth model may be hitting the ceiling and that many countries show signs of being stuck in a trap of over specialisation in lower-value production. Megatrends such as changing FDI patterns, structural change in the automotive industry, digitalisation, climate change, and demographic decline are all already impacting EU-CEE and will only continue to grow in importance and influence. These trends create opportunities for the region but also have the potential to further negatively affect the convergence potential if not adequately addressed.

Our study established six key priority areas for policymakers. First, EU-CEE must contribute to changing the debate at the EU and local level around macroeconomic policy. Second, administrations in the region need to use available levers to instigate a transition from functional specialisation towards more profitable parts of the value chain. Third, EU-CEE must fully embrace and take advantage of the digital revolution, which has received a serious push forward from the current pandemic. Fourth, the region needs to accept and then maximise all resources available to fund and profit from the green transition. The fifth priority is to address the ongoing demographic decline by using government policies to stimulate the automation of low-wage jobs. Finally, governments in EU-CEE must limit the economic and social volatility that will result from these changes as much as possible. This will include a different tax system and an expanded role for the state.

Our study shows substantial opportunities for EU-CEE in a greener, digitised, and more automated world. EU-CEE compares reasonably well with Western Europe in many areas, and even where it does lag behind, the gaps are not necessarily big. Fully tapping into the opportunities presented by the megatrends of the 2020s and beyond, combined with appropriate macroeconomic policies at the national and EU level, would set the stage for sustainable further convergence with Western Europe. However, this requires sensible government policies to be enacted now. The risks of doing nothing are serious and include being stuck at a low level of living standards relative to North-western Europe, dealing with the political consequences of inequality and economic insecurity, and bad environment standards.

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