100 Most Important Trends in the CEE Economies.

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SPOTDATA

Katarzyna Zawodna-Bijoch

President and CEO Skanska's commercial development business unit in CEE

We have gone through the most extraordinary year in our history – as countries, societies, and companies. The deep recession caused by the COVID-19 pandemic has shaken the fundaments of economies and business models, but a revival of economic activity seen since early 2021 brought hope for a much better future.

We are observing new trends and business transformations that are appearing on the market, which will shape the future. They create new opportunities and the new normal which will be our reality going forward. Together with the analytics company SpotData, we have listed them in the "100 trends in CEE economies" report. Our goal is to demonstrate their impact on CEE. After all those analyses and multiple discussions with different stakeholders, we are certain that CEE has a bright future and is a good place to invest, from the perspectives of both corporations and financial investors.

CEE has solid macroeconomic fundamentals: high GDP growth, low levels of indebtedness and unemployment, and a strong inflow of foreign investments. The most important point to note is that the knowledge economy is the fastest-growing segment of the CEE region. IT, R&D, pharma, consulting and finance: those are the sectors which are growing at the fastest pace, supported by the large pool of well-educated workers. This creates a very positive environment for the office markets.

The new era will be defined by two important megatrends: digitalization and the green revolution. Companies are accelerating the transformation into digital processes and clean energy. We are seeing these trends everywhere around and note that CEE is dynamically adapting to new challenges.

I am confident that our report will help you navigate the trends and phenomena defining CEE economies. Enjoy the reading!

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Work on this report was co-ordinated by:

Ignacy Morawski, director of SpotData, chief economist of Puls Biznesu, in co-operation with **Alicja Defratyka,** senior analyst at SpotData and **Paulina Masternak, Jakub Łaszkowski, Maciej Skrzynecki.**

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Key Issues

The global economy is faring much better during the COVID-19 pandemic than expected. One reason is that businesses are adapting to uncertainty and the new environment. Deglobalisation has not happened and global merchandise trade registered stunning growth in the second half of 2020.

CEE was hit severely by the COVID-19, suffering one of the highest death rates in Europe, but most countries in the region managed to avoid deep recessions and performed better than EU-average in economic terms.

In 2010 a tenth of foreign direct investment in the EU were located in the CEE, in 2020 that share had risen to 15%. This reflects the growing importance of the region in international value chains, both in industry and business services. The combination of very high quality staff with relatively low levels of fixed capital per employee makes CEE a particularly attractive place to invest.

One of the most important structural shifts ongoing in the CEE is an increase in demand for high-skilled workers. This is reflected in the fact that the demand for white-collar staff has outpaced demand for blue-collar worker, not only in services but also in industry which is becomes more service-oriented. The growth of white-collar jobs (professionals, analysts, technicians etc.) in industry in CEE has been close to 20% over the last decade.

Knowledge-intensive services are the fastest growing segment of the economies of CEE, with the CAGR rate for the last decade at 4,7%, compared to the EU average of 2,7%. And business services are one of the fastest growing segments of knowledge-intensive sectors. The total growth of exports of business services from CEE has been triple-digit since 2005, and in case of Poland and Romania it surpassed 500%.

The investors activity in the office market in CEE declined in 2020, but 2021 should bring back growth. The demand for office space and total volume of transactions has declined by 25-30%. But the high development activity and strong rebound in economic activity indicate that pre-pandemic transaction level may return within a few quarters.

The amount of modern office space per capita in the capital cities of CEE is still much lower than in major Western capitals, but is gradually converges with their level. In 2007, the amount of modern office space in Warsaw, Prague, Budapest, Bucharest and Bratislava was 1.6 m^2 per inhabitant. That was 39% of the space per person in Berlin, Frankfurt, Paris, Brussels and Amsterdam. By 2020 that ratio had grown to 73%.

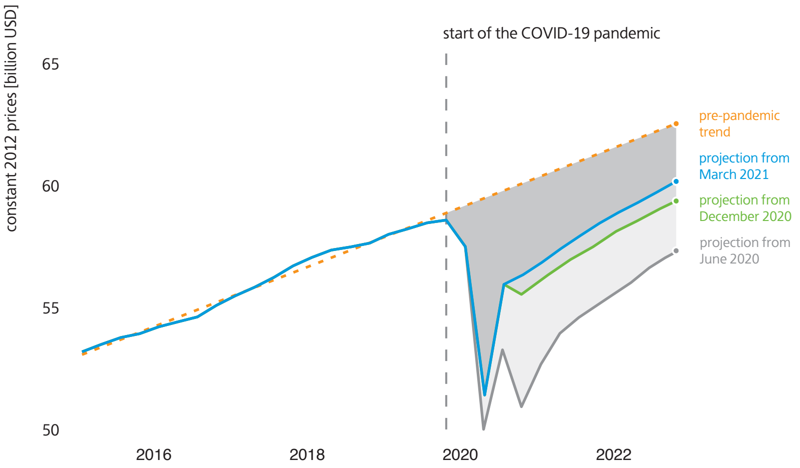
Global context

The COVID-19 crisis has been much less harmful for the economy than initially expected, but it has generated some new risks

01

OECD GDP projections

data for 33 OECD countries



Source: SpotData, Skanska, OECD

The global economy is faring much better during the COVID-19 pandemic than expected. One reason is that businesses are adapting to uncertainty and the new environment.

In the middle of 2020 the OECD (a think-tank and international economic organisation of developed countries) predicted that in the scenario of a second wave of the COVID-19 pandemic the GDPs of OECD countries would see a double-dip recession and only a gradual recovery.

The second wave hit in the autumn of 2020, but GDP did not fall. On the contrary, it continued increasing. The level of GDP in the fourth quarter of 2020 was 10% higher (!) than predicted in June, although the path of pandemic was extremely bad.

The increasing resilience stems from two sources. Part of it is due to governments all around the world stimulating demand by pumping trillions of dollars into their economies. But it is also due to businesses learning to adapt to the new environment. Hybrid working models, teleconferences, digital back-office procedures, digital trade fairs, new business models – all these helped to cushion the shock in most sectors. Obviously there are sectors which have suffered deep collapses in demand, but the overall economic balance of COVID-19 is not as bad as had been feared.

Deglobalisation has not happened and global merchandise trade registered stunning growth in the second half of 2020.

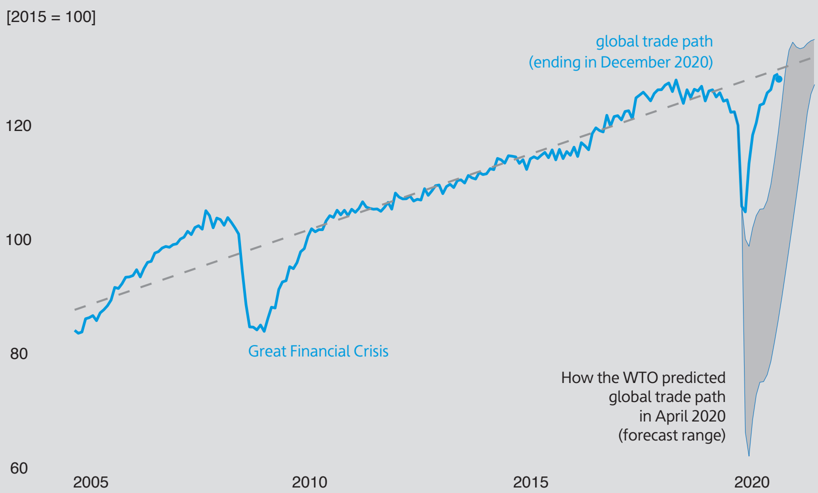
In April 2020, the World Trade Organisation predicted that the global trade in merchandise would fall by as much as 35% in 2020. In the end, it contracted by only 7% and the second half of the year brought a stunning revival. Supply chains did not break, companies did manage to provide deliveries on time and new businesses flourished despite limits on travel.

Why did such a positive and unexpected scenario play out? One of the major reasons is that global consumer demand shifted from services to goods. People did not go out to restaurants and cinemas, but they did buy more home appliances and electric cars. Moreover, digital operations worked very efficiently and provided a cushion against the freeze in direct contacts.

02

World merchandise trade volume compared with World Trade Organization forecasts

2015 average=100

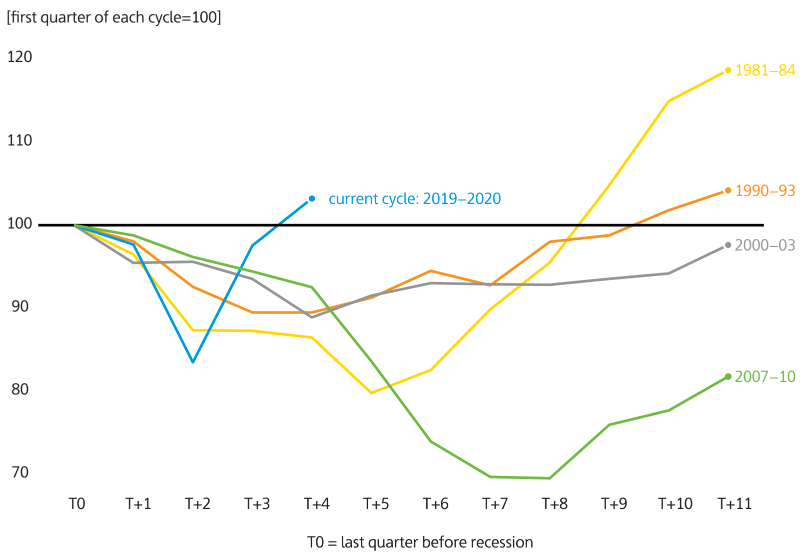


Source: SpotData, Skanska, WTO

03

Private investment expenditure (on fixed assets and intellectual propoerty) in the USA

first quarter of each cycle = 100



Source: SpotData based on FRED

The revival of investment took place much earlier in this cycle than in the previous one, at least in the USA – Europe will hopefully follow.

It took three years for the investment in fixed assets (and intellectual property) to return to pre-crisis levels after the dot-com bubble popped in 2000. After the financial crisis in 2008 it took even longer: four years. The average for post-war recessions has been two to three years. After the start of the COVID-19 pandemic it has taken only one year. This is based on data from the USA, but it is highly probably that similarly dynamic revival will occur in Europe.

What is the cause of this difference? One reason is the very strong fiscal and monetary support, which is outlined on the following pages. But, more importantly, the COVID-19 crisis is perceived as a transitory shock – a very strong and painful shock, but one which does not damage the structure of the economy of its long-term growth path.

Investors and economists are gradually coming to the conclusion that a pandemic is not as damaging as other types of recessions.

Research conducted by the European Central Bank (the ECB), based on data from the post-WWII period, shows that pandemic crises leave less long-term damage than other types of recessions. There were various pandemics which provided data for this conclusion: the Asian flu (1957), the Hong Kong flu (1968), SARS (2003), the Asian flu (2009), Ebola (2014) and Zika (2016). None of those killed as many people as COVID-19, but the public policy response to them was also not as strong. So, the broad conclusion that pandemics are less harmful than other crises remains convincing.

This fact has gradually come to dominate the economic discussion about the long-term consequences from the 2020 crisis. Whereas at the beginning of the pandemic many economists warned against dreadful long-term consequences, a year later there was much more optimism. The Financial Times wrote in April: "This crisis is different: the dramatic rebound in the global economy". The article argued that the turnaround in forecasts was astonishing and extremely rare.

04

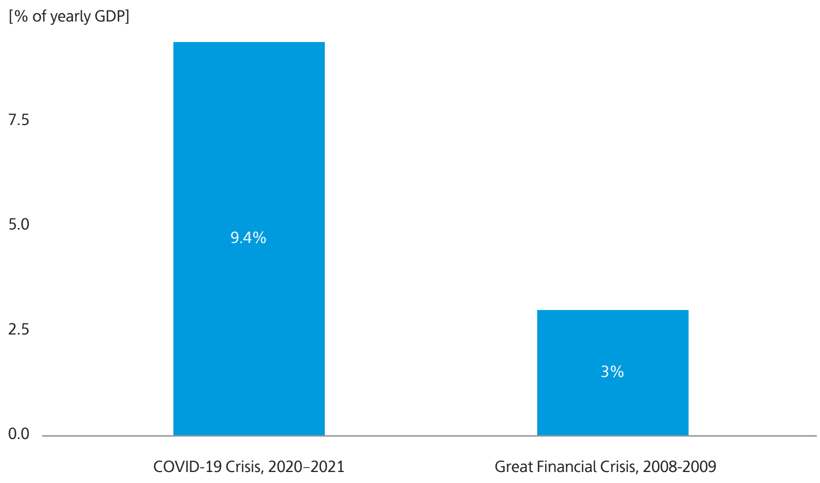
Long-term effect of large economic shocks

average % loss in potential GDP four years after the shock

Source: SpotData, Skanska based on European Central Bank research

Fiscal support for the economy in the Advanced Economies

% of GDP



Source: SpotData, Skanska based on International Monetary Fund

The super-strong fiscal support has increased the chances that the global economy will rebound strongly once the pandemic has fizzled out.

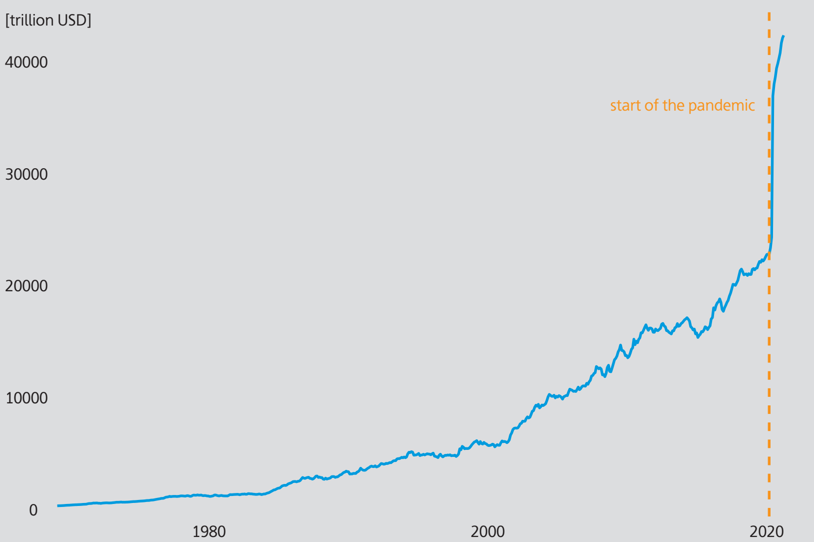
Advanced economies pumped money equal to almost 10% of their GDPs to support households and businesses during the collapse of economic activity in 2020 and 2021. That is triple the level of support provided in 2008–2009, following the great financial crisis. The unprecedented effort has helped to avoid economic and social costs related to recession and increased the chances that global GDP will return to the long-term trend within a few years.

Global liquidity surged to unprecedented levels.

The amount of transactional money in the largest global economies almost doubled during 2020 (the indicator includes physical money and demand deposits). Central banks created large amounts of money to fill the liquidity shortfall which resulted from unprecedented wave of fear. The increased liquidity resulted in stronger demand for financial and physical assets, including bonds, stocks and real estate assets. Unless central banks start to aggressively tighten monetary policy, for example by raising interest rates, the ample liquidity should support the prices of various assets in the near future.

Global money supply

currency and demand deposits (M1 money supply). Data for the US, the eurozone and Japan

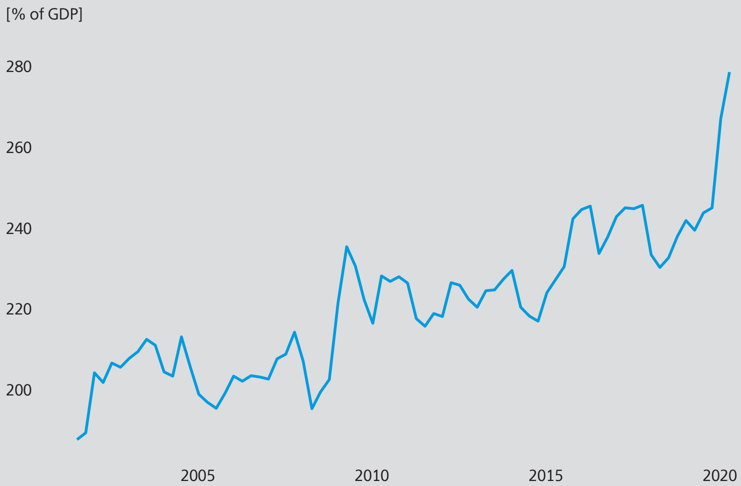


Source: SpotData, Skanska, BIS

07

World debt in relation to GDP

private sector and government,
countries reported by the Bank of International Settlements



Source: SpotData, Skanska, BIS

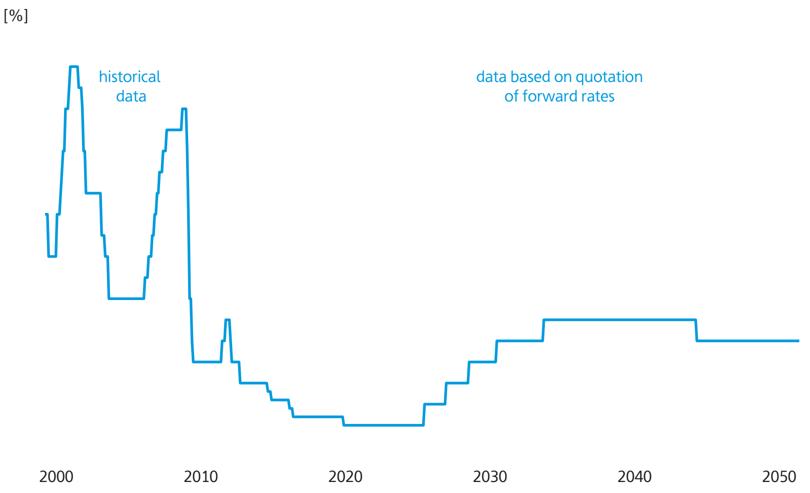
The build-up in debt due to unprecedented fiscal stimulus and recession generates some risks for the future – countries with lower debts should be more resilient.

The global economy has been saved from catastrophe. But there are no free lunches. The cost of anti-crisis measures has been a huge increase in public and private debt stocks. Global debt in relation to GDP has risen by approximately 40 percentage points – from 240% to 280%. This raises the risk of either massive defaults, if interest rates rise, or inflation, if the cost of money stays low for a longer time. That does not mean that those risks will necessarily materialise, but they will be closely monitored by investors, businesses and policymakers.

08

Deposit rate of the European Central Bank

historical data and forecast based on forward rates



Source: SpotData, Skanska, the ECB

Interest rates will not stay at zero forever, but the expected rises in the cost of money should be gradual.

Although the global economy should return to growth in 2021 and to its long-term potential level within a few years, the process of revival will be gradual and might require continuous policy support over the next couple of years. Investors in Europe expect the first interest rates hikes by the ECB no sooner than 2025, and the deposit rate level for 2030 is currently expected at less than 1%.

Long-distance travelling will recover more gradually than general economic activity, and that trend might support nearshoring by multi-national companies.

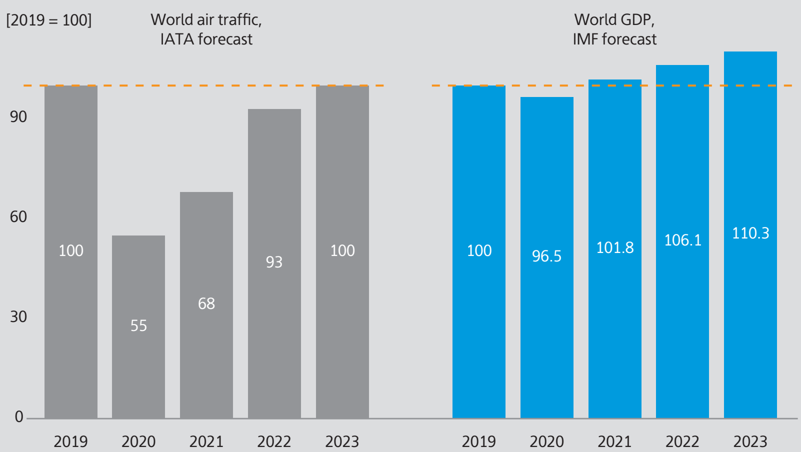
Global GDP should recover quite quickly after the pandemic fizzles out. According to forecasts from the International Monetary Fund, the level of global GDP in 2021 should be higher than that in 2019. But global travel might take longer to recover: the International Air Transport Association predicts that 2019 levels of traffic will be seen again only in 2023.

If people are more cautious and travel less, economic activity might tend to concentrate more in local clusters. That might support nearshoring and enable CEE to draw more investments from Western European companies which previously had important operations in Asia.

09

Forecasts for world air traffic and GDP

2019 = 100



Source: SpotData, Skanska based on European Central Bank

Economic growth in CEE

CEE outperformed other EU countries in 2020 in economic terms and should return to strong income convergence to Western Europe from 2021 onwards

Paul Gamble

Senior Director,
Head of Emerging Europe,
Sovereign Ratings,
Fitch Ratings

Utilisation of the Next Generation EU (NGEU) Fund will provide a significant boost to economic growth in recipient countries over the next few years. It will ensure that the rebound in growth in Central and Eastern European (CEE) EU members that starts in 2021 will strengthen next year. All CEE EU members will be net recipients of grants and will have access to new, cheap loans under the EU's EUR 750 billion plan.

Our forecasts for strong economic rebounds in the region this year largely reflect base effects following sharp coronavirus-driven contractions, as economies reopen and the external environment improves, and our assumption that progress towards a medical solution puts growth prospects on a firmer footing during the second half of 2021 (a key uncertainty in CEE as elsewhere), as well as still-supportive fiscal policies. Our projections incorporate the third wave of the virus that is currently in the region.

We forecast Romania to be the fastest growing country in the region this year, at 6%, following a contraction of 3.9% in 2020. Growth is projected to be slightly lower in Poland, at 4.1%, as the economy was more resilient to the pandemic in 2020, shrinking by only 2.7%. Growth will also be in the 3.5-4.5% range in the Czech Republic, Slovenia and Slovakia. Frontloaded use of NGEU grants will begin to support CEE economies this year and should provide a more substantial growth boost in 2022. Growth is projected to exceed 5% in Croatia, Hungary, Romania and Slovakia next year and will be above 4.5% in Bulgaria, the Czech Republic, Poland and Slovenia.

NGEU funds provide benefits to the region beyond growth. Spending of the grant component will be net neutral for government budgets, so will not add to government debt, but will allow for savings on capital spending and potentially generate additional tax revenues.

Could NGEU impact medium-term growth potential?

Assessing the effect of NGEU on growth potential involves looking beyond the near-term impact of higher spending and considering what effect the NGEU-funded projects will have in the medium term on productivity or a change in demographic profile after 2026. It also raises questions about whether the conditionality attached to the disbursement of funds can be effectively applied (from the European Commission perspective) and how effective it is at incentivising the authorities to implement growth-enhancing reforms.

In general, the biggest challenge for potential growth in the region is the negative impact from labour contribution, reflecting weak demographic profiles. Recent experience in some CEE countries (particularly the Baltics) shows that adverse demographic trends can be reversed to some extent, due in part to persistent growth that leads GDP per capita closer to the EU average. Total factor productivity is one area that can benefit from substantial investment, in particular if this happens in conjunction with higher private investment. However, at present, it is difficult to estimate whether the investment rate can rise in the long term, as there is little clarity on the investment projects that will be funded. As such, Fitch has yet to make an assumption on long-term potential growth that incorporates NGEU.

Piotr Bielski

Director of Economic Analysis Department, Santander Bank Polska S.A.

I am very positive about the post-pandemic economic outlook for the CEE countries and I think they will clearly outperform "old Europe" in terms of economic recovery. First of all, I think we may benefit significantly from the global trend of reshoring and shortening of supply chains. Poland is already a very important manufacturing hub for Europe and it may strengthen further this position (together with other countries in CEE) if we see the trend of moving production of various products from very distant locations to places closer to the final consumer. I see excellent potential for expansion not only in production of goods but also services. Poland was very successfully expanding its business services exports before the pandemic, taking advantage of its highly skilled and inexpensive labour force. Now, with the even broader use of remote work and expanded IT infrastructure, we should be able to continue and even accelerate this trend.

The second very important boost will come from increased EU funding, after the EU Recovery Programme is launched. It should stimulate investments in key areas, including accelerated green transformation and digital transformation. For Poland, which has the dirtiest energy mix in the EU, speeding up the green transformation is critical for the competitiveness of the local industry.

Last but not least, recent disruptions in supply chains, including problems with maritime transport, may increase the importance of CEE, Poland in particular, as a transport hub between Europe and Asia. Poland is located in a strategic spot, at the end of the railway from China, and we may benefit from the growing importance of this trade route. In fact we can already see some evidence of this trend in the foreign trade data.

Adrian Karczewicz

Head of Divestments, Skanska's commercial development business unit in CEE

There are a number of reasons why Central and Eastern Europe is one of the most attractive regions in terms of capital inflows and FDI inflows. It is not only about lower costs of work in countries such Poland and the Czech Republic, but also the fact we are observing an increasing number of services which require highly qualified employees. Additionally, the share of personnel employed in R&D is growing, which is an important factor indicating investment attractiveness.

CEE countries are competing with richer European nations when it comes to the percentage of their working-age population employed in knowledge-intensive businesses. The significant percentage of young people investing in higher education and stable, low labour costs have led to a brain business surge in Central and Eastern European nations. These factors directly affect the growing numbers of companies using modern digital technologies and indicate regional further development in the following years. And that means still undercovered potential and destinations for capital allocation.

CEE was hit hard by COVID-19, suffering some of the highest death rates in Europe, but most of the countries in the region have managed to avoid deep recessions.

The Czech Republic and Poland suffered Europe's highest excess death rates (i.e. the number of deaths above the historical average in relation to population size). The management of the pandemic in those countries was less than ideal, due to the limited resources invested in public health care, the low efficiency of sanitary administration bodies and the reluctance of the population to accept harsh lockdowns. However, the economic losses were much lower than the average for the EU.

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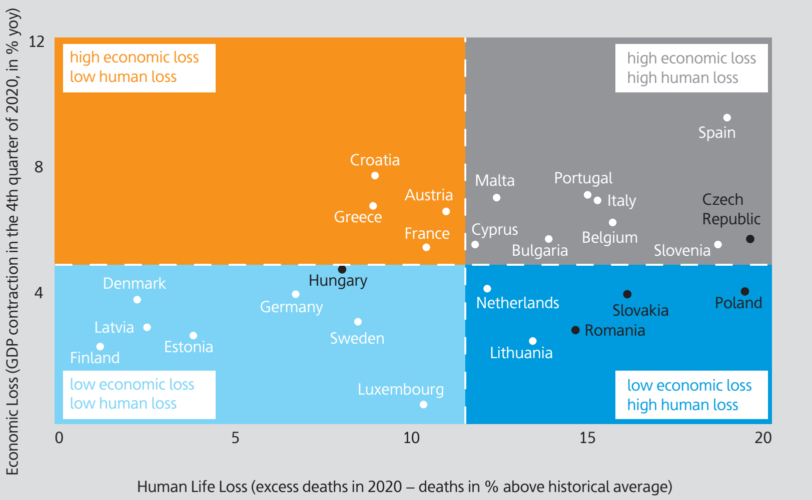
Human loss and economic loss in EU Member States in 2020



Source: SpotData, Skanska, based on Eurostat

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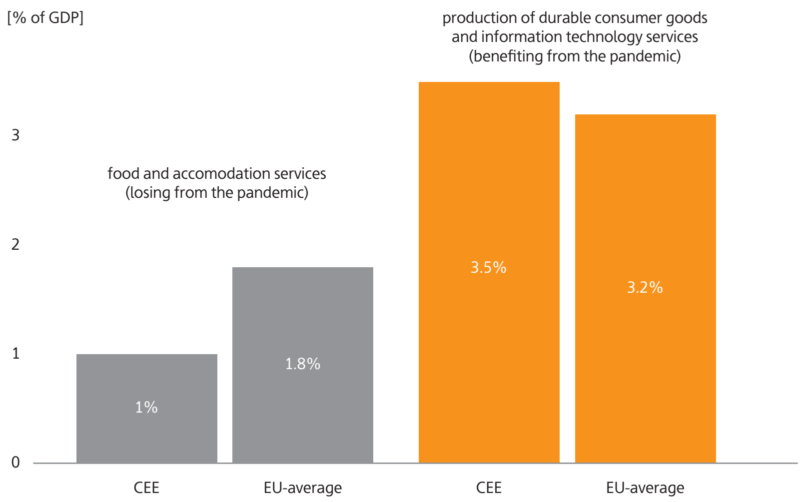
Sectors losing and benefiting from the pandemic

share of GDP



Source: SpotData, Skanska, based on Eurostat

The lower costs of the COVID-19 crisis stem from the fact that CEE has much lower share of sectors vulnerable to the shocks resulting from the pandemic.

Compared to the EU average, CEE has a higher share of sectors which benefitted from the COVID-19 pandemic, and half the share of sectors which were severely hit.

The sectors which benefitted are mainly producers of durable consumer goods, which experienced a relocation of consumer demand from services to goods, and technological services, such software, hosting, Cloud-related services, etc.

As an industrial hub, CEE has a large share of factories producing furniture, electronic appliances or other home equipment, which Europeans bought in large quantities in 2020. As a growing IT hub, software centres account for a substantial share of its GDP. Also, the tourism and hospitality sector accounts for a low percentage of the GDP of CEE.

The end result is that the long-term damage to corporate balances will be lower in this region than in Western Europe.

The costs from COVID-19 will be lower in CEE than in other countries.

The IMF predicts that long-term costs from the COVID-19 pandemic in CEE will be below the average for the world. These costs are calculated as a difference between the level of GDP predicted for 2022 today and the level which was predicted for that year before the pandemic.

Therefore, it demonstrates how pandemic has influenced the perspectives of each economy. Most countries are obviously expected to loose from the crisis, with some exceptions such as Turkey, which is a large producer of home appliances – products for which demand jumped when people were forced to stay at home. CEE is expected to lose moderately, much less than other emerging markets or Western Europe.

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Projected economic loss from the pandemic in the medium term

difference between the level of GDP (in USD) projection for 2022 made before COVID-19 and in January 2021

Source: SpotData, Skanska, based on IMF

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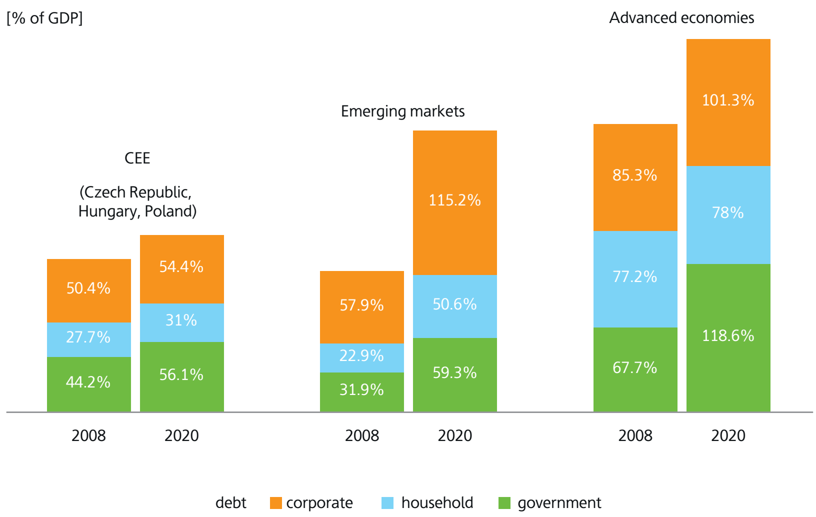
Debt in relation to GDP

general government + household + corporate debts



Source: SpotData, Skanska, BIS

Low debt levels should help maintain resilience to shocks in an unstable era.

As mentioned in chapter 1, high levels of debt after the crisis will be one of the main macroeconomic risks facing the world, and one which might lead to defaults, inflation or heightened financial volatility. Fortunately, CEE is a region characterised by relatively low levels of debt levels, both public and private. These low levels of indebtedness might be a source of strength, providing resilience during uncertain times.

Long-term convergence continues unabated.

In mid 1990s, the average real GDP per capita in CEE was approximately 40% of the level in Italy or Germany (after correcting for PPP (purchasing power parity), which is the difference in consumer prices). In this decade it might become equal with the level in Italy and reach more than 70% of the level in Germany.

This is the most important story that one should know about CEE. The EU's eastern peripheries are catching up and gaining as important a position as its southern peripheries in the global division of production. In the next step they might even achieve a level higher than Italy or Spain.

The three reasons for this trend are: a) the high productivity of well-skilled labour; b) improvements in the institutional environment; and c) the inflow of foreign capital, which makes technological transfers possible.

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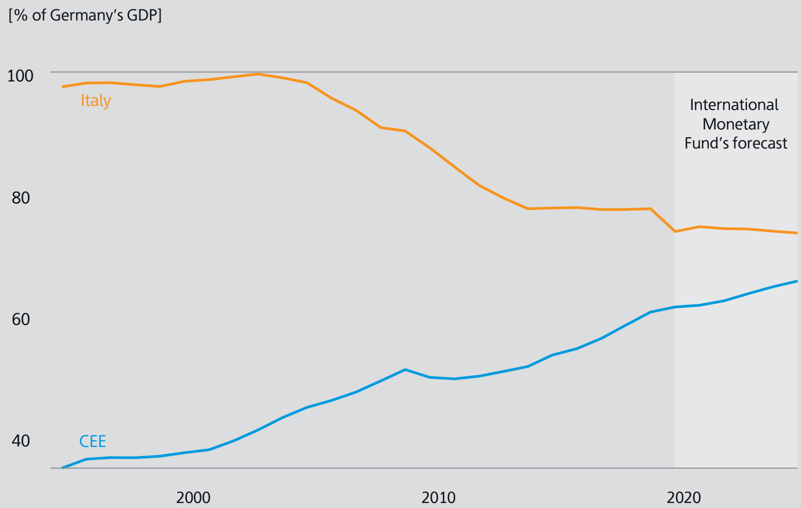
Real GPD per capita as % of German level

based on data in purchasing power parity, in constant 2017 international dollars



Source: SpotData, Skanska, based on IMF

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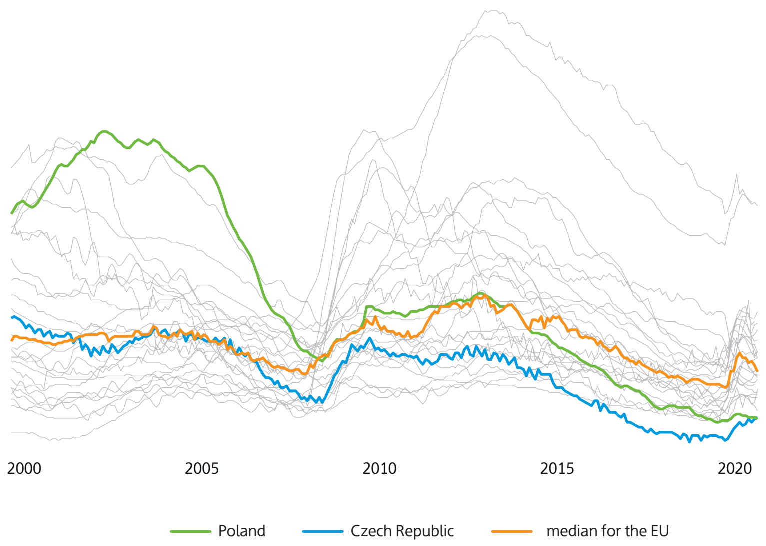
Unemployment rate in the EU

each line represents one Member State



Source: SpotData, Skanska, based on Eurostat

Poland and the Czech Republic have become EU leaders in terms of low unemployment rates.

For the Czech Republic low unemployment is a normal situation; but for Poland it is a structural shift – the country has changed from having the highest unemployment rate in CEE in 2004 to having the lowest in 2020. The fact that this happened within one generation, without any macroeconomic imbalances (such as debt bubbles, inflation and foreign indebtedness) is a historical achievement.

Inflation may be elevated in CEE and containing price pressures will be a challenge for local central banks.

Prices have been raising in the CEE region more quickly than in the EU as a whole since before the start of the pandemic. COVID-19 forced the central banks of CEE to loosen their monetary policy, but now they will have to pay more attention to local inflationary risks.

Poland and Hungary have the most to worry about: they already have the highest inflation rates in the entire EU and their trends are rising.

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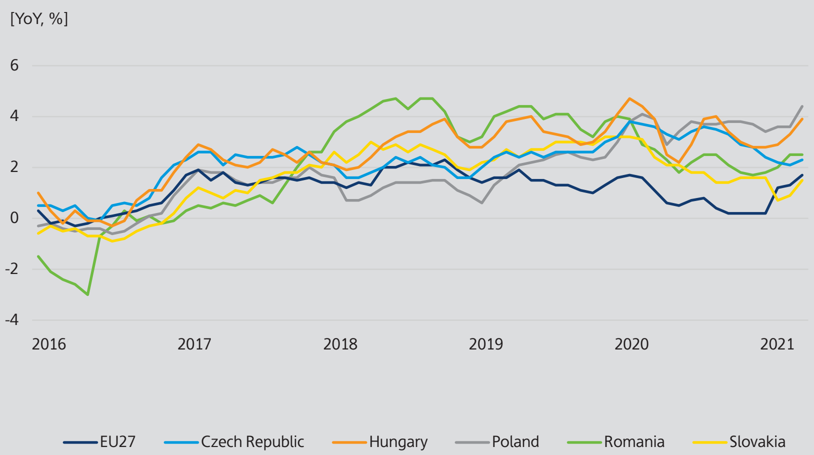
Monthly inflation rate, HICP

(YoY, %)



Source: SpotData based on Eurostat

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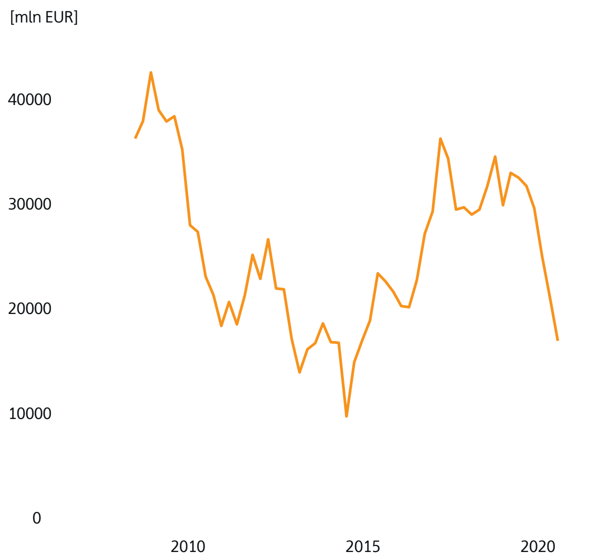
The share foreign direct investment in Europe flowing to CEE gradually increases.

The pandemic in 2020 obviously resulted in a decline in foreign direct investment worldwide. But the fall in CEE was not as large as in other EU Member States and, therefore, the share of CEE in all investment flows in the EU has increased. One of the reasons for this is the fact that large parts of the industrial sector, which is a pillar of the economies of CEE, were more resilient to the crisis.

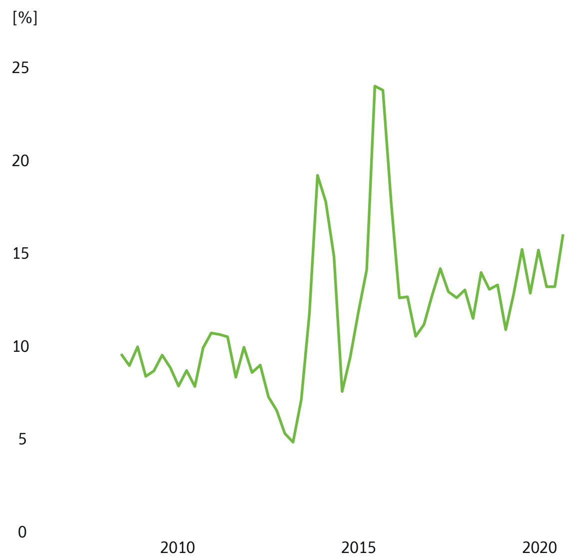
In 2010 a tenth of foreign direct investment in the EU were located in the CEE, in 2020 that share had risen to 15%. This reflects the growing importance of the region in international value chains, both in industry and business services.

Foreign Direct Investments in the CEE countries*
in mln EUR



*excluding Hungary, due to data distortions

CEE's share of all foreign direct investment inflows to EU Member States**
in %



**excluding tax havens: the Netherlands, Cyprus and Irleand

Source: SpotData based on Eurostat

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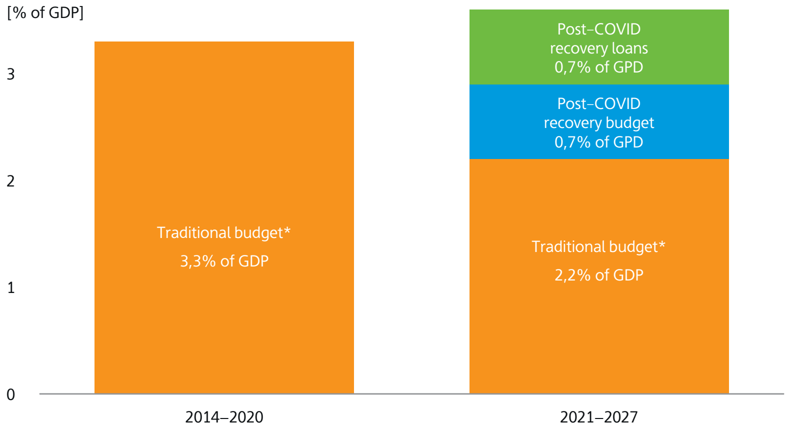
EU funds avaliable for CEE countries
planned allocation



*Multiannual Financial Framework (MFF)

Source: SpotData, Skanska, based on European Commission

Special EU funds for investment in infrastructure will flow at faster pace over the next five years.

CEE is expected to benefit from the EU's post-pandemic investment fund. The gross allocation is expected to be 1.4% of GDP annually for at least four or five years, on top of gross transfers equal to 2.2% of GDP from the traditional EU budget; this will boost infrastructure investments and GDP growth.

CEE has moved from being emerging markets to having a position among developed countries.

Emerging markets are risky but very dynamic. Developed countries are safe but generate less growth. CEE has managed to take position somewhere in between the two extremes, registering high economic growth but at the same time providing investors with safety and institutional certainty.

It is interesting to note, however, how over the last 15 years CEE has moved from being rather emerging to become instead a rather developed region – in terms of stability and safety. One of the aspects which demonstrate that shift is interest rate, i.e. the cost of capital. In 2004 the average central bank interest rate in CEE was at the level equal to emerging countries (such as Brazil, China, Indonesia, etc); by 2020 it had fallen to levels observed in developed economies.

This process reflects how the risk premium, an important component of any interest rate, has decreased. CEE is able to attract foreign capital without needing to offer high interest rates.

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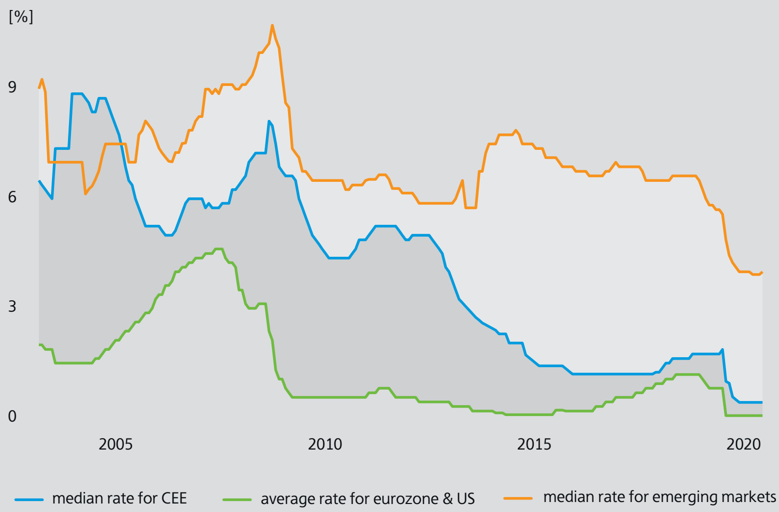
Average central bank interest rate
in % (emerging markets = G20 emerging markets)



Source: SpotData, Skanska, based on Bank for International Settlements

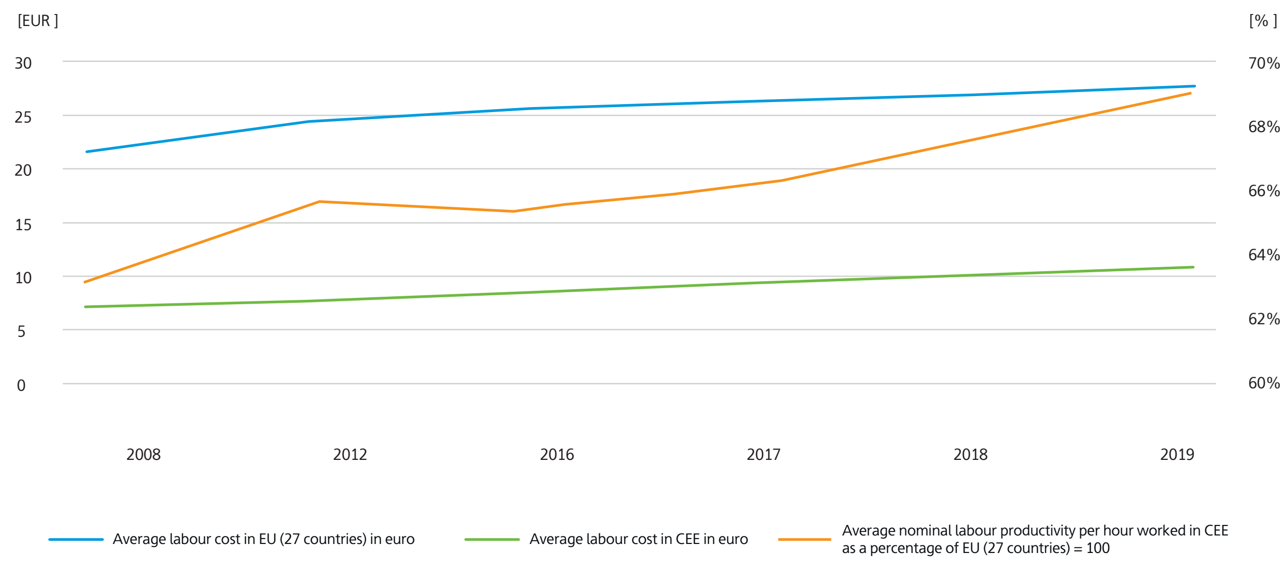
CEE is slowly narrowing its wage gap with developed countries, but at the same time is increasing labour productivity, the wage-to-productivity ratio is still very attractive for investors.

Average labour costs in CEE countries are rising steadily. In 2008, the average for five countries (Poland, the Czech Republic, Slovakia, Hungary and Romania) was €7.16 per hour; in 2019 it was €10.86. However, this is well below the EU average, which was €27.70 in 2019. The average labour costs in CEE countries are therefore about 38% of the EU average (in 2008 they were 33%). In 2019, the highest labour costs were in the Czech Republic (€13.50), Slovakia (€12.50) and Poland (€10.70). It was lower in Hungary (€9.90) and the lowest in Romania (€7.70). On the other hand, it was Romania that had seen the biggest percentage increase since 2008, up by 83%, while in Poland the increase had been 41%.

As well as rising labour costs, the region also has increasing labour productivity. The average labour productivity in 2008 was 63.2% of the EU average, and in 2019 that figure was 69%. The highest productivity in 2019 was in the Czech Republic (77.4%) and Slovakia (70.1%), followed by Hungary (66.7%) and Romania (66.1%), and the lowest was in Poland (64.9%).

In the coming years we can expect an increase in labour costs in the CEE region and a narrowing of the wage gap with developed countries. However, the steady increase in productivity in CEE countries will ensure they remain an attractive place for investors.

Average labour costs and labour productivity in CEE and the EU



*productivity is defined as gross value added per worker; gross value added measures all value created by economic agents within the economy (revenue less external costs)

Source: SpotData based on Eurostat data

21

Tech giants are starting to appear on the list of the largest foreign investments.

Three sectors have dominated the foreign direct investment (FDI) landscape in CEE in over recent years: technology, automotive and trade. Although the latter two are traditionally important, the role of modern technologies is a relatively new phenomenon.

The Microsoft data centre and Continental R&D centre show that international companies are not afraid to locate more complex processes in CEE. They demonstrate that the region's development is not only based on industry and simple services, but also a growing importance of services.

At the same time automotive sector is still a major pillar of the FDI inflows. The biggest investments in the Czech Republic and in Slovakia are by German car companies. The region is one of the most important places in the world car supply chain. This FDI reflects the growing complexity of the car factories. The producers are expecting changes and deciding to invest more in electromobility. This highlights that despite still being industrial centres the Czech Republic and Slovakia will also offer workplaces for more educated blue-collar workers. And, in addition, services related to the automotive sector will grow.

A list of the selected large foreign investment projects announced in CEE over the last three years

COMPANY	COST	SHORT DESCRIPTION	CITY
Microsoft Data Center	EUR 830 mln	Microsoft is building its first datacentre in the CEE region	Warsaw
SK ie technology	EUR 375 mln	This investment will be antother factory of batteries in Poland	Dąbrowa Górniczna
Umicore	EUR 660 mln	This factory will contribute to the surging Polish electromobility sector	Nysa
Toyota	EUR 153 mln	Toyota is investing in a factory in the Czech Republic factory in order to for producing new, more ecological cars	Kolin
Volkswagen	EUR 1 bln	VW wants to expand the production capacity of its Bratislavia factory, so it can produce new models Skoda Superb and VW Passat models there	Bratislava
Porsche	EUR 250 mln	Porsche is going to expand production in Slovakia so it can compete better in new technologies	Horna Streda
Chervon	EUR 48 mln	A new factory of this Chinese firm aims to produce more than two million car parts each year	Miszkloc
Mercedes	EUR 100 mln	Daimler is planing to produce a new electric SUV in Hungary	Kecskemét
Doosan	EUR 200 mln	This Korean company wants to expand its presence in Europe by setting up a new copper foil production facility in Hungary	Tatabánya
Lidl	EUR 100 mln	Lidl's new logistics hub in Hungary will help secure its position in that country	Ecser
Semcorp	EUR 183 mln	The investment by this Chinese firm will be yet another in the CEE's electric vehicle sector	Debrecen
Kaufland	EUR 300 mln	This retail group plans to expand its presence in the whole of Romania	Whole country
Continental	EUR 200 mln	Continental plans to establish a new R&D centre in in Romania that will provide new technologies to the entire company	Timisoara

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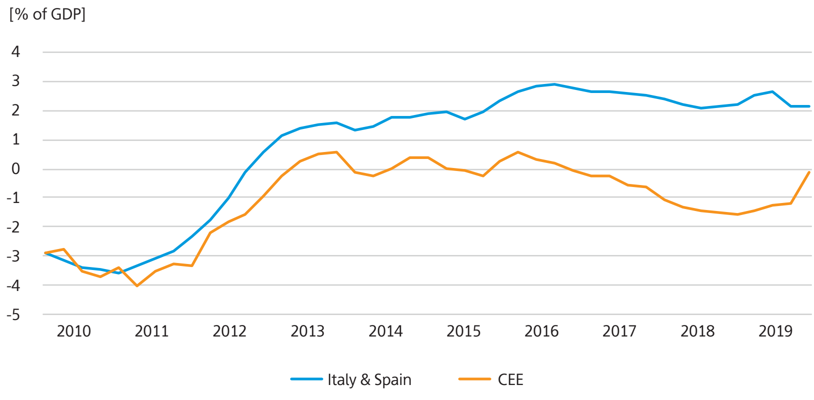
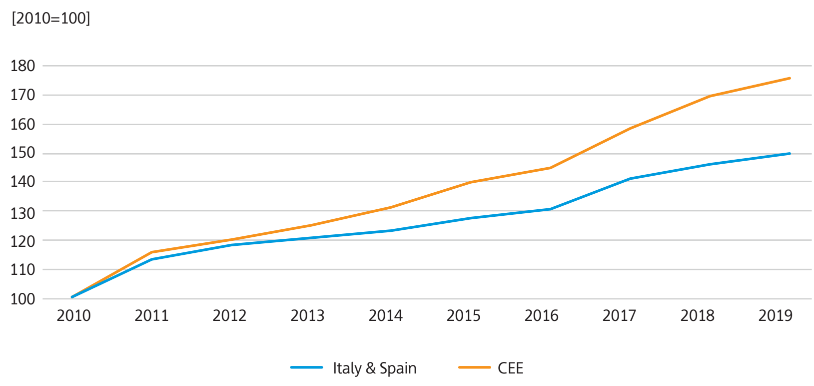
Current account balance, in % of GDP



Source: SpotData based on Eurostat data

Export of goods, 2010 = 100



Source: SpotData based on Eurostat data

Long-term external rebalancing is much more favourable for growth in CEE than in the southern peripheries of the EU.

Before the 2008 financial crisis, the peripheral countries of the EU – those Central and Eastern Europe, as well as Italy and Spain – had deeply negative current account balances. That meant they were attracting large foreign capital inflows, which financed increasing imports. After the crisis the inflows of capital stopped and the countries had to rebalance: to increase exports in relation to imports and to improve the current account balance.

While both regions went through a rebalancing of current account, they achieved that in a different way.

As the CEE countries (with the exception of Slovakia) have their own currencies, they were able to use devaluations to improve the competitiveness of their exports. Effective exchange rates decreased sharply in the region in 2008. And thus their exports boomed.

Italy and Spain, on the other hand, had to adjust more painfully, as they couldn't devaluate their currency. They had to rebalance more by cutting domestic demand and, as a result, imports, which also brought higher unemployment.

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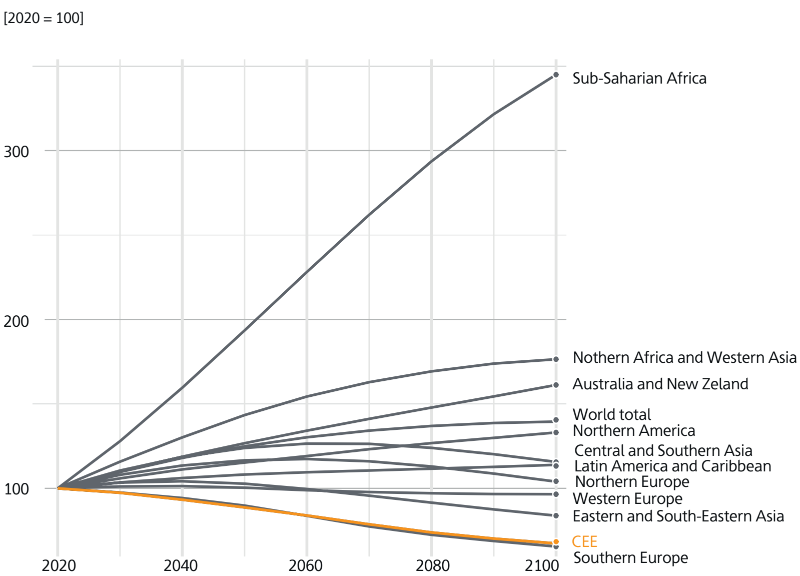
UN population projections
2020 = 100



Source: SpotData, Skanska, based on the UN

Falling populations will generate pressure on public finances, and also on companies.

CEE and Southern Europe are regions with the highest expected falls in population levels, according to projections by the United Nations. This is due to low birth rates.

In purely macroeconomic terms, falling populations do not generate any meaningful risks. Countries with lower population changes register, on average, faster growth in GDP per capita than those with high levels of population change. The problem, however, is that pensions systems are vulnerable to such demographic shifts. A falling population might lead to a drop in levels of pension payments and result in political pressure for tax increases.

Falling populations are also a challenge for companies in the region, which find it more difficult to fill vacancies. They will have to compete for the diminishing pool of staff with foreign companies, which are more productive and offer higher wages. This is why many economists believe that demographic regression can accelerate technological progress.

24

Cities in CEE moved up in the international rankings of the attractiveness metropolises.

According to a report from fDi Intelligence, cities in CEE are now seen generally as very attractive for investors. Their position in the prestigious publication has, in general, improved substantially over the last five years.

In 2020, three of the capitals in CEE were in the top 25 of the main ranking, in 2015 none of them reached such a lofty position.

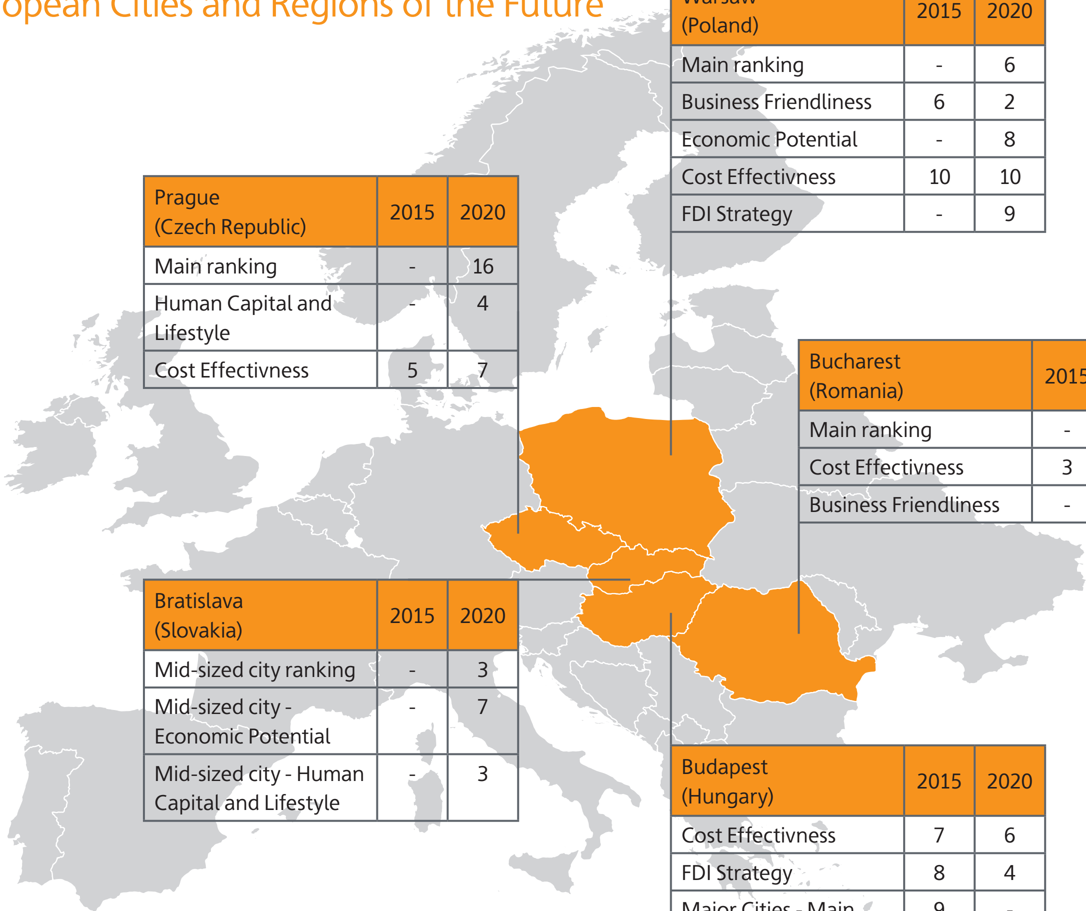
Other regional CEE cities are also present in the rankings, although not the main one, which is dominated by the largest metropolises. Cities such as Bratislava, Krakow and Wroclaw are included in the sub-rankings.

The major advantage of the cities of CEE is cost efficiency, which is not only a result of relatively low salaries but also an effect of the increasing productivity of staff in CEE.

The step forward is especially noticeable in Romania and its capital, Bucharest, which is seen not only as one of the most cost-efficient locations in Europe but also as business-friendly city. This is a result of the relatively low tax rates and generally business friendly regulations, which are reflected in ranking. Moreover, the region of Bucuresti-Ilfov is listed in the rankings as one of the most competitive in terms of human capital and prospect of growth. In the 2015 the word “Romania” was mentioned only once in the entire fDi annual report.

On the other hand, both bigger and smaller cities in Poland were included in the 2015 edition of the report. They managed to retain or to strengthen their positions in the 2020 rankings of business friendliness and FDI strategies. It shows that Warsaw is not the only city in Poland that is a magnet for investments, other cities can compete and bring funds to them too.

Positions of major CEE cities in the annual fDi ranking „European Cities and Regions of the Future”



Warsaw (Poland)	2015	2020
Main ranking	-	6
Business Friendliness	6	2
Economic Potential	-	8
Cost Effectivness	10	10
FDI Strategy	-	9

Prague (Czech Republic)	2015	2020
Main ranking	-	16
Human Capital and Lifestyle	-	4
Cost Effectivness	5	7

Bucharest (Romania)	2015	2020
Main ranking	-	22
Cost Effectivness	3	4
Business Friendliness	-	4

Bratislava (Slovakia)	2015	2020
Mid-sized city ranking	-	3
Mid-sized city - Economic Potential	-	7
Mid-sized city - Human Capital and Lifestyle	-	3

Budapest (Hungary)	2015	2020
Cost Effectivness	7	6
FDI Strategy	8	4
Major Cities - Main ranking	9	-
Business Friendliness	5	-

Source: fDi Intelligence,European Cities and Regions of the Future 2014/15 & 2020/2021 editions

Society, education, work

The gradual shift from simple jobs to more complex tasks is a sign of how CEE is moving up in the global hierarchy of production

Monika Grzegorczyk

Research Assistant, Bruegel

Mario Mariniello

Senior Fellow, Bruegel

Stability and Economic Growth Potential

The CEE region has grown steadily after the European Union enlargement in 2004 and COVID-19 did not disrupt that trend significantly. This can be explained by lower exposure to tourism and greater reliance on industry and manufacturing. Moreover, fiscal stimulus in response to the COVID-19 crisis has been comparable to the rest of European Union. That had a positive impact on the labour market, which indicators show has improved over the years. The unemployment rate hardly increased at all in some countries in CEE, such as Poland and the Czech Republic, and only went up slightly in Slovakia, where the rate is still lower than the EU average. The activity rate is close to the western average and the employment level is even higher in countries such as the Czech Republic or Poland. Most people are not aware that the percentage of high skilled workers (having upper secondary and tertiary education) in total employees is as high as in Western European countries. It is important to note that the region has caught up in the human contribution to productivity.

The Human Capital Index, which measures investment in human capital, shows that most of the CEE countries are in the same group as western countries, which is astonishing development compared with a decade ago. Similarly, the quality of jobs is on an upward trend, although there are worries about the quality of contracts. Unfortunately, it is common practice, to reduce labour costs, to offer contract work which does not provide employment protection, wage protection or leave entitlements. Strengthening the regulation of workers' rights is needed so that the labour quality indicator can grow in the future. Overall, this creates very good conditions for the growth of the region in these uncertain times, as well as investment opportunities.

Karolina Radziszewska

Executive Vice President Human Resources, Skanska's commercial development business unit in CEE

On female participation in the labour market:

The CEE region indeed has a relatively good position, as female participation in the employment market became common in the 20th century and that societal norm held after the transformation. There are, however, still gaps to bridge – to enhance female participation in employment our region has to excel in workplace gender equality, closing the gender pay gap, increasing female participation in executive positions and breaking the division between feminised and masculinised jobs. However, even more importantly, states have to take a more active role in providing support for those women who are primary care-givers – statistically much more often than man – for children, ageing parents and family members with disabilities. Care responsibilities combined with unpaid work performed by women in households – still more than men – are the primary reasons for lower participation in the employment market.

On generational change:

In times of a shortage of talent on the market companies have no other choice but to embrace and attract younger generations. To do that effectively companies have to consider their preferences, one of them being values-driven company culture and values alignment. Thousands of graduates entering the market are looking for employers that are socially and environmentally responsible, are looking for employers that provide a working environment that helps them to thrive and develop themselves and to contribute to a better society, where ethics and work ethos are equally important as profitability.

CEE is becoming an area of immigration, not emigration

The CEE, especially Romania and Poland, saw high levels of emigration after accession to the European Union. Hundreds of thousands of people moved to countries with higher wages and lower unemployment, with the United Kingdom as the top destination. Although many of these people left only temporarily, the permanent outflow was significant as well.

Now, after years of economic growth, the migration flows are reversing. All of the CEE countries had unemployment rates lower than the EU average in 2019. The Czech Republic, Poland and Hungary were among the four countries with the lowest unemployment (the one was Germany, which ranked second). Many sectors would face significant labour shortages were it not for foreign workers. Immigration is most important in Poland, which has seen a significant influx of workers (most of them temporary) from Ukraine since 2014. At the end of 2019 there were 2.1 million foreign citizens in Poland and 1.3 million of them were Ukrainian. The Czech Republic had 715,000 foreigners at that time – 220,000 of them from Slovakia and almost 300,000 from outside the EU (almost half of them Ukrainian). Slovakia has around 70,000 foreign workers (less than 3% of the total employment).

Moreover, some people who left CEE have come back. For example, the estimated number of Polish nationals resident in the United Kingdom fell by 200,000 between 2017 and 2020, according to data from the UK statistical office.

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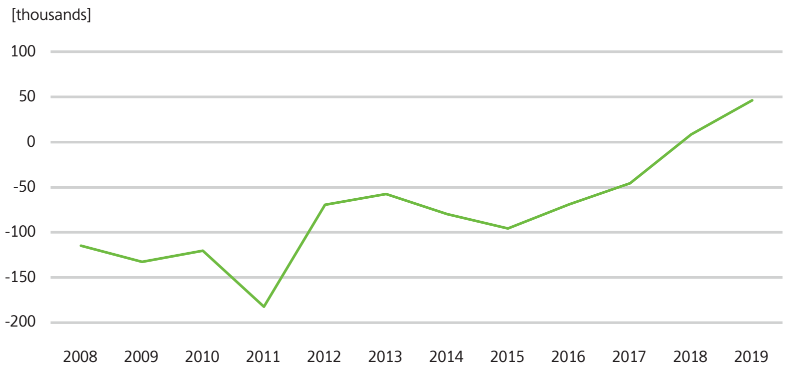
Net migration to CEE (excluding Hungary*), thousands



Source: SpotData based on Eurostat data; * no data for Hungary

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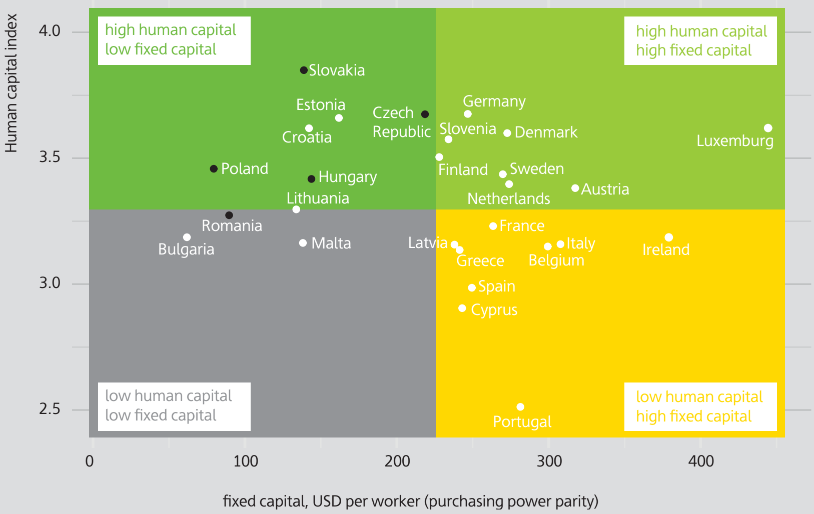
Fixed capital (machines + buildings) vs human capital in Europe

CEE countries have a very high human capital levels and relatively low levels of fixed capital



Source: SpotData, Skanska based on Penn World Tables

The high quality of human capital is the main reason why more and more foreign companies are investing in the region.

The combination of very high quality staff with relatively low levels of fixed capital per employee makes CEE a particularly attractive place to invest. Returns on investments are high for foreign companies, and host countries benefit from capital investments and transfers of knowledge related to new investments.

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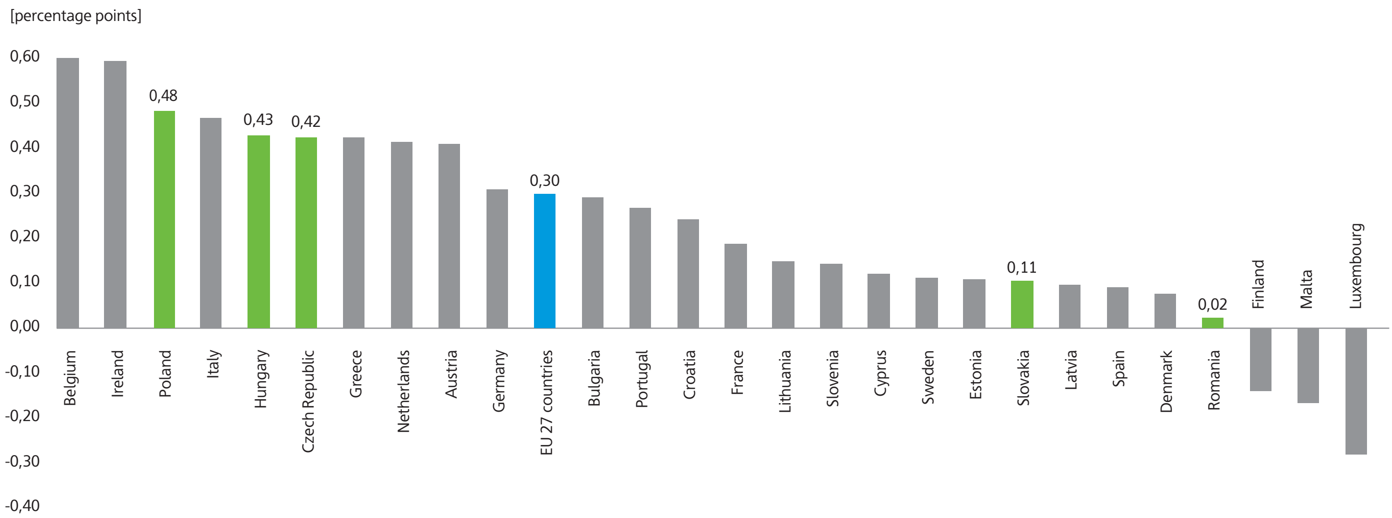
The percentage of personnel employed in R&D is growing, and this is an important factor indicating a country's investment attractiveness.

If countries want their economies to grow and attract foreign investors, in particular those which want to establish R&D centres, they must offer highly skilled human resources. Therefore the percentage of people with higher education among the working population and the percentage of people engaged in research and development play an important role. In the countries of CEE the level of R&D personnel and researchers as a percentage of total working population is still below the EU average. But the important thing is that this share is growing significantly and the change in percentage levels between 2011 and 2019 is one the best, especially in three CEE countries: Poland, Hungary and the Czech Republic. Poland recorded the third highest growth: 0.48 percentage points (from R&D personnel and researchers accounting for 0.5% of the working population in 2011 to 0.98% in 2019). Hungary saw an increase of 0.43 percentage points (from 0.81% to 1.24%) and the Czech Republic 0.42 percentage points (up from 1.08% to 1.5%). In Slovakia and Romania the increases were significantly smaller, although it is worth noting that in three countries (Finland, Malta, and Luxembourg) recorded decreases.

Change (in percentage points) between 2011 and 2019 in R&D personnel and researchers as a percentage of total active population



Source: SpotData based on Eurostat data

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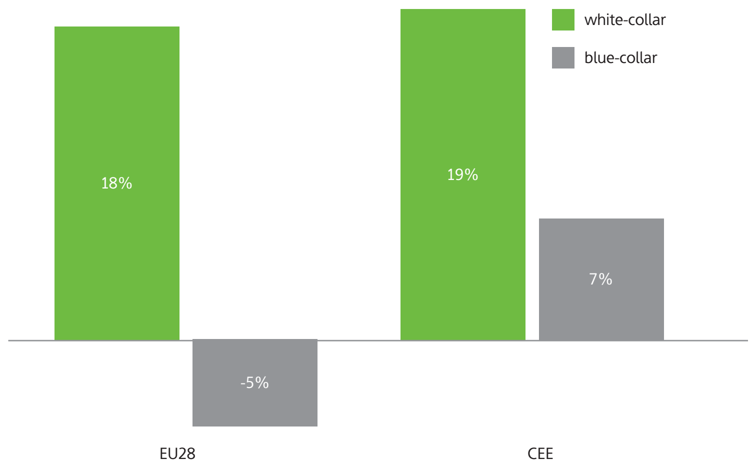
Change in job types in the industrial sector

2019 compared with 2010



Source: Spotdata based on Eurostat

The share of office jobs is growing, not only in services but also in industry; there is a gradual shift from blue-collar work to white-collar

As the CEE region is a strong industrial hub for Europe, demand for workers in this sector is growing at a strong rate.

But what has changed over the past decade is that the demand for white-collar staff has outpaced demand for blue-collar worker.

This trend is strong in the whole of the EU, where there has even been a decrease in employment of blue-collar workers. Over the past few years this trend has also become visible in CEE.

The biggest increase in office jobs can be seen in Poland, where such employment increased by 36%, compared to 2% for manual workers. In Czech Republic and Slovakia there is a shift towards office jobs in industry sector.

One of the causes of this trend is the fourth industrial revolution, also known as Industry 4.0, which increases the role of knowledge and digital processes in production.

Brain businesses are becoming one of the pillars of the economies of CEE.

The capital cities of CEE are among the leaders in Europe in terms of density of brain business jobs, according to data from the European Centre for Policy Reform and Entrepreneurship.* The share of these jobs ranges from 22.4% in Bratislava (the highest in Europe) to 13.5% in Bucharest. This underlines the most important structural feature of the economies of CEE: the gradual transformation to the knowledge economy. The total density of brain business jobs (not only in capital cities but in entire countries) in CEE is still low, because smaller cities continue to be dominated by relatively low-complexity jobs, but the growth in employment in brain businesses in CEE is the highest in the European Union, ranging from 21% in Czech Republic to 42% in Slovakia (in the period from 2014 to 2020). "On a regional basis, the most significant increase of brain business jobs has occurred in Warsaw, the Polish capital region, followed by the Slovakian capital region Bratislava, and the German region of Braunschweig" notes the ECPRE.

*Dr Nima Sanandaji, "The Geography of Europe's Brain Business Jobs: 2021 Index", the European Center for Policy Reform and Entrepreneurship, 2021

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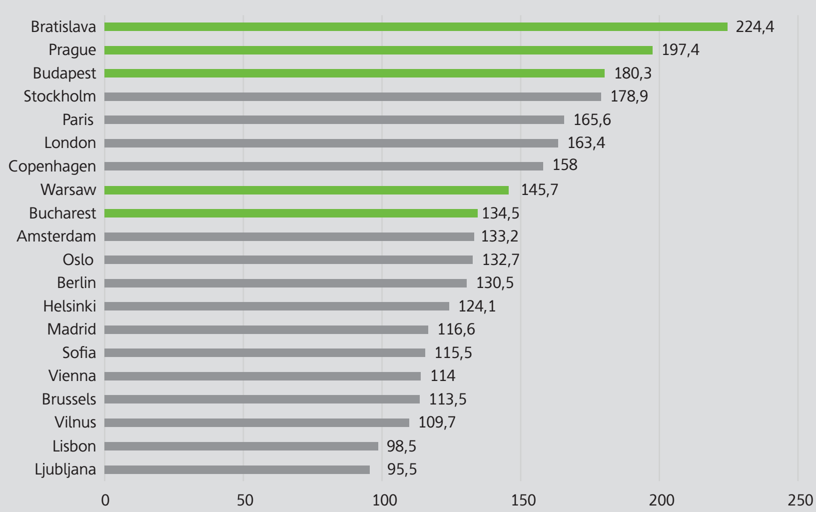
Regional Ranking of Brain Business Jobs

All brain business sectors, jobs per 1,000 working age population



Source: "Geography of Brain Business Jobs", European Centre for Policy Reform and Entrepreneurship, March 2021

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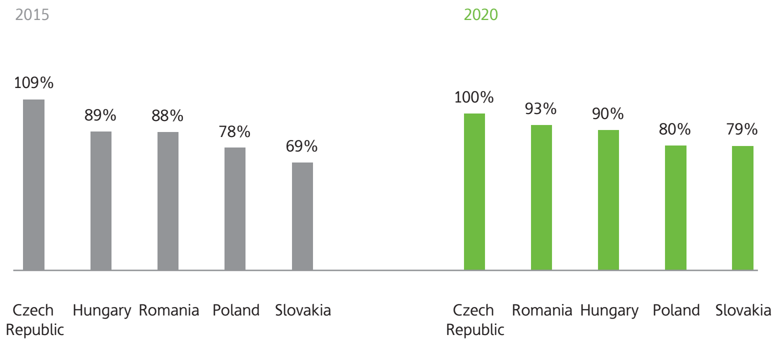
Advanced Internet User Skills and Development as a percentage of EU

average skills as a percentage of the DESI human capital dimension



Source: SpotData based on DESI Index

The region is gradually catching up in terms of the digital competencies of its citizens

The digital skills of staff are particularly important for employers. That is even more true today, because the pandemic has moved most human activities online and hybrid and remote working models have gained importance.

The digital performance and digital competitiveness in EU Member States is defined by one of the components of the Digital Economy and Society Index (DESI), i.e. the DESI human capital dimension, which is calculated as the weighted average of two sub-dimensions: Internet user skills (50%) and advanced skills and development (50%).

Although the countries of CEE are not yet among the top European countries, especially in the component of advanced Internet skills and development, they are rapidly catching up with the EU average. Between 2015 and 2020, all CEE countries saw an increase in advanced Internet skills and development and four out of five saw an increases compared to the EU average: Hungary saw an increase from 89% of the EU average to 93%, Romania from 88% to 90%, Poland from 78% to 80% and Slovakia from 69% to 79%. In 2015, the Czech Republic had a level equal to 109% of % the EU average and in 2020 was exactly equal to that average.

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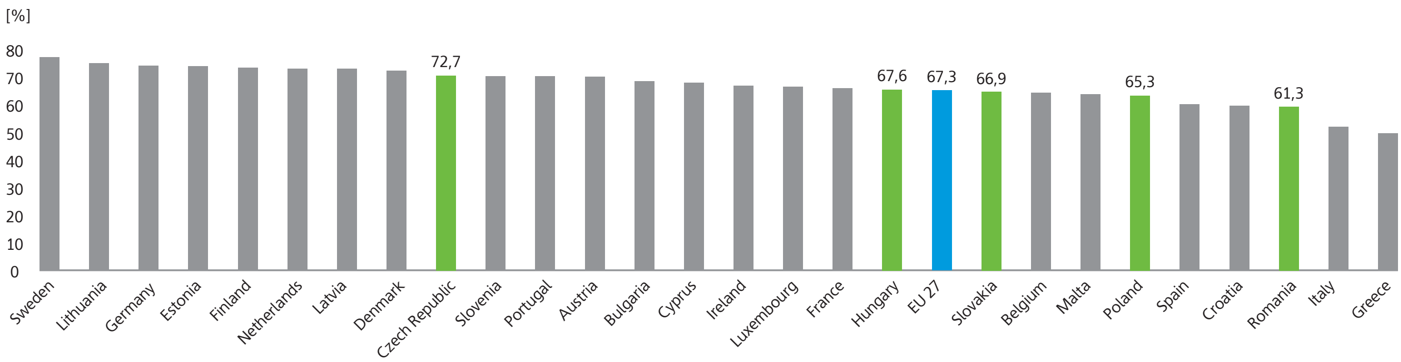
Increasing the employment rate of women remains both a challange and an opportunity for CEE

While the overall employment rate compares quite well with other countries, the big challenge for the CEE countries will be to increase the employment rate among women. Given the aging population, the lower retirement age for women than for men and the fact that women are living longer than men, the key to maintaining both the pension systems and the competitiveness of economies will be to increase the activity among women. Female employment as a percentage of the population aged 20-64 is the highest in the Czech Republic (72.7%), but this time it is far behind the rate leader Sweden (79.7%). Hungary (67.6%) and Slovakia (66.9%) are just around the EU average (67.3%), but Poland (65.3%) and Romania (61.3) are closer to the bottom.

At the same time, adressing the challange of low employment rate among women would help CEE to ease the pressure on pension systems and further increase competitiveness.

Employment of women in 2019
(as % of the famale population aged 20 to 64)



Source: SpotData based on Eurostat data

The region is undergoing a significant generational change, which brings a shift in workplace values in many dimensions.

The labour markets in the countries of CEE are changing. A significant part of these markets is made up of people under the age of 39, who started their careers in free-market economies and do not have the trappings of the communist era. In three countries (Poland, Slovakia and Romania) the share of persons aged 20–39 in total employment of the population aged 20–64 in 2019 was above the EU average, which is 41%. Against this background Poland stands out: almost half (47%) of employed people are between 20 and 39 years old.

For young people other values play a more important role than for the older generation and employers should take this into account when recruiting and should work harder to keep the youngest employees in their companies for longer.

A survey conducted for a report from SpotData and Provident in Poland in the spring of 2019 found that Generation Z (i.e. those born after 1995) place more value on project work, a good atmosphere and relationships with colleagues, good office location, and quick journey to work. Older generations are more focused on employment security, but for young people a permanent job and job stability is not a priority anymore.

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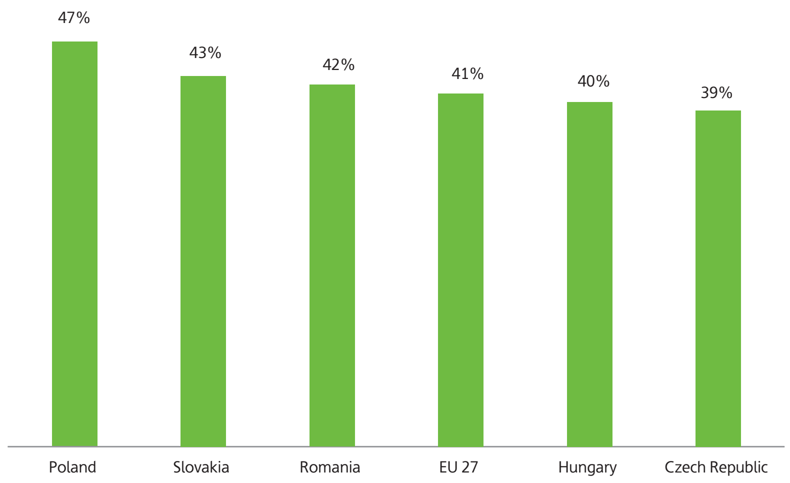
Percentage of those aged 20 to 39 in the total working population (aged 20 to 64) in 2019



Source: SpotData based on Eurostat data

Addressing the challenge of low employment rates among women would also help the countries of CEE to ease the pressure on their pension systems and further increase competitiveness.

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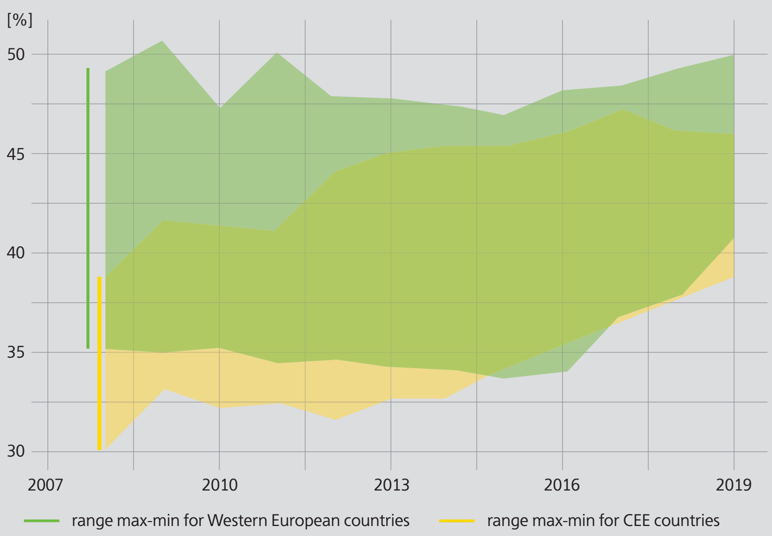
Minimum wage as percentage of the average wage



Source: SpotData based on Eurostat data

There is much more political pressure to reduce social inequalities than in the past.

The countries of CEE are well aware that competitive wages are one of the factors giving them economic advantage. But economic growth has brought new aspirations, fostered by declining unemployment and rising wages. Pressure to reduce inequalities has gradually built up. Over the last decade most CEE countries have substantially increased their minimum wages. Today those are at a similar level – in relations to average wages – as those in Western Europe. So far this process has not have any negative impacts on employment or competitiveness.

Automation of services affects the structure of employment, for example in financial services, but not the total size of the workforce.

The automation and digitalisation of financial services means that there will be increasing claims that machines will replace humans. Additionally, the COVID-19 pandemic has accelerated the use of electronic banking and the lockdown has reduced the operations of physical locations.

However, fears of massive job destruction are definitely premature. Since 2008, the year of the great financial crisis, employment in financial and insurance activities has not only not declined, but has actually increased. The growth in jobs in this sector took place even in the difficult year of 2020 (a total of 6,000 new jobs for the countries of CEE). This is because a change in the structure of employment, which has been noted for years. The number of clerical support employees, i.e., those often working in now liquidated stationary branches, is decreasing, while the number of professionals is increasing. Between 2008 and 2020 the number of clerical support employees in CEE countries fell by 37,400 and the number of professionals rose by 103,200. Digitalisation of services increases the demand for people who can manage technological processes. The demand for people involved in marketing and social media communication is also growing. And such people can successfully continue to work in hybrid or remote models after the pandemic.

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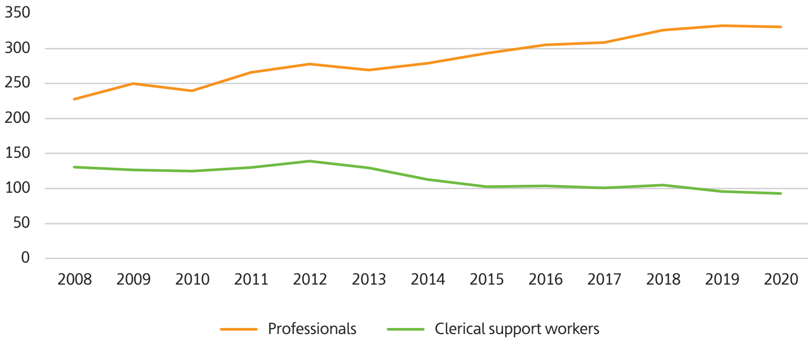
Employment in financial and insurance activities



Source: SpotData based on Eurostat

35

The pandemic has accelerated the moving of trade to e-commerce channels – the Czech Republic is a regional leader in this sector.

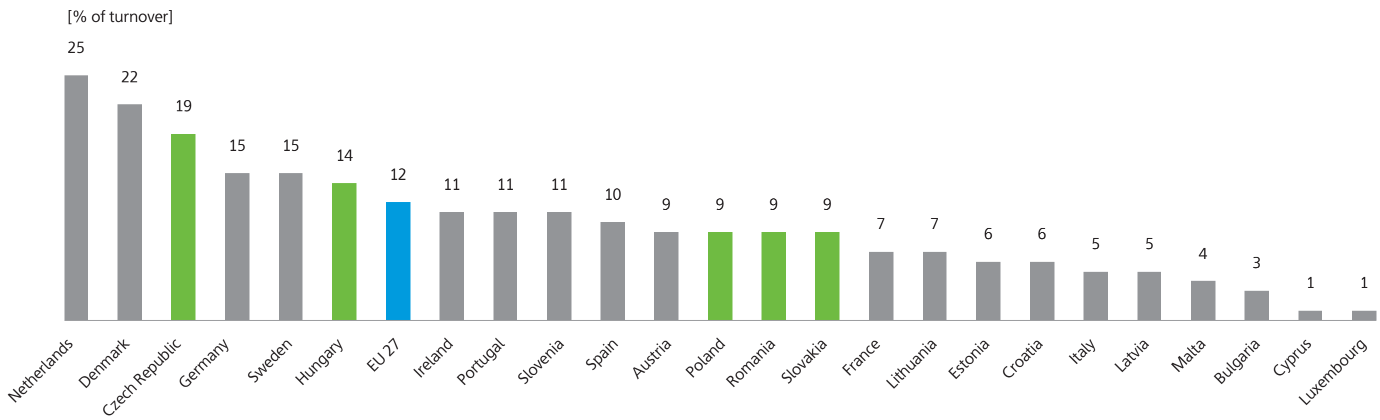
It is estimated that the pandemic accelerated change to e-commerce processes by about two or three years. For some industries and companies the epidemic was a catalyst for change, for example the sale of food and non-prescription medicines, which before the pandemic were not strong in e-commerce channels.

New shopping habits will, to some extent, be permanent. They will generate more demand for technology services, such as technological infrastructure, the use of Big Data and the Internet of Things, and advanced warehouse infrastructure.

In the countries of CEE the percentage of enterprises with e-commerce sales accounting for at least one percent of their turnover (all enterprises, excluding the financial sector, at least 10 employees or more) is increasing systematically. The Czech Republic stands out with a very high percentage of such companies, 30% in 2020, when the EU average was 18%.

Enterprises' total turnover from e-commerce sales in 2020, in %

Retail trade, excluding sale of motor vehicles and motorcycles (10 persons employed or more)



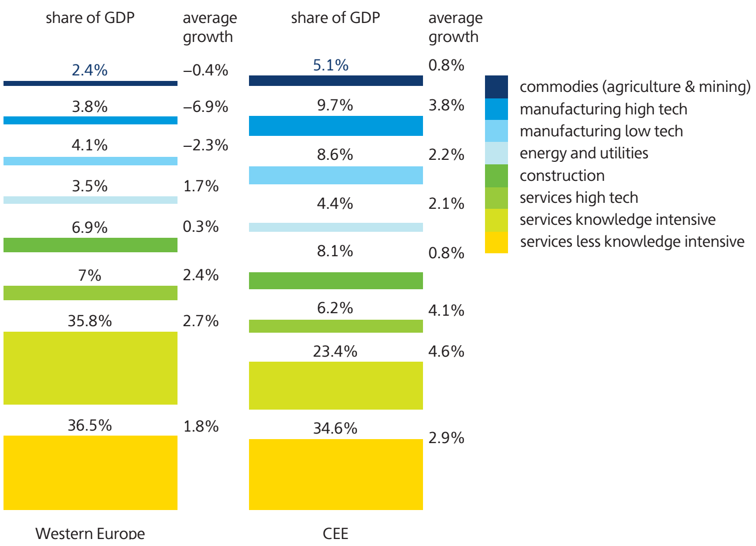
Source: SpotData based on Eurostat / no data available for Belgium, Greece and Finland

Companies and sectors

Knowledge-intensive services are the fastest growing segment of the economies of CEE

Share and growth of sectors in Western Europe and CEE

based on value added generated in each sector



Source: SpotData, Skanska, based on Eurostat

CEE is a manufacturing hub, but knowledge-intensive services are growing at the fastest pace of all sectors.

A comparison of the structures of the economies of CEE with those of Western Europe indicates two crucial differences.

The first is that the countries of CEE have a much higher share of manufacturing in GDP – both high-tech and low-tech. The second difference is that their GDPs are made up less of what are referred to as knowledge-intensive services. Those are services which are provided by highly educated professionals, such as creative services, legal and consulting advice etc.

But knowledge-intensive services are the fastest growing segment of the economies of CEE (on average over the last decade), slightly exceeding the rate of growth in high-tech services (IT and R&D). So the structure of the economies of CEE is converges to Western levels.

The most dynamic local private companies are in the retail, IT and automotive sectors.

The Warsaw Stock Exchange is the largest and most liquid capital market in Central Europe and companies listed on the WSE are representative of wider corporate trends in the region. Three of those trends stand out in terms of the share of sectors and their high compound annual growth rate (CAGR) over the period from 2011 to 2020.

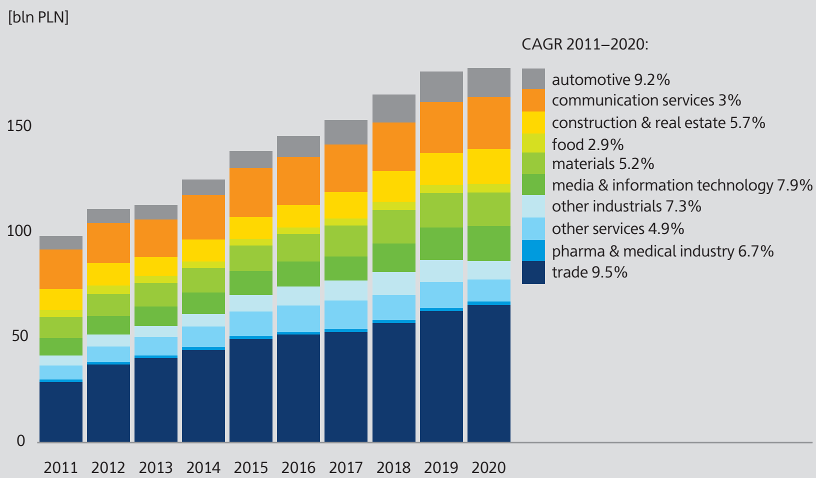
The first is that, despite the fact that knowledge-intensive sectors are the most dynamic segment of the economies, local corporate leaders are most often found in the retail sectors. There are many Polish retail companies which operate on the international level, expanding in not only CEE but also in Western Europe (such as LPP, which has shops in London and Berlin). In general, the retail sector in Poland is modern and efficient.

The second is that being an industrial hub for Europe supports the growth of local production companies, especially in the automotive sector. They are mainly suppliers of large German and French manufacturers, such as VW and PSA.

The third is the IT sector is getting stronger and reflects the technological progress that CEE is experiencing. The region is changing from being a low-cost production centre to providing more complex technical services.

Private non-financial companies on the warsaw Stock Exchange

based on data from a constant group of 100 companies [bln PLN]



Source: SpotData, Skanska, based on the IMF

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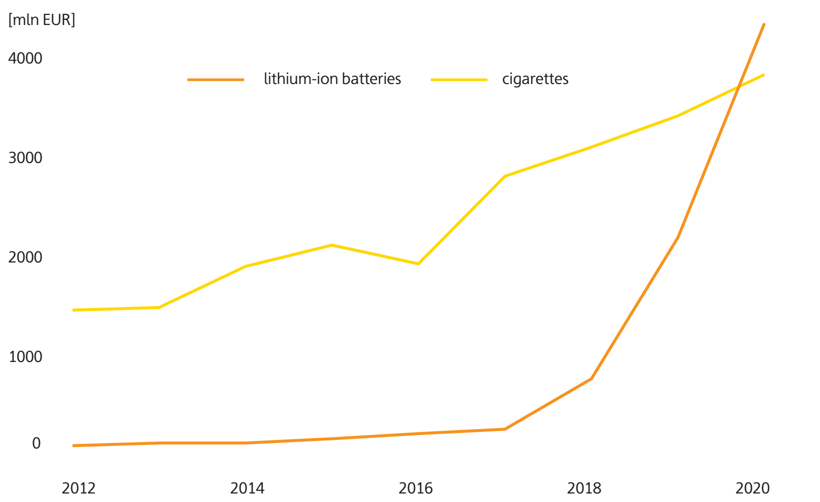
Major export items in Poland – cigarettes vs batteries, in mln EUR



Source: SpotData, Skanska, Eurostat

Cigarettes lost their position as Poland's top export, replaced by lithium-ion batteries – a change not lacking in symbolism.

Cigarettes have for many years been Poland's biggest export; the country is the largest producer of cigarettes in Europe. But 2020 brought a historical change: lithium-ion batteries took over pole position. This is due to Asian producers of batteries for electric cars opening factories in Poland and increasing production there. Today factories located in Poland supply more batteries to German car producers than factories in China and Korea combined. The Polish government hopes that an entire new electomobility sector will develop.

Very high-tech industries are slowly emerging – biotech, for example, is becoming internationally competitive in the area of initial drug discovery process.

Polish biotech companies are becoming strong and well-known in the region. The last year – 2020 – was especially good for most of them. One of the best performing companies is Selvita S.A. – a Polish firm which is one of the largest European companies providing multi-disciplinary R&D services (a contract research organisation – a CRO) and is now present in 40 countries. At the beginning of 2021, Selvita completed its acquisition of Croatian CRO Fidelta. This corporate acquisition provides a significant increase in business scale and solid foundations for further grwth. Another Polish firm, Synektik Group, is an innovative integrator of medical solutions for oncology, cardiology and neurology. Synektik Group brings the newest technologies to Poland and makes them available to consumers. It is a leading supplier of innovative products, services and IT solutions for surgery, diagnostic imaging and nuclear medicine, with revenues in 2020 amounting to PLN 125 million.

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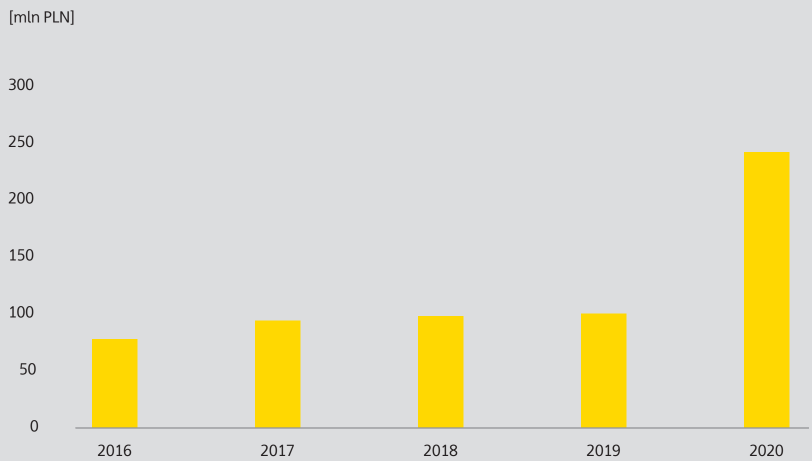
Revenues of biotech companies listed on the Warsaw Stock Exchange [mln PLN]



Source: Spotdata based on GPW biotech companies' data

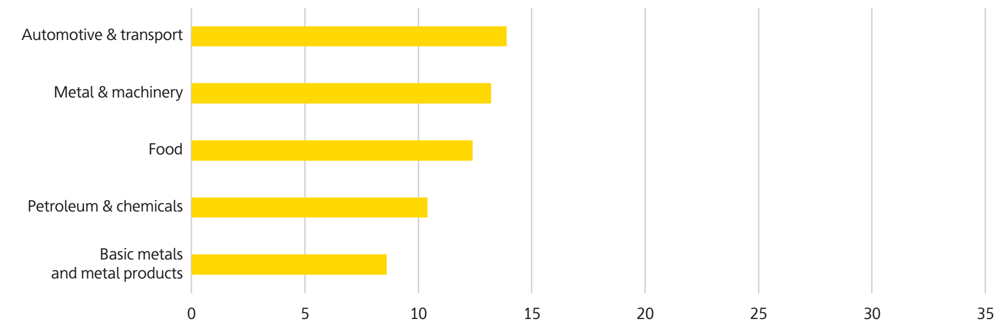
The major foreign investments in the CEE region are in finance, business services and technologies, followed by manufacturing sectors.

Poland, the largest country in CEE, is a good example of a structure of foreign investments in the region. Most investments are in knowledge intensive services and one such expect increasing numbers of such investments over the next decade.

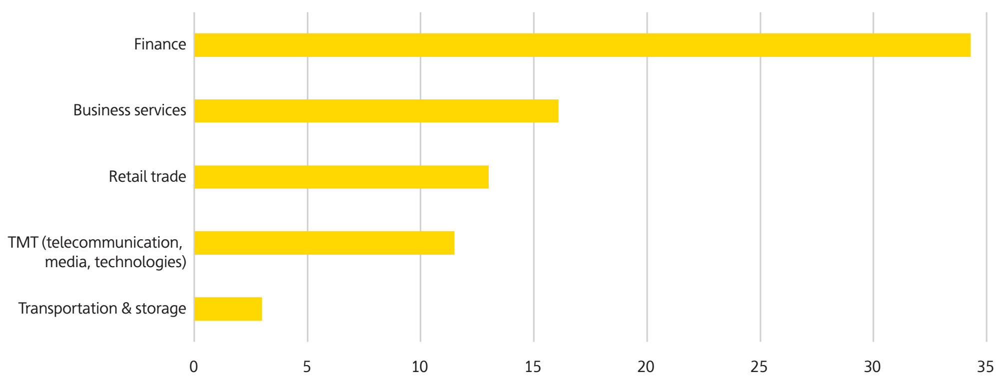
The most important role is played by financial services and business services investors. They account for more than 15% of total foreign direct capital invested in Poland. Adding TMT (technology, media and telecommunications) raises that share to 21%. These are the knowledge intensive sectors, in which foreign companies look for skilled local workers to perform complex tasks in international environments.

In the industrial sector most of the funds are invested in manufacturing of machines, car making and the production of small electronic items. These sectors are now going through significant structural shifts in terms of technology. The trends of the fourth industrial revolution are coming to Polish assembly lines and will strengthen the Polish economy in the near future. The increasing complexity of manufacturing operations indicates that Poland is not only seen as a source of relatively cheap labour force, but also as a safe and stable place to locate the most advanced technological processes.

Total value of foreign direct capital invested in manufacturing in Poland as of the end of 2020 [bln EUR]



Total value of foreign direct capital invested in services in Poland as of the end of 2020 [bln EUR]



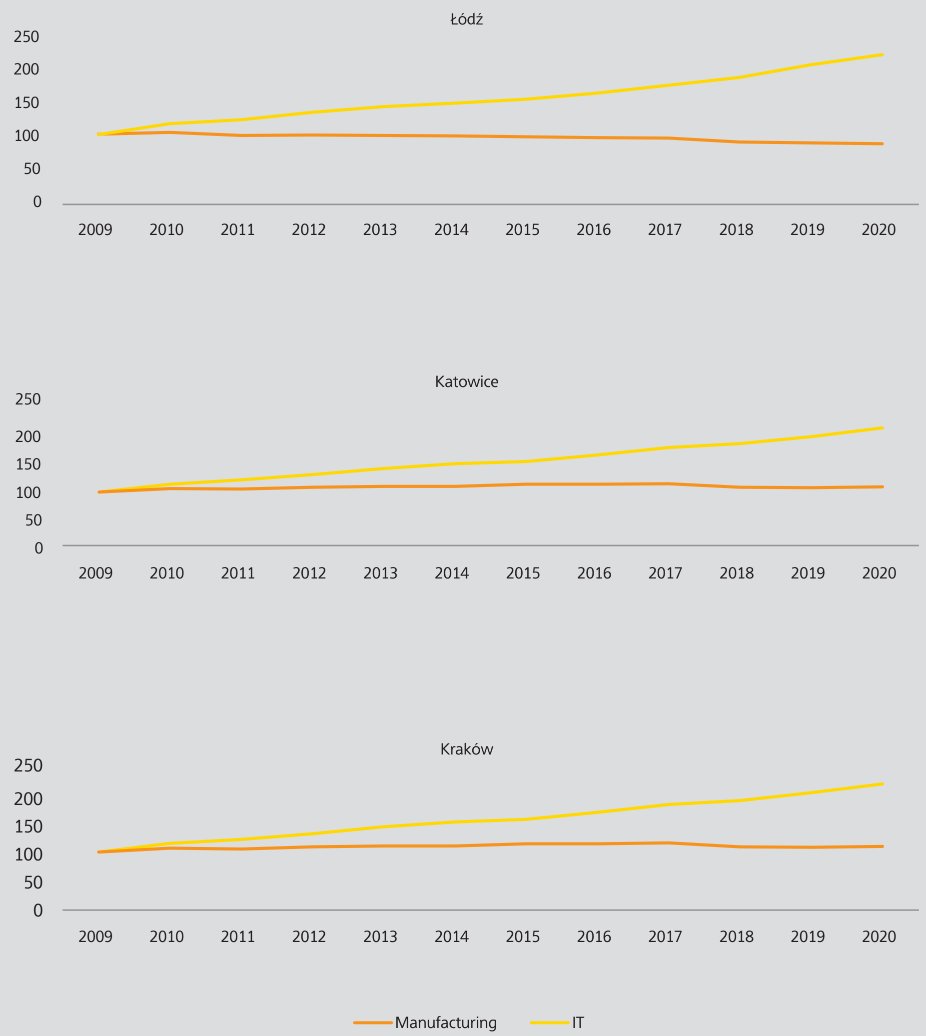
Source: SpotData based on NBP

The new economy flourishes on the ruins of the old one – in the centres of the old industries, such as Łódź (clothing) and Katowice (coal), the number of IT firms is growing rapidly, while the number of manufacturing companies from the old economy is falling.

CEE has many traditional industrial centres specialising in coal mining and textile production. Globalisation and energy transformation have weakened those places. But they have demonstrated that they can move into new sectors, especially IT services. Those changes show the resilience and flexibility of regional economies.

Łódź, Katowice and Krakow are good examples of such cities – they used to specialise in textiles, coal and steel, respectively. Those sectors are declining, but new ones have flourished. In all three cities the number of IT firms has more than doubled over the last decade. That shows how rapid the changes in the structure of the local business environments were. Data suggests that these companies are replacing the role of "traditional" manufacturing in the region.

Dynamics of number of companies in each sectors of economy



Source: SpotData based on GUS

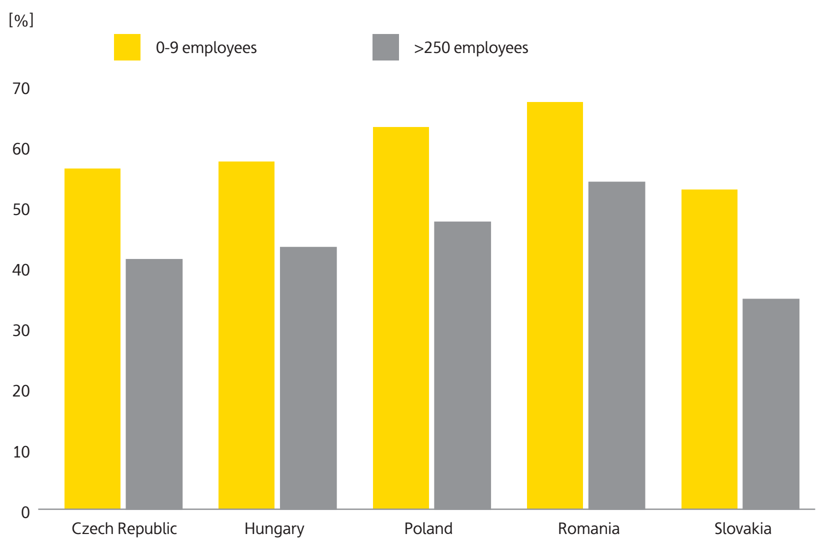
Micro and small companies were the backbone of the economic transformation in early 1990s, but now they are under existential pressure from rising wages and need to transform in order to increase productivity; this is important for the office market, because in the future more and more local companies will be tenants.

The natural point of reference for the region is Germany, CEE's richest neighbour. That's where the aspirations of both the governments and people of CEE are aiming. However, to achieve a standard of living similar to German, the companies of CEE need to increase their productivity. Only in the Czech Republic is the average labour productivity is as high as half (50%) of that in Germany. Romania has average labour productivity just 30% of figure for Germany, and in the rest of the CEE countries have productivity levels slightly above 40% of the German average.

In the whole region, with the exception of Romania, the gap is significantly smaller for companies employing more than 250 people. Their productivity is at around 50% of their German counterparts. Microbusinesses are much further behind similar companies from Germany, with the most striking difference in Poland, where such firms have only a quarter of the productivity found in Germany – and only half that of large companies in Poland.

The challenge for the region will be encouraging the growth of micro and small enterprises and improving their productivity.

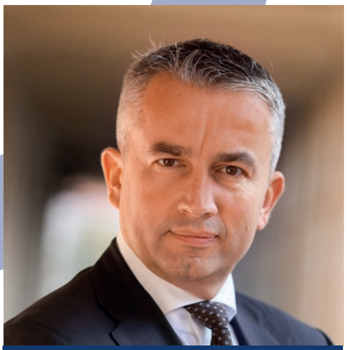
Labour productivity as % of German productivity



Source: SpotData based on Eurostat data

Modern business services

CEE has become one of the important global hubs for business services centres, which increasingly concentrate on the technology sectors



Jacek Levernes

the Honorary President of the Association of Business Service Leaders

In terms of the CEE region, the post-pandemic reality will be in part a repeat of what happened after the financial crisis in 2008 – when the size of our industry doubled in 3 years. Companies have already started or will start reassessing their cost structure and footprint, however with a resilience focus. One can say that the pandemic will probably have two effects. First of all, companies will become more focused on the aspect of well-being of their employees, as well as providing them with flexibility to come to the office just some days of the week and adding soft benefits. We will witness a growing need for healthy, spacious, green and collaborative type spaces. Therefore, in the short-term thus, there might be a slight decrease in the amount of the needed office space. However, as the second effect of the pandemic will be a growing drive for generating more savings across corporations - there will be more jobs and investments coming into the sector due to nearshoring. We are already observing a renewed investment interest and growth into the shared services (SSC), Business Process Outsourcing (BPO), IT and R&D segments of the sector. New jobs and investments coming into CEE will in the mid-term increase sector employment to above 1 million people and translate into new net-net growth for the real estate industry.

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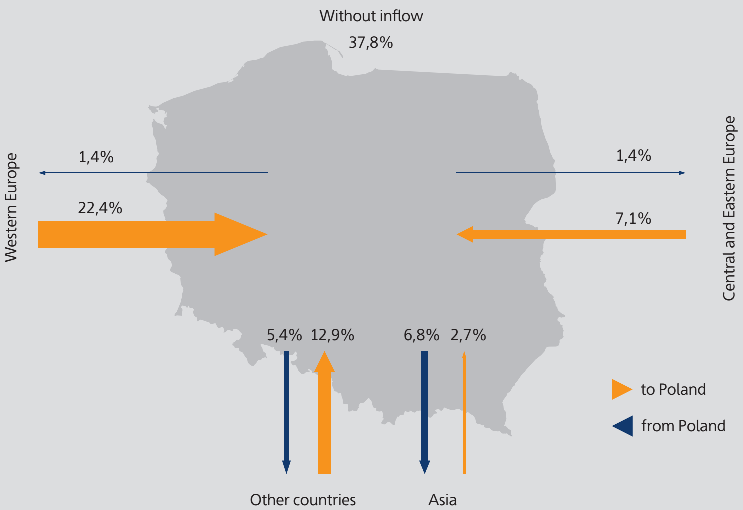
How the global recession will affect activity of businiess centres in Poland – the directions of the expected movements



Source: ABSL survey conducted among 294 busniess centres in Poland January and February 2021

The pandemic did not stop the expansion of modern business services sector. In some areas it may have even strengthened that sector.

According to a survey conducted by ABSL in January and February 2021, over 77% of business centres in Poland were planning to increase their headcount. Despite the shocks caused by the pandemic, business services only marginally reduced their hiring plans. Furthermore, companies wanted to expand their presence in Poland: firms already operating business centres in Poland stated that in the first half of 2020 they planned to open more than 78 new business centres. Out of those 78, 36% are, according to data from ABSL, planned to be IT centres and 20.5% SSC/GBS. ABSL also found that IT services also retained top position in the ranking of resistance to external shocks.

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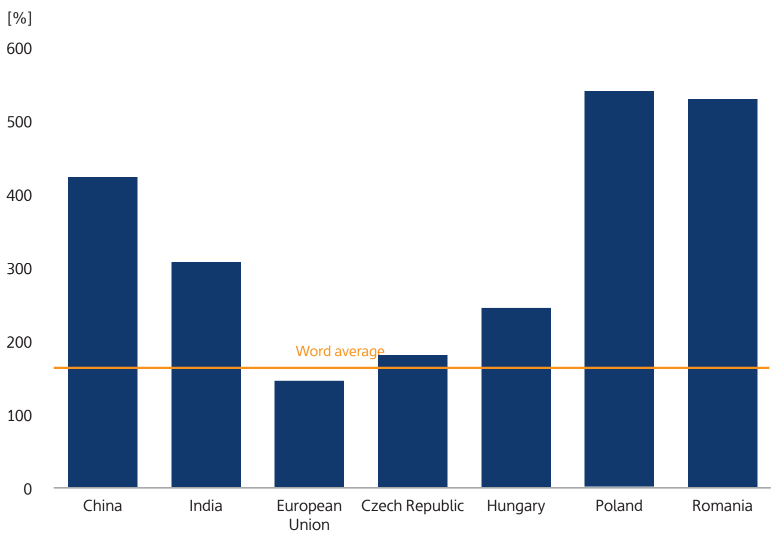
Growth of business services exports 2005–2019, in %



Source: SpotData based on WTO data

Growth in business services in CEE has been among the strongest in the entire World.

Business services are increasingly being provided from developing countries, thanks to the lower cost of labour there and advances in telecommunications technology. The centre of mass of business services moved away from the West between 2005 and 2019. This is best exemplified by China and India, which have seen growth of more than 400% and 300%, respectively, when it comes to exports of business services.

The growth in Poland and Romania is even more impressive (in relative terms, of course), up by more than 500%. Czech Republic and Hungary, while less stunning, have also seen growth rates higher than the global average (165% growth) and the EU average (145%). This growth should continue. CEE has started to attract investments in higher value-added services, which creates new opportunities and will help to sustain the process of strengthening the region's position in the global market.

Recent years have seen an acceleration in exports of services in the ICT (internet and communication technologies) sector

CEE has an increasingly important role in the ICT services sector. As it can be seen from the chart, software from the region is increasingly competitive on foreign markets. The biggest growth in ICT exports has been in Poland (more than USD 6 billion in 2017, up from less than USD 5 million in 2004), Romania (USD 4.5 billion in 2017, USD 440 million in 2004) and Czech Republic (almost USD 4 billion, up from USD 1 billion in 2004).

Data from Eurostat shows that high tech services are also responsible for a growing percentage of employment in the region. For example, in Romania high tech services accounted for 1.2% of all jobs in 2008 and 2.1% in 2019. The share of high tech services in total employment almost doubled in the same period in Slovakia, rising from 1.8% to 3.2%. Slovakia, Czech Republic (3.3%) and Hungary (3.1%) all had figures above the EU average of 3% in 2019.

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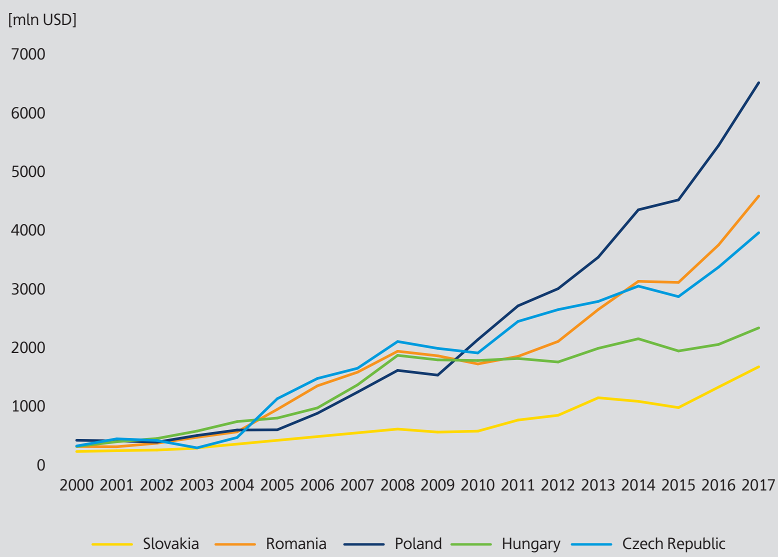
ICT service exports, in mln USD



Source: SpotData based on World Bank WITS data

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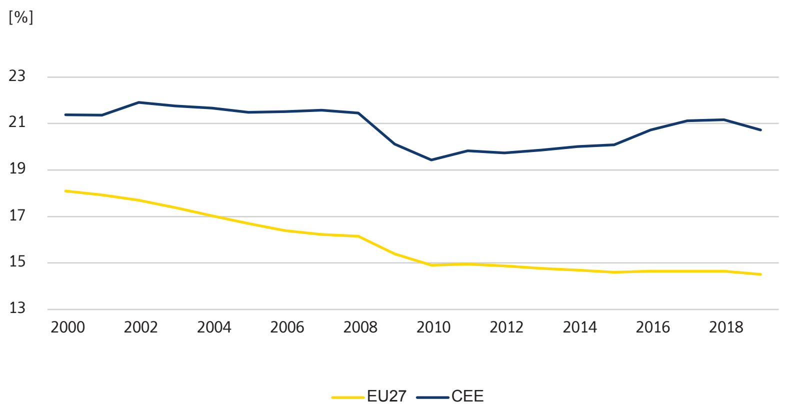
Share of manufacturing in total employment



Source: SpotData based on Eurostat data

Modern services are growing thanks to the industrial sector – many large industrial firms locate their service departments in CEE because they have production facilities here.

Developed countries have been going through a period of steady deindustrialisation over the last few decades. The share of manufacturing in total employment in the EU fell from 18% in 2000 to 14.5% in 2019. However, CEE has bucked that trend: the region is now a European manufacturing hub and the sector is responsible for 21% of employment. Much of the growth in manufacturing can be credited to the inflow of foreign direct investment, with average of USD 7 billion per year since 2005.

Manufacturing creates a bigger percentage of gross value added in CEE than in the rest of Europe. The average for the EU is 16.6%, while in most of the CEE region it is around 20%, and as high as 25% in Czech Republic.

This sector is also important for the growth in business services. More and more manufacturers are locating their office operations in CEE, for example supply chain management, quality control, IT support, etc.

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The phenomenon of nearshoring: can it gain importance in the services sector?

The practice of relocating parts of a company's operations to other countries has for decades been known as offshoring. Recent years have brought into spotlight nearshoring – moving business processes to countries close to the main location of the company or to its clients. This can reduce costs without some of offshoring's problems – such as time differences and cultural differences. Nearshoring in manufacturing can also lower transport costs and shorten delivery times.

CEE is uniquely positioned to gain from this trend. The region offers many opportunities for companies from Western Europe, especially Germany. Lower labour costs, cheaper office space and good transport routes attract such firms. The best advantage CEE countries have over cheaper destinations (such as India) is EU membership, which gives access to one of the largest markets in the world with minimal administrative burdens and no tariffs. Nearshoring could also benefit from the need of more diverse supply chains after the COVID-19 pandemic.

According to the Savills nearshoring index (which takes into account labour costs, electricity prices, infrastructure and trade openness) the most attractive country in CEE region (and the entire EU) is the Czech Republic. That country has attracted many electronics producer, such as Taiwanese firms Foxconn, Pegatron and Asus. Poland, on the other hand, is, according to Kearney Global Services Locations, the most attractive destination in the region for nearshoring services. That is especially noticeable in the IT sector and business services – with the latter employing almost 340,000 people in 2020, according to data from ASBL, an almost sevenfold increase since 2008.

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The largest investments in modern shared service centres in CEE over the last three years

Low labour costs, a highly educated workforce and the availability of office space in large cities have won the region many SSC/BPO projects. The main beneficiary has been Poland, with 11 million m2 of office space (the largest market in the CEE) in 2020, and another 1.7 million m2 under construction and almost half of CEE's employment in this sector. The top cities in Poland for SSC/BPO activities are Warsaw, Krakow and Wroclaw.

The companies investing in business services in Poland include both global brands and local enterprises. Examples of the former, in terms of investments in 2018–2020, include Huawei, JTI, Johnson & Johnson, PepsiCo and Maersk. This sector employs close to 340,000 people in Poland, and more than a third of those jobs have been created since 2016.

The second biggest market in the region is Romania, with 120,000 employed in business services as of 2018. The country is especially attractive for IT companies, partly because it offers generous tax incentives for specialists in this sector. Microsoft, Oracle, Deutsche Bank and IBM are among the biggest occupiers of Romanian offices. Bucharest is the main city for business services, with more than 50% of the market, and almost two thirds of the capital city's outsourcing is in the ITO & BPO sector.

Most of the companies opening business services centres in CEE are large multi-national enterprises with credit ratings even higher than those of local governments.

Is it safe to invest in the CEE region? It is. But it is even safer to invest in assets which depend on the credibility of large international companies, especially those in the financial and technologies sectors.

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Credit rating of Poland and Skanska's largest tenants in Poland

Source: Spotdata based on S&P Global Ratings

Real estate

There are signs that the office market has withstood the COVID-19 pandemic better than expected

Richard Divall

Head of Cross Border Capital Markets I EMEA, Colliers

Interest rates are expected to remain low for the next few years and combined with Governments expected to 'build their way out' of the pandemic through major infrastructure projects, real estate will continue to be an attractive asset class to investors however, interest rates are expected to rise possibly from 2023.

Colliers Global Investor Survey highlights the appetite for European real estate is expanding – on average, investors want to increase assets under management by 20%. Offices will remain the dominant sector however, portfolio weightings to sectors such as housing, healthcare and technology sub-sectors, are poised to play a larger role in institutional investor portfolios.

With hybrid office working models, both investors and occupiers will require high ESG standards and high quality air, energy efficient utilities and carbon-friendly buildings. There will be a greater emphasis on mixed use developments with retail needing to be more entertaining, social and places where the future customer can convene. There will also be a greater focus by investors on businesses in the technology, AI, Life Sciences and cyber sectors.

We also expect a greater demand for owner-occupied and private rental residential properties – a trend which is likely to grow across the major markets of the CEE region. The private rented sector accounts for only 1% of the market in CEE compared to 35% in North America. Any liquidity concerns of a lack of local investors is quickly being erased by the rise of activity by Czech and Hungarian pension funds and with Poland looking to enter the REIT market, we will continue to see more North American, APAC and European capital enter the CEE markets.

Peter Heckelsmüller

Head of Acquisitions & Sales, Deka Immobilien Investment GmbH

Despite all discussion about future trends it is important to state that it is crucial that the key factors which convinced Deka Immobilien and other market participants to invest in the CEE area will follow a positive development.

Strong arguments for investing in central Europe in the past has been the healthy economic rates of economic growth, the availability of highly skilled workforce and professionals, low unemployment rates and a strong availability of modern new developed office properties with a high technical standard.

The ensuing lockdowns have caused significant uncertainty over the future of work. While in the past remote work in a flexible work model was more an exemption it now has become more a standard model. But there are signs that majority of office workers will return to the offices in a hybrid-return with a mix of office presence and working from home. Offices will more transform into comfortable spaces with a safe distance, places to meet with favourable conditions for team interactions.

Another necessary trend is the climate change and the reduction of carbon-risk factors. Investors have to focus more how the climate change could impact the revenues and costs with their operations. They also have to be more interested in the costs associated with carbon reductions.

In our opinion energy efficiency and the reduction of carbon-risk factors will have a growing influence on the investment decision in the future. This has also an impact on developers and property owners. They have to be prepared and to be aware of the consumption data of their properties and may also adopt measures to reduce the energy consumption and the emission.

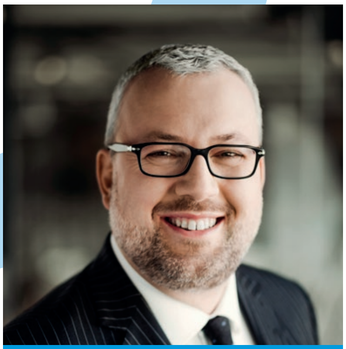
Mateusz Polkowski

Head of Research
and Consulting, CEE,
JLL

The real estate sector proved to be more resilient to the long-term impact of the pandemic than initially expected.

Although it must be emphasised that individual market segments reacted differently to COVID-19. It is worth analysing the CEE market here, where we can observe a whole spectrum of trends. In the case of the office market, last year brought quite a reshuffling of the demand structure and an increase in the importance of lease renewals. Companies often opted for short-term contract extensions and are waiting for a return to normal before making long-term commitments. One of the key trends was also the growing supply of space offered for sublease. In the retail market, the pandemic highlighted the challenges that the sector had faced before, emphasizing not only the importance of multi-channel sales but also the need to look for alternative locations. Last year has definitely strengthened the popularity of convenient and quick shopping which was also reflected in the new space that was brought to the market and which was mainly concentrated in retail parks and convenience centres.

When it comes to the Polish industrial sector, in 2020 it observed spectacular, record-breaking results, proving once again its strength and resilience. What's more, high tenant activity allowed Poland to maintain its position as the third most active location in Europe. As for the investment real estate market, it continued to attract investor attention. The value of real estate investment transactions in Poland totalled EUR 5.6 billion - a 30% drop on the record-breaking result of 2019 but was still the third-best result in market history.



Arkadiusz Rudzki

Executive Vice President Leasing & Sales, Skanska's commercial development business unit in CEE

The pandemic has reflected some new trends and highlighted the strengths of the CEE region. A stable economic environment has been revealed, enhancing the competitive edge compared with other countries in Europe. It proves that countries such as Poland and the Czech Republic are less vulnerable to the current global disruptions and most of the macroeconomic risks brought by COVID-19. Thanks to long-term development, EU grants boosting the economies in the region, the presence of a highly educated workforce and its overall business friendliness, the region is more attractive than ever. We see an obvious shift towards the growing importance and scale of the e-commerce sector and the currently ongoing transformation of our way of working. Those factors influence trends related to the post-pandemic supply chain changes, which put nearshoring and moving business processes to companies located in nearby countries in the lead. There are also some clear signs of other impacts on the real estate market itself. Demographic changes and the evolution of expectations among the young generations, further amplified by the new pandemic reality and the gaining importance of hybrid working models, have led us to long-term trends such as the shift away from the existing preference for ownership of one's home on the residential market. It can be expected that in CEE countries more and more people will decide to live in rental properties, which has significant implications for the future deployment of the residential market.

Antony Slumbers

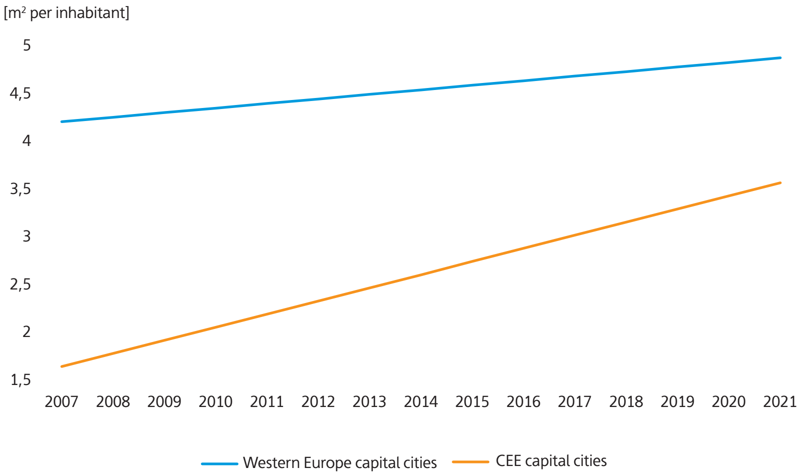
Co-Founder, Real Innovation Academy

The fundamental thing to understand as an investor in real estate is that real estate is no longer about satisfying needs, it is about creating desire.

It is no longer actually about real estate per se, but rather what real estate can offer people in terms of enabling them to be productive, or by providing them with pleasure. We have moved on from a world where people needed shops to go shopping and offices to work. Need being the critical word: it used to be that our customers had to buy what we were selling. They had no choice. But 20 years of e-commerce has shown us (to different degrees across Europe) that our shopping can come directly to us, rather than us having to go out and get it.

Over the last year, due to the pandemic, we have also learnt that by and large businesses can operate without offices. Not being able to be in our offices has not stopped us operating. And a majority of employees say that they do not want to return to their offices, at least not on a full time basis. Which leaves the real estate industry in an existential position. Their customers no long need what they are selling. So the old business model, based on that need, is fundamentally broken. To succeed in real estate in the future is going to require the creation of desire. Desire to visit shops, shopping centres, offices. We need to build new operating models based on putting our customers first. They used to need us. Now they do not. That requires us to rethink everything.

Modern office stock per capita in Western Europe and CEE



Source: Skanska, SpotData, JLL, CBRE, Colliers

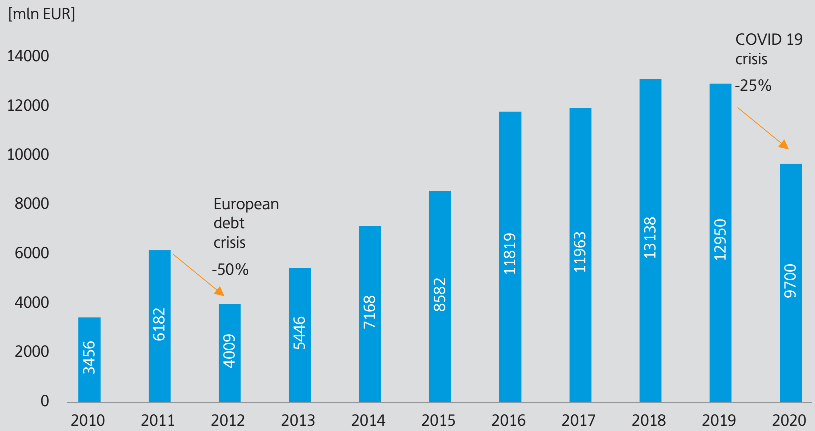
The amount of modern office space per capita in the capital cities of CEE is still much lower than in major Western cities, but is gradually converges with their level.

In 2007, the amount of modern office space in Warsaw, Prague, Budapest, Bucharest and Bratislava was 1.6 m² per inhabitant. That was 39% of the space per person in Berlin, Frankfurt, Paris, Brussels and Amsterdam. By 2020 that ratio had grown to 73%. The amount of office space in CEE is much higher than in the past, but also still lower than in the Western world. The size and liquidity of the market gradually increases, supported not only by the development gap, but also by the fact that the capital cities of CEE have been taking a role of finance and technology centres.

Real estate investments have been more resilient during COVID-19 crisis than during the previous recessions.

In 2020, the value of investments in the CEE real estate sector amounted to €9.7 billion, which was 25% lower than the year before. The decline was substantial, but it was only half the rate of decline seen during the eurozone debt crisis in 2012, when investment values fell by 50%. This can be seen as proof that despite the very deep recession the general perspectives for the economy – both in the region and globally – have not worsened much. The pandemic has hit certain sectors, such as retail commercial centres, but at the same time it spurred activity in others, such as e-commerce and logistics. The long-term economic harm from the crisis should be limited, unless the pandemic becomes a recurring phenomenon.

Investments in real estate assets in CEE, in mln EUR



Source: Skanska, SpotData, JLL, CBRE, Colliers

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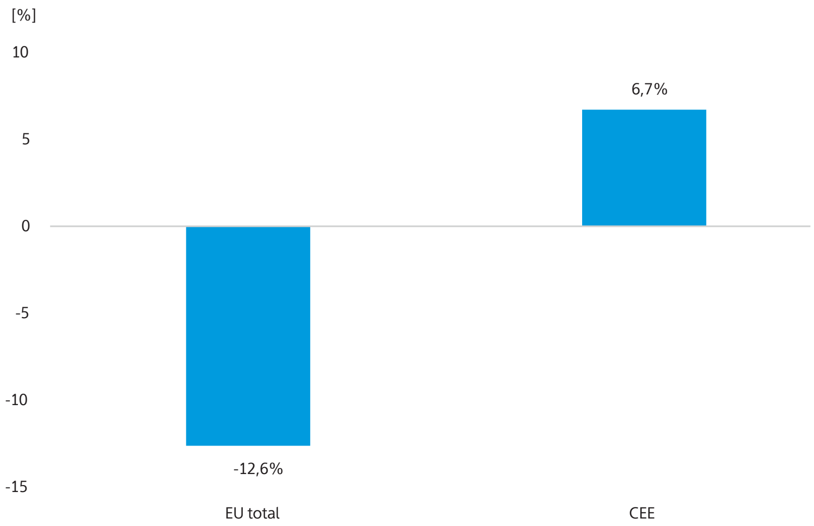
Permits for office buildings in 2020

percent change in floor space, year on year



Source: SpotData, Skanska, Eurostat

Permits for new office projects in CEE have bucked the general European decline.

The office market was shaken by the COVID-19 pandemic, and developers generally slowed new projects. But that was not the case in CEE, where the number of permits issued grew quite strongly.

It demonstrates that the crisis had relatively limited impact on perceived future growth of the market and that the depth of the office market gradually grows.

The number of permits for residential buildings generally fell in CEE, but Poland stands out with its super-strong demand.

Poland's residential market has generally been resilient to crisis. House prices rose in 2020, the levels of rents fell only slightly, rental yields remained above those before the crisis and developers recorded strong financial performances. Market growth was supported by loose monetary policy. Although such policy is found almost everywhere, in Poland zero interests rate are a completely new phenomenon for investors. Many people have moved their savings to real estate investments.

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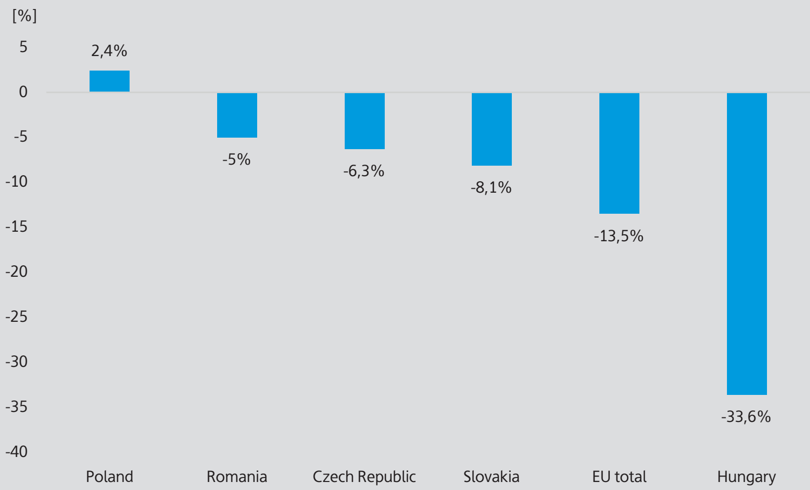
Permits for residential buildings in 2020

percent change in floor space, year on year



Source: SpotData, Skanska, Eurostat

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How will the epidemic change the office? There will be more hybrid work models or more shared space?

COVID-19 will make long-term changes to our jobs. The ability to work remotely will become the norm, not just an occasional bonus for employees. However, the transition to a job without live interaction between employees will not be complete. In knowledge-based economies, it is the working out of ideas together, the exchange of ideas and views, that creates value. Coming to the office also satisfies the need to socialize, talk and interact with others. Social interactions, including those that take place in the office, are important to health, well-being, and affect longevity.

In creative roles a return to the office is indispensable. During meetings people read non-verbal signals and are able to react faster, just talking on Skype or Zoom doesn't make that possible. That is why, for example, Goldman Sachs has announced that it plans to return 100% of its workforce to offices after the vaccination program is completed. Jamie Dimond, head of JP Morgan, summarised his approach to remote work by saying "I'm about to cancel all my Zoom meetings. I'm done with it. We want people back to work, and my view is that sometime in September, October it will look just like it did before".

On the other hand, many of the world's biggest big tech companies, such as Twitter, have already announced their staff will be able to work remotely on a permanent basis. Employees will, of course, have a choice and not the obligation to work from home. It is important to remember that not everyone can work from home or likes to work from home. It depends on the type of work, the conditions at home to do it (e.g. space and equipment) and self-discipline. The possibility of working remotely is being announced not only by technology companies, but also by industrial companies, such as Ford, which will give 30,000 employees the option of continuing to do their jobs from home indefinitely.

But change will happen to some extent. The more frequent shift to remote working will affect office spaces. However, there is no one common path for companies. Some companies will reduce the amount of space they have, but others will need more space. It will all depend on the size of the company, its specifics and its financial situation. Small and medium-sized companies may give up larger office spaces in favour of smaller ones and use shared space more often.

Larger companies that have grown steadily during the pandemic and have good prospects ahead of them will tend to adapt to the new realities of social distancing. It will be difficult for people to return to their offices if distances are not maintained. Working desk-to-desk in a small spaces will not be socially acceptable, so these companies may even increase office space and certainly redesign.

Demand for office space fell in 2020 but is expected to rebound when the pandemic subsides.

In 2020, demand for modern office space in CEE totalled 2.3 million m², which was a third lower than the year before. That decline was a natural consequence of the shift of workers to home offices, which occurred on a large scale in the modern business services sector. The largest drop in demand was in Hungary (down by 50%), and the smallest in Slovakia (a fall of 9%). The market will rebound when the uncertainty about the future path of the pandemic subsides. JLL commented recently on the Polish market, which is responsible for more than half of demand in the region: "Although many companies in Poland are holding back on final decisions regarding changes to their office portfolio due to the pandemic, we are seeing some recovery in this area and the laying out of strategies for the new normal. For example, in the last few months JLL, has acquired new tenant representation projects for approx.70,000 m². About 25–30% of this number are enquiries from newcomers, mainly from the business services, IT and medical sectors as well as companies planning to expand their scope."IT and medical sectors as well as companies planning to expand their scope".

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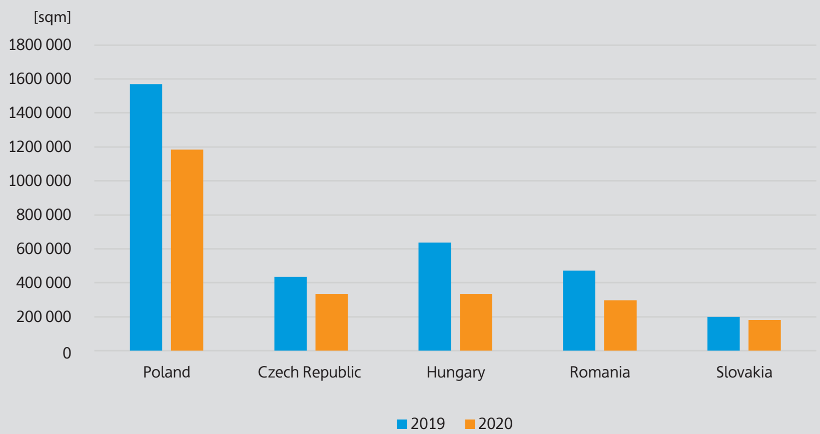
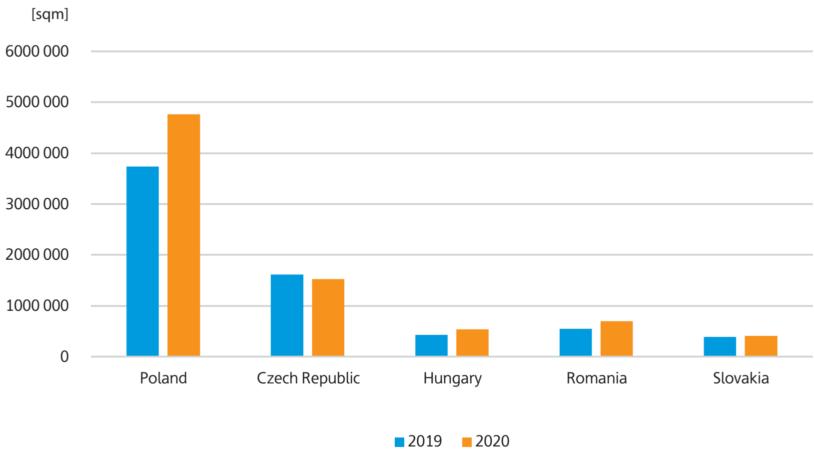
Office space - transaction volume (sqm)
in 2019 and 2020



Source: JLL

56

Warehouses – transaction volume (sqm) in 2019 and 2020



Source: JLL

The most dynamic segment of the real estate during the pandemic was warehousing and its strength is expected to continue.

In 2020, the demand for warehouse space in CEE totalled 8 million sqm, which was 18% higher than the year before. The largest increase in demand was in Poland (up by 25%), and the worst result registered in the Czech Republic (a fall of 6%). The demand was driven by two major factors: firstly, the shift of retail trade to e-commerce channels; and secondly the strong increase in industrial activity, especially in the second half of 2020, which stemmed from consumers switching from purchasing services to purchasing goods. The first of these two factors should continue even after the pandemic subsides, because some of the shift to e-commerce channels is expected to be permanent.

Prime yields in the office market remained generally stable during the pandemic.

Yields in the office market did not change much during 2020 as compared with 2019 levels. However, the yield on safe government bonds denominated in euro declined (for example, the yield on German bunds fell from –0.3% to –0.5% on average between 2019 and 2020), which means that the yield premium in the office market has increased. This is a result of uncertainty and limited liquidity. But, at the same time, the stability of yields in the office market can be regarded as a sign of the limited negative impact of the crisis. The factor that helped the market to stabilise was the large amount of capital ready to be invested in the real estate market.

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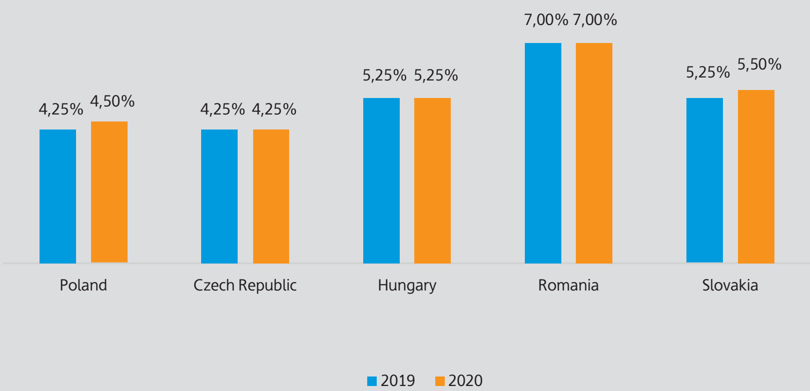
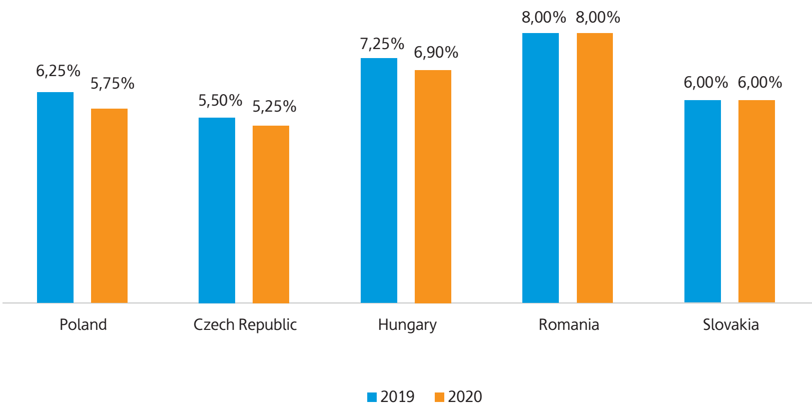
Prime yields – office market in 2019 and 2020



Source: JLL

58

Prime yields – werehouses market in 2019 and 2020



Source: JLL

The decline of yields in the warehouse market signals increased demand and brightening perspectives.

Although the pandemic crisis hit most segments of the real estate, the warehouse market had an excellent year in 2020 – and some of the factors supporting this growth should remain strong for the foreseeable future. The decline in yields in this sector signals increased liquidity and perception of stronger future demand. The e-commerce market should be one of the main drivers of that strength. Most forecasts show that e-commerce in CEE will grow by 10–20% a year for at least the next five years.

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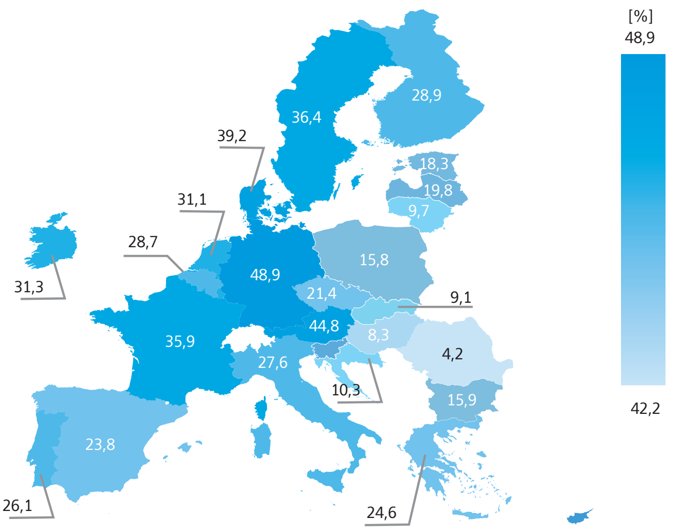
Percentage of households living in rental properties in 2019



Source: SpotData based on Eurostat data

Ownership dominance might be on the turning point for the residential market.

CEE countries are still dominated by the cult of property ownership. People prefer to take out a mortgage to live in their own apartments or houses rather than rent. In the EU, an average 30.2% of people lived in rented accommodation in 2019, but in all CEE countries the average is far lower – in the Czech Republic only 21.4% and in Poland 15.8%, with the other three countries with the lowest of all EU Member States: Slovakia 9.1%, Hungary 8.3% and Romania just 4.2%. At the other end of the spectrum is Germany, where 48.9% of people live in rental properties.

In the coming years, however, it can be expected that in the countries of CEE more and more people will decide to live in rented properties. This is related to the ongoing social changes, especially among young people, who prefer to live according to the principle that it is better to "be" than to "have".

It can be assumed that young people in the countries of CEE will be more willing to live like young people in Western and Scandinavian countries and not be tied down with long-term loans to buy housing. Especially since project work is increasingly important to them, and the pandemic has changed the labour market and hybrid work will become the norm.

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The COVID-19 pandemic has created new needs and opportunities for technology use in real estate and given rise to innovation. Buildings will be smarter and there will be large-scale use PropTech applications and solutions.

After the pandemic many employees will go back to their offices, including these who will work in a hybrid system. Office space will have to be redesigned to provide more space for employees and to comply with new sanitary requirements.

The COVID-19 pandemic requires physical distancing, which means there opportunities to use PropTech on a wider scale, and the main goal will be to ensure the safety to the people working in a building. Proptech is a combination of the words "property" and "technology", and this term is used to describe technology that is innovative for the real estate industry.

Everyday surfaces, such as elevator controls, light switches and door handles, are now possible infection vectors.

Non-contact temperature measurement devices at the entrance to the office will become the norm.

The use of technology that can ensure touchless access and innovative asset control systems also become the new normal in how we move around and enter buildings.

The right app on one's phone will open the entrance gate, and the system will call the elevator and send it to the right floor.

In case of a potentially dangerous event, such as a fire emergency or emergency procedures related to an epidemic, staff in the building will receive immediate alert and instructions sent to their phones.

Smart lighting systems and voice command recognition systems can help employees and tenants safely use the space without touching contaminated surfaces.

PropTech can also provide smart space planning solutions designed to accommodate the demand for a safe workplace.

Sensors paired with machine-learning algorithms can help manage and visualise office spaces better. Daily density reports will provide employers with data-based information about potentially dangerous areas that can result in employees crowding together.

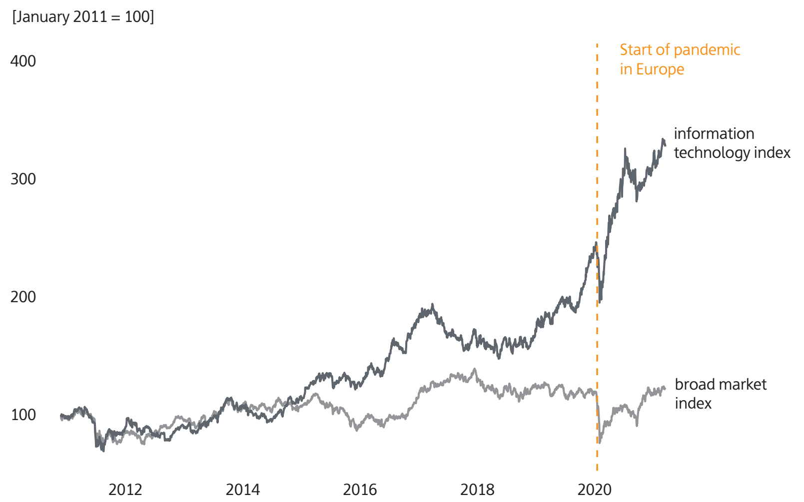
Digital transformation & technologies

CEE is well-placed to benefit from global acceleration in digitalisation due to it skilled workforce and the growing share of software services in its GDP

61

Stock market indices at the largest stock exchange in CEE (the Warsaw stock exchange)

data rebased, January 2011 = 100



Source: SpotData, Skanska, Warsaw Stock Exchange

Investors bet on the new digital world.

Since the spring of 2020 there has been a wave of interest in technology stocks all over the world, including in CEE. One reason for this trend has been the loose monetary policy, which helped the stock prices of high-growth companies. The other reason, and probably the more important one, is that investors believe in faster digital transformation – the adoption of new technologies, new sales channels, new business models and investments in cyber security. And so far data is proving those beliefs to be correct.

There are visible signs that the pandemic has accelerated the digital transformation.

Saying that the digital transformation is speeding up is not merely claptrap. The data shows that companies have increased spending on digitalisation since the pandemic started in 2020. For example, the project pipeline of the largest local software company in the CEE (Asseco) grew by 25% between 2019 and 2020. Other large companies from the IT sector also report strong demand for their services. The CEE is being given an opportunity to prove its growing digital potential.

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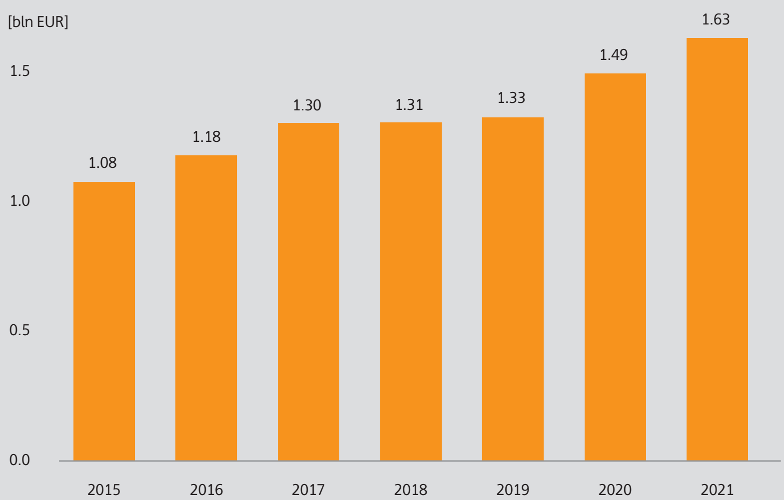
Projected pipeline of Asseco – the largest local software company in CEE, in bln EUR

data for the end of the first quarter of each year



Source: SpotData, Skanska, Asseco

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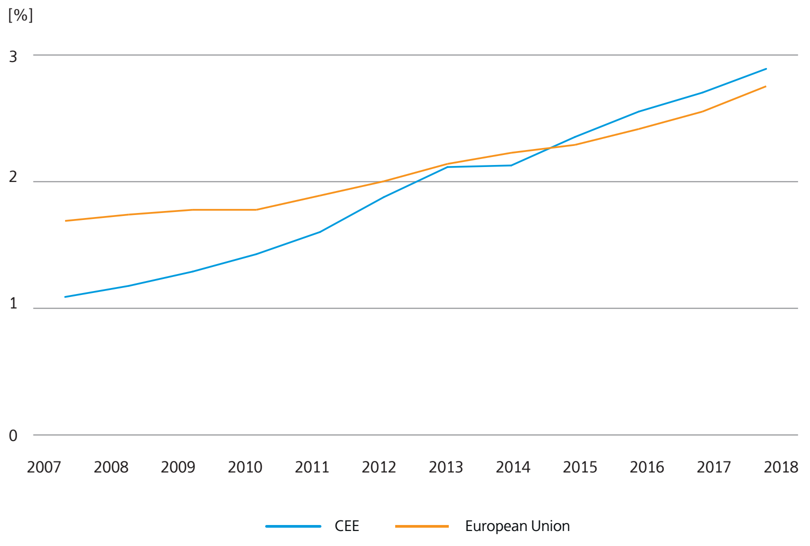
Share of programming in gross value added, in %



Source: SpotData, Skanska, based on Eurostat

CEE has developed its digital capacities and is now well-placed to benefit from the global acceleration in digitalisation.

The CEE region is increasingly competitive with regard to software development. Between 2007 and 2018 the share of software programming in terms of gross value added in the CEE countries grew faster than the average for the European Union, doubling from 1.4% to 2.8% (EU average stands at 2,7%).

The biggest relative growth of programming was in Poland, where it accounted for 0.9% of gross value added in 2007 and 2.7% in 2018. Another software boom happened in Romania, increasing from 1.7% to 3.6% (the highest percentage in the region). This trend continued in 2019, where the figure rose to 4.2% (data for 2019 is not yet available for some countries). Both of those countries have tax incentives for IT development, such as 5% income tax for self-employed developers in Poland (instead of 19%) and an exemption from payroll tax in Romania for selected IT jobs.

The Central European market for software development services is being boosted by influx of talented developers from Eastern Europe.

There are already more than 600,000 professional developers in CEE, half of whom live in Poland. They form the base of a dynamic software industry, which is one of the fundaments of the growing knowledge economy. The most important drivers of demand are the digital transformation and automation. Relatively new technologies, such as artificial intelligence and the Internet of Things, can substantially contribute to the growth in GDP in the region. McKinsey* noted in a 2020 report about CEE that the COVID-19 crisis had accelerated digital growth: "In 2017–2019, the digital economy in CEE grew by almost 8 percent a year, much higher than the pace of change in the largest five economies in Western Europe(…) During the first months of the COVID-19 lockdowns, our estimates show that the digital economy in CEE accelerated."

One of the factors that will help to increase the pace of the growth of the software industry is the influx of skilled foreign developers from Eastern Europe, especially Ukraine and Belarus. Gazeta Wyborcza,** a major Polish newspaper, estimates that in 2021 the number of foreign workers coming only to Poland will reach approximately 200,000.

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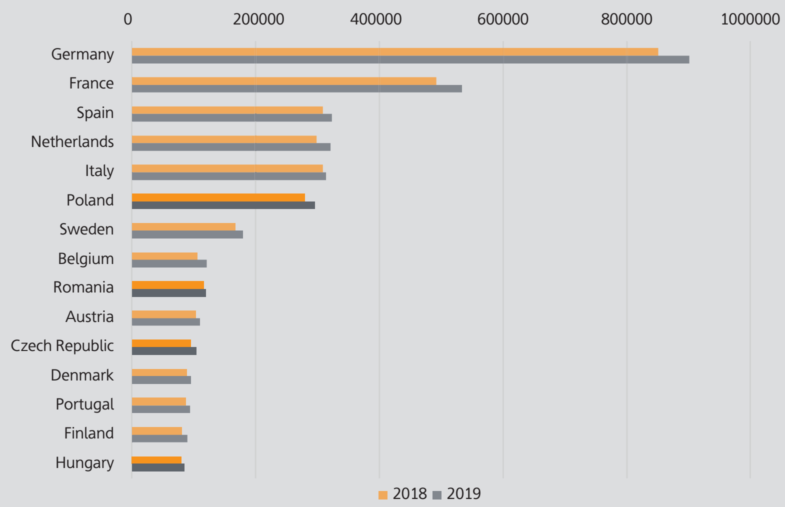
Growth in number of professional developers



Source: Spotdata based on The State of European Tech 2019

Many of them are software developers: "Tensions over the eastern border have caused immigrants to arrive again, and quickly. The jump can be seen in migration from Belarus. Skilled IT workers transferred to offices in Poland are responsible for much of it" Gazeta Wyborcza notes.

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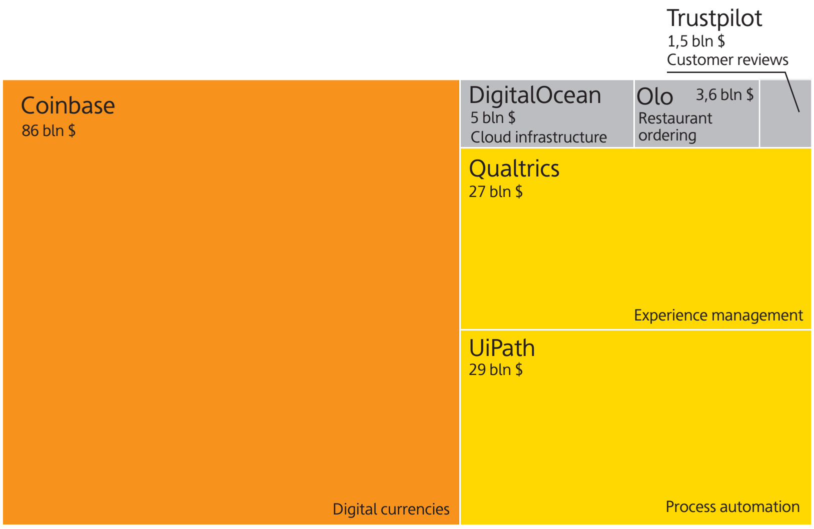
Hottest technology IPOs in 2021 according to ComputerWorld

market value at debut



Source: data from Computerworld

The unicorns from CEE listing on western stock markets demonstrate the digital prowess of the region.

One of the largest tech IPOs on the global stock markets in early 2021 was by Romanian company UiPath, which specialises in process automation. It was valued at USD 29 billion on the New York Stock Exchange when it was first listed in April. Its early financial success demonstrates both the intellectual potential of the CEE region (although the company is currently based in New York) and the good prospects for back-office digitalisation, which may bring higher value-added investments in the business services sector in CEE.

CEE has been able to grow large local players in e-commerce, which is dominated around the world by US behemoths.

The second hot tech IPO from CEE, following UiPath, was InPost, a Polish e-commerce logistics operator. It was the largest European IPO in the first quarter of 2021, according to PWC. The financial success of this company demonstrates an important trend: the booming e-commerce market is driven by local players, which is able to successfully compete with such giants as Amazon and Alibaba. For example, in Poland the leading e-commerce platform is Allegro, a Polish company.

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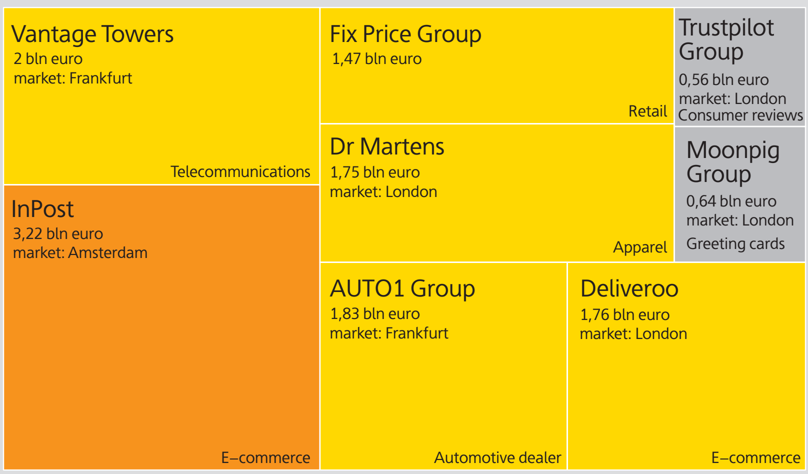
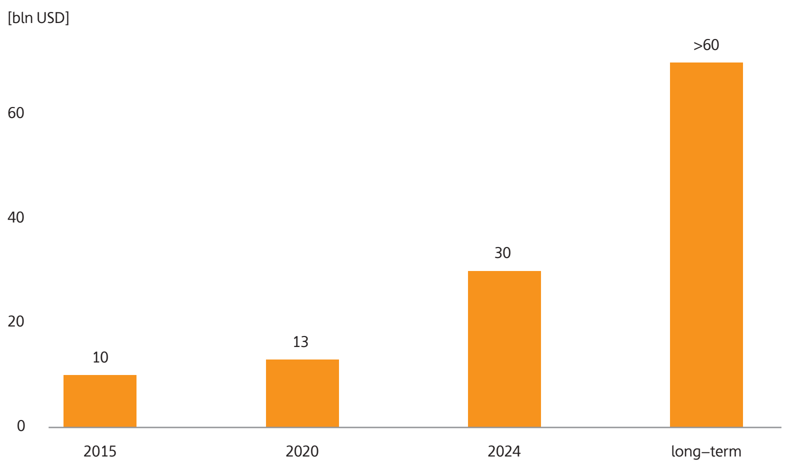
Largest European IPOs in the first quarter of 2021



Source: data from PWC

67

Global market for process automation, in bln USD



Source: estimation by UiPath based on data from IDC

Process automation might put some workplaces in CEE at risk, but at the same time it should create new growth opportunities.

CEE has become one of the global centres for back-office process outsourcing for large multi-national companies. The increasing trend to automate these processes raises the risk that some of such investments might disappear in the future. According to IDC, the leading data provider in the ICT (information and communication technologies) sector, the global market for process automation will be growing by almost 25% a year in the medium and long term. But CEE is well prepared to withstand that challenge, in fact the region can even benefit from it. Over the last couple of years the investment inflows in the business services area have concentrated more on technology operations, which are more difficult to automate than traditional back-office tasks. Moreover, automation will create demand for new technology jobs, which the CEE region can provide.

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The most important directions for digital change in companies are the increasing use of the Cloud and Big Data technologies, and the moves of manufacturers towards what is known as Industry 4.0.

Companies need to adapt their activities and use new forms of technology if they do not want to be left behind in increasingly competitive markets. In the CEE region there is still a lot of space for digitalisation, not only basic processes (e.g. ERP and CRP), but also the newest ones. In terms of using the most modern systems, such as Cloud services or Big Data technologies, companies from the region still lag significantly behind companies from other EU Member States.

For example, in the EU as a whole 36% of companies use some kind of Cloud services. In CEE Czech Republic has the highest such percentage (29%), followed by Slovakia (26%), Hungary (25%) and Poland (24%). Romania, with only 16%, is at the very bottom of the EU.

When it comes to Big Data technologies, for the EU as a whole 14% of companies use such technologies. In CEE, Czech Republic has 9%, Poland 8%, Hungary 7%, Slovakia 6% and Romania 5%. It can be expected that in the next few years companies from CEE will increase their investments in digital change to catch up with the rest of the EU.

Technology adoption among companies

percent of companies using given technology

Source: SpotData, Skanska, Eurostat

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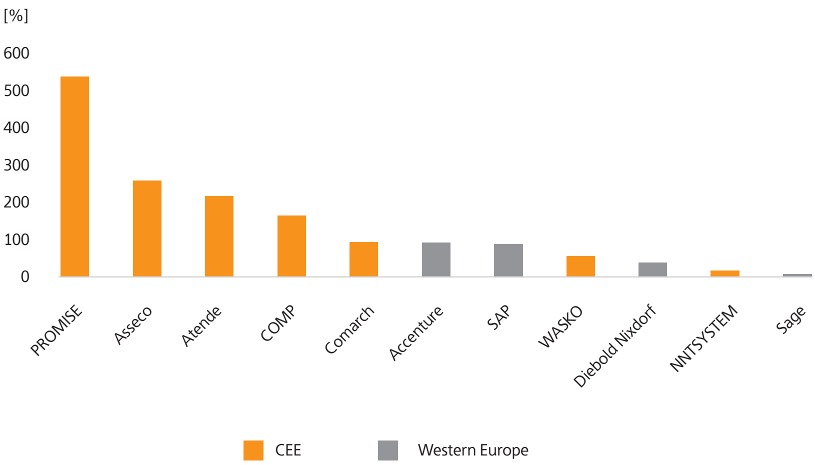
Revenue growth in the last 10 years



Source: SpotData, based on Biznes Radar and Macrotrends

Leading local IT companies have registered triple-digit growth rates over the last decade.

Over the last 10 years Polish IT companies saw much faster increases in revenue than their peers from Western Europe. That is not only due to Polish companies being smaller, it mostly reflects the pace of economic growth and digital transformation of local public administration and private companies.

A shining example of international success Czech firm Avast Software, whose products include Avast Antivirus, one of the most popular such applications in the world. IT software developers are competitive too, Asseco and Comarch are both major Polish IT companies that compete in the markets of Western Europe.

The example of Asseco shows that Polish IT companies can be among the biggest in Europe and still manage to develop quicker than the European average. Asseco, despite having revenue of nearly USD 1 billion in 2010, still managed to increase that to over USD 3 billion in 2020.

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The skills of CEE programmers are ever more highly valued by foreign companies.

CEE is a place where international companies increasingly locate their R&D, technological and operational centres. That shows that the CEE region has enough well educated and skilled staff. Their work can compete on international technological markets.

Major growth comes from financial companies, which often locate their technological departments in the region. ING, UBS and Credit Suisse all have hubs in Poland. Polish staff provide complex services and solutions for clients from the all over the world.

The technological centres in CEE are also highly diversified in terms of business field, with not only pure IT software centres. For example, in Poznan GSK has both a financial hub and a centre that develops drugs and other pharmaceutical products.

Even more interesting examples include IBM and Amazon. IBM runs a Watson Lab in Prague that develops AI technology. Amazon bought the Ivona software firm in Gdansk, which is now working on upgrades to Amazon's Alexa system. This acquisition showed that Amazon has confidence in the Polish firm, especially given that the transaction took place in 2011, when the technology was much less advanced than it is today.

The trend of setting up IT centres in CEE is not coming to an end. The Watson Lab in Prague was opened in 2018. Microsoft will build a data centre in Warsaw in 2021, and Continental in 2019 decided to open a new software development centre in Romania. In addition, many companies that opened CEE offices are now increasing the complexity of the services conducted in them.

Major investments in tech centres in CEE

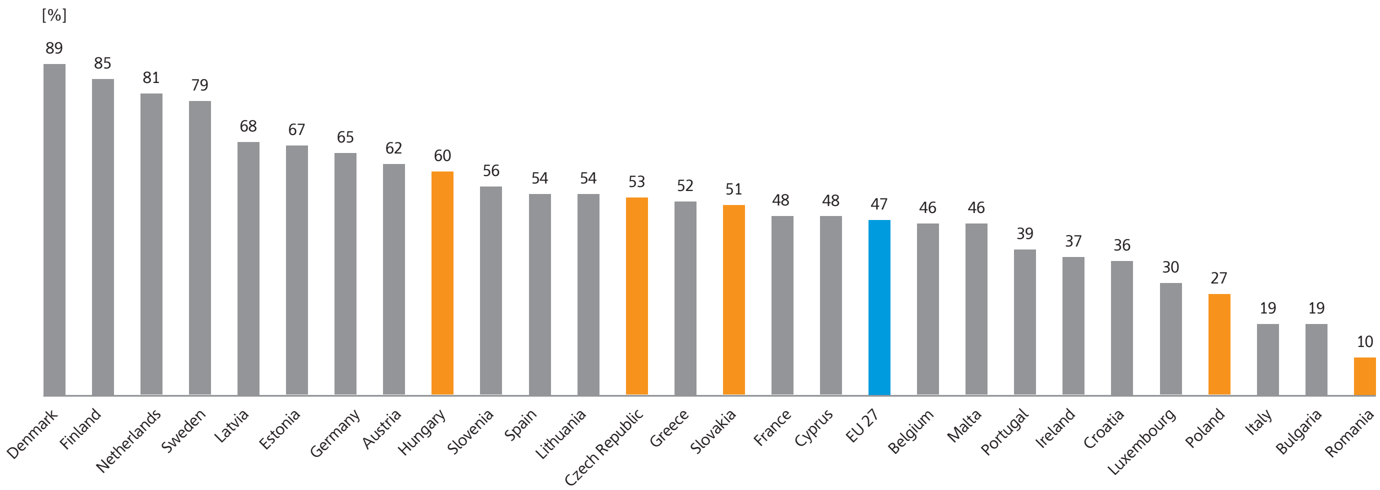
COMPANY	CITY	BRIEF DESCRIPTION
Amazon Development Center Poland	Gdańsk	Established in 2013 based on Ivona Software specialising in AI voice technology
GSK Tech Center	Poznań	R&D providing GSK with various types of technologies
ING Tech Poland	Warsaw	Tech centre providing ING with various types of financial and IT solutions
ING Tech Poland	Katowice	Tech centre providing ING with various types of financial and IT solutions
IBM Watson	Prague	Providing AI solutions to clients of IBM
Siemens	Wrocław	Responsible for developing Siemens' logistics technology
UBS	Kraków	Providing financial and IT solutions for UBS and its clients
Continental	Timisoara (western Romania)	Software created in Romania solves automotive sector problems
Credit Suisse	Wrocław	Providing financial and IT solutions for Credit Suisse and its clients
SAP Lab	Prague	Developing SAP technology and adapting it to customers' needs

Public administration in Poland and Romania still lags in terms of digitalisation, but that creates opportunities for catching up quickly over the next decade.

In 2020, 47% of people in the EU looked up information on the websites of public authorities and this figure was substantially higher than in 2008 (33%). Against this backdrop, three CEE countries stand out with levels well above the EU average: Hungary 60%, the Czech Republic 53% and Slovakia 51%. In contrast, only 10% of the people in Romania had obtained information from public authorities through their websites and 27% of the people in Poland.

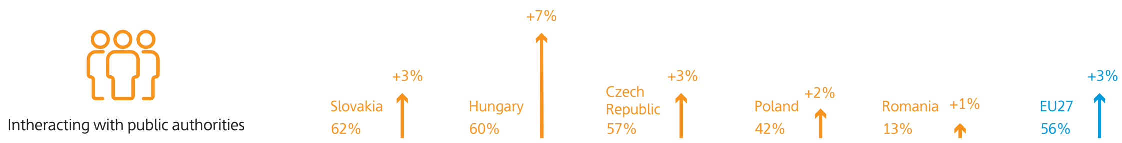
Other important indicator is the percentage of individuals using the Internet for interacting with public authorities, which has been steadily increasing in all CEE countries over the last ten years. Again three countries are above the EU average (56%): Slovakia, at 62%; Hungary, 60%; and the Czech Republic, 57%. The other two are behind the EU average: Poland, at 42%; and Romania, 13%. These two countries have a significant opportunity for digitalisation of public administration and are planning to spend a sizeable amount of EU funds on this.

Percentage of people that obtained information from government websites in the last 12 months, 2020



Digital public administration indicators

percentage of individuals using the internet for



Source: SpotData based on Eurostat data, France, Italy: data 2019

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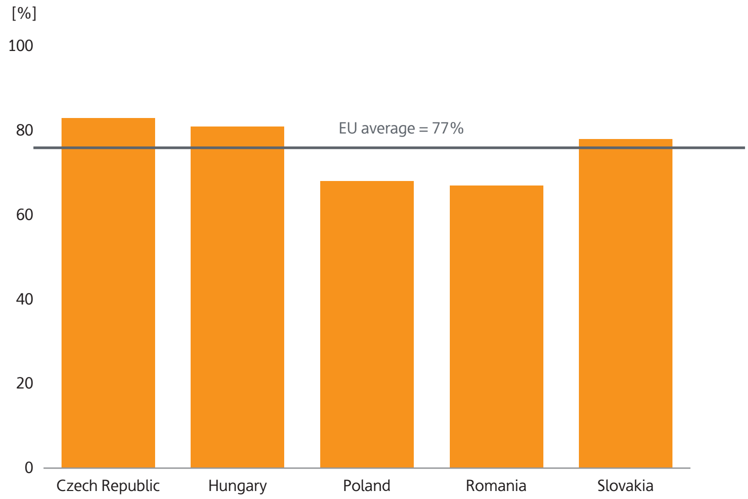
Household internet connection type: fixed broadband (2020)



Source: SpotData, based on Eurostat

To support the digital transition, some countries plan to accelerate broadband coverage.

The Czech Republic, Slovakia and Hungary have solid broadband infrastructures, but Poland and Romania still lag behind. Those two countries plan to close the gap over the next few years. It is highly probable that the COVID-19 crisis will accelerates investments in this area.

Statistics also show that there is a major difference in the share of population who have never used a computer. The Czech Republic and Slovakia are above the EU average, Poland and Hungary are close to this level, whereas Romania does very poorly in this respect: 27% of the population of Romania have never used a computer (the average for the EU is 16%). This means that more than one in four Romanians are unable to access online services.

It is a paradox that one of the most dynamic European markets in terms of IT services performs so poorly on basic measures of Internet access. But this also demonstrates how much low-hanging fruit there is in some parts of CEE – and thus also easy to use growth opportunities.

The EU is increasing the pool of money available for supporting digital investments.

Digital transition is key for Europe's future prosperity and resilience. As part of the next long-term EU budget, the Multi-annual Financial Framework, the Commission has proposed the Digital Europe programme, a programme to accelerate the post-COVID-19 recovery and drive the digital transformation of Europe.

The programme will boost investments in supercomputing, AI, cybersecurity, advanced digital skills, and ensuring the widespread use of digital technologies across the economy and society, including through digital innovation hubs. Its goal is to improve Europe's competitiveness in the global digital economy and bring about technological sovereignty. It will do that by deploying and building capacity for new digital technologies, in order to support a digital transformation that will guarantee high-quality public services benefiting people and businesses.

The Digital Europe programme will complement other EU programmes, such as the Horizon Europe programme for research and innovation, and the Connecting Europe Facility, which focuses on digital infrastructure.

The Digital Europe programme runs from 2021 to 2027 and, with a budget of €7.58 billion.

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Direct support from the EU for digitalization in all Member States

Multiannual Financial Framework	2021-2027
Research and Innovation	
Horizon Europe*	€86,1 bln
in addition, allocation under NGEU	€5,4 bln
European Strategic Investments	
Connectiong Europe Facility-Digital	€2,1 bln
Digital Europe Programme	€7,6 bln
In total fo digitalization	€101,2 bln
Total budget	**€2 017,8 bln**

Source: Spotdata based on The World Bank Group

The rolling-out of 5G is expected to increase rapidly in the coming decade.

The “fifth generation” of mobile telecommunication systems, more widely known as 5G, is integral to digitalisation efforts, and its roll-out is seen as one of the most critical building blocks of the European digital economy and society over the next decade. It is a topic of strategic interest in Europe, with ambitious goals being set at the EU level, such as 5G accounting for 29% of all telecom connections in Europe by 2025.

Although now the deployment of 5G is low comparing to, for example, the USA, a recent report from the European Commission and European Investment Bank shows that Europe plans to accelerate the roll-out swiftly via a number of funding programmes and regulatory actions. Europe sees 5G as a major opportunity to improve both the ICT sector and the entire economy, contributing to the digital transformation of businesses and society.

There are several funding programmes within the new budget plan. For example, the European Commission has identified 5G standards as one of the five key priorities of the Digitising European Industry initiative.

Another initiative that aims at addressing the issues limiting the financing and development of

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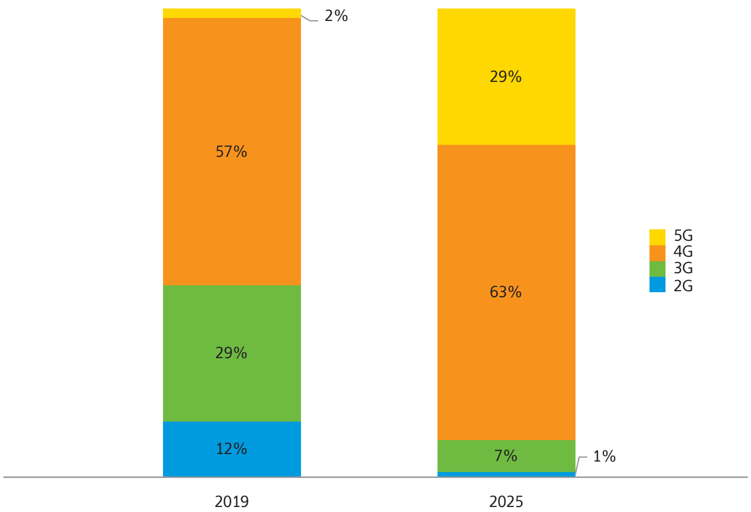
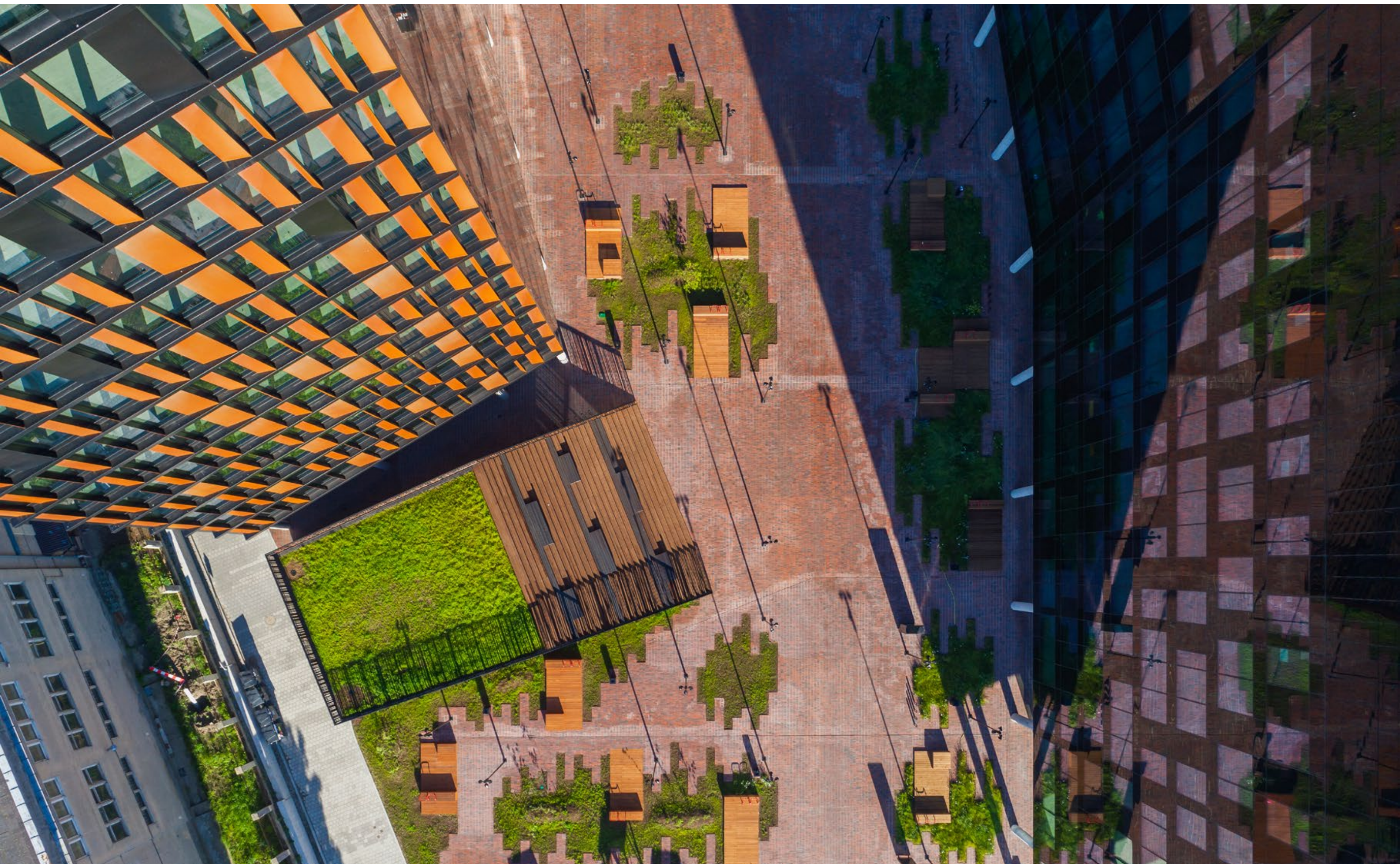
Accelerating the 5G transition in Europe



Source: Spotdata based on Axon Consulting elaboration a report from GSMA

5G is 5G Action Plan. This plan focuses on ensuring the commercial roll-out of 5G in at least one major city in every Member State by the end of 2020 and uninterrupted coverage of all urban areas and major terrestrial transport routes by 2025. This plan sets a clear roadmap for public and private 5G investments in the EU.

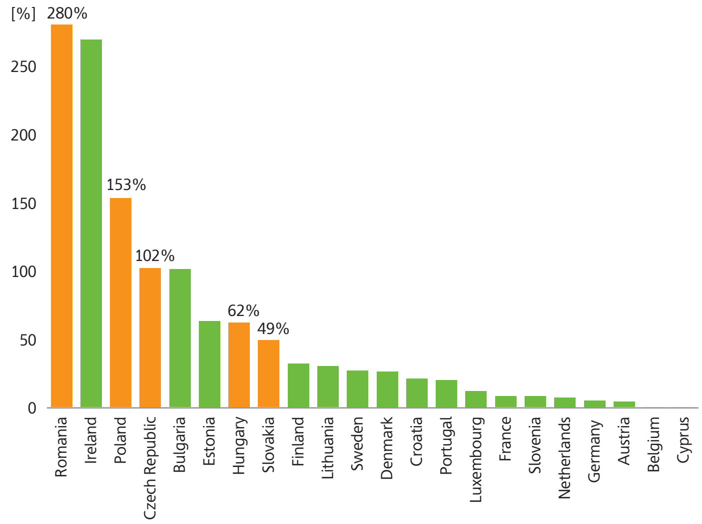


Infrastructure

Increasing connectivity enables the region to play more important role in the global trade and financial system

75

Percentage change in the number of kilometres of motorways,
2006 vs 2019



Source: SpotData based on Eurostat data

Increasing transport connectivity is an important factor that supports investments in business services.

The countries of CEE do not yet have as well-developed infrastructure as Western countries, but the rate at which they have been catching up over recent years has been very rapid. One factor that stands out significantly in terms of percentage increases is the number of kilometres of new motorways between 2006 and 2019: Poland recorded growth of 153%, the Czech Republic 102%, Hungary 62% and Slovakia 49%. The highest percentage increase was recorded in Romania, 280%, but that came from a very low starting point.

In countries with very well-developed infrastructure, such as Germany, had 37 kilometres of motorway per thousand square kilometres. Hungary had almost half that amount, with 19 kilometres of motorway per 1,000 km^2, but this was still more than France, which had 18 kilometres of motorway per 1,000 km^2 (in Poland the figure is 5,4).

The development of infrastructure in the countries of CEE in recent years was made possible by significant amounts of EU funds allocated for this purpose.The framework of new EU funds will ensure that the countries of CEE will continue to be major beneficiaries.

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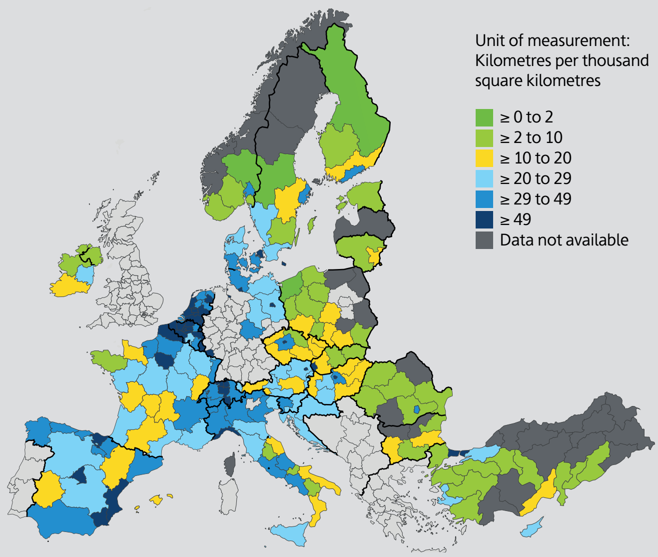
Motorway density



Source: Spotdata based on Eurostat

Countries in the CEE region are gradually improving local road connections.

According to data from Eurostat, in 2018 the densest motorway networks in the EU are found around the cities of Budapest (120 km / 1000 km^2), Vienna (109 km/1000 km^2), Prague (91 km/1000 km^2) and Berlin (also 91 km/1000 km^2). The highest density of railway lines is in the regions of Germany and the Czech Republic. In relative terms, the most significant motorway expansion between 2009 and 2018 took place in the Romanian region of Sud-Est, followed by the Polish region of Kujawsko-Pomorskie and the city of Prague. However, the impressive growth rates are explained by the very limited motorway networks in these areas in the 2000s.

Between 2007 and 2018 the biggest increase in the region in motorway density per 100,000 people was in Hungary. This country and Romania both have very ambitious plans on building hundreds more kilometres of motorways in the near future.

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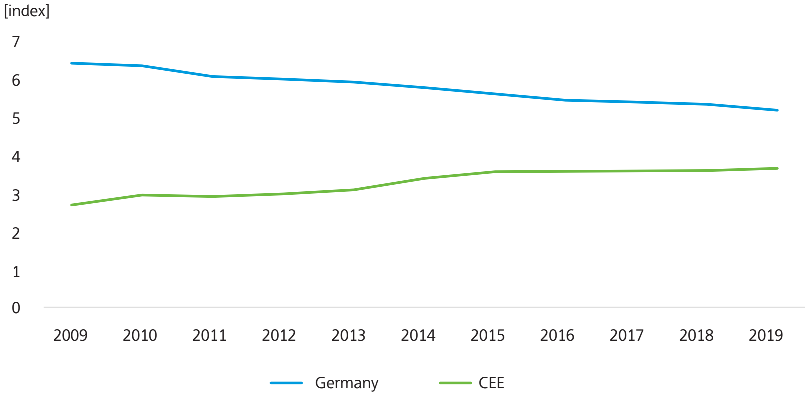
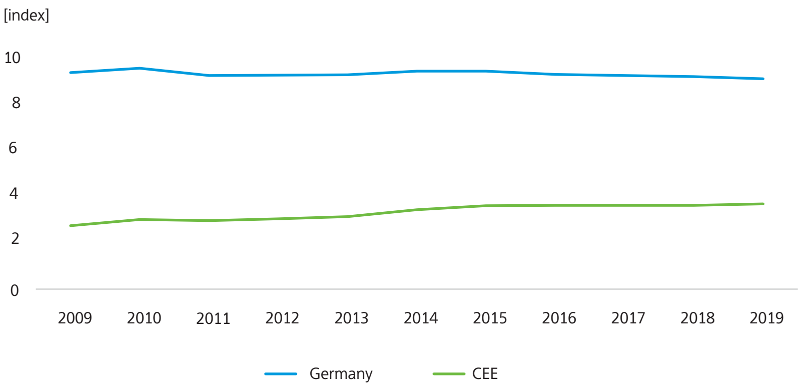
Quality of railway infrastructure (Global Competetive Index)



Source: SpotData, based on Global Competetive Index

Quality of roads (Global Competetive Index)



Source: SpotData, based on Global Competetive Index

The infrastructure quality gap to Germany is shrinking, but there is still a lot to improve in some countries.

The 2019 global competitiveness index produced by the World Economic Forum covers the quality of the infrastructure in every country in the world. It indicates that in terms of quality of road and railway infrastructure CEE is gradually catching up with Germany. The gap now is half as big as it was a decade ago.

However, there are considerable differences in the region. Over the last decade Poland improved its road quality the most, making huge investments in its road network. Romania, on the other hand, despite joining the EU in 2007, has still not managed to substantially increase the quality of its transport infrastructure. The reason why Romania lags behind the other countries of CEE is mainly related to the problems with corruption and lack of transparency. However, things might change in the near future. There is growing pressure on the Romanian government to deal with the problem of neglected infrastructure. Programmes such as the General Transport Master Plan and the National Road Safety Strategy offer a chance for Romania to follow the example of Poland in this sector – as it has done in others.

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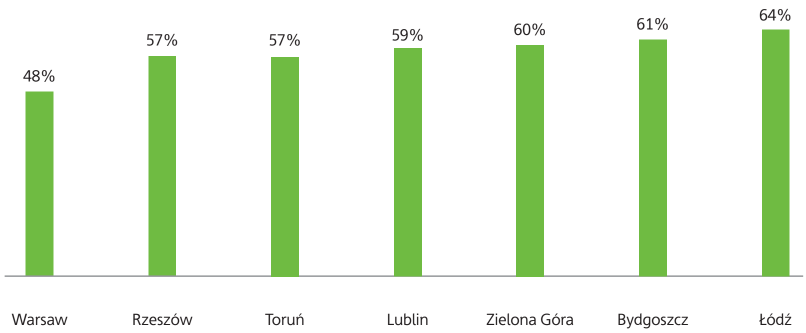
Growth in wages in Polish mid-size academic cities, compared to the capital city Warsaw, in %

2009 vs 2019



Source: SpotData based on Eurostat data

Improved local connections open up new opportunities in academic cities that offer access to a deep labour pool.

During the last decade we have noted that salaries in Polish cities known for their universities are growing faster than the national average. Comparing 2019 with 2009, the growth is 10 to 15 percentage points higher than in the country's capital city. Many cities with universities mention as important goals in their development strategies increasing the quality and innovation of education, attracting as many students and researchers as possible, and developing co-operation between the scientific, business and local government communities.

A report from the Polish Economic Institute in 2019 included Łódź, Lublin and Szczecin in a "pursuit group" which means they are catching up in terms of development of higher education and co-operation between universities and the scientific and business communities.

The Polish government plans to build a number of new rail connections as a part of the Solidarity Transport Hub project, which will link the academic cities to major Polish cities. Improved local connections could significantly improve the mobility of the inhabitants and attract more young talented people to study and work in such cities.

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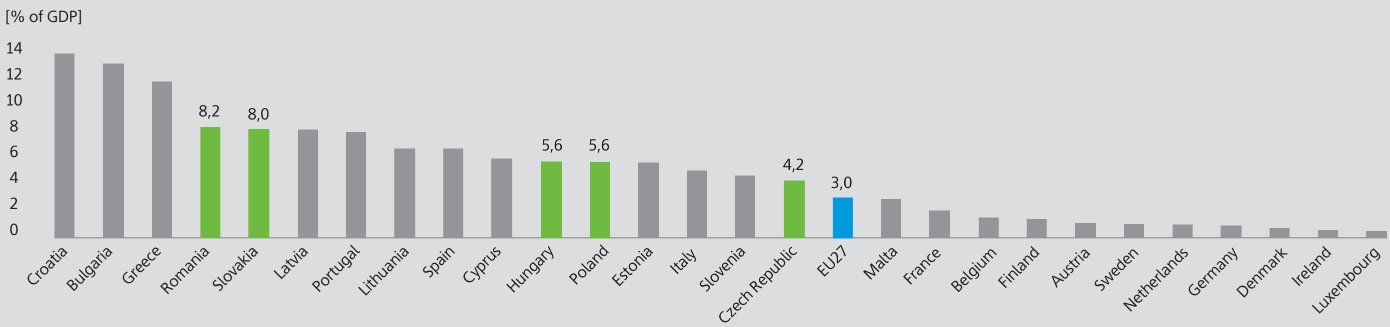
Countries from the CEE region are among the biggest beneficiaries of the Next Generation EU fund

The EU's long-term budget, coupled with Next Generation EU, the temporary instrument designed to boost the recovery, will be the largest stimulus package ever financed through the EU budget. Next Generation EU is a €750 billion (€360 billion of which in loans) temporary recovery instrument to help repair the immediate economic and social damage caused by the Coronavirus pandemic.

€73.5 billion from that fund will flow to the countries of Central Europe. The biggest part of the fund, which is the Recovery and Resilience Facility, aims to mitigate the economic and social impact of the Coronavirus pandemic and make European economies and societies more sustainable by providing financial support for the green and digital transitions. NextGenerationEU will also provide additional money to other European programmes and funds, such as Recovery Assistance for Cohesion and the Territories of Europe (REACT-EU), Horizon2020, InvestEU, rural development and the Just Transition Fund (JTF).

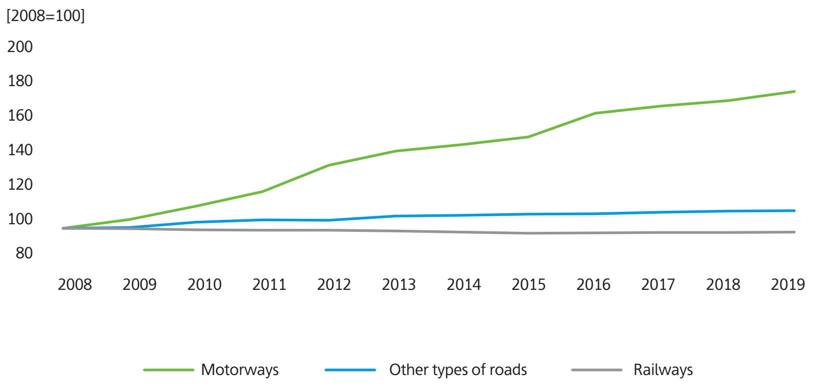
Estimated allocation of grants from the Next Generation EU fund as % of GDP in 2019



Source: Spotdata based on Eurostat data and Bruegel calculations on European Commission data

80

Relative changes in length of transport infrastructure elements, in %
(2008 = 100)



Source: SpotData, based on Eurostat

A new era for rail transport is coming

During the rapid increase in road infrastructure, railways were sometimes neglected. The most important sign of that is the fact that the number of kilometres of railways in Poland fell in the last decade. That only exacerbates the problems caused by the uneven distribution of railways in this country

To remedy these problems the Polish government plans to prioritise railway infrastructure over the next few years. The investments will be linked with the building of an international airport hub (the CPK) in central Poland, between Łódź and Warsaw. The plans involve building 1,600 km of new railways between airports and major Polish cities. Existing routes are going to be upgraded in order to be able to handle high-speed trains. The target is to provide connections from all major Polish cities (excluding Szczecin) to the CPK in just two hours and 30 minutes. Because the airport will be close to the two biggest metropolises in Poland, it will also provide them to fast connections to the entire country. The rail investments will be supported by the climate policies of the European Union. Trains are the only long-haul transport method that can currently work efficiently with electric motors. Electrification is one of the pillars of the green transition in energy.

Insight: what are the major infrastructure projects started in 2020,besides roads?

In 2020, the European Commission approved an investment package worth more than €1.4 billion of EU funds for 14 large infrastructure projects with a value of more than €50 million each in seven Member States, among which are the Czech Republic, Hungary, Poland and Romania. The latter two are the biggest beneficiaries of the EU's cohesion policy.

In the Czech Republic the construction of key infrastructure linking the energy systems of different EU Member States is underway. A new efficient and reliable power line will be built, which will increase energy security and renewable energy generation and reduce the number of regional blackouts and grid failures.

The major projects in Hungary will increase flood safety and improve sustainable water management.

More than €500 million for Romania from the Cohesion Fund will ensure access to improved drinking water and proper treatment of wastewater, as well as improving the quality and efficiency of medical services.

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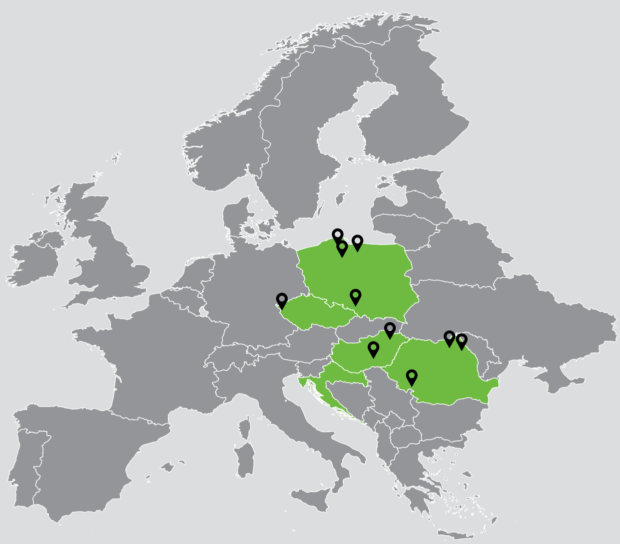
Major infrastructure projects financed by the EU



Source: Spotdata based on Eupoean Commission Major Projects

North–South routes grow after years of underinvestment.

One of the crucial strategic goals of the Three Seas Initiative is supporting the development of north–south infrastructure routes. The argument that these routes are seriously underinvested in had been advanced before the initiative started and has become one of the pillars of its investment strategy.

In 2015 an American think-tank, the Atlantic Council, published an analysis in which it argued that intensified integration along north–south lines in Central Europe is a necessary condition for developing an effective internal market in the EU. The argument was based on the observation that north–south routes in the region were underdeveloped, due to a deliberate policy of the Soviet Union between 1945 and 1989, which had favoured the integration of the Soviet bloc with its centre and prevented the development of regional ties.

To demonstrate the practical aspect of this problem we compared the travel time on routes of comparable distance in Western and Eastern Europe: Gothenburg to Barcelona and Tallin to Constanza. Both routes connect important northern and southern ports. Whereas one needs 24 hours by car and slightly more than one day by train to get from Gothenburg to Barcelona, it takes 32 hours by car and 3.5 days by train to get from Tallin to Constanza.

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Travel times between selected large northern and southern ports in the 'EU 15' and in the Three Seas region

Source: SpotData, based on Eurostat

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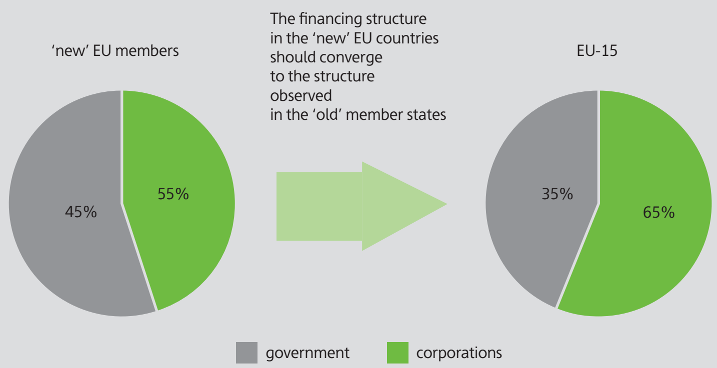
The structure of financing infrastructure investments in the EU



Source: SpotData, based on Eurostat

Infrastructure becomes an investment asset.

The Three Seas countries need new sources of investment financing and should aim, in the long run, to achieve a financing structure akin to Western Europe, with a 30%–40% share of government funds and a 60%–70% share of market funds.

Fortunately, the region is not alone in the quest for a new, innovative approach to funding infrastructure projects. Due to budget constraints, resulting from fiscal savings efforts after the financial crisis, searching for new sources of infrastructure financing has become a global challenge. Many international organisations have started to pay more attention to this problem, including the International Monetary Fund, the World Bank, the OECD, and the EU. At the G20 Summit in Toronto in 2014 a decision was taken to launch the Global Infrastructure Initiative, the aim of which is promoting infrastructure investments based on a combination of public and private financing.

Since then many organisations have started to make efforts related to the creation of institutions favouring a new approach to the problem. Supporting the creation of investible assets backed by infrastructure projects is one of the most important goals of these efforts.

Energy transformation

CEE will have to accelerate investments in energy transition, which, along with digitalisation, will be one of the two megatrends defining the business transformations in the coming years

One significant revolution that is yet to begin on a large scale will be the conversion of building heating systems to use electricity.

The energy transformation has so far mostly concentrated on the producing of energy. In the near future much more effort will be made to transform other sectors, one of which being construction, both commercial and residential.

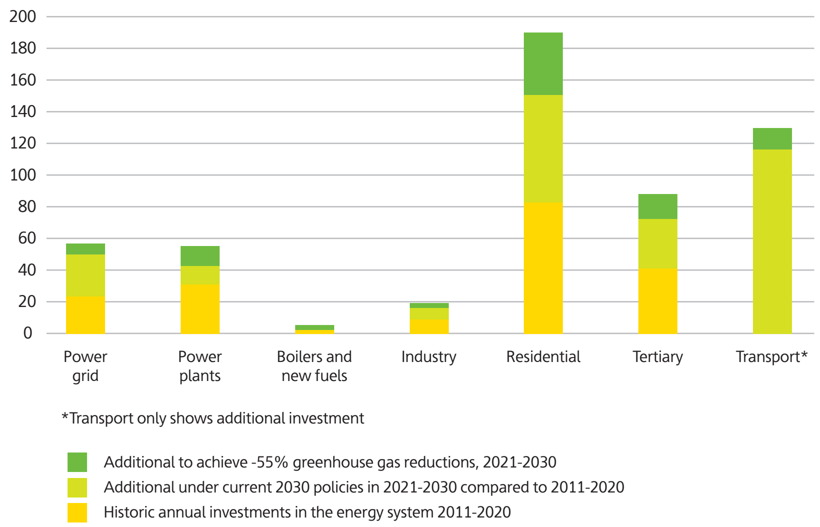
Estimates from the European Commission show that to meet emission targets (a 55% reduction by 2030) investments in the efficiency of buildings have to double over the next decade in the entire EU. In CEE the requirements are even higher, because the region has not yet started any serious transition in this field.

The corresponding problem in CEE is that inefficient heating systems create pollution, in the form of smog, a problem which was solved in Western Europe decades ago. During winter it makes the air in Polish towns the worst in the entire European Union. The source of smog are usually the old heating systems, which burn coal.

This problem will probably be solved over the next decade.

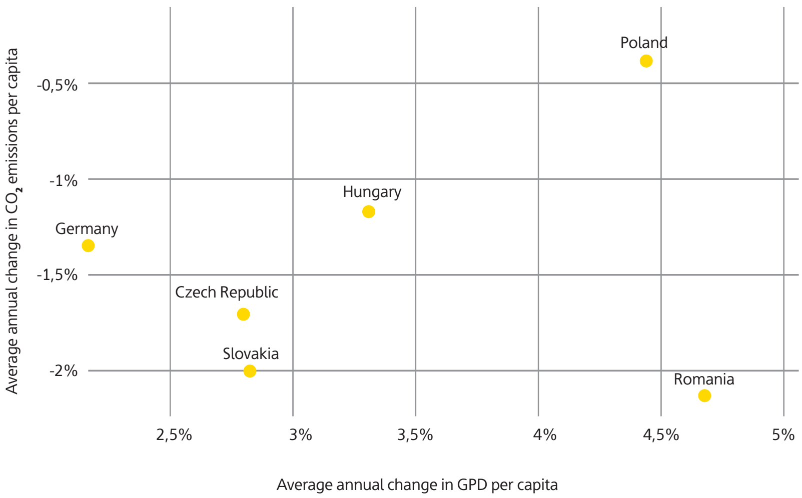
The programmes that are intended to tackle it have significant budgets, for example the "Czyste Powietrze" (Clean Air) programme has a budget of €25 billion for the period until 2029.

Annual average investment 2011-2020 and 2021-2030 under existing policies and to achieve a 55% reduction in greenhouse gas emissions, in billions EUR (2015)



Source: European Commission

Average annual change in CO_2 emissions per capita vs GDP per capita, 1990 to 2018



Source: Our World in Data

Countries in the CEE region have been reducing GHG emissions while increasing GDP …

All of the countries of CEE have managed to cut CO_2 emissions per capita while expanding their economies. In total the region cut its CO_2 emissions by 30% compared with 1990 (the base year from which the EU intends to cut emissions by 55% by 2030).

The most successful country in terms of this metric in the region, as well as all of Europe, was Romania, which cut CO_2 emissions by 56% compared with 1990, while increasing its GDP per capita by 115%.

… but many countries in CEE are still not on track to meet long-term emission goals.

As said above, the EU aims to cut net greenhouse gas emissions by 55% compared with 1990 (the reference year) by 2030 and by 100% by 2050. Those targets are set at the EU level rather than the national levels, so not all countries will have to meet them. But it is obvious that all Member States will have to cut their emissions to close to the EU target or even further. For some countries in CEE, such as Poland, that will be a very challenging process. The region has already cut emissions substantially, but Poland, the Czech Republic and Hungary are still not on track to meet the strict targets by the end of this decade. They will have to accelerate the pace of investments in energy transition, which, along with digitalisation, will be one of the two megatrends defining business transformations in coming years.

There are ongoing debates about the optimal path to decarbonisation. For example, Poland plans to shut all of its coal mines by 2049 and ban heating houses with coal in cities by 2030. However, according to recent polls 41% of Polish people want to speed up the energy transformation and 32% could pay more for it

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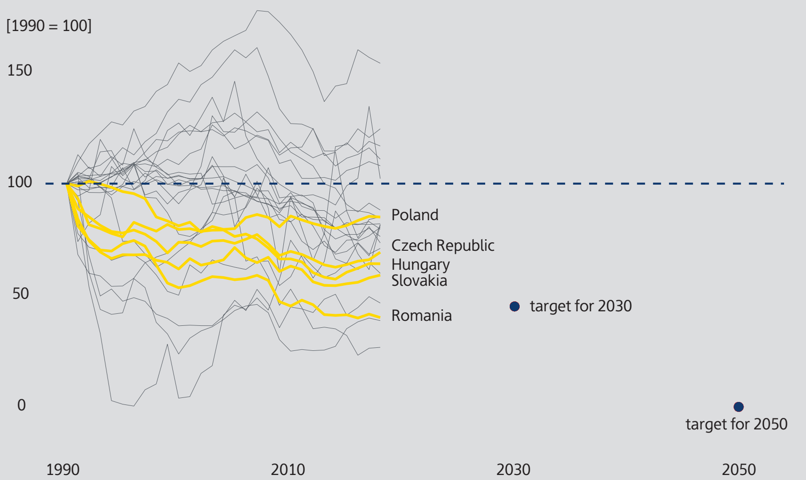
Net greenhouse gas emissions in relation to the reference year 1990

each line represents one Member State



Source: SpotData, Skanska, based on Eurostat

in energy bills. Generous funding from the EU offers Poland an excellent chance to catch up on decarbonising its economy.

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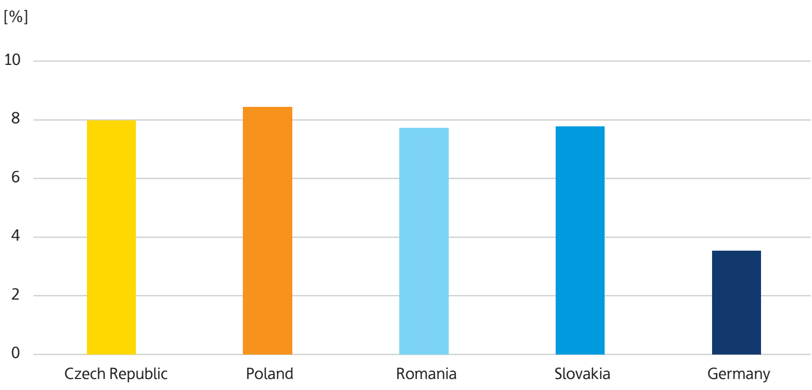
Share of energy-intensive industries in total employment, in %



Source: SpotData based on Eurostat data; Energy-intensive industries are: mining, metal manufacturing, cement and other construction material manufacturing, energy production and transport

The share of employment in industries that are on the frontline of the energy transition is higher in CEE than in the countries of Western European – this increases the scale of the challenge.

In all of the countries of CEE industries on the frontline of the energy transition account for a larger share of employment than the EU average. Nowhere is this more problematic than in Poland, where more than half of all Europe's mining jobs are to be found. Poland and Romania also have large transport sectors, which will have to change to low-emissions sources of energy. That will be difficult, because the technologies to decarbonise long-haul transport are not yet well developed.

Prices of CO_2 emissions allowances are growing steadily, and by 2030 they may reach €70 per tonne, which creates challenges for industry-intensive sectors.

Since 2018, when the European Commission reduced the surplus of emission allowances in the carbon market, there has been a clear upwards trend. The commission also proposed, in September 2020, to raise the 2030 GHG reduction target to at least 55% compared with 1990 (15 percentage point higher than it previously was). The faster rate of decreasing emissions leads to fewer permits and, eventually, higher prices. As a result, the market for emissions allowances (EAs) is hitting record levels. Price of emissions allowances have more than doubled since April 2020; on April 12 2021 they hit a record high of nearly €44 per tonne of carbon-dioxide equivalent. Investors are expecting that the upwards trend will continue, as bets that the price will rise have doubled since November. It is expected that by 2030 the price may reach €70 per tonne.

That should incentivise investments in green technologies and lead to an accelerating of the transition towards a net-zero emissions economy.

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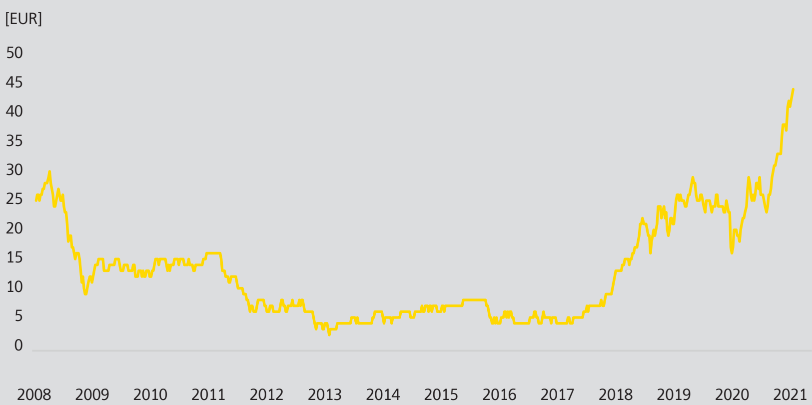
Daily EU ETS carbon market price in EUR



Source: Spotdata based on Ember

But it puts an enormous pressure on carbon-intensive energy producers and industrial companies in CEE.

More companies are adopting sustainability, low-carbon and less waste strategies.

The need to reduce greenhouse gas emissions, decrease water consumption, produce less waste and take actions to reduce the negative impact of companies on the environment has been widely discussed worldwide for several years. Therefore, it is good that more and more companies not only talking about these topics but include them in corporate strategies and plan to invest heavily to achieve these goals.

In 2020, PKN Orlen, the biggest company in Poland, was the first oil company in Central Europe to declare an aspiration to achieve emissions neutrality by 2050.

PGE Poland Energy Group, one of the biggest energy companies in Poland, published its new strategy with a plan and path towards decarbonisation and the goal of achieving climate neutrality by 2050.

Another energy company which has included sustainable development goals in its strategy is MOL Group from Romania. Their future plans target is in line with the European Union's Green Deal and ambitions to become a net zero CO_2 emitter by 2050 on all scopes. CEZ Group from the Czech Republic made a commitment to generate carbon neutral electricity before 2050. Their partial target on that way is a decrease in emission of CO_2 by 30% before 2030 in comparison with 2018.

More companies in CEE will undertake such actions within the next 2-3 years.

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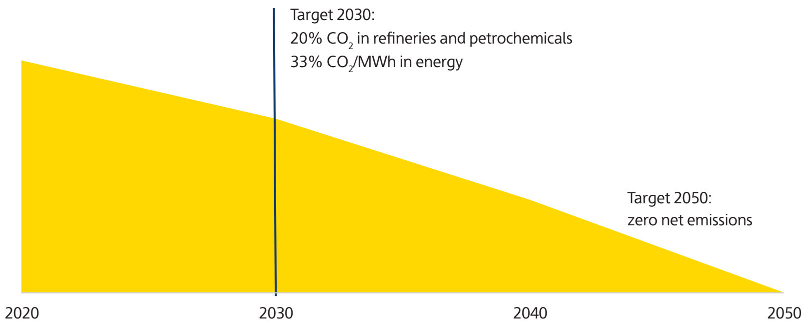
PKN OLREN's low-carbon strategy



Source: SpotData based on the PKN ORLEN 2030 strategy

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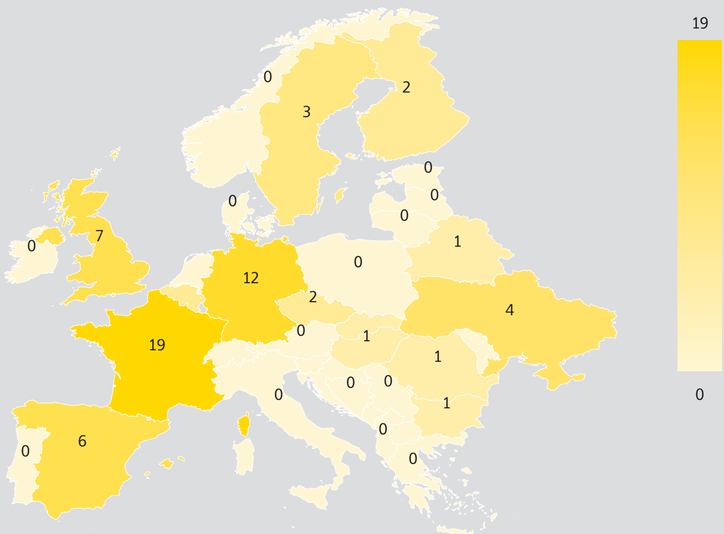
Number of nuclear power plants in 2020



Source: Spotdata based on Eurostat and world-nuclear.org data

Nuclear energy will play an important role in the region's energy transformation

As climate targets are becoming more demanding and the demand for electricity is growing, there is a need for new zero-emissions energy sources that can replace fossil fuels. Although some countries in the west of Europe are planning to shut down their nuclear power plants to make space in their energy mix for renewables, the countries of CEE are planning to rely more on nuclear energy in decarbonising their energy systems. Nuclear power will provide additional support for the energy mix. This is because it provides a stable source of energy as opposed to renewable energy sources.

As of today, the only country in the CEE region that does not have a nuclear power plant is Poland. But, according to the government's official nuclear strategy (PPEJ), nuclear plants will play a crucial role in efforts to decarbonise the economy and reduce reliance on coal. As part of this transition, the government intends to have six operational nuclear reactors by 2043. This would bring nuclear capacity to 6–9 gigawatts by 2043, accounting for a tenth of the country's power generation. Other countries in the region (the Czech Republic, Hungary and Romania) are planning to build more reactors.

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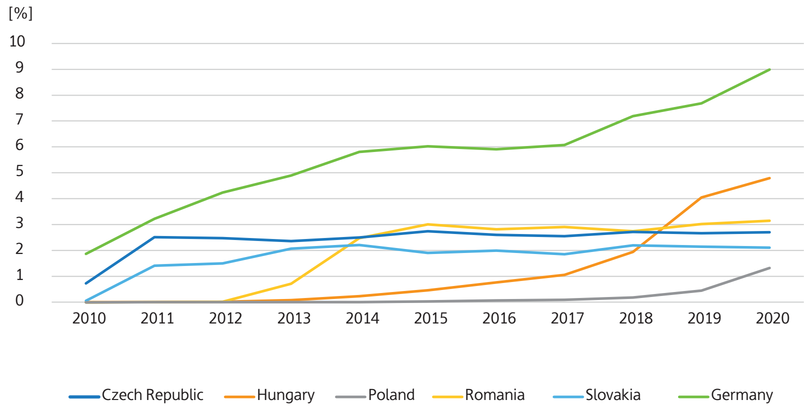
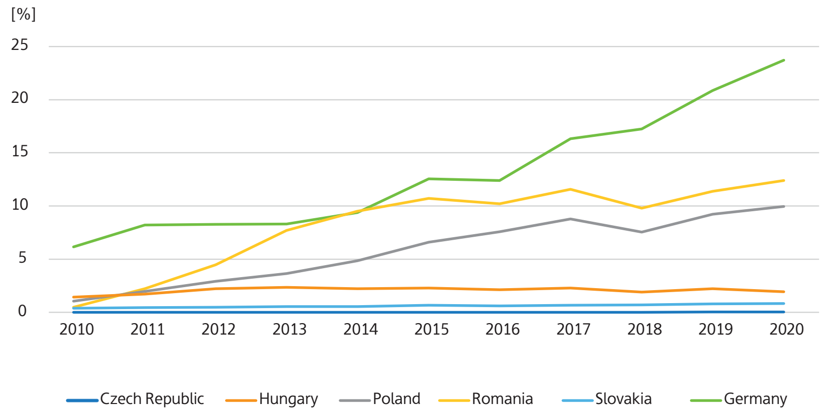
Solar electricity production as a % of total electricity production



Wind electricity production as a % of total electricity production



Source: SpotData, based on Our World In Data

Although CEE lags behind Western Europe in terms of the green energy transition, across the region efforts to close the gap are picking up pace.

Data shows that CEE is lagging behind the EU average in terms of electricity production from renewables, but visible moves are being made to keep up with new EU regulations and emissions targets.

In the last few years, tremendous investments have been made in CEE to increase renewable energy production capacity. They are especially visible in solar- and wind-power farms.

In terms of production of electricity from solar energy, the only countries in the CEE region that have made significant investments are Poland and Hungary. Budapest has focused on photovoltaic sources of energy, because the Hungarian government wanted to end the nation's dependence on external source of electricity. Therefore it has promoted both small and big investments in solar power plants, that are seen as a most beneficial source of power. In Poland the uptick in solar energy production was due to the popularity of small photovoltaic installations. As in Hungary, Warsaw set up a program of extra funding for households that were installed such units.

However, the energy production from photovoltaic installations is still much lower than the production from wind turbines. Wind turbines in Poland produced over 15 TWh in 2020. Despite stagnation in recent years, there are plans for numerous investments in Baltic offshore wind farms. Some of the major investors in offshore wind farms are PKN Orlen, PGE and Polenergia. These are major Polish energy companies. If their plans and those of other investors come to fruition, Baltic installations will triple Poland's production of electricity from wind.

Sam verror atia volupti amenimusdae pos mossi cum is nient etur?

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New fuel and energy storage technologies.

Hydrogen could be an important fuel for transport. The CEE nation most advanced in planning for this potential is Poland, where public consultations regarding a hydrogen strategy were recently completed. The draft strategy aims to start power-to-gas installations by 2025 and support research into hydrogen fuel cells. By 2030 such cells would be used by residential buildings and public buildings. The targets include using hydrogen to store energy by 2030. The draft strategy also talks about having 500 hydrogen-powered buses and 32 fuel stations by 2025, and 2,000 such buses by 2030.

In the CEE region several large companies, both public and private, have announced plans to invest in hydrogen technology. Among them are PKN Orlen, which is investing in hydrogen generation in Poland and in fuel stations (through its Unipetrol subsidiary) in the Czech Republic. Chimcomplex, the largest chemicals company in Romania, plans to invest between €0.5 and €1 billion in hydrogen production. Polish bus manufacturer, Solaris, already produces hydrogen buses, dozens of which will be delivered to clients this year.

New fuel and energy storage technologies

COUNTRY	PROJECT
Czech Republic	Two companies from Jablonca – Jablotron and Devinn – are working on portable electricity generators fuelled by hydrogen. Unipetrol plans to open three new fuel stations by 2021.
Hungary	Hungarian Gas Storage – a natural gas storage company – recently announced plans to build a relatively small electrolysis system to generate hydrogen for the company's own needs. The total investment will come to €8 million.
Poland	PGNiG's experimental power-to-gas plant in Odolanów is set to start producing hydrogen from solar power in 2022. Gas Storage Poland is researching ways to store energy from renewables in hydrogen. A Partnership with Toyota is developing hydrogen fuel stations.
Poland	Private energy company ZE PAK is working on starting hydrogen production in Konin with target rate of 63 kg/h. ZE PAK will open fuel stations in Konin and Warsaw in 2021.
Poland	Solaris – the biggest manufacturer of electric bus in Europe – started production of hydrogen buses in 2019. The first Solaris Urbino 12 Hydrogen models have been ordered by companies and cities from Germany, Italy and the Netherlands, a total of 67 units.
Poland	PKN Orlen's hydrogen plant in Włocławek is set to start production in 2022. Target production: 4,000–5,000 t, 600 kg/h. Initial rate of production: 170 kg/h.
Slovakia	Slovnaft is working on producing blue hydrogen from natural gas. Target production is 5,000 kg/h, although at first it will be lower and used primarily by Slovnaft.
Romania	Chimcomplex is planning the construction of a production plant in Vâlcea. The investment will be for a total amount between €500 million and €1 billion.

Law and institutions

The business environment in CEE has improved substantially over the last 15 years, although the region struggles with strategic institutional challenges

The business environment has for many years been on top of the agenda of reforms in CEE and such reforms have produced very positive results.

In every country covered by this report the overall score in the Doing Business rating increased between 2010 and 2020.

Highlights:

- In 2020 countries in CEE are ranked between 40 and 55 of the 190 countries included in the 'Ease of doing business' ranking, which is above such countries as Italy and Greece.
- In Poland the total time needed to deal with construction permits fell by nearly 50% as between between 2010 and 2020 the number of procedures was reduced from 20 to 12.
- The process for registering property improved, especially in Poland and the Czech Republic. In Poland the total time needed to register property fell by 60 days between 2010 and 2020, in the Czech Republic by 52 days; elsewhere in the region the total time required has remained low, at below 20 days.
- Slovakia made starting a business easier by abolishing the requirement to obtain and submit information on tax arrears.

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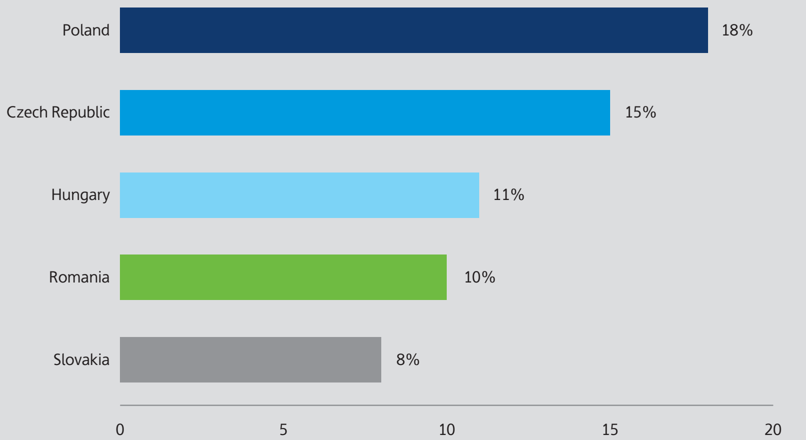
Easy of Doing Business in the 2020 World Bank Ranking

index growth in percentage



Source: Spotdata based on The World Bank Group

- Hungary made paying taxes easier by upgrading its electronic tax system; Romania, Slovakia and the Czech Republic also made paying taxes less time-consuming and less costly.

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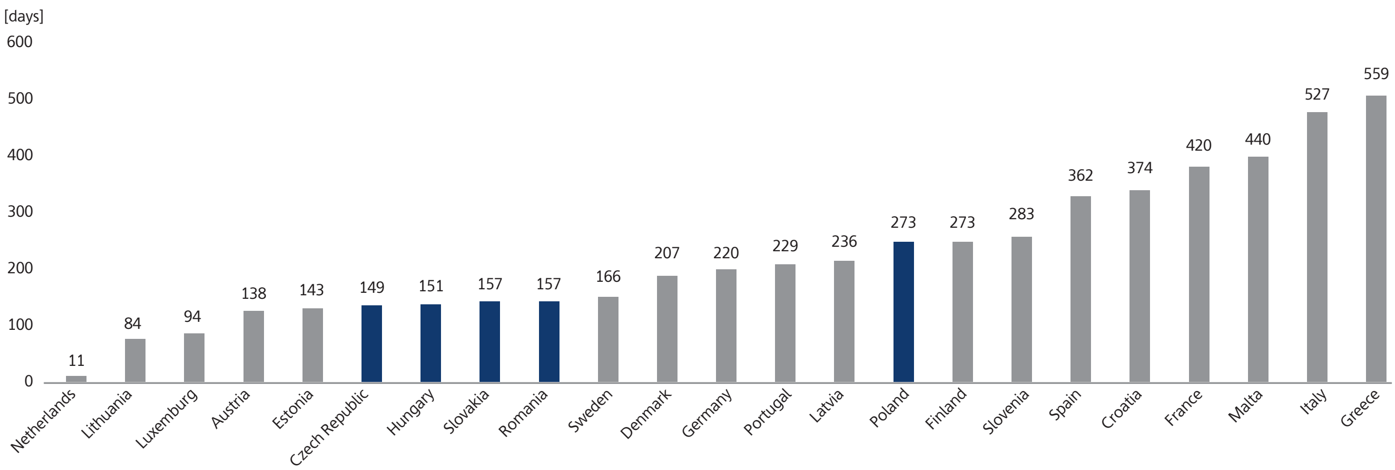
The efficiency of judicial systems in CEE has gradually increased, although there is still considerable space for improvement

The effectiveness of national justice systems is important for corporations and generally plays an important part in building an attractive business environment. The belief that the law enforcement is fully respected directly translates into the confidence to invest in a country.

Four of the five countries of CEE stand out positively and are among the countries with the shortest estimated time needed to resolve litigious civil and commercial cases: the Czech Republic (149 days), Hungary (151 days), Slovakia (157 days) and Romania (157 days). Poland has the longest dispute resolution time, 273 days, but that is still shorter than the richer countries of France (420 days) and Italy (527 days).

Against the background of the CEE region, Slovakia stands out very positively, having reduced the estimated time needed to resolve litigious civil and commercial cases the most by any European country for which data is available: from 437 days in 2012 to 157 days in 2018. During this period, the Czech Republic also reduced the time needed to resolve cases (from 174 days to 149) and Romania did too (from 193 days to 157). In contrast, the time needed increased in Hungary (from 97 days to 151) and Poland (from 195 days to 273).

Estimated time needed to resolve litigious civil and commercial cases in 2018 (in days)



No data for Bulgaria, Belgium, Ireland, Cyprus

Source: SpotData based on Eurostat data

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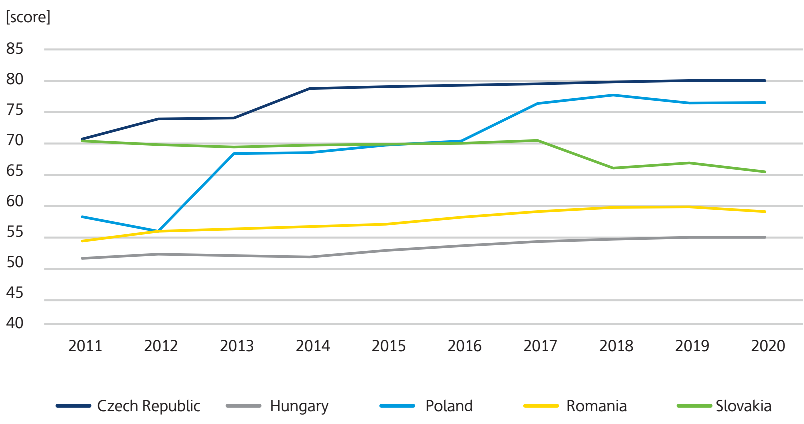
Resolving insolvency – score given in Doing Business Ranking



Source: SpotData based on Doing Business

Bankruptcy laws are being modernised in many countries, offering better protection from creditors, which in theory should encourage investments.

The countries of CEE are putting in the effort to improve their regulatory environments and reform the area of resolving insolvency to reduce the rates of business bankruptcy and to prevent the liquidation of insolvent but viable businesses.

In four of the five countries of CEE (the Czech Republic, Poland, Hungary and Romania) the changes are reflected in increases in the marks given in the Doing Business Rankings with regard to resolving insolvency. Only Slovakia had a fall in this score in that ranking.

Improvements made to legal system over the last decade

Poland has made resolving insolvency easier by introducing new restructuring mechanisms, changing voting procedures for restructuring plans and giving creditors greater participation in insolvency proceedings. It has also established a central restructuring and bankruptcy register and released guidelines for the remuneration of bankruptcy trustees.

Romania has improved its insolvency system by introducing time limits for observation periods (during which a reorganisation plan must be confirmed or a declaration of bankruptcy made) and for the implementation of reorganisation plans. It has also introduced additional minimum voting requirements for the approval of reorganisation plans and clarified rules on voidable transactions and on payment priority for the claims of post-commencement creditors.

Slovakia has improved its insolvency process by redefining the roles and powers of creditors and trustees, strengthening the rights of secured creditors and redefining rules for the conversion of restructuring into a bankruptcy proceeding.

The Czech Republic made it easier to deal with insolvency by introducing further legal amendments to restrict set-offs in insolvency cases and suspending, for some insolvent debtors, the obligation to file for bankruptcy.

Hungary – Amendments to Hungary's bankruptcy law encourage insolvent companies to consider reaching agreements with creditors out of court so as to avoid bankruptcy.

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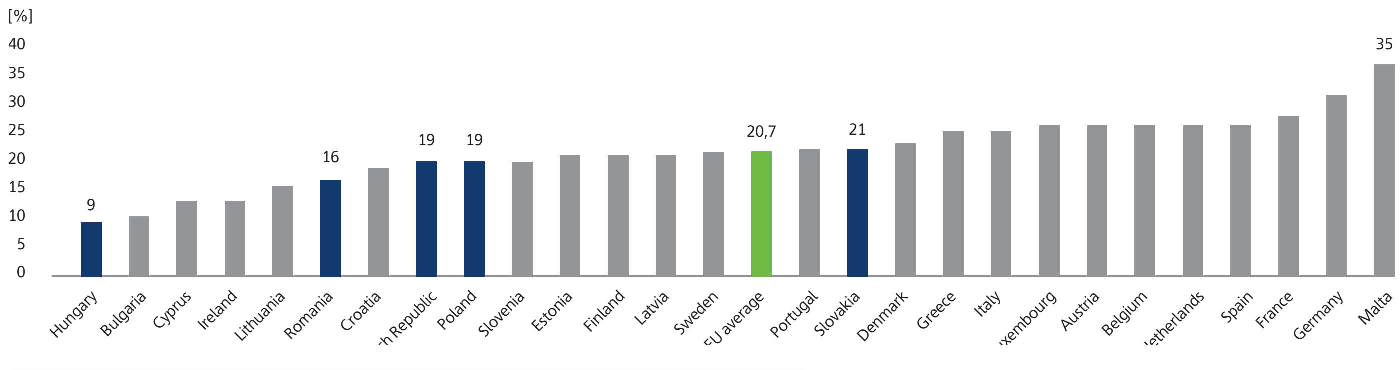
CEE countries use attractive tax rates to draw in foreign investments.

Corporate income tax (CIT) rates vary widely across the EU. The countries of CEE stand out with their low rates. Four of the five countries in the region have corporate tax rates below the EU average, which was 20.7% in 2020. Hungary is the country with the lowest rate in the EU – only 9%. Romania is next with 16%, then the Czech Republic and Poland, with 19% each. Slovakia has a rate of 21% but that is still well below the rates in countries with the highest CIT rates, such as Malta (35%), Germany (30%) and France (26.5%). Low corporate taxation rates can be one of significant factors that attract foreign investors.aut parchil lorernatam as dolenda cupiciatatem cor adiaeca boritat occuptust experiosam doluptaes alit eos con experov itatemos dolorporum estisciis quatae eum qui quidit, sam que re et undis sin corehendit mo quo cullab iumquia si voloreium ate vendi.

Corporate tax rates in 2021 in %



Source: SpotData based on KPMG data

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In their efforts to support investments more and more countries are trying to introduce tax measures which favour reinvestment of profits – one of the options is what is known as Estonian CIT.

The income tax system in Estonia is known for its rather simple, and thus taxpayer-friendly, structure. CIT tax is a good example. The underlying assumption of CIT in Estonia is that tax collection is shifted until the time when a company distributes its profits. Thus, even though a company generates income, it does not have to pay tax until the generated profits are distributed among its shareholders (e.g. in the form of a dividend). The system supports reinvesting the earnings generated, and it comes with simplified tax accounting requirements, as output tax does not have to be calculated on an ongoing basis.

This tax scheme was introduced nearly 20 years ago in Estonia, and more recently in Georgia and Latvia. Similar regulations intended for small taxpayers have also been introduced in other countries, including Sweden and Germany.

The first country in the CEE region to introduce such a tax was Poland, with this new tax regulation coming into force at the beginning of 2021.

Among the benefits of Estonian CIT the government of Poland lists the elimination of development barriers for the Polish SME sector, greater resistance to recessions, greater investment capacity, increased productivity and innovation, and the creation of new jobs. There can be no doubt that deferring taxation until earnings are distributed, general support of investments with tax incentives and the reduction of reporting obligations are significant improvements to the tax system. The solution surely deserves the attention of taxpayers, especially as it may prove more beneficial and less burdensome for SMEs investing in their development than taxation on general principles. Therefore, even though the Polish version of the tax is more complex and restricted to a smaller group of entities entitled to use the solution, it certainly has the potential to boost the number of investments in the country.

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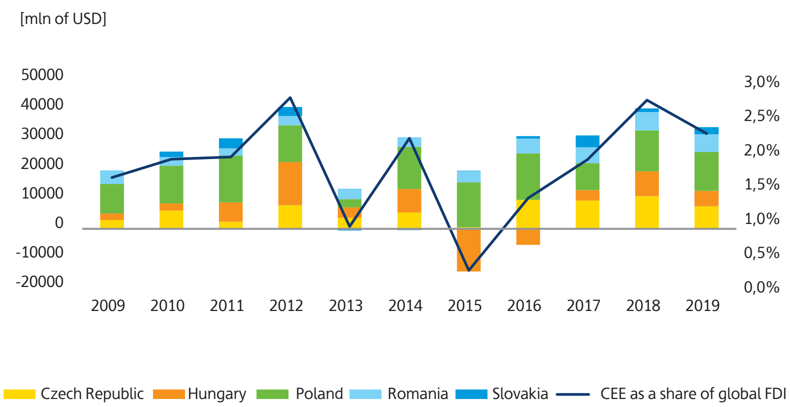
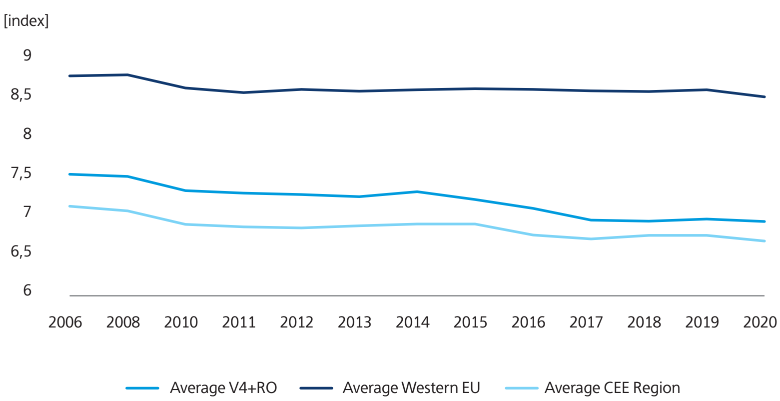
FDI inflows



Source: SpotData, based on UNCTAD

The Economist democracy index



Source: SpotData, based on The Economist

Over the last five years political tensions between EU institutions and the governments of some countries in CEE have grown, but these tensions have not to date had any meaningful impact on foreign investments

The political turbulences in CEE over the last few years have created concerns that economic growth might be hampered by political uncertainty. The European Commission (the EU's main executive body) has commenced infringement procedures against Poland and Hungary, accusing both countries of undermining judicial independence. The governments of both countries argue that the accusations are unfounded. Their relations with the EU have worsened significantly.

But these tensions have not to date resulted in any economic damage. Foreign investors continue to have great confidence in the region, which can be demonstrated by FDI inflow data for 2018 and 2019.

During the eurozone crisis the inflow of FDI to the region dropped, due to the fact that most investors are from the countries of Western European. But when the eurozone crisis came to an end, FDI in CEE surged.

Why have political tensions not had any impact on investments? The reason might be that CEE does not differ much from other regions in terms of direction of change. Quality of democracy is worsening all over the World, as reported by The Economist. Therefore, the trends in the region do not differ from global tendencies, and hence the investors are not reacting to it.

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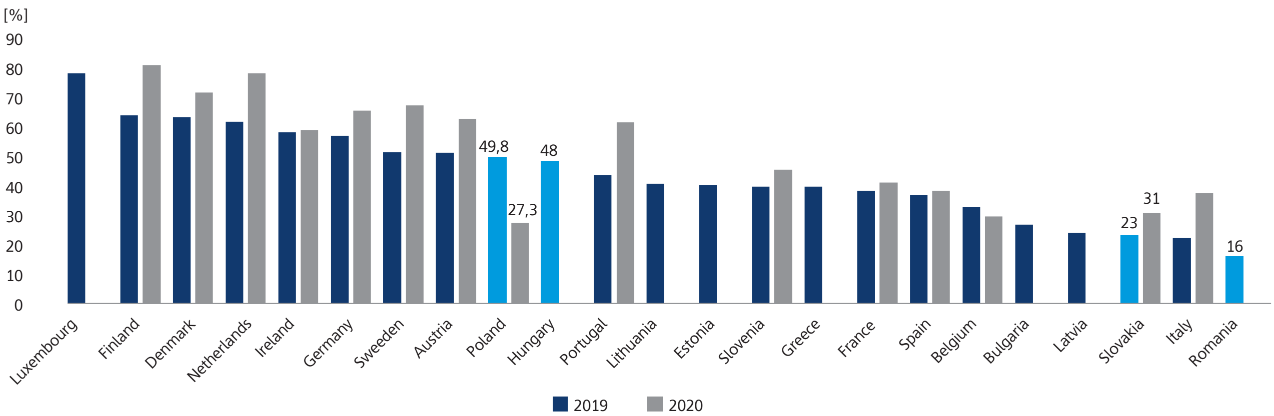
Countries in CEE have problems with low levels of social trust, especially trust in public institutions, and this will create challenges in the years ahead

The COVID-19 pandemic has showed how important trust in public institutions and governments is. In countries where the governments enjoy authority and social trust, people more readily adapted to the lockdown and complied with the restrictions introduced, and thus it was easier to control the scale of the tragedy. Trust in governments will be one of the key factors for returning to socio-economic normality after the crisis caused by COVID-19.

The countries of CEE will have to do a lot in this field in the coming years, because trust in governments is still too low compared with other countries. In 2019 levels of trust in public institutions in Poland and Hungary were close to the average rate among European OECD countries with 50% and 48% of the populations of those countries having trust in public institutions. Slovakia, on the other hand, ranked third from the bottom, with a level of 23%, and at the very bottom of the list was Romania, where only 16% of people trust their government.

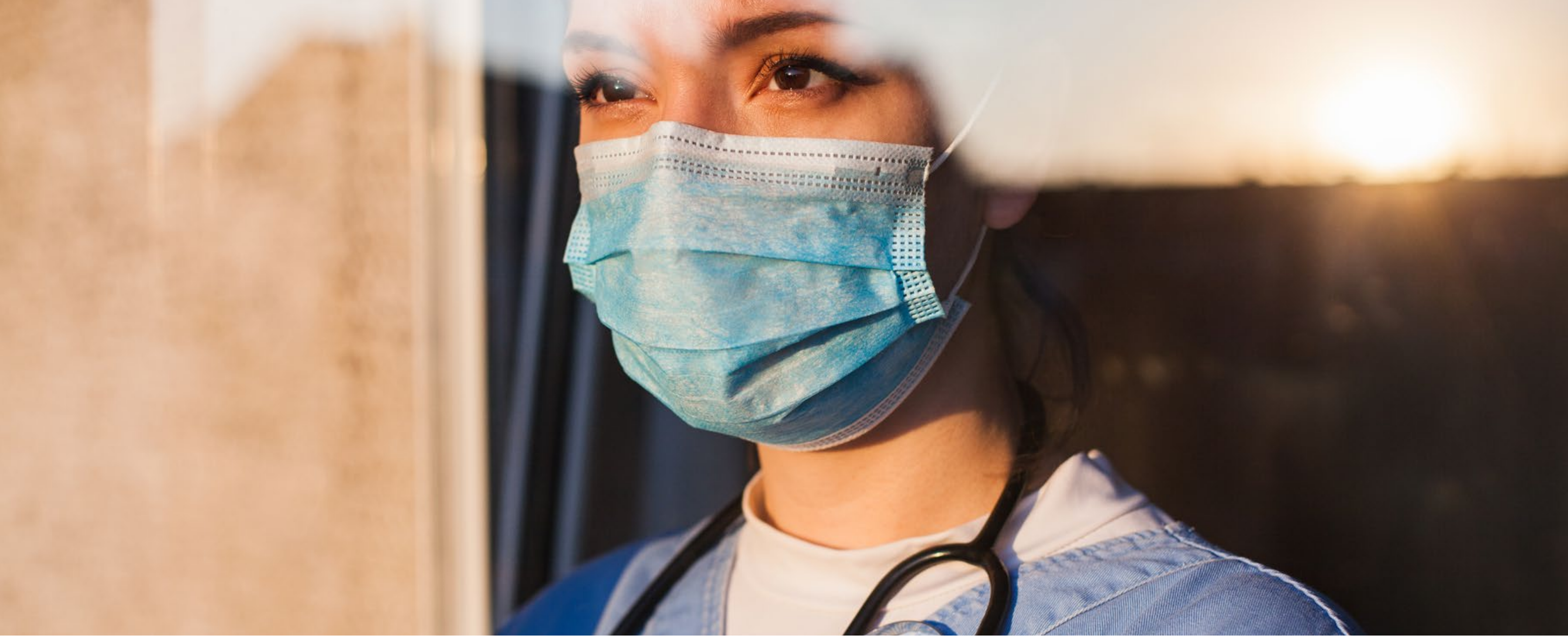
In 2020 most of the countries in Europe saw the level of trust in the government increase, which was related to the way the government dealt with the effects of the pandemic, but also how it communicated with citizens. For example, in Finland the number of people who trust their government increased from 64% to 81%, in Germany it rose from 57% to 65%, in Sweden from 51% to 67%, and in Slovakia increased from 23% to 31%.

Trust in government in European OECD countries in 2019 and 2020 in percentage of population



No data for Luxembourg, Hungary, Lithuania, Estonia, Greece, Bulgaria, Latvia and Romania in 2020

Source: SpotData based on OECD data



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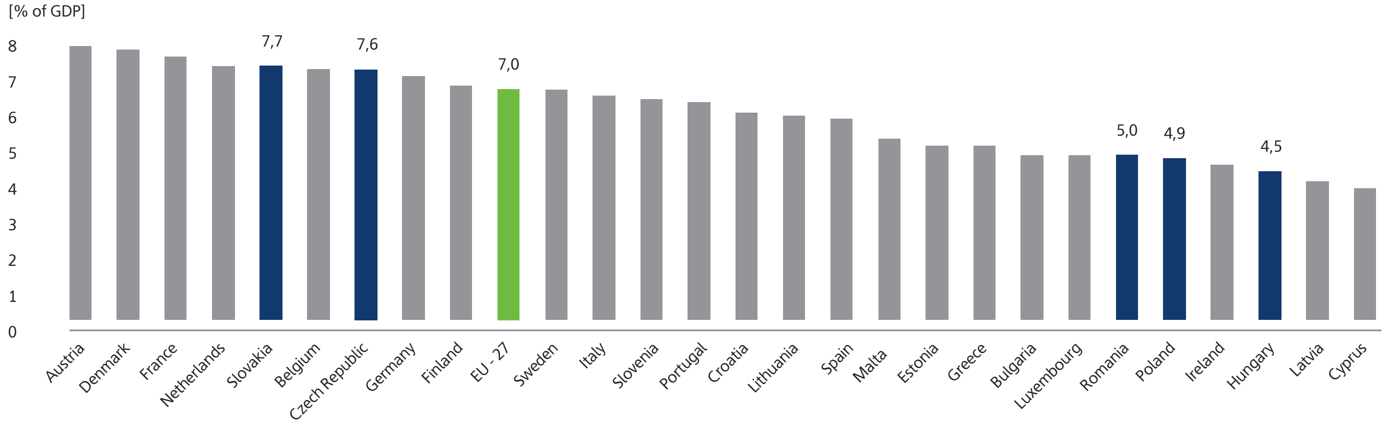
The pandemic has severely highlighted one of the biggest institutional challenges facing CEE: underinvestment in public services, especially public expenditure on healthcare.

Efficient state and public services are key to long-term development. They are also essential to combatting the effects of crises, as the COVID-19 pandemic has clearly demonstrated. An efficient healthcare system plays a key role in the fight against disease. Although the amount of spending on healthcare as a percentage of GDP does not directly correspond to how well countries have dealt with the pandemic (there were many other elements at play, such as the testing strategy, confidence in the authorities, the timing of restrictions, etc), there is no doubt that countries, especially those whose current level of spending on health is far below the EU average, will seek to increase spending in this respect. All the more so, because after the coronavirus pandemic we can expect a pandemic of depression, mental problems and the need to treat more people who during the pandemic could not be treated for, or neglected to treat, other diseases.

Of the countries of CEE, Slovakia had the highest health spending in 2019 (7.7% of GDP) and the Czech Republic was at 7.6% of GDP, both above the EU average (7%). Against this background, other countries in the region with very low health expenditure stand out negatively: Romania (5%), Poland (4.9%) and Hungary (4.5%).

In the next few years one can expect increases in expenditures on public services in CEE, as without their efficient functioning there may be an increase in social divisions and the exclusion of the poorest, who will not be able to afford good access to education or healthcare.

General government expenditure on health in 2019 as a % of GDP



Source: SpotData based on Eurostat data

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