

Monthly Report

Omicron Wave is Sweeping CESEE

Let's Hope the Central Bankers are Right about Inflation

Semiconductor Shortage Impacting the EU-CEE Automotive Industry

The Business Services Sector in Central and Eastern Europe



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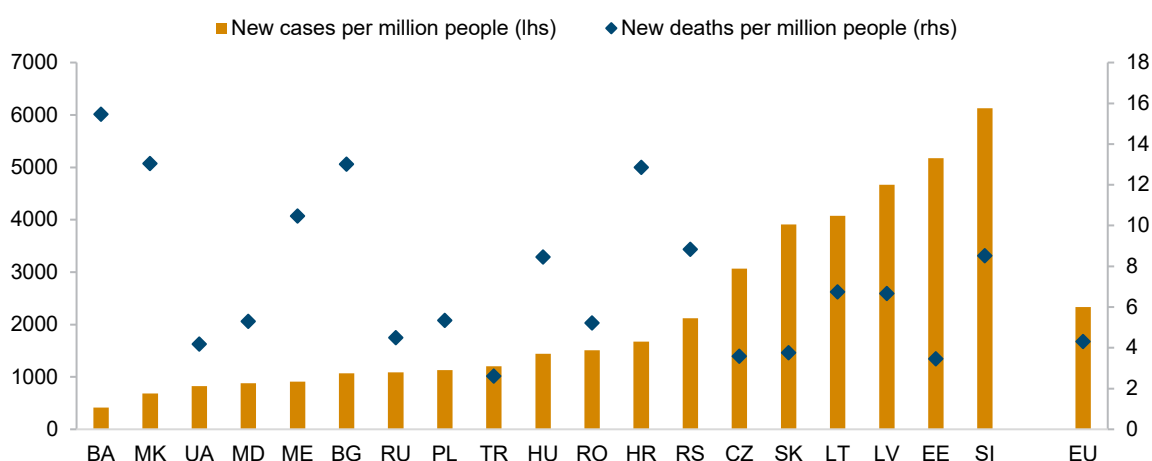
Chart of the month: Omicron wave is sweeping CESEE

BY OLGA PINDYUK

While Western Europe has almost emerged from the Omicron wave of the COVID-19 pandemic, many countries of Central, East and Southeast Europe (CESEE) are just starting to combat it. The Omicron variant has been spreading at unprecedented speed, with overall reported infection rates three times greater than the highest peak of previous waves of the pandemic.¹

We use the data provided by the COVID-19 vaccine tracker to compare CESEE countries in terms of the rise in new cases (orange columns, left axis) and the death toll (dark blue diamonds, right axis). As Figure 1 shows, Slovenia, the Baltic states, Slovakia and Czechia are recording the highest daily new confirmed cases in the region (they are likely to have gone through the worst of the Omicron wave already, as new daily cases have started to decline there). In all other countries of the region, new daily cases are on the rise and appear to be far from their peak. The lowest numbers of daily cases are being recorded in Bosnia and Herzegovina, North Macedonia and Ukraine, but these are expected to rise significantly quite soon.

Figure 1 / Daily new confirmed COVID-19 cases and deaths per million people, as of 7 February 2022



Note: New confirmed cases and deaths are averages over the seven days preceding 7 February 2022.

Source: <https://ourworldindata.org/>

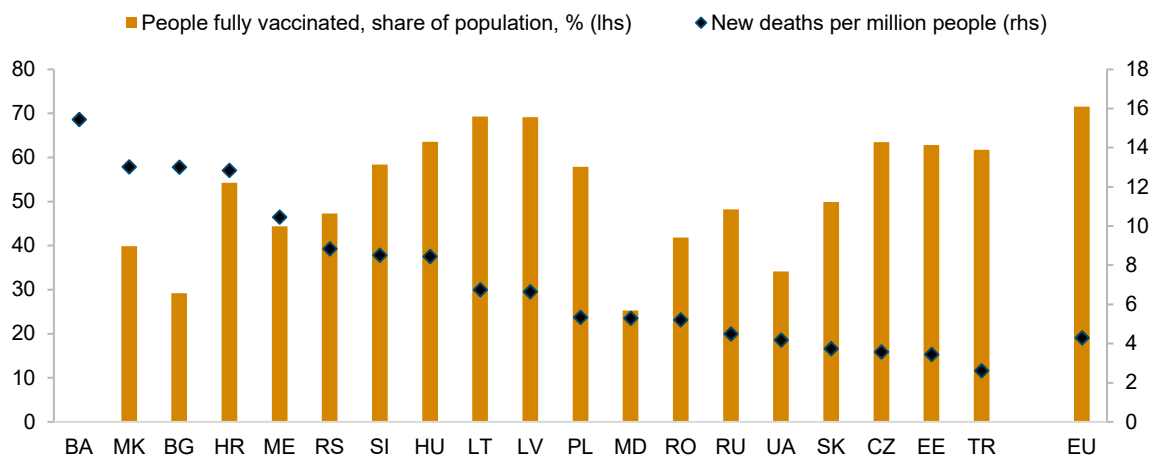
The very high numbers of infected people are exerting pressure on the economy (through staff shortages due to illness) and on the health sector (through increased hospital admissions). As the data on hospitalisations are not available for all countries of the region, we look at the death rate, as an

¹ <https://www.ecdc.europa.eu/en/news-events/societal-pressure-unprecedented-omicron-spread-can-be-eased-through-increased>

approximation for the severity of the pandemic. It is striking how much the COVID-19 death rates vary across CESEE: the highest levels are recorded in the Balkan countries (Bosnia and Herzegovina, North Macedonia, Bulgaria and Croatia), where they are more than three times the average for the EU.

In part, this difference in death rates can be attributed to a higher prevalence of the old, more severe, coronavirus variants in some countries. But another important factor that goes to explain the large dispersion is the difference in COVID-19 vaccination rates. Figure 2 compares the death toll (dark blue diamonds, right axis) and the vaccination rate (orange columns, left axis). Within CESEE, the highest rates of full vaccination are currently to be found in Latvia and Lithuania, though they remain slightly below the EU average (72%). Less than 30% of people are fully vaccinated in Moldova and Bulgaria, which have the lowest rates in the region. There is a negative correlation of about 30% between the full vaccination rates and the death rates across the CESEE region.

Figure 2 / Daily new confirmed COVID-19 deaths per million people and full vaccination rates, as of 7 February 2022



Note: New confirmed deaths are averages over the seven days preceding 7 February 2022. The full vaccination rate is as of 7 February 2022.

Source: <https://ourworldindata.org/>

Finally, it is possible that in many CESEE countries new coronavirus cases and deaths are being under-reported, as the (costly) current tracking of the COVID-19 pandemic still appears to be inadequate. Indeed, the count of new cases is usually strongly correlated with the prevalence of coronavirus testing. Whereas in Austria, on average 0.8% of people are tested daily, in Albania the figure is only 0.01%. Across CESEE, Czechia and Slovakia carry out the most tests, relative to population size – about 0.1% are tested daily. Still, the number of tests is only a fraction of the number performed in previous waves of the pandemic.

Opinion Corner*: Let's hope the central bankers are right about inflation

BY RICHARD GRIEVESON

Central banks hope that the currently very high inflation will pass without major monetary tightening or balance-sheet reduction. There are plenty of reasons to think that they are right. But if they are wrong, and if much more monetary tightening is required, the impact on the financial sector, the real economy and even the stability of the euro area will be serious.

US inflation is running at close to a 40-year high, and euro-area inflation is at its highest since the single currency came into being. Across much of CESEE, inflation is at its most elevated level for at least a decade. Commodity prices have been a key driver; but it is clear that prices are now coming under pressure on a much broader front, and that inflation will not be as transitory as central banks were proclaiming only a few months ago.

Current inflation rates reflect a basic imbalance between supply and demand, linked to the pandemic and its fallout. COVID-19 caused an abrupt reallocation of resources in the economy. This is still playing out and is leading to shortages and higher prices in some sectors. That has been compounded by supply dislocations caused by, for example, blockages at US ports and the impact of China's zero-COVID policy. The Bank for International Settlements (BIS) estimates that these supply dislocations alone increased US inflation by 2.8 percentage points in 2021.¹

The worst of the spike in inflation may well pass soon. In month-on-month terms, euro-area inflation slowed to 0.3% in January – its lowest since July 2021. However, the most likely scenario remains that the factors currently pushing up inflation will continue to be quite important throughout 2022. Supply dislocations will not disappear this year. Easing restrictions as the Omicron wave passes will also lead to greater demand for services, where labour-market tightness is also likely to be evident. Meanwhile, energy prices could yet go higher, due to robust global growth, dwindling spare capacity and political risks.

CURRENT SPIKE IN INFLATION HAS MAJOR DISTRIBUTIONAL IMPLICATIONS

One of the important elements of the current inflationary spike is its uneven distributional impact. The published headline inflation rate is an aggregation of prices, which does not mirror the reality experienced by many people. Across Europe, there are reports of citizens facing a 'cost of living crisis', and many governments are responding with food subsidies. Meanwhile, the dramatic increase in gas prices in Europe has led to a sharp jump in household energy bills. Especially poorer households are going to have to devote a large share of their disposable income to energy in the coming months: and that means a lot less money for everything else.

* Disclaimer: The views expressed in the Opinion Corner section of the Monthly Report are exclusively those of the authors and do not necessarily represent the official view of wiiw.

¹ Rees, D. and Rungcharoenkitkul, P. (2021), Bottlenecks: Causes and macroeconomic implications, BIS Bulletin No. 48, November.

The uneven impact of consumer price inflation compounds the sharp inequality in asset price inflation in Europe that has been seen over the past decade. Massive central bank stimulus, particularly by the European Central Bank (ECB), has fuelled a rapid increase in asset prices since 2008. This is clear in stock and bond markets, but perhaps most importantly in the cost of residential property. The potential political fallout from all this should not be underestimated.

CENTRAL BANKS ARE REACTING, BUT THEY ALSO KNOW THAT THEY CANNOT DO MUCH

In this context, the choice facing central banks is very hard. In the financial media, investment bank analysts are calling for ever more (and ever quicker) monetary tightening by the major central banks. Yet inflation caused by supply disruptions cannot really be tackled by imposing higher costs on borrowing money. If central banks hike interest rates abruptly, they risk crashing the economy, without actually dealing with the inflation problem they are trying to tackle.

Even amid the increasingly hawkish rhetoric, real interest rates remain deep in negative territory: the real policy rate in the US is currently around -7%, and in the euro area it is around -5.5%. The story is similar across large swathes of CESEE (with the exception of the CIS and Ukraine). Projections by the major central banks indicate that inflation will be back on target by 2023-2024, yet these forecasts suggest an expectation that this will be achieved with quite limited monetary tightening. The implication is that the central banks anticipate inflation mostly taking care of itself – and the market agrees. Although market expectations now imply much more rapid tightening, the ‘terminal rate’ – i.e. the rate at which the markets think central banks will stop the hikes – has barely changed. Even the Fed, which is currently the most hawkish of the world’s major central banks, is expected to stop raising the level, with the nominal policy rate at around 2% (historically a very low rate).

WHAT ARE THE RISKS OF A WAGE-PRICE SPIRAL?

Worries about a possible wage-price spiral are increasingly prevalent in the media. These concerns have been voiced by respected economic thinkers and should be taken seriously. Certainly, in the current climate of uncertainty, such an eventuality cannot be totally ruled out. Yet what is it about the pandemic that has altered the situation so fundamentally that a wage-price spiral is now conceivable?

During the 1980s, 1990s and 2000s – the period of hyper-globalisation, neoliberalism and the China shock – the bargaining power of workers was reduced. These structural impediments to a wage-price spiral are all still there. Although one could argue that the declining working-age population across much of Europe will push up wages, this factor already existed before the pandemic, without creating much of an inflationary impact. The power of technology to increase competition and keep down prices in online retail has, if anything, been strengthened by the pandemic. Meanwhile, the prevalence of within-country income inequality, which over the past decades has been shown to be a key driver of weak price growth,² is unlikely to be fundamentally altered by COVID.

² Mian, A., Straub, L. and Sufi, A. (2021), What explains the decline in R*? Rising income inequality versus demographic shifts, Jackson Hole Economic Symposium, Federal Reserve Bank of Kansas City, August.

All of this suggests that it will take much more than some supply dislocations to generate 1970s-style inflation. Even in the current context of high inflation and tightening labour markets, real wage growth is mostly negative (strongly so in some countries). It seems quite possible that in a couple of years we will be back to where we were before the pandemic, with the problem of inflation being – if anything – too low in much of Europe.

WHAT IF THE CENTRAL BANKS ARE WRONG?

If inflation stays higher for longer than is currently anticipated, and if it becomes increasingly driven by expectations, then central banks will have a much bigger problem. If that happens, then they will feel under pressure to react much more strongly – not only by raising policy rates, but also by reducing the size of their balance sheets (so-called Quantitative Tightening) more rapidly than is currently planned.

A sharper hike in interest rates by the Fed and the ECB and a rapid shrinking of balance sheets would most likely create a recession in the developed world and CESEE. It would also have a major impact on financial markets, which could have much more serious repercussions. A decade of ultra-low borrowing costs has created a build-up of debt that may not be sustainable if interest rates return to anything like the pre-2008 ‘normal’; and this applies not only to the emerging markets, but also to parts of the euro area. The ECB is unlikely to be able to significantly reduce its dominant position as a holder of euro-area debt without a material increase in sovereign credit spreads – something that it will be determined to avoid. According to this scenario, the political tensions inherent in the euro’s architecture will become more keenly felt. In recent years, the ECB has been able to play such a crucial role in keeping a lid on credit spreads because inflation has been so low. If that changes, central bankers in Frankfurt will be placed in a much more difficult position.

More broadly, sharply higher euro and dollar interest rates and a withdrawal of liquidity would lead to a major asset price correction. US stocks have rarely been more expensive relative to earnings, indicating a major potential downside. Sovereign and corporate bond yields have also been dramatically compressed by central bank policy since 2008, and a major sell-off here would ricochet through the financial system with unpredictable consequences. Meanwhile, sharply higher interest rates would also lead to a major downward correction in property prices, hurting especially those with variable-rate mortgages and large debt repayments.

KEEP YOUR FINGERS CROSSED

The most likely scenario still seems to be that inflation will fall back towards target by 2023 or so, without major tightening by central banks. Yet the unique nature of the pandemic and its fallout should make everyone very humble in trying to project how it will play out. A wage-price spiral, and sharply higher interest rates, cannot be ruled out. If that happens, both a recession and financial crisis are on the cards. Keep your fingers crossed that the central bankers are right!

Semiconductor shortage impacting the EU-CEE automotive industry

BY DORIS HANZL-WEISS AND OLIVER REITER

The current global semiconductor shortage, which has been triggered by the COVID-19 pandemic, is likely to persist and may well last until 2023, as new production capacities take time to build up. The automotive industry and those EU-CEE economies that specialise heavily in the sector – Slovakia, Czechia, Hungary and Romania – have been particularly badly affected, with resulting economic losses of up to 1% of GDP last year.

INTRODUCTION

The global economy is currently plagued by supply shortages in multiple products. The shortage of semiconductors is one very prominent example, where the lack of a certain input hampers production in different parts of the world: in 2021, automobile producers around the world were forced to suspend production or move to short-time working (Kurzarbeit). A recent Bloomberg article estimates that the global semiconductor shortage will last through 2022.¹ Chip manufacturers (mostly situated in Southeast Asia) are already operating at full capacity: they cannot boost existing production capacities sufficiently rapidly, and they need two to three years to build and run a new factory.

In EU-CEE, the automotive sector plays a dominant role in the economies of Slovakia, Czechia, Hungary and Romania, and an important role in Poland and Slovenia. How are these countries affected by the shortage of chips, and what impact will it have on their economic growth?

SEMICONDUCTOR SHORTAGE: REASONS AND POLICY RESPONSE

There are many causes of the current semiconductor shortage, but the most important trigger has been the COVID-19 pandemic. The widespread introduction of working from home and distance learning increased demand for personal computer equipment (on the employee side) and cloud-based computing power (on the employer side). Simultaneously, demand for video gaming devices shot up as well. As a consequence, the automotive companies, which stopped production in March 2020 and did not reckon on a swift recovery in demand for cars, were left behind. Also, inventories are generally low, due to just-in-time production. Meanwhile, semiconductor-factory closures during the pandemic reduced the quantity of chips available, thus widening the gap between supply and demand. Disasters such as the snowstorm in Texas, USA, caused additional production problems, and a fire at a plant in Japan set back the production of semiconductors still further.²

¹ See <https://www.bloomberg.com/news/articles/2021-12-15/automakers-to-battle-chip-crisis-for-years-consultancy-says>

² See <https://www.cnbc.com/2021/08/24/bosch-says-semiconductor-supply-chains-in-car-industry-no-longer-work.html>

Aside from these short-term factors, there has been a long-term trend toward integrating chips into more and more products (from refrigerators and toothbrushes, to cars and even lightbulbs), and this has steadily pushed up demand for semiconductors. Digitalisation, industry 4.0 and environmental concerns are all leading to the use of more and more semiconductors.

This is most evident in the automotive sector, where a structural shift towards new technologies is just getting under way: with the move from the production of cars with internal combustion engines to the manufacture of electric vehicles, the demand for semiconductors will likely increase even further. Whereas a 'normal' Ford Focus is today built using 300 chips, Ford's electric vehicles could incorporate up to 3,000.³ This will also affect car prices: Bloomberg projects that in 2030, 45% of the cost of a car will be due to the built-in semiconductors.⁴ And in the case of autonomous (self-driving) vehicles, the need for chips will skyrocket.

For Europe, this will mean an increased dependence on the import of semiconductors from abroad, as 70% of chips are produced in Southeast Asia.⁵ Generally, nowadays the manufacture of semiconductors is split between 'fabless' companies and 'foundries': 'fabless' companies plan and design the chips, while 'foundries' produce them according to the design. Qualcomm, Broadcom, Nvidia and Apple are examples of fabless companies (all of them US firms). Intel (US) and Samsung (South Korea) are two companies that both design and manufacture semiconductors.⁶

Foundries are often located in Taiwan and China, because of the skilled, but still relatively cheap, labour force. TSMC (Taiwan Semiconductor Manufacturing Company, Taiwan), UMC (United Microelectronics Corporation, Taiwan), GlobalFoundries (US) and SMIC (Semiconductor Manufacturing International Corporation, China) are the biggest foundries in the world. In terms of revenue, TSMC is, for instance, five times the size of Infineon, a German chip manufacturer.⁷

In Europe, the production of semiconductors is concentrated in Germany, France, Italy, the Netherlands, Austria, Belgium and Ireland. The main European companies are Infineon (Germany), NXP (Netherlands), ST Microelectronics (France/Italy) and Bosch Semiconductors (Germany) (European Commission, 2021).

Currently, the semiconductor industry is trying to catch up with demand, including in Europe (see also the overview of recent EU initiatives in this field in Box 1).

- › Intel is planning to open two semiconductor plants in Europe, but has not yet announced the exact locations. Some see Germany and France as likely locations; but another possibility is Poland, where

³ See <https://www.cnn.com/2021/09/06/vw-ford-daimler-fear-chip-shortage-could-persist-for-some-time.html>

⁴ See <https://www.bloomberg.com/graphics/2021-semiconductors-chips-shortage/>, published on 29 March 2021.

⁵ While Europe is dependent on Asia for the fabrication of chips, it depends on the US for chip design. Referring to application fields, Europe holds a relatively large share in the automotive field, with 37% of global market sales of cars. See European Commission (2021) for European dependence along the semiconductor value chain and the main fields of application.

⁶ See <https://sourceability.com/news/why-chipmakers-cannot-quickly-fix-the-global-semiconductor-shortage>, published on 16 October 2021.

⁷ See <https://www.infineon.com/cms/en/about-infineon/press/press-releases/2021/INFXX202109-098.html>, published on 17 September 2021.

Intel already has a presence. An Intel semiconductor plant that is currently in Ireland will be dedicated to supplying customers in the automotive industry.⁸

- › Infineon, a German producer of semiconductors and an important supplier to the automotive manufacturing industry, opened a new plant in Villach, Austria, ahead of schedule in September 2021. It is set to produce ‘power semiconductors’ (chips for managing the power within an integrated circuit) used in electric cars, data centres, and the generation of solar and wind power.⁹
- › In August 2021, the world’s largest car-parts supplier, Bosch, opened a new semiconductor-producing factory in Dresden, Germany.¹⁰ That city also hosts the GlobalFoundries factory, the largest European chip plant, and it hopes to become the EU chipmaking hub – a ‘Silicon Saxony’.¹¹

BOX 1 / EU INITIATIVES TO COUNTER THE CHIP CRISIS¹²

- › The Important Project of Common European Interest (IPCEI) for microelectronics was already established in March 2018. In order to support this IPCEI, in its publication ‘A competition policy fit for new challenges’,¹³ the Commission expresses its intention of reviewing public support, in order to fill possible funding gaps in the semiconductor ecosystem.
- › In March 2021, the Commission, in its Digital Decade communication,¹⁴ expressed the ambition to double the production of semiconductors in the EU by 2030 – raising it from the current 9% of world production (in value terms) to at least 20%.
- › The European Chips Act, announced by President Ursula von der Leyen on 15 September 2021, sets out to develop a European Semiconductor Research strategy, a collective plan to enhance European production capacity and a framework for international cooperation and partnership.¹⁵ On 8 February 2022, the Commission presented its proposal, including a Chips for Europe Initiative, a new framework to ensure the security of supply and a coordination mechanism between Member States and the Commission in order to monitor the supply of semiconductors.¹⁶
- › An Indo-Pacific Strategy: the EU wants to hold talks with partners such as Japan, South Korea and Taiwan to address its strategic dependence on imported supplies of semiconductors.

⁸ See <https://www.euractiv.com/section/transport/news/intel-to-invest-up-to-e80-billion-euros-in-boosting-eu-chip-capacity>, published on 7 September 2021, and <https://newsroom.intel.ie/news-releases/enabling-capacity-to-support-the-european-auto-ecosystem/?linkId=100000066334423#gs.awdhq3>, published on 8 September 2021.

⁹ See <https://www.infineon.com/cms/en/about-infineon/press/press-releases/2021/INFXX202109-098.html>, published on 17 September 2021.

¹⁰ See <https://www.cnbc.com/2021/08/24/bosch-says-semiconductor-supply-chains-in-car-industry-no-longer-work.html>

¹¹ See <https://www.ft.com/content/75841b94-196e-466f-ad1b-72d3809c33fc>, published on 16 December 2021.

¹² Many thanks for comments from Bernhard Moshhammer, wiiw.

¹³ European Commission (2021), A competition policy fit for new challenges, COM/2021/173 final.

¹⁴ European Commission (2021), 2030 Digital Compass: the European way for the Digital Decade, COM/2021/118 final.

¹⁵ https://ec.europa.eu/commission/commissioners/2019-2024/breton/blog/how-european-chips-act-will-put-europe-back-tech-race_en, published on 15 September 2021.

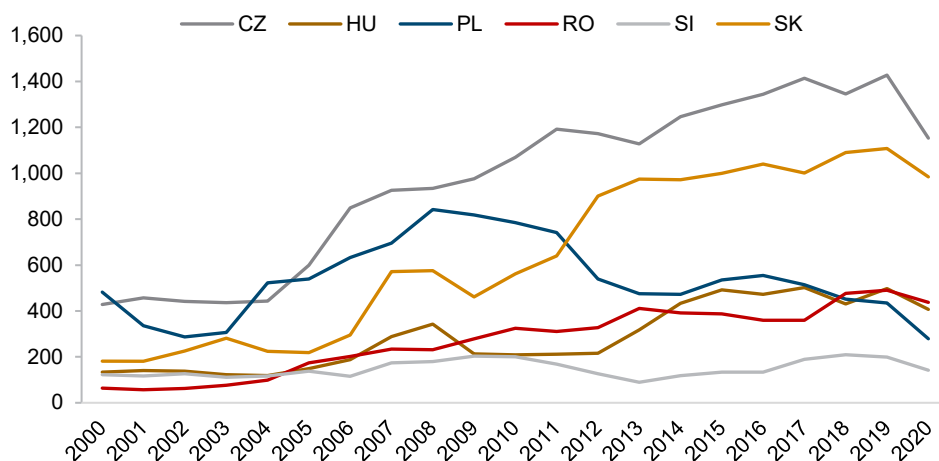
¹⁶ [https://www.europarl.europa.eu/legislative-train/theme-a-europe-fit-for-the-digital-age/file-european-chips-act-\(semiconductors\)](https://www.europarl.europa.eu/legislative-train/theme-a-europe-fit-for-the-digital-age/file-european-chips-act-(semiconductors)), https://ec.europa.eu/commission/presscorner/detail/en/IP_22_729, published on 8 February 2022.

However, it will take a while before the chip shortage is fully resolved.¹⁷ Building new semiconductor capacities requires time and is very capital intensive.¹⁸ Besides, there are multiple types of chips: high-end chips, which are used in laptops and servers, have the biggest profit margin and are thus a priority for the foundry companies. The car industry needs less-sophisticated (and less-profitable) chips, and so foundries are hesitant about expanding their production facilities for these chips.¹⁹

ROLE OF THE AUTOMOTIVE SECTOR IN EU-CEE

Shaped by the influx of foreign companies following the fall of the communist system in 1989, the automotive sector has become an important industry in the EU-CEE countries. In 2019, the (direct) automotive sector²⁰ accounted for 40% of manufacturing production in Slovakia, 28% in Czechia, 27% in Hungary, 23% in Romania, 14% in Slovenia and 12% in Poland. In terms of exports that year, its share ranged from 34% in Slovakia to about 22% in Czechia, Hungary and Romania, and approximately 14% in Slovenia and Poland. In fact, in terms of per capita population, Slovakia is the world's number one producer of passenger cars, with more than 1 million vehicles produced in 2019.

Figure 1 / Passenger car production, in thousands



Source: International Organization of Motor Vehicle Manufacturers (OICA), oica.net

The COVID-19 pandemic hit the automotive sector in 2020, and the region's companies closed their plants for several weeks during the first lockdown at the end of March 2020. Pent-up demand led to a swift recovery thereafter; however, it could not make up for the previous slump. In 2020, the production of motor vehicles fell by more than 30% compared to 2019 in Poland; by 29% in Slovenia; and by about 20% in Czechia and Hungary. The smallest declines were seen in Slovakia and Romania – about 10%

¹⁷ See <https://www.cnbc.com/2021/03/16/2-charts-show-how-much-the-world-depends-on-taiwan-for-semiconductors.html> and <https://www.cnbc.com/2021/05/07/chip-shortage-is-starting-to-have-major-real-world-consequences.html>

¹⁸ A new plant with the latest technology is said to cost EUR 20bn and EUR 5bn per annum for operation. See European Commission (2021), p.87.

¹⁹ See <https://sourceability.com/news/why-chipmakers-cannot-quickly-fix-the-global-semiconductor-shortage>, published on 16 October 2021.

²⁰ Defined by NACE rev. 2 classification as sector C29 'Manufacture of motor vehicles, trailers and semi-trailers'.

(see Figure 1). Although higher car production numbers were forecast at the beginning of 2021, the semiconductor shortage started to bite, and passenger car production continued to decline.

EFFECTS OF SEMICONDUCTOR SHORTAGE ON AUTOMOTIVE SECTOR IN EU-CEE

While the impact of the chip shortage was already evident in the second quarter of 2021, it really started to make itself felt in the third quarter of 2021. In late September, German car manufacturer Opel announced that it would close its plant in Eisenach (Germany) for the remainder of 2021, with 1,300 workers temporarily laid off.²¹ In September 2021, Stellantis, the owner of Opel, reported that the company as a whole expected to produce 1.4 million fewer cars that year, solely due to the chip squeeze.²² Japan's largest – and the world's second-largest – car manufacturer, Toyota, also announced in September that it would be cutting production by 40%, again due to the shortage of chips.²³ Further announcements by manufacturers such as VW, Ford, Daimler and others suggest that a total of 7.7 million vehicles that were due to be produced in 2021 were not in fact manufactured, at a cost to the global car industry of approximately USD 210bn in revenue (about 6% of total revenue).²⁴

The global chip shortage also affected EU-CEE producers throughout last year. Car manufacturers had to halt production for days on end, drop shifts and suspend certain production lines. For example, in Slovakia, Volkswagen Bratislava had to stop production of SUVs for two weeks at the beginning of May 2021, though the production of small city vehicles was not affected at that time.²⁵ The situation deteriorated in September, when Volkswagen interrupted production of small cars for one week, while the production of SUVs was also partly affected.²⁶ The three other large carmakers in Slovakia – KIA, Stellantis and Jaguar Land Rover – also announced temporary production stoppages last year. Meanwhile, the main producer in Czechia, Škoda, said in September that it would be unable to build 100,000 cars in 2021 due to the global chip crisis.²⁷

Overall, the small EU-CEE countries are highly import dependent. In 2019, imports were as high as 85% of GDP in Slovakia, 81% in Slovenia, 74% in Hungary and 71% in Czechia, compared to 44% in Poland and 39% in Romania. And intermediates account for a very high share of total imports, ranging from 56% in Slovakia to 47% in Poland in 2019. The main inputs for the automotive sector are parts and accessories for motor vehicles (NACE rev. 2, 293), with Czechia and Slovakia being the main importers

²¹ See <https://www.reuters.com/business/autos-transportation/chip-shortage-leads-carmaker-opel-shut-german-plant-until-2022-2021-09-30/>

²² See <https://www.reuters.com/business/aerospace-defense/stellantis-criticised-by-unions-over-furlough-scheme-cushion-chip-shortage-2021-09-28/>

²³ See <https://www.wsj.com/articles/toyota-succumbs-to-chip-shortage-and-shuts-factories-11629372702>, published on 19 August 2021.

²⁴ According to research by AlixPartners: <https://www.alixpartners.com/media-center/press-releases/press-release-shortages-related-to-semiconductors-to-cost-the-auto-industry-210-billion-in-revenues-this-year-says-new-alixpartners-forecast/>, published on 23 September 2021.

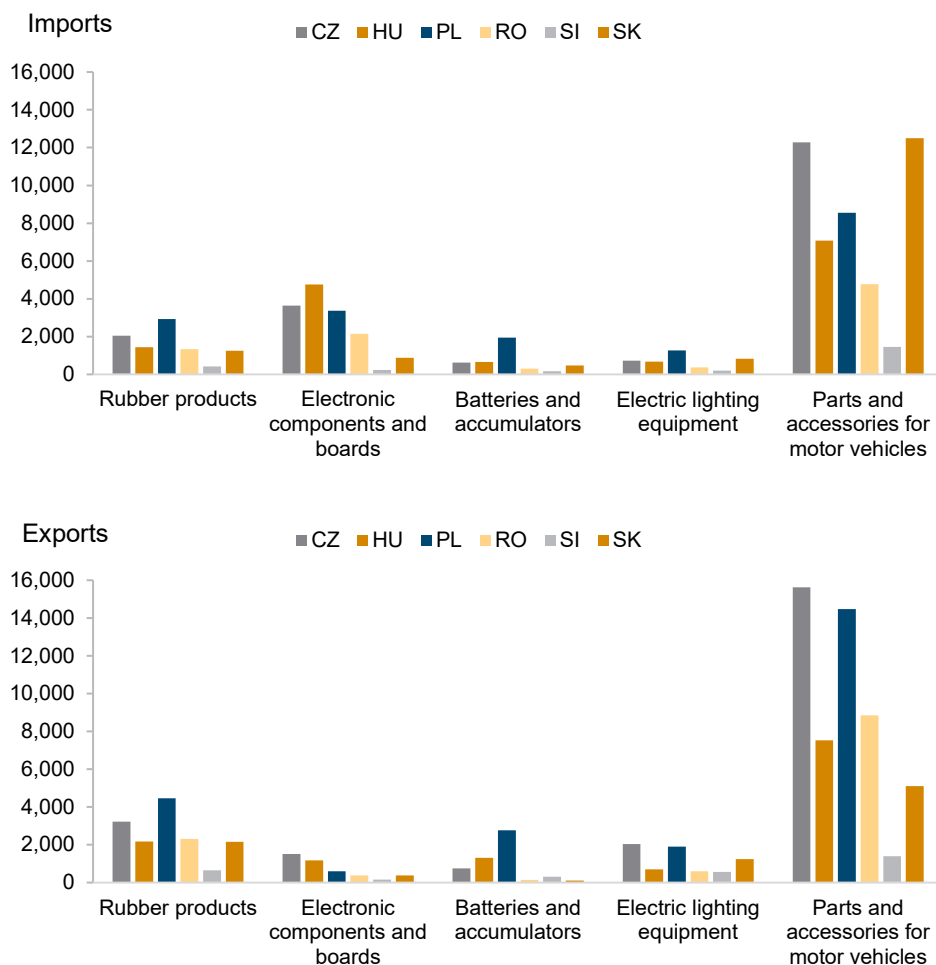
²⁵ See <https://spectator.sme.sk/c/22666777/supply-shortage-have-no-effect-on-carmakers-economic-results.html>, published on 24 May 2021.

²⁶ See <https://spectator.sme.sk/c/22743508/news-digest-number-of-cases-double-in-a-week-state-of-emergency-not-ruled-out.html>, published on 16 September 2021.

²⁷ See <https://deutsch.radio.cz/materialmangel-skoda-baut-diesem-jahr-100000-autos-weniger-8728300>, published on 12 September 2021.

in EU-CEE (EUR 12bn each in 2019) (see Figure 2, upper panel). While the EU-CEE countries are also major exporters of automotive components (see Figure 2, lower panel), this is mainly on account of Czechia, Poland and Romania; meanwhile, Slovakia is highly dependent on imports. All other inputs depicted in Figure 2 should be regarded as rough figures, as the inputs could be destined for any sector of the economy. However, the figure does provide a general indication of which inputs are most imported; we can see that electronic components and boards assume a large role.

Figure 2 / Imports and exports of main automotive inputs, 2019, in EUR million



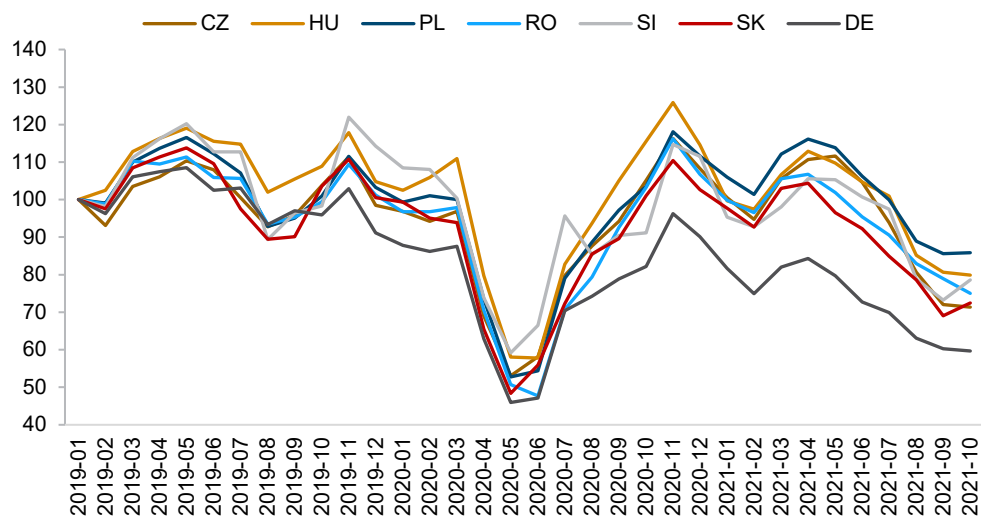
Note: Very rough selection of NACE rev. 2 categories. NACE 221 Rubber products, NACE 261 Electronic components and boards, NACE 272 Batteries and accumulators, NACE 274 Electric lighting equipment, NACE 293 Parts and accessories for motor vehicles.

Source: Eurostat COMEXT, wiiw calculation.

If we look at the effects of the chip shortage on automotive production and exports, we can see similar patterns for both indicators in the region (Figures 3 and 4): both peaked in March 2021 and there then followed a pronounced downward trend. Normally works holidays during the summer months do have a negative effect on production figures. However, in 2021, the holidays were often prolonged, in order to counter the chip shortage. In September 2021, we see a turning point in the production figures for Slovakia and Slovenia, and some bottoming out for Czechia, Hungary and Poland; but in Romania, the

downward trend continued. The latest data from the Czech Automotive Industry Association, however, paint a very positive picture for November 2021, with a sharp recovery in passenger car production.

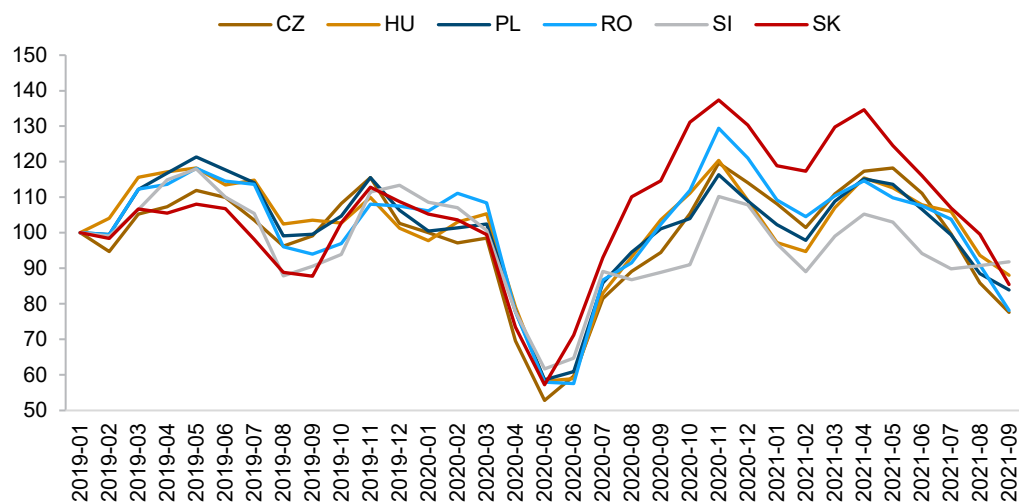
Figure 3 / Monthly production in the automotive sector, three-month moving average, January 2019 = 100



Note: NACE rev. 2 C29 'Manufacture of motor vehicles, trailers and semi-trailers'.

Sources: Eurostat Short-Term Business Statistics, Republic of Slovenia Statistical Office, Slovak Statistical Office.

Figure 4 / Monthly exports of vehicles, three-month moving average, January 2019 = 100



Note: HS 87.

Source: Eurostat COMEXT, wiiw calculation.

Overall, the EU-CEE automotive sectors were affected quite badly by semiconductor shortages during the third quarter of 2021, which dragged down exports and GDP growth. The Slovak National Bank (2021, p.35) estimates that exports were impacted negatively by 2.8 percentage points in 2021 and GDP by 1.1 percentage points. According to OECD estimations (OECD, 2021), GDP losses in the first nine

months of 2021 from supply-side disruption in the motor vehicle industry reached 1.5% in Germany and 1% in Czechia (and somewhat less in Poland, at 0.2%). For this year, however, the impact should be neutral, due to the low base effect.

OUTLOOK

In response to the current shortages, efforts are under way to increase semiconductor production around the world, especially in the US, China, South Korea and Japan (less so in Europe, and even less so in EU-CEE). However, new production capacities take time to build up. Besides, with the Omicron variant on the rise and possible further virus mutations, supply-side disruption may even increase in the near future. Therefore, the semiconductor chip shortage will likely persist and may well last until 2023. The automotive industry generally – but particularly in the EU-CEE countries – will need to adapt to this new situation as it heads into an uncertain future.

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The business services sector in Central and Eastern Europe

BY TOMASZ GEODECKI¹

Following the EU's eastern enlargement, global players in the business services sector started to invest actively in the low-cost EU-CEE economies. Thanks to continued strong productivity growth, the cost competitiveness of these locations was generally maintained between 2004 and 2014. Moreover, despite the growing internationalisation of the sector, its cooperation with local businesses increased. The rapidly improving skills – as well as the growing importance of knowledge-intensive services – contributed further to the region's importance as a location for business services in Europe.

TERRITORIAL EMBEDDEDNESS OF SERVICES SECTORS

One of the characteristic features of globalisation is the spatial separation of management and production in the hunt for cost savings – a feature that increases demand for coordination services (Jones and Kierzkowski, 1990). Advances in long-distance communication have led to the realisation that savings can also be made in coordination processes, by outsourcing them to specialised firms or by relocating them to countries with lower labour costs (Baldwin, 2012; Wirtz et al., 2015).

Once the barriers to production-factor flows between European countries were removed, global players in the business services sector (BSS) started to invest in the low-cost economies of the EU countries of Central and Eastern Europe (EU-CEE). Up until 2014, the vast majority of the largest vendors operating in the sector in EU-CEE were subsidiaries of multinational companies (ABSL, 2020). Is this sector, then, the area where EU-CEE economies will be able to gain competitive advantages – and in the long run develop high skills and obtain high value added in knowledge-based services? Or, on the contrary, will the factors related to remote communication and labour costs that originally contributed to the emergence of the BSS in EU-CEE eventually lead to its demise? After all, service provision can be relocated further east or south, once the unit labour costs in EU-CEE approach the levels of Western European cities.

Such questions focus on the extent to which this sector is territorially embedded. The term 'territorial embeddedness' describes the way in which actors are anchored in a particular area (Hess, 2004) and the extent to which they 'interact and build relationships with local actors in order to exchange resources, knowledge and information' (Wright, 2010). The embeddedness of the BSS in the EU-CEE economies faces two main challenges.

The first is to build long-term relationships between investors and local actors, in order to improve the perception of the benefits of investing in a given location. Alongside invested capital, localised capabilities can play the role of sunk costs, because they cannot be cheaply recreated elsewhere. Therefore, next to the unit labour cost (ULC), it is the abundance of skilled labour that is the key to

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decisions on investment in services centres. These elements make up territorial embeddedness, which in the EU-CEE countries is considered from the perspective of the danger of relocation to other, cheaper locations (Domański and Gwosdz, 2009).

The other challenge for territorial embeddedness arises from the fact that the benefits of participating in global value chains do not necessarily spill over into the local economy. If information and communications technology (ICT) 'made it possible and price differences made it profitable' (Baldwin, 2012), then low-cost labour is the main motivation for investment. Labour-intensive stages are therefore relocated to low-labour-cost locations and thus create less and less value added along the value chain (Stöllinger, 2021). If an economy is only engaged in the least profitable links in the value chain, the increase in value added is not necessarily in proportion to the increase in trade. Moreover, subsidiaries of multinational firms may maintain very limited contact with local suppliers and customers, leading to the formation of 'cathedrals in the desert' (Hardy, 1998).

Participation in global value chains has become an opportunity for developing economies to gain competence in knowledge-intensive activities, because improving the quality of products and the efficiency of processes to meet the requirements of the chain is a precondition for joining it (Baldwin and Lopez-Gonzalez, 2015; Pietrobelli and Rabellotti, 2011; Milberg and Winkler, 2013). The growing demand for skills in the developing world leads, in turn, to higher wages and consequently an increased supply of skills (Markusen, 2005). Thus, upgrading of the capabilities in the supply base can take place under the dominance of global companies. With increased productivity stemming from more extensive development of knowledge-based sectors, it becomes possible to reconcile closer relationships with global network participants and to maintain intensive relationships with local actors. Industrial upgrading – i.e. 'substantial changes in a country's specialization and knowledge base that increase its capacity for rent generation' (Ernst, 2000) – is what enables emerging economies to take on the two challenges they face in the age of globalisation.

The aim of this article is to propose measures of territorial embeddedness and to determine the level and dynamics of the BSS's embeddedness in EU-CEE economies. Based on the above, it addresses the following questions:

1. Is the BSS in EU-CEE seeing faster productivity growth than in the rest of the EU, while at the same time maintaining its cost competitiveness?
2. What is the relationship of the BSS in EU-CEE with national suppliers and customers? To what extent does added value created in this sector feed into the local economies?
3. How capable are the EU-CEE countries of building the skills and creating the value added in the knowledge-intensive BSS that will lead to that sector's industrial upgrading and improve the sectoral structure of their economies?

In order to answer the research questions posed, we divide the European economies into two groups: EU-CEE and Western Europe (the remaining EU countries, plus the UK).

In simple terms, the business services sector comprises six World Input-Output Database (WIOD) sectors, grouped into two categories:

- › *IT business services (IT BS)*: J58 – Publishing activities; J62-J63 – Computer programming, consultancy and related activities; information service activities; and
- › *Professional business services (professional BS)*: M69-M70 – Legal and accounting activities and activities of head offices; management consultancy activities; M71 – Architectural and engineering activities; technical testing and analysis; M72 – Scientific research and development; M73 – Advertising and market research.

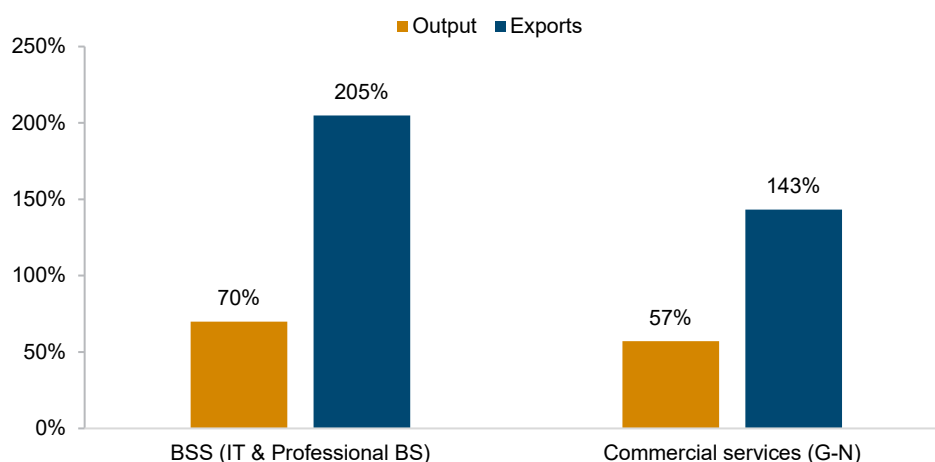
We will discuss these against the background of the entire commercial services sector (NACE Rev. 2, sections G-N).

Our selection of the period to be studied (2000-2014) was dictated by the availability of WIOD data compatible with NACE Rev. 2, and by the fact that its first part (2000-2004) comes just before the accession of several CEE countries to the European Union, whereas 2004-2014 covers the decade after accession, when certain trends related to the functional separation of the two sector categories had already become evident.

PRODUCTIVITY AND COST COMPETITIVENESS

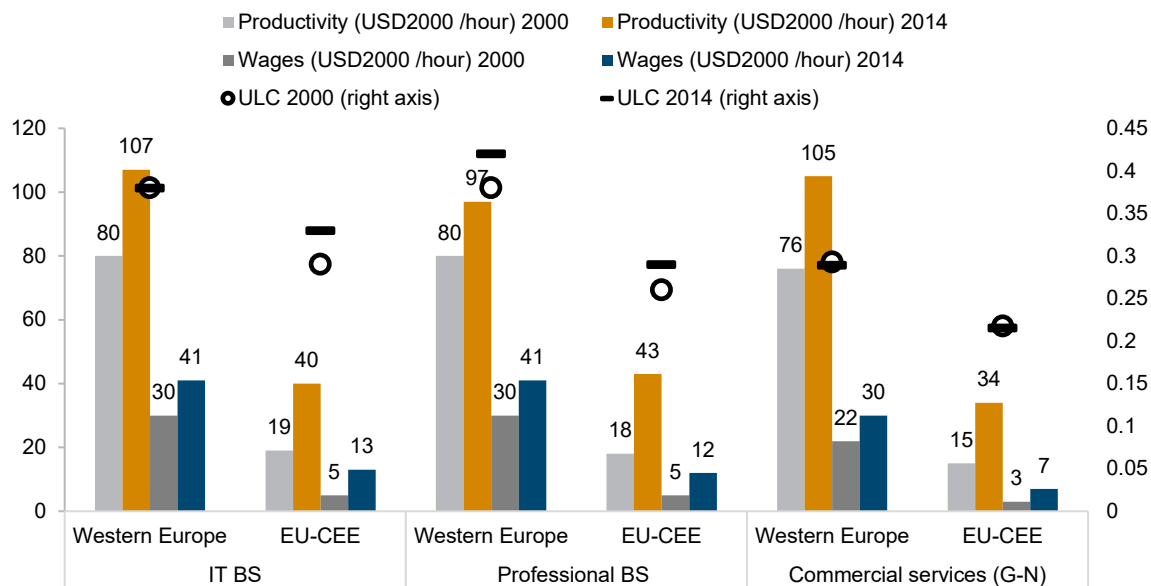
The period 2000-2014 saw rapid development of the European BSS – a process that was much faster in terms of global output and exports than was the case with commercial services on average (Figure 1). The growing trade volume may have caused factor price equalisation. Figure 2 presents the components of a basic calculation of ULC in the BSS and data on the exports of this sector.²

Figure 1 / Growth rates of output and exports in BSS and commercial services in the EU, 2000-2014 (USD, constant 2000 prices)



Source: own calculations based on WIOD SEA and WIOD (Rel. 2016; Timmer et al., 2015).

² We obtained our data from WIOD Socio-Economic Accounts (WIOD SEA) (Rel. 2016).

Figure 2 / Productivity, wages and ULC in the BSS and commercial services in 2000 and 2014

Source: own calculations based on WIOD SEA and WIOD (Rel. 2016; Timmer et al., 2015).

In the EU as a whole, the growth rate of the BSS's output was higher than that of the entire services sector, reflecting the growing importance of the former. Moreover, the growth rate of exports in the BSS significantly exceeded the growth rate of their output, which reveals that international trade in business services was gaining in importance for companies operating in the sector.

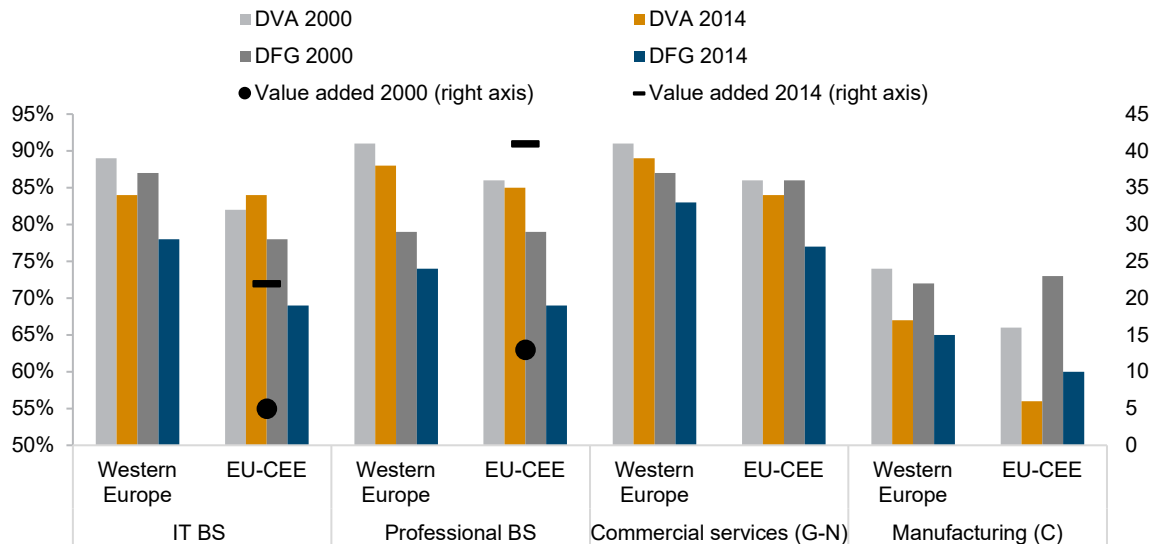
Productivity in EU-CEE's BSS grew rapidly – faster than in Western Europe – leading to a convergence of productivity levels in the European BSS. Productivity growth in EU-CEE was nevertheless slower than wage growth, which contributed to a decline in the cost competitiveness of the BSS. The ULC increased significantly, particularly in IT, although it never exceeded 90% of the Western European level. By contrast, the unit labour cost in professional BS remained relatively low, due to a rapid increase in that sector's wages in the Western countries. As a result, in 2014, an investor who compared the ULC levels of the EU-CEE and Western Europe would have found EU-CEE more favourable.

INTEGRATION INTO LOCAL ECONOMIES

To illustrate the degree of cooperation between the BSS and local economies in EU-CEE, estimates for the services sectors in Western Europe and EU-CEE are shown in Figure 3. Based on the methodology developed by Timmer et al. (2013), we used the WIOD (Release 2016, Timmer et al., 2015) to estimate

- › the share of domestic value added (DVA) in final goods sold by BSS, and
 - › the share of value added created in BSS by supplying domestic final goods (DFG) producers,
- using the approach proposed by Grodzicki and Geodecki (2016). For details, see also Geodecki (2020).

Figure 3 / Positions in global value chains (%) and value added (USD bn at constant 2000 prices) of the European BSS in 2000 and 2014



Source: own estimations based on WIOD (Timmer et al., 2015).

First, in the BSS, the figures for sales to the domestic customers of services sectors (DFG) are clearly lower than those for domestic purchases of intermediate inputs (DVA). This may be due to the relatively high demand for the latter in the services sectors, where human capital remains a more important production factor than in the manufacture of goods. Comparison with the manufacturing sector makes it clear that, in the case of physical movement of goods, the DVA embodied in intermediate inputs can be much lower.

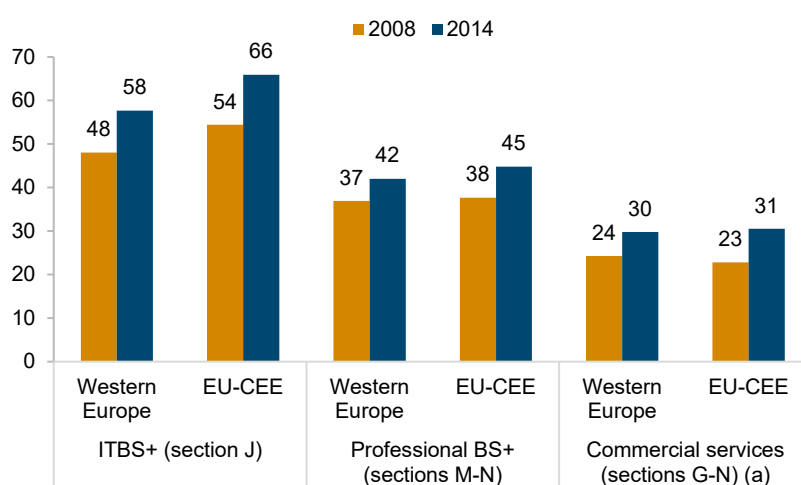
Second, European economies have become increasingly interconnected. In 2000-2014, they saw a decrease in domestic value added embodied in the acquisition of intermediate inputs to meet final demand in commercial services. In services, the IT sectors recorded the lowest DVA, which may illustrate the declining importance of localisation, with firms sourcing relatively more standardised processes. By contrast, on downstream markets, the smallest share of value added purchased by domestic buyers (DFG producers) was recorded in professional BS, which serves to illustrate the readiness of firms to outsource professional services (e.g. human resources, legal services, accounting) to specialised firms using international skills and wage arbitrage (Wirtz et al., 2015). In EU-CEE, DFG values are significantly lower, suggesting that in these locations more resources are engaged in providing international coordination services. This may also be due to the lower purchasing power of local buyers in EU-CEE.

Overall, the small change in DVA in the EU-CEE countries and the decreasing share of DFG imply non-decreasing embeddedness of BSS in the local economies. Cooperation with local suppliers became more intensive, if it is analysed from the perspective not only of the share of local value added, but also of its volume. A large nominal increase in locally created and delivered value added (see Figure 3) implies increased cooperation between the BSS and local actors: for example, in 2014, domestic buyers in EU-CEE obtained 69% of the value added in final demand from professional BS providers; in 2000, the figure was more than 79% of value added, the volume of which was only a third of that in 2014.

SKILLS IN BUSINESS SERVICES

In order to assess the prospects for further BSS productivity growth in EU-CEE, we tracked one of its most important factors: namely, the skills involved in providing services in this sector. Relevant data for one-digit NACE aggregates were obtained from EU-KLEMS. Therefore, the broader J and M-N sections were used, rather than the narrower IT BS and professional BS categories. Figure 4 shows the share of highly skilled personnel in total employment in the BSS.

Figure 4 / Share of highly skilled personnel in selected services sectors in 2008 and 2014 (% of total hours worked)



a) Weighted average by sector's shares in hours worked by persons engaged.

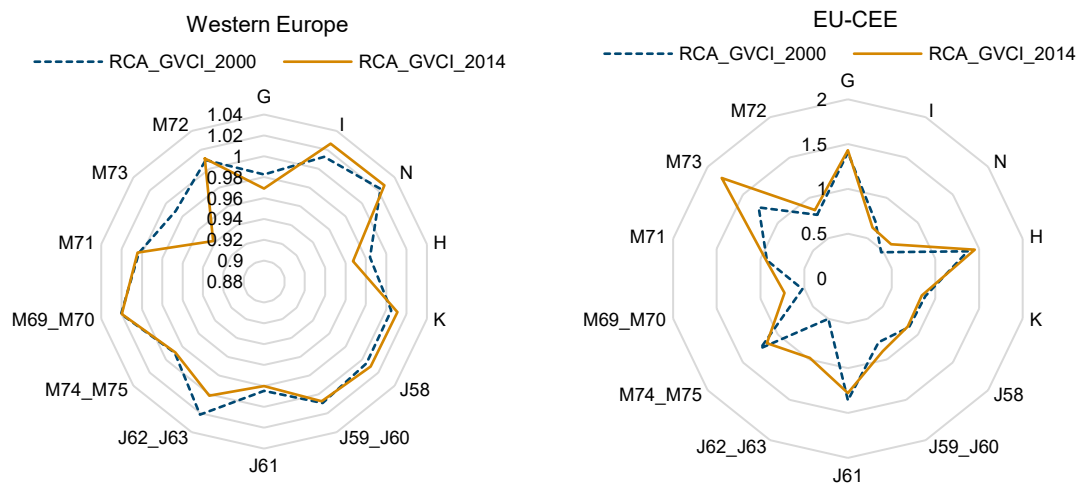
Sources: WIOD SEA (Timmer et al., 2015), EU-KLEMS.

The proportion of highly skilled personnel in the EU-CEE's BSS increased rapidly – faster than in Western Europe. As a result, by 2008 the corresponding proportions were virtually the same in the two groups. In the other period studied, particularly large proportions of highly skilled personnel in the EU-CEE BSS were noted in IT and professional business services. Not only were these proportions greater than in Western Europe in 2008, but by 2014 they had grown much faster. Consequently, in 2014 a significantly larger proportion of highly skilled persons were in employment in the IT and professional business services sectors in EU-CEE than in Western Europe, although the shares were equal in total services. Thus, it can be argued that between 2000 and 2014, the development of a knowledge base in the EU-CEE BSS improved markedly, as is evidenced by the increasing skill levels of the personnel in IT and professional business services.

Therefore, a change in skills should trigger changes in both export specialisation and comparative advantage in global value chain income (GVCI) (Timmer et al., 2013). However, those latter changes do not always go hand in hand. In many cases, the subsidiaries of transnational corporations (TNCs) in low-cost countries have only a small margin on re-exported intermediates. Low labour costs, together with narrow profit margins, add up to little value added being captured locally. Therefore, in the era of globalisation, it is the capture of value added (measured by GVCI) rather than exports that indicates the benefits accruing to an economy from participating in global value chains (see Timmer et al., 2013).

Figure 5 shows the revealed comparative advantages (RCAs) in GVCI in 2000 and 2014 for EU-CEE and Western Europe.

Figure 5 / Revealed comparative advantages (RCAs) in the global value chain income in commercial services: EU-CEE versus Western Europe



The services sectors are ranked clockwise, from the least knowledge intensive:

G – Wholesale and retail trade, repair of motor vehicles and motorcycles

I – Accommodation and food service activities

N – Administrative and support service activities

H – Transportation and storage

K – Financial and insurance activities

J58 – Publishing activities

J59_J60 – Motion picture, video, television programme production; programming and broadcasting activities

Source: Own compilation based on WIOD (Timmer et al., 2015).

J61 – Telecommunications

J62_J63 – Computer programming, consultancy and related activities; information service activities

M74_M75 – Other professional, scientific and technical activities; veterinary activities

M69_M70 – Legal and accounting activities; activities of head offices; management consultancy activities

M71 – Architectural and engineering activities; technical testing and analysis

M73 – Advertising and market research

M72 – Scientific research and development

From the perspective of individual sectors, EU-CEE's advantages in service provision are found in trade and transport, while in most sectors of IT BS and professional BS they remained at below 1. The patterns in Western Europe mirrored those in EU-CEE,³ with clear declines recorded in trade and transport, as well as in professional and information services. As was argued above, the latter represent the more knowledge-intensive sectors, illustrated by their clockwise rankings on the chart from the least (sections G and I) to the most knowledge-intensive (sections J and M). This shows that – with the growing interconnectedness – it was not only labour-intensive activities (G & H) that were moved to low-cost locations in EU-CEE, but also skill-intensive activities (J62-J63, M60-M70, M73). In summary, the structure of value creation also improved, as knowledge-based services steadily gained increased share.

³ Owing to the design of RCA, advantages for EU-CEE (RCA>1) represent disadvantages for Western Europe (RCA<1).

CONCLUDING REMARKS

1. This analysis reveals that the EU-CEE's BSS saw rapid productivity growth in 2004-2014, and an even more rapid increase in wage levels. This tendency was the opposite of what was seen in other sectors in EU-CEE, where wages grew more slowly than productivity (see Astrov et al., 2019). One explanation lies in the white-collar off-shoring model (Markusen, 2005), which stipulates that in the Global South it is the knowledge capital provided by TNCs that increases demand for skilled labour. In addition, the growing tradability in IT and professional services (Baldwin, 2019) equalises factor prices across Europe. Despite the increase in unit labour costs, their relative value was still below that in Western Europe. Therefore, the BSS in EU-CEE maintained its cost competitiveness and offered good investment opportunities in subsequent years.
2. The share of local buyers in the BSS sector decreased in the period 2004-2014. With the influx of multinational service providers, foreign customers also gained in importance. Domestic value added, however, remained relatively stable, probably due to the heavy dependence of services on human capital, which is more localised in nature than are inputs to manufacturing production.
3. The above-mentioned dimensions seem to suggest that the territorial embeddedness of the BSS in EU-CEE is relatively high. The prospects for future productivity growth in services will be conditional on an increase in the skills of workers in the region. In EU-CEE, the improvement in worker skills seems to outstrip that observed in the Western European countries. Thanks to the growing tradability and off-shorability of services, it is not only in transportation and retail trade that the EU-CEE countries have been able to build comparative advantage. In the decade following eastern enlargement of the EU, IT and professional business services also acquired a visibly greater importance in EU-CEE's economic structures. Demographic decline, however, is starting to bring local shortages of human capital and is leading to a decline in cost competitiveness (Bykova et al., 2021).

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Conventional signs and abbreviations used

%	per cent
ER	exchange rate
GDP	Gross Domestic Product
HICP	Harmonised Index of Consumer Prices (for new EU member states)
LFS	Labour Force Survey
NPISHs	Non-profit institutions serving households
p.a.	per annum
PPI	Producer Price Index
reg.	registered
y-o-y	year on year

The following national currencies are used:

ALL	Albanian lek	HRK	Croatian kuna	RON	Romanian leu
BAM	Bosnian convertible mark	HUF	Hungarian forint	RSD	Serbian dinar
BGN	Bulgarian lev	KZT	Kazakh tenge	RUB	Russian rouble
BYN	Belarusian rouble	MKD	Macedonian denar	TRY	Turkish lira
CZK	Czech koruna	PLN	Polish zloty	UAH	Ukrainian hryvnia

EUR euro – national currency for Montenegro, Kosovo and for the euro-area countries Estonia (from January 2011, euro-fixed before), Latvia (from January 2014, euro-fixed before), Lithuania (from January 2015, euro-fixed before), Slovakia (from January 2009, euro-fixed before) and Slovenia (from January 2007, euro-fixed before).

Sources of statistical data: Eurostat, National Statistical Offices, Central Banks and Public Employment Services; wiiw estimates.

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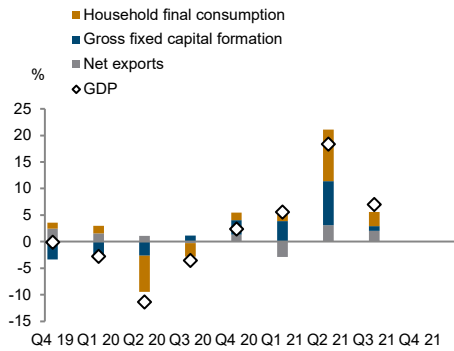
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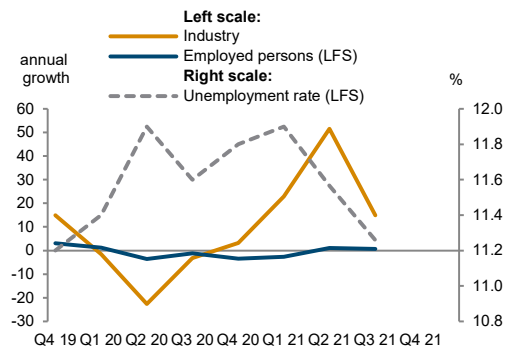
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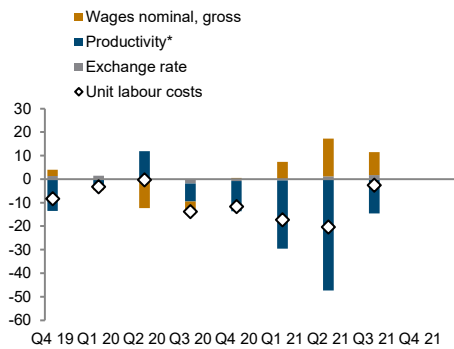
Real GDP growth and contributions
y-o-y



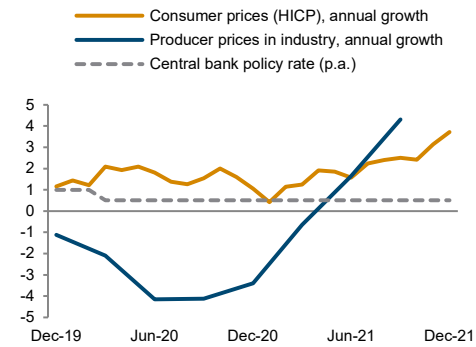
Real sector development
in %



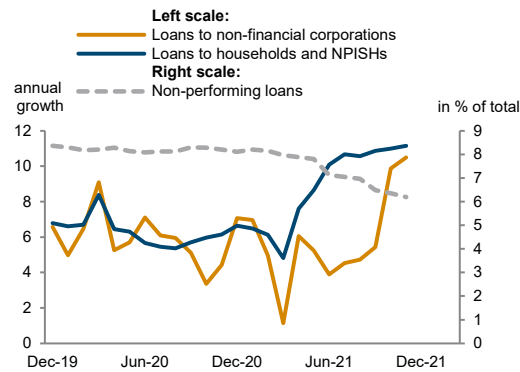
Unit labour costs in industry
annual growth rate in %



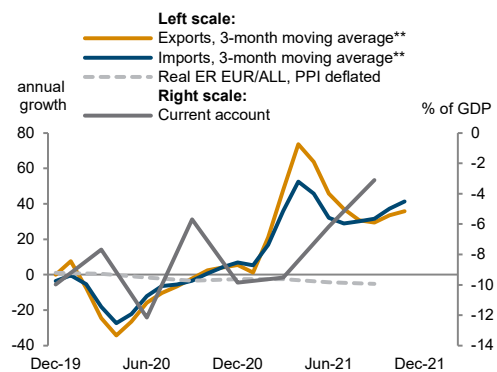
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



**EUR based.

Source: wiiw Monthly Database incorporating Eurostat and national statistics.

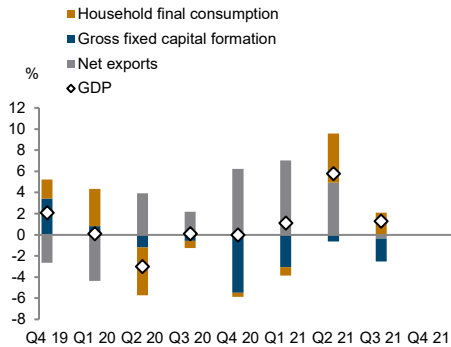
Baseline data, country-specific definitions and methodological breaks in time series are available under:

<https://data.wiiw.ac.at/monthly-database.html>

Belarus

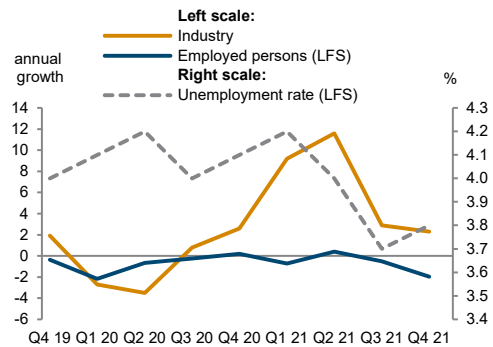
Real GDP growth and contributions

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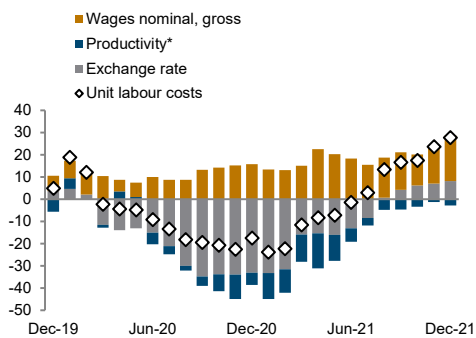
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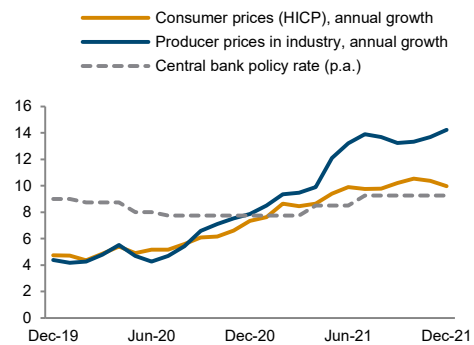
Unit labour costs in industry

annual growth rate in %



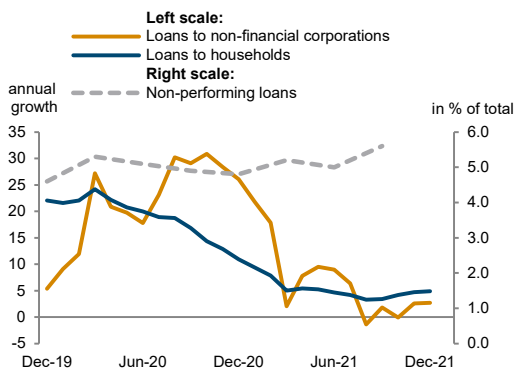
Inflation and policy rate

in %



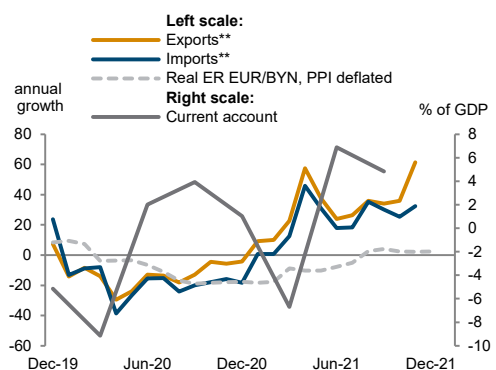
Financial indicators

in %



External sector development

in %



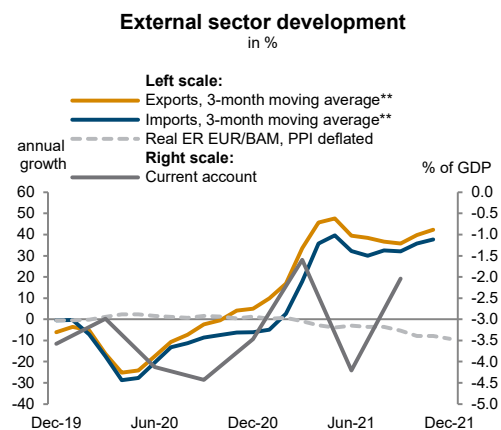
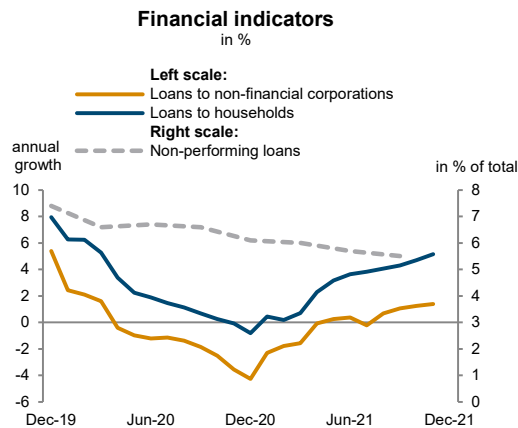
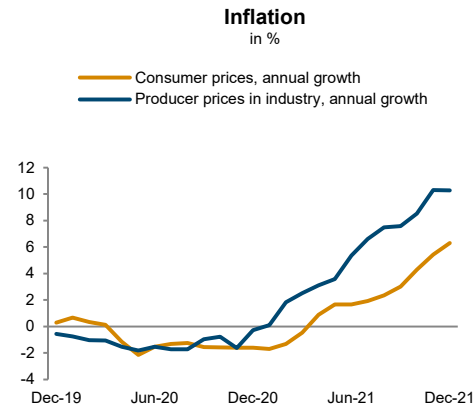
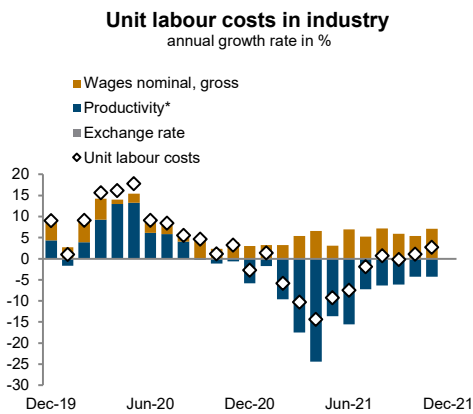
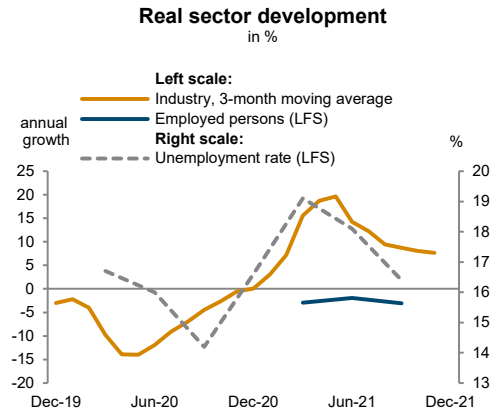
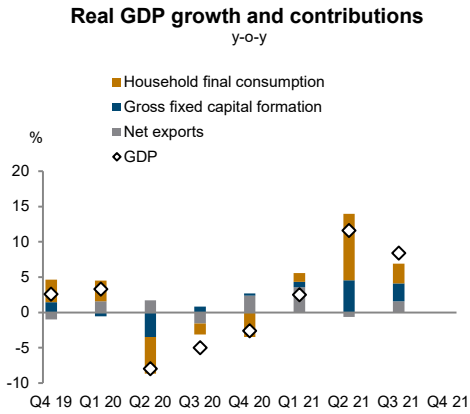
**EUR based.

Source: wiiw Monthly Database incorporating Eurostat and national statistics.

Baseline data, country-specific definitions and methodological breaks in time series are available under:

<https://data.wiiw.ac.at/monthly-database.html>

Bosnia and Herzegovina



**EUR based.

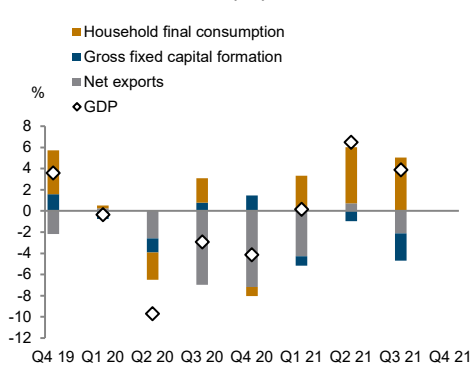
Source: wiiw Monthly Database incorporating Eurostat and national statistics.

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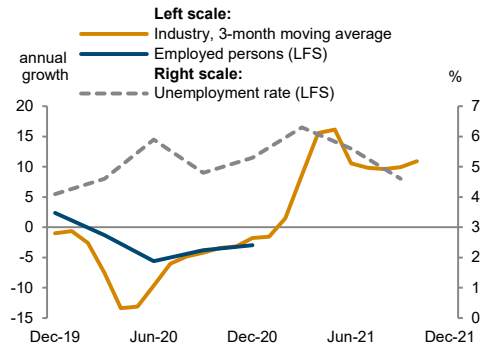
<https://data.wiiw.ac.at/monthly-database.html>

Bulgaria

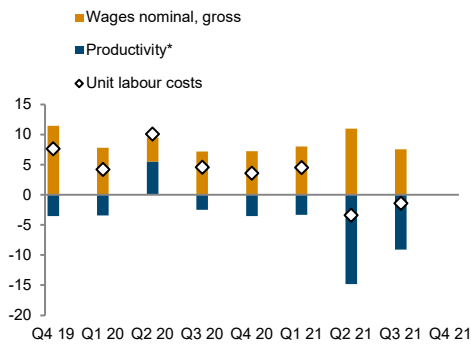
Real GDP growth and contributions



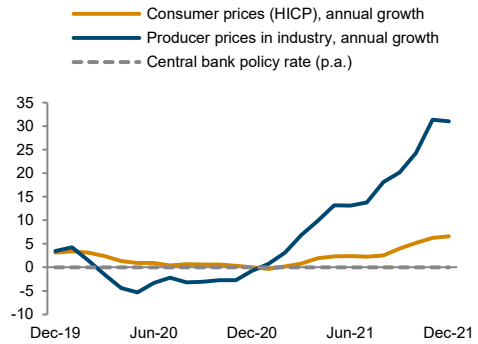
Real sector development



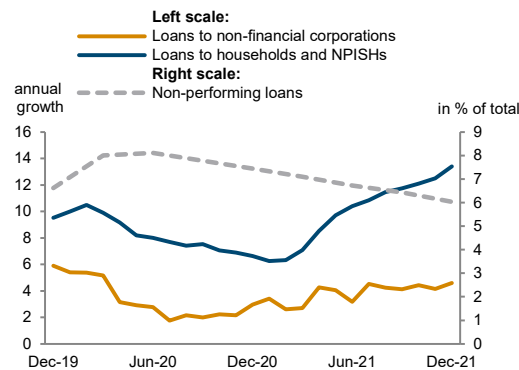
Unit labour costs in industry



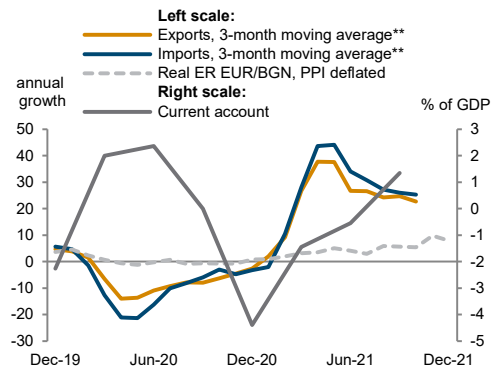
Inflation and policy rate



Financial indicators



External sector development



**EUR based.

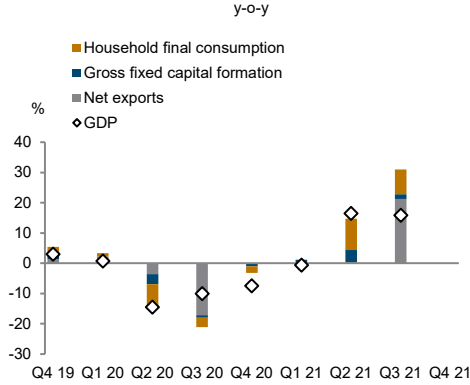
Source: wiw Monthly Database incorporating Eurostat and national statistics.

Baseline data, country-specific definitions and methodological breaks in time series are available under:

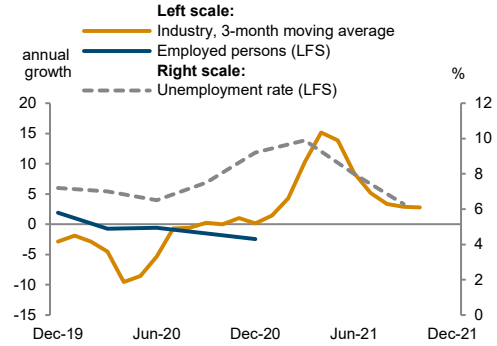
<https://data.wiw.ac.at/monthly-database.html>

Croatia

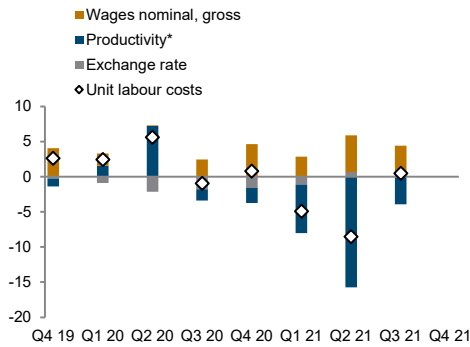
Real GDP growth and contributions



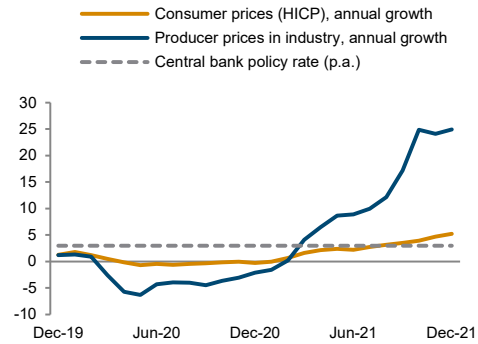
Real sector development



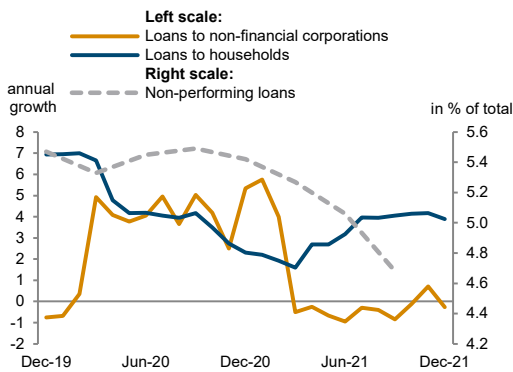
Unit labour costs in industry



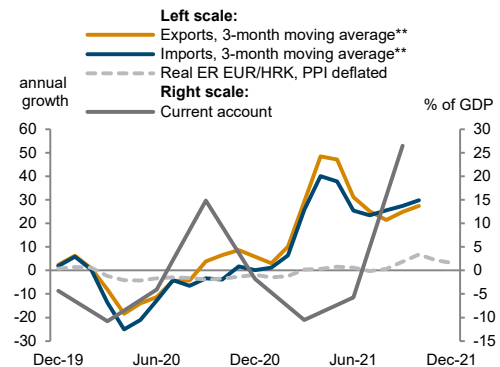
Inflation and policy rate



Financial indicators



External sector development



**EUR based.

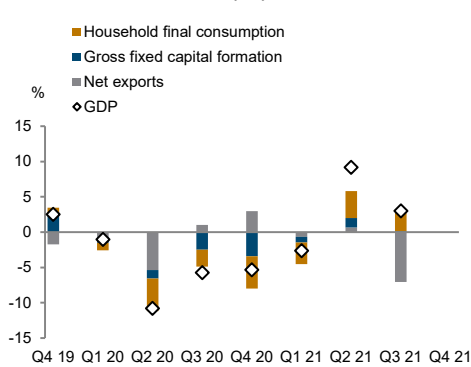
Source: wiiw Monthly Database incorporating Eurostat and national statistics.

Baseline data, country-specific definitions and methodological breaks in time series are available under:

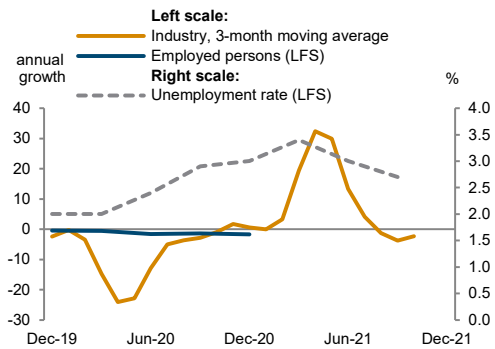
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Czechia

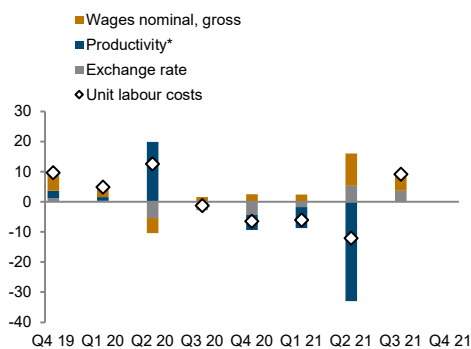
Real GDP growth and contributions



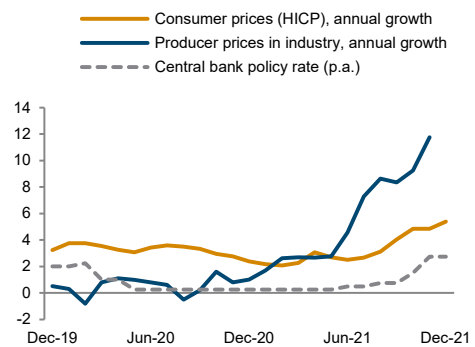
Real sector development



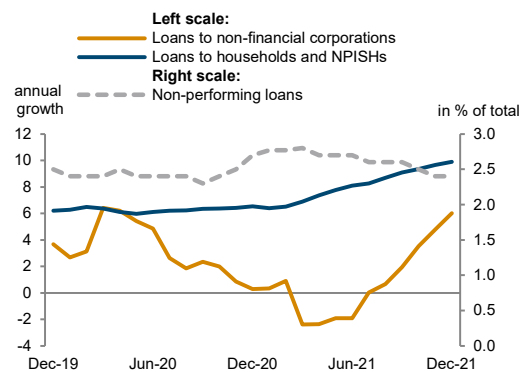
Unit labour costs in industry



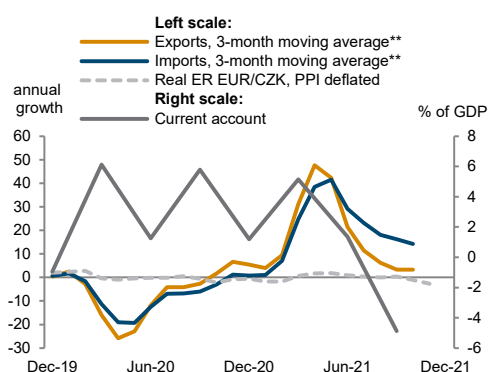
Inflation and policy rate



Financial indicators



External sector development



**EUR based.

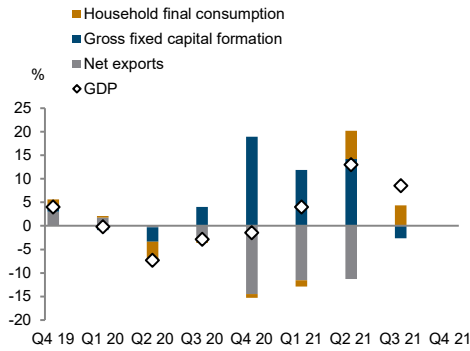
Source: wiiw Monthly Database incorporating Eurostat and national statistics.

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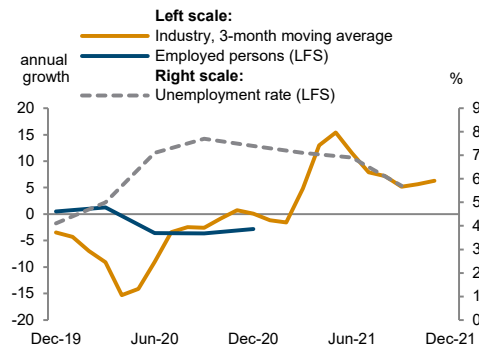
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Estonia

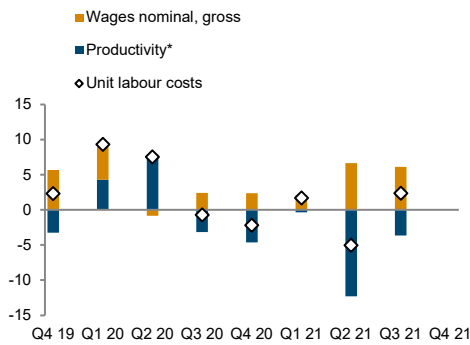
Real GDP growth and contributions
y-o-y



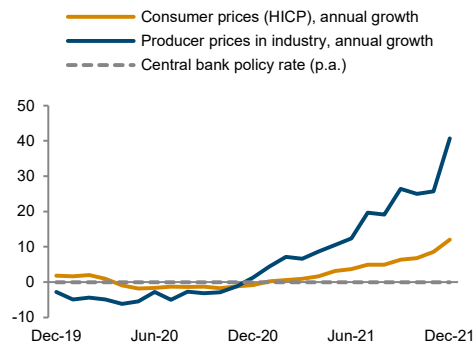
Real sector development
in %



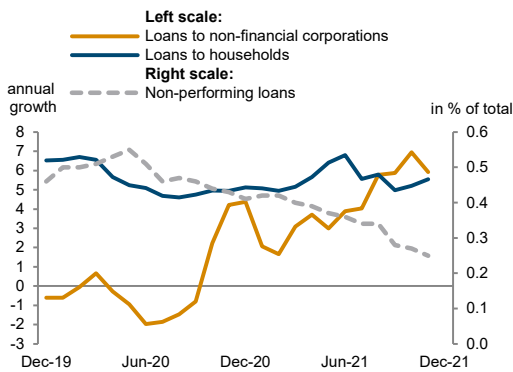
Unit labour costs in industry
annual growth rate in %



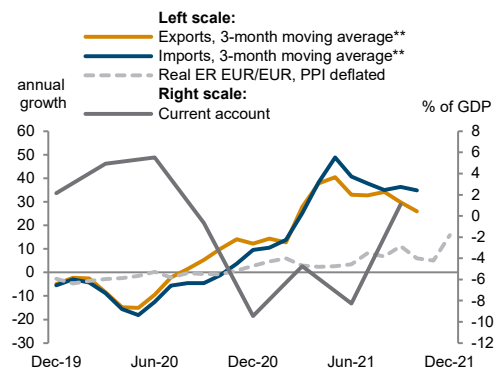
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



**EUR based.

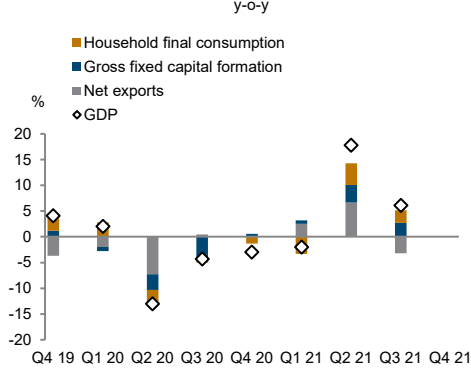
Source: wiiw Monthly Database incorporating Eurostat and national statistics.

Baseline data, country-specific definitions and methodological breaks in time series are available under:

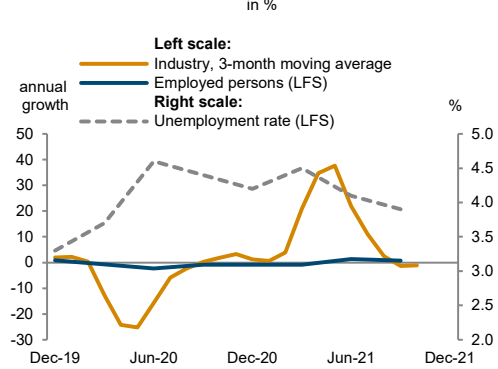
<https://data.wiiw.ac.at/monthly-database.html>

Hungary

Real GDP growth and contributions



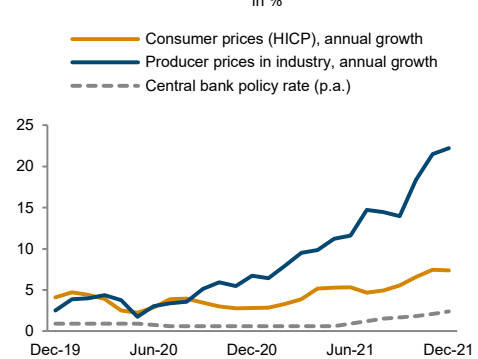
Real sector development



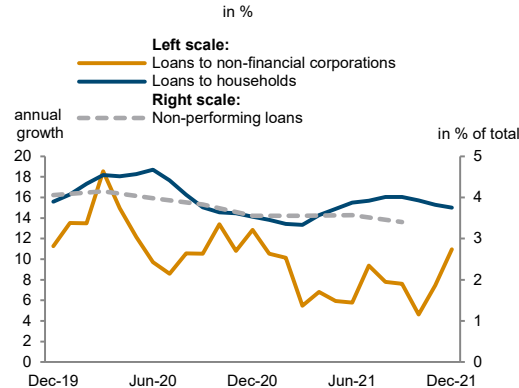
Unit labour costs in industry



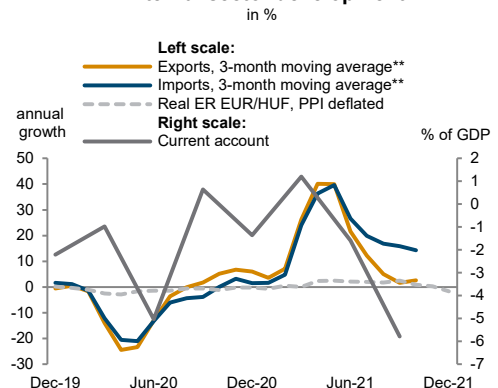
Inflation and policy rate



Financial indicators



External sector development



**EUR based.

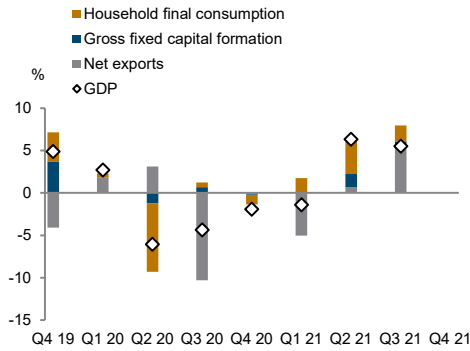
Source: wiw Monthly Database incorporating Eurostat and national statistics.

Baseline data, country-specific definitions and methodological breaks in time series are available under:

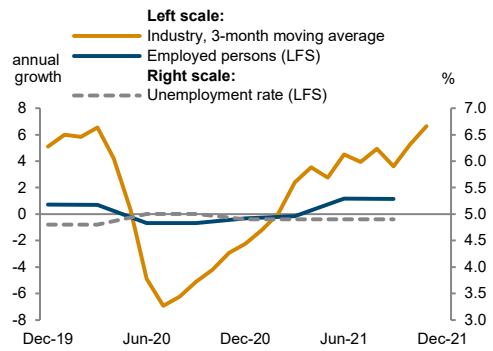
<https://data.wiw.ac.at/monthly-database.html>

Kazakhstan

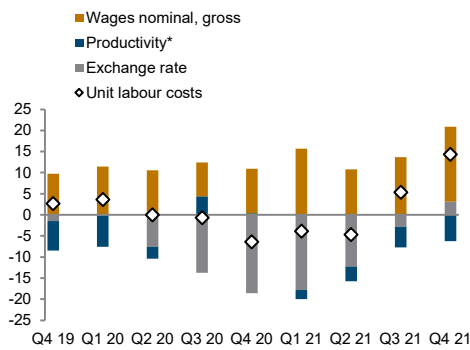
Real GDP growth and contributions
y-o-y



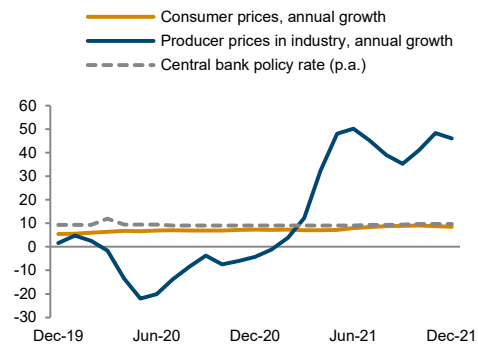
Real sector development
in %



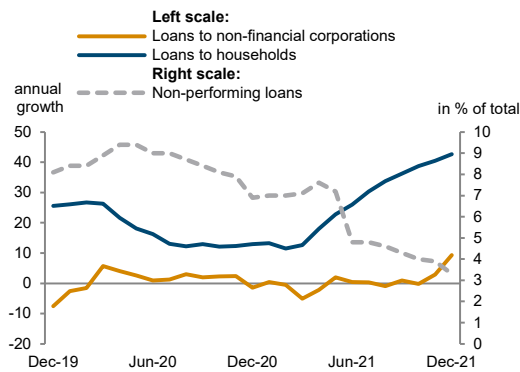
Unit labour costs in industry
annual growth rate in %



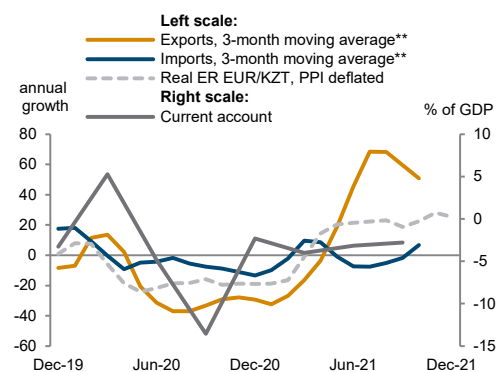
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



**EUR based.

Source: wiiw Monthly Database incorporating Eurostat and national statistics.

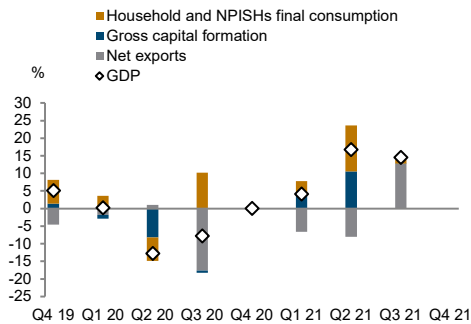
Baseline data, country-specific definitions and methodological breaks in time series are available under:

<https://data.wiiw.ac.at/monthly-database.html>

Kosovo

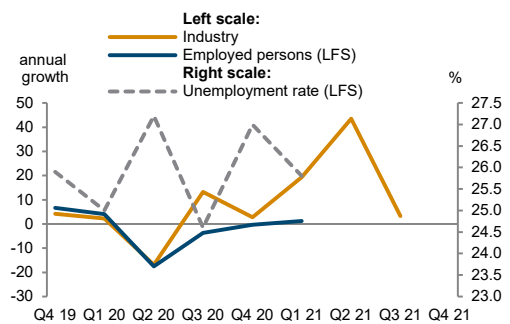
Real GDP growth and contributions

y-o-y



Real sector development

in %



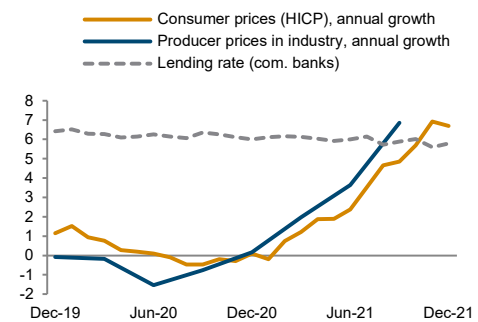
Productivity in industry

annual growth rate in %



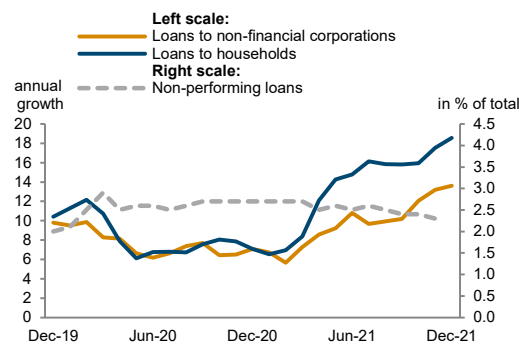
Inflation and lending rate

in %



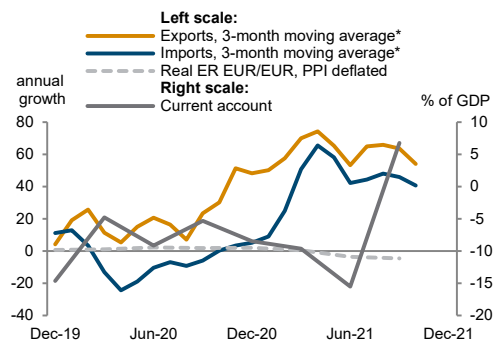
Financial indicators

in %



External sector development

in %



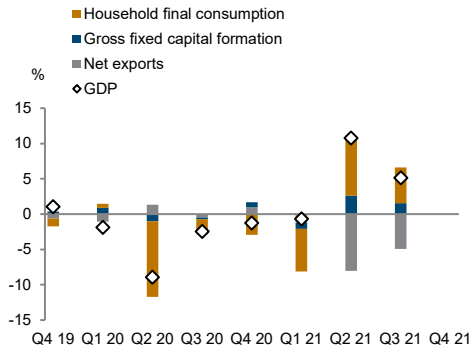
Source: wiiw Monthly Database incorporating Eurostat and national statistics.

Baseline data, country-specific definitions and methodological breaks in time series are available under:

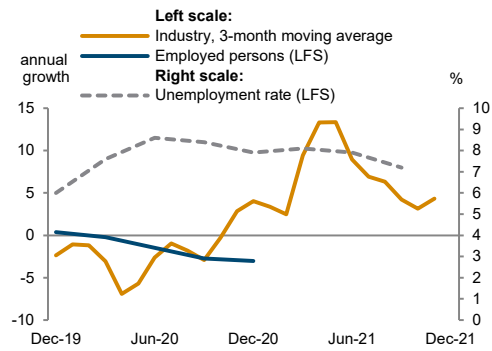
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Latvia

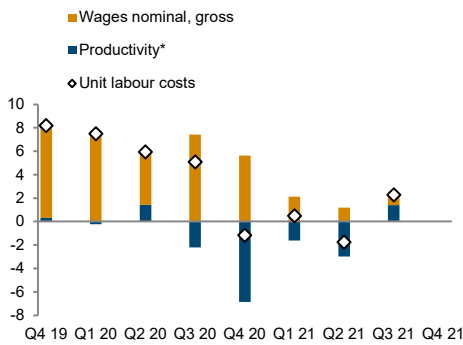
Real GDP growth and contributions
y-o-y



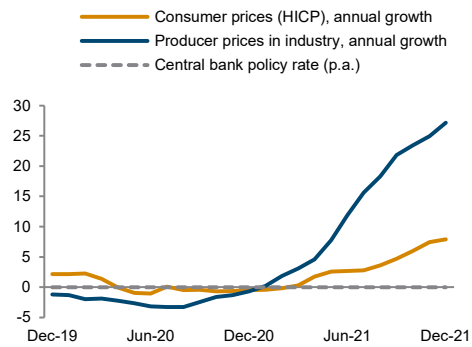
Real sector development
in %



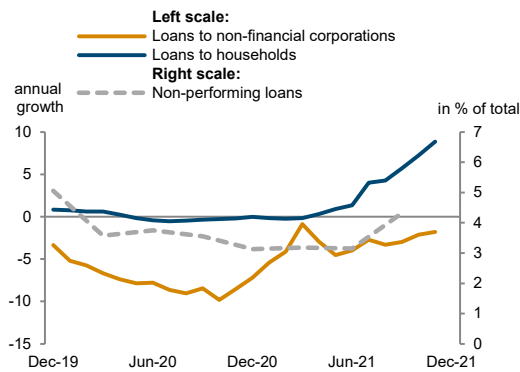
Unit labour costs in industry
annual growth rate in %



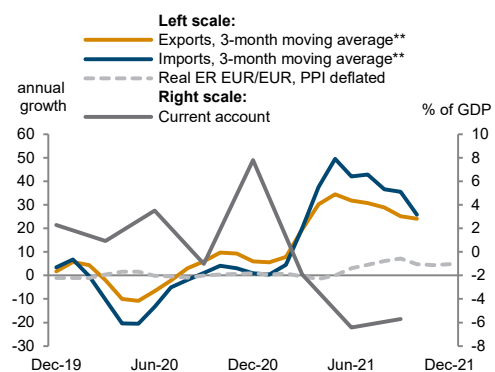
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



**EUR based.

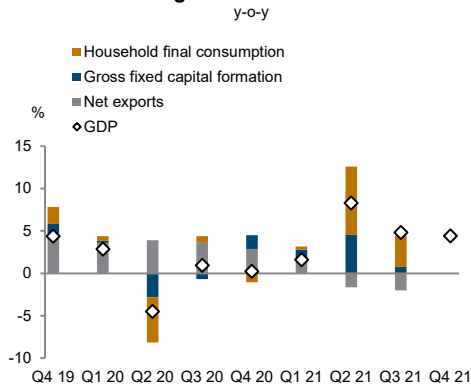
Source: wiiw Monthly Database incorporating Eurostat and national statistics.

Baseline data, country-specific definitions and methodological breaks in time series are available under:

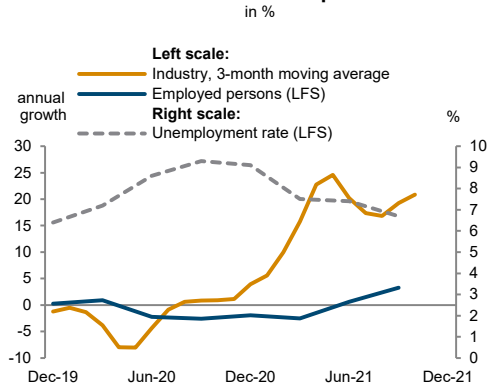
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Lithuania

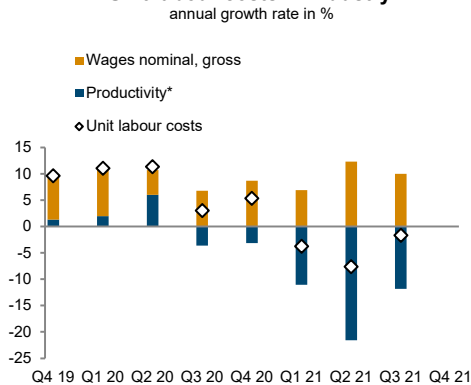
Real GDP growth and contributions



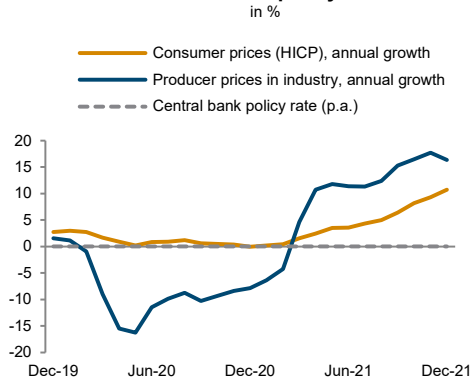
Real sector development



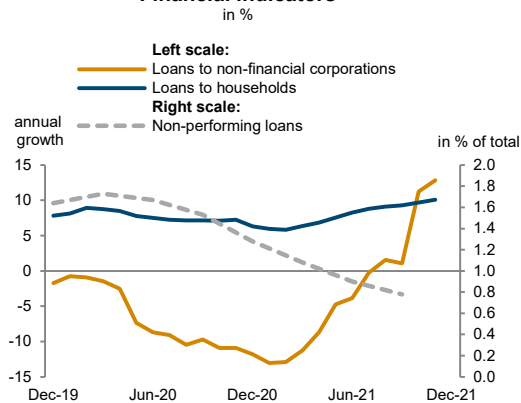
Unit labour costs in industry



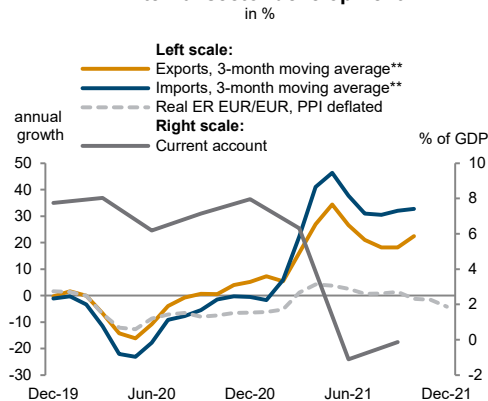
Inflation and policy rate



Financial indicators



External sector development



**EUR based.

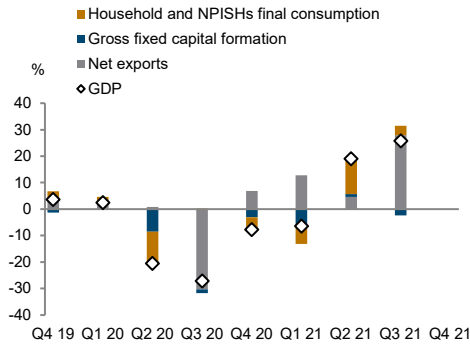
Source: wiw Monthly Database incorporating Eurostat and national statistics.

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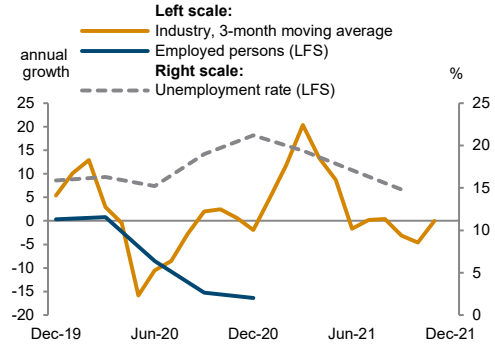
<https://data.wiw.ac.at/monthly-database.html>

Montenegro

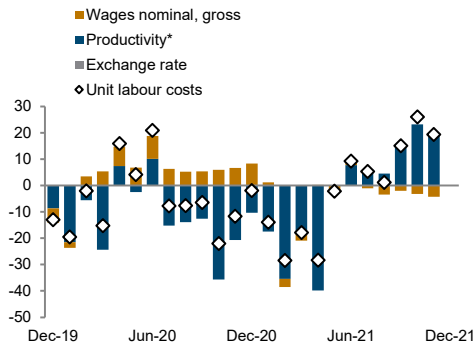
Real GDP growth and contributions
y-o-y



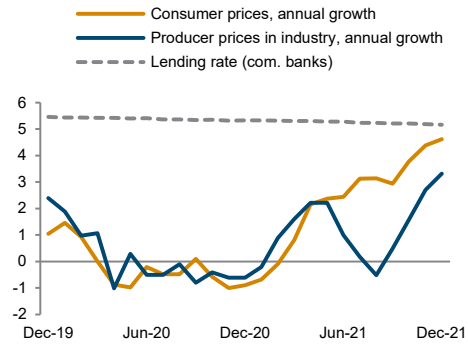
Real sector development
in %



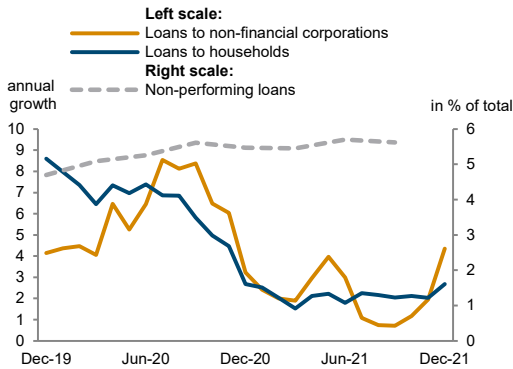
Unit labour costs in industry
annual growth rate in %



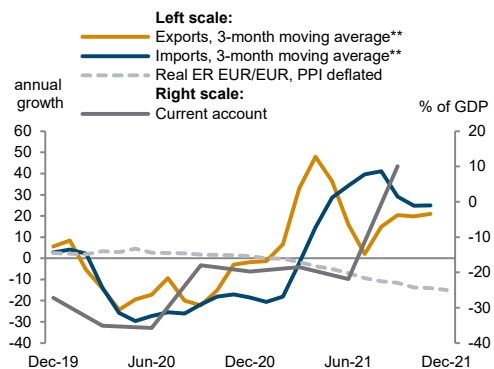
Inflation and lending rate
in %



Financial indicators
in %



External sector development
in %



**EUR based.

Source: wiiw Monthly Database incorporating Eurostat and national statistics.

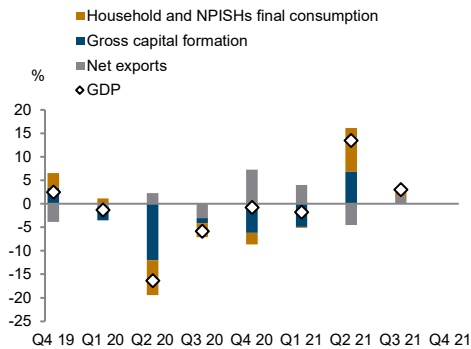
Baseline data, country-specific definitions and methodological breaks in time series are available under:

<https://data.wiiw.ac.at/monthly-database.html>

North Macedonia

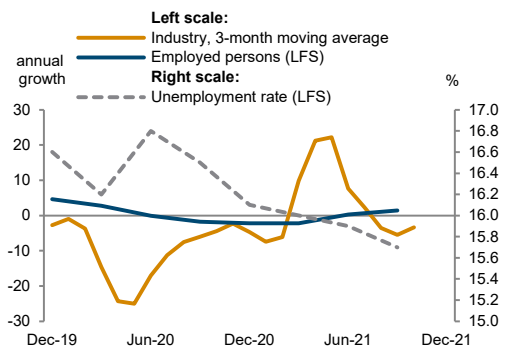
Real GDP growth and contributions

y-o-y



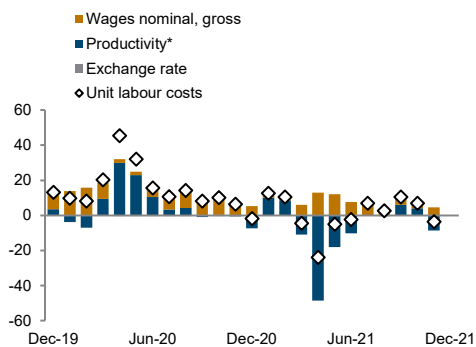
Real sector development

in %



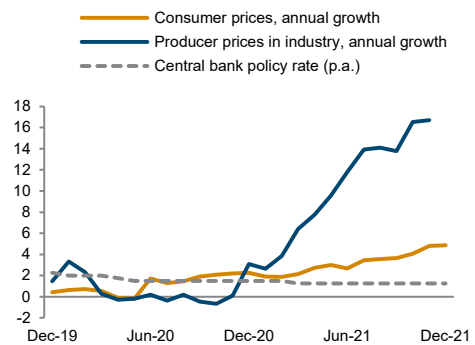
Unit labour costs in industry

annual growth rate in %



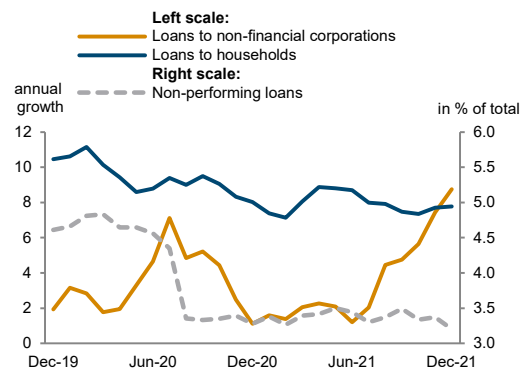
Inflation and policy rate

in %



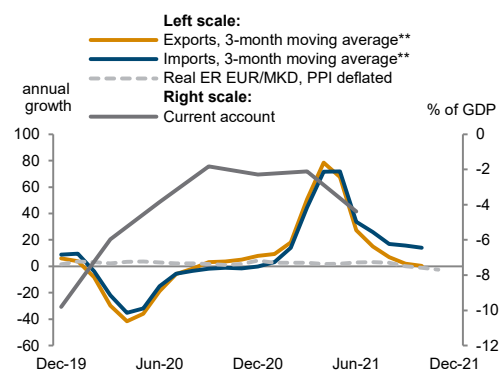
Financial indicators

in %



External sector development

in %



**EUR based.

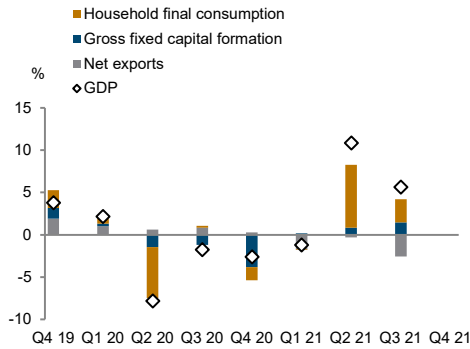
Source: wiiw Monthly Database incorporating Eurostat and national statistics.

Baseline data, country-specific definitions and methodological breaks in time series are available under:

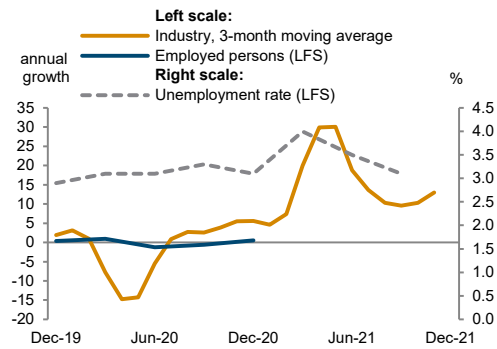
<https://data.wiiw.ac.at/monthly-database.html>

Poland

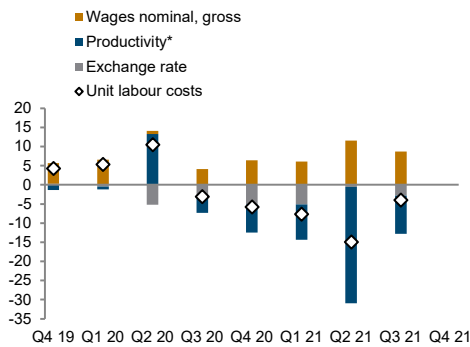
Real GDP growth and contributions
y-o-y



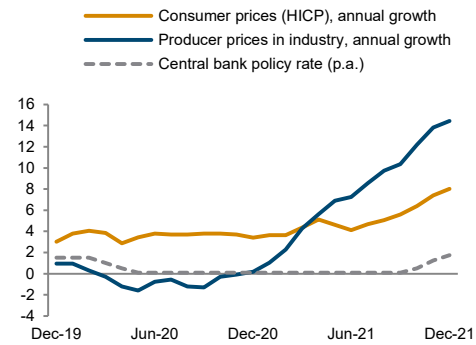
Real sector development
in %



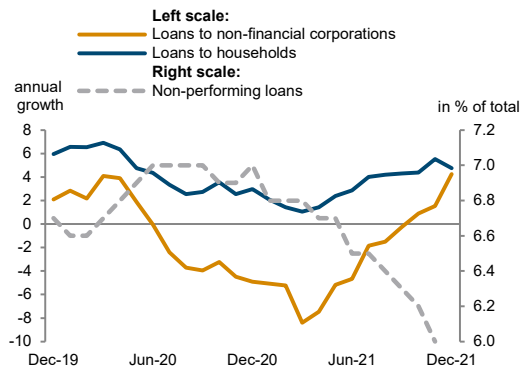
Unit labour costs in industry
annual growth rate in %



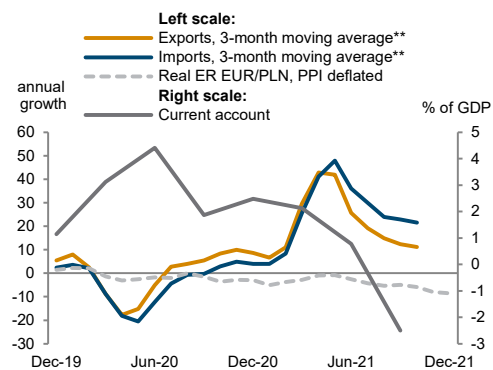
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



**EUR based.

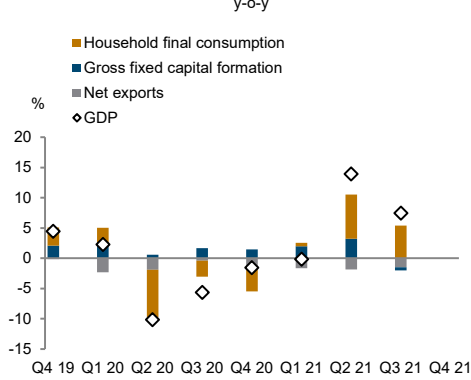
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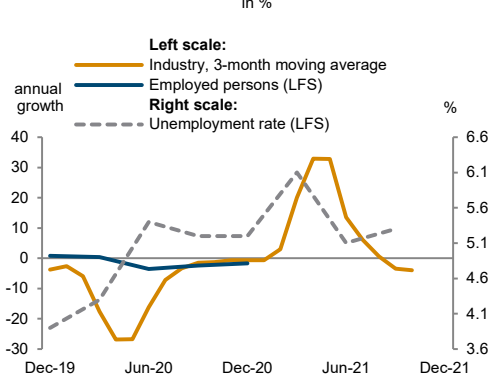
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Romania

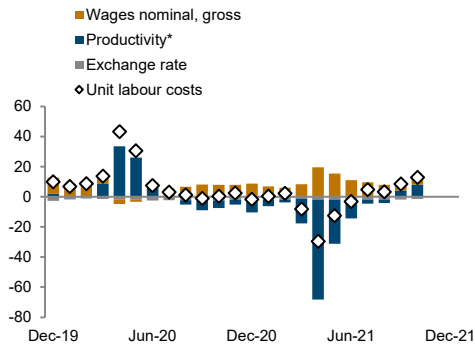
Real GDP growth and contributions



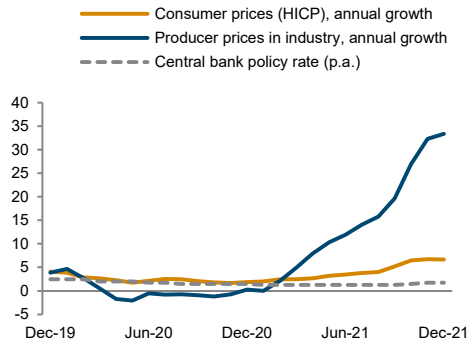
Real sector development



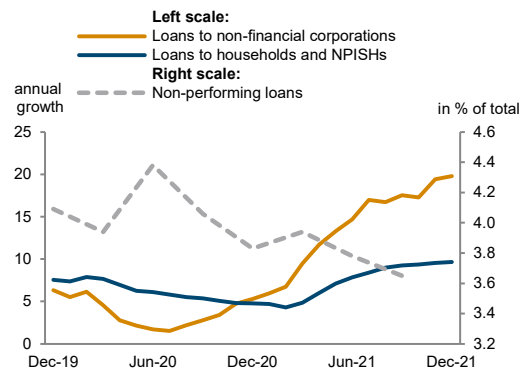
Unit labour costs in industry



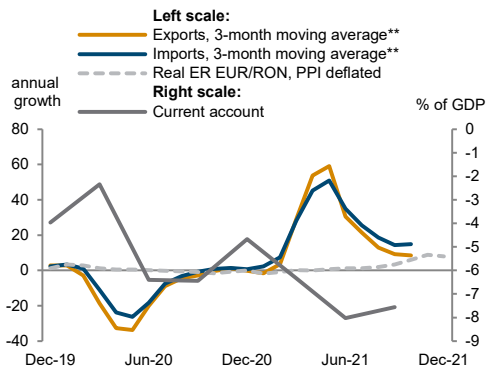
Inflation and policy rate



Financial indicators



External sector development



**EUR based.

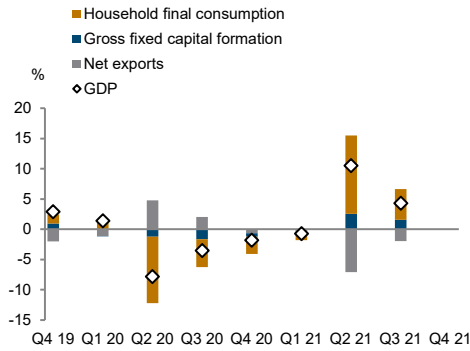
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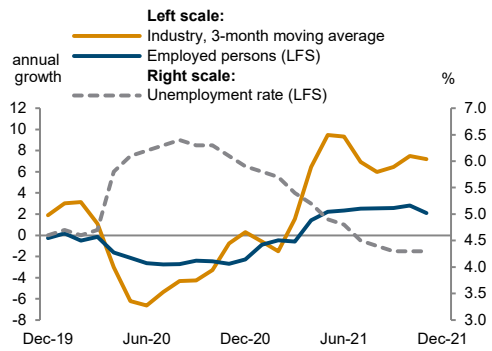
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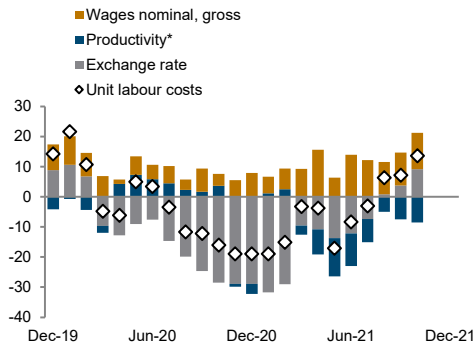
Real GDP growth and contributions
y-o-y



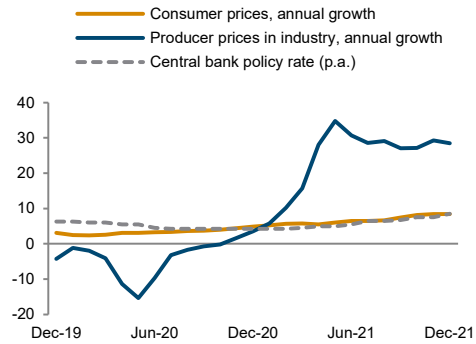
Real sector development
in %



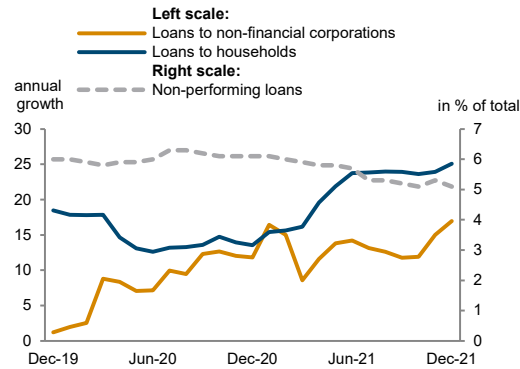
Unit labour costs in industry
annual growth rate in %



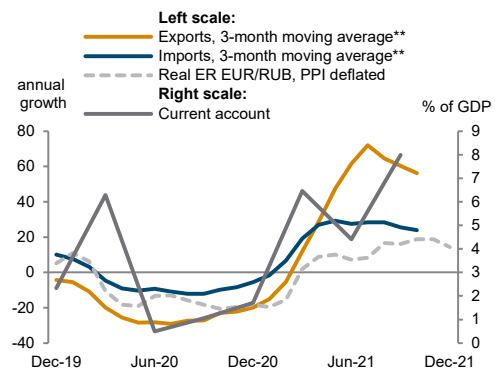
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



**EUR based.

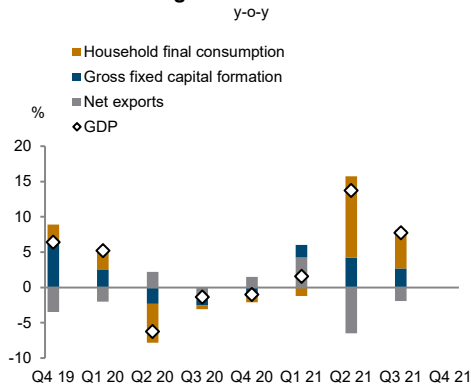
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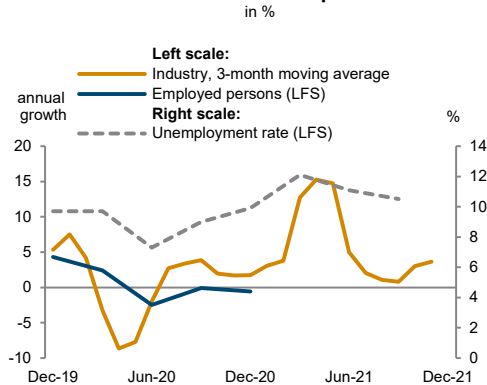
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Serbia

Real GDP growth and contributions



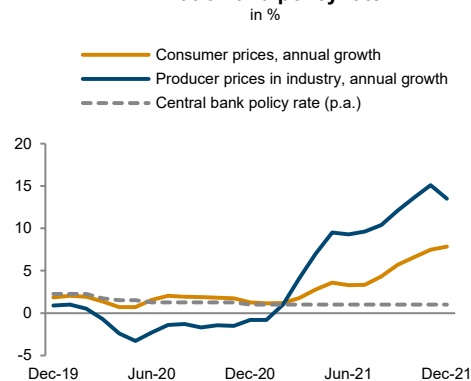
Real sector development



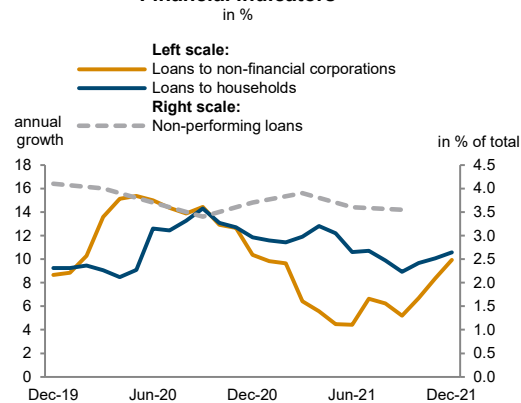
Unit labour costs in industry



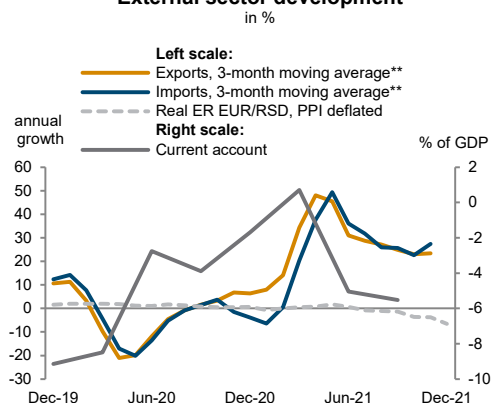
Inflation and policy rate



Financial indicators



External sector development



**EUR based.

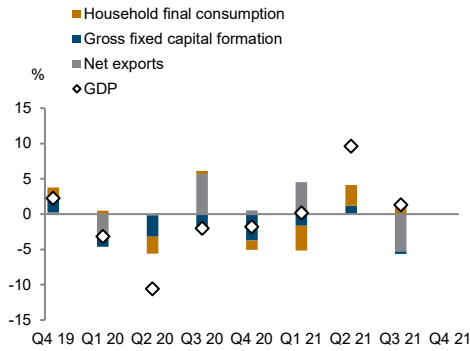
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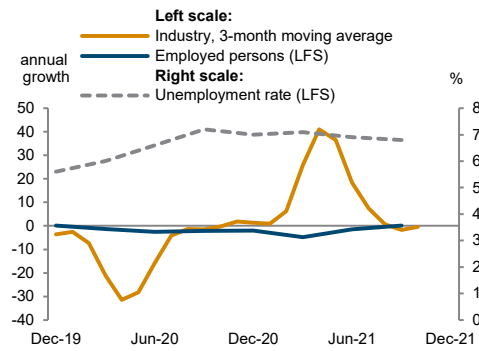
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Slovakia

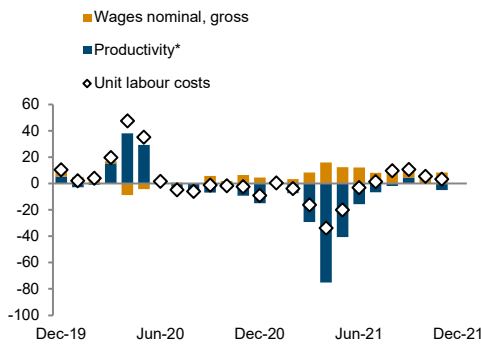
Real GDP growth and contributions
y-o-y



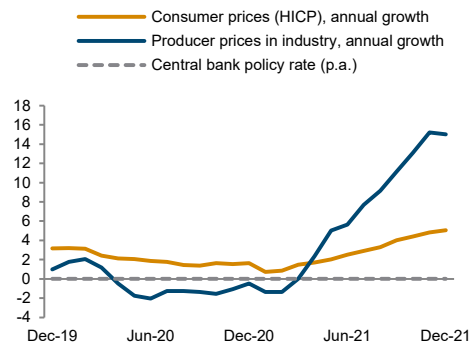
Real sector development
in %



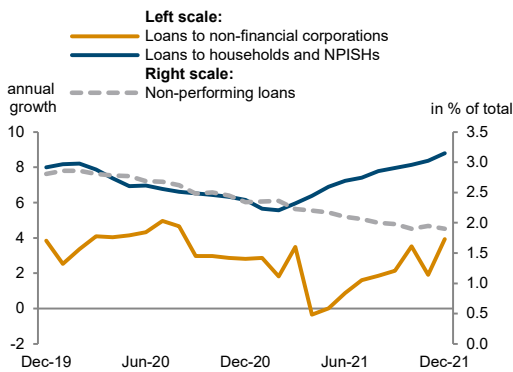
Unit labour costs in industry
annual growth rate in %



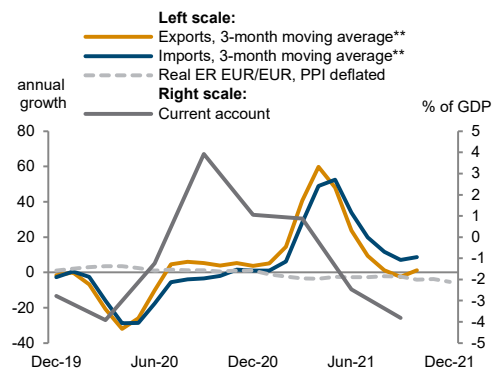
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in %



Financial indicators
in %



External sector development
in %



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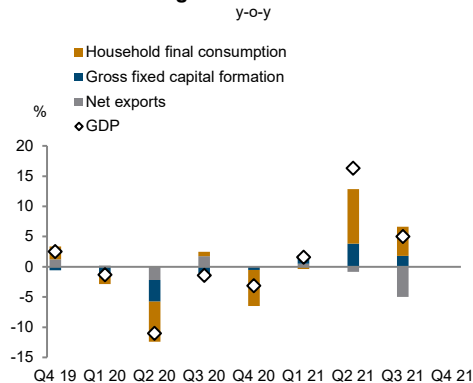
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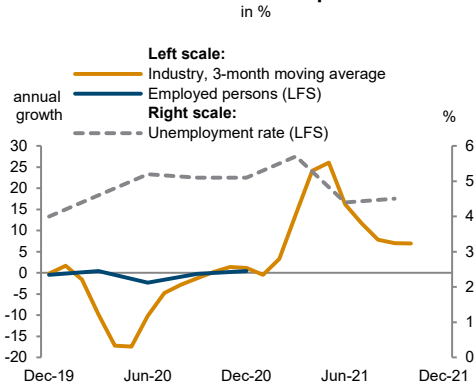
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Slovenia

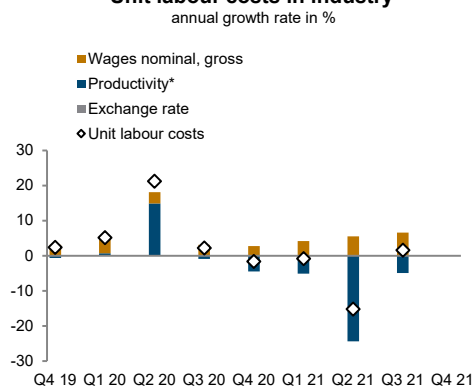
Real GDP growth and contributions



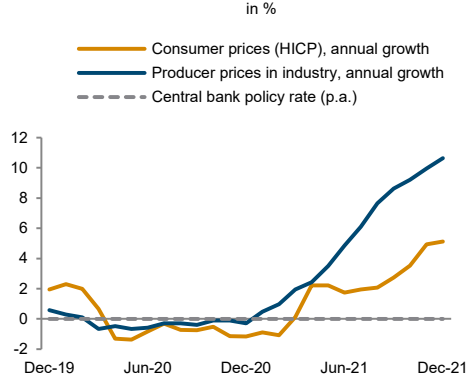
Real sector development



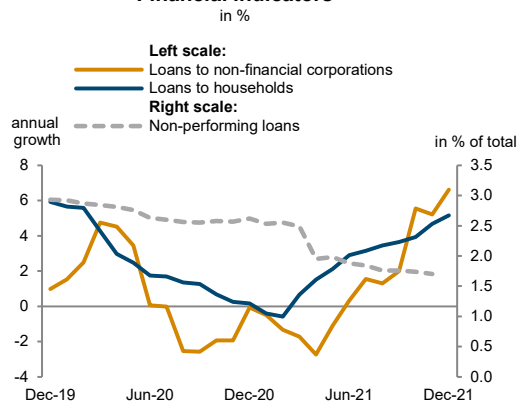
Unit labour costs in industry



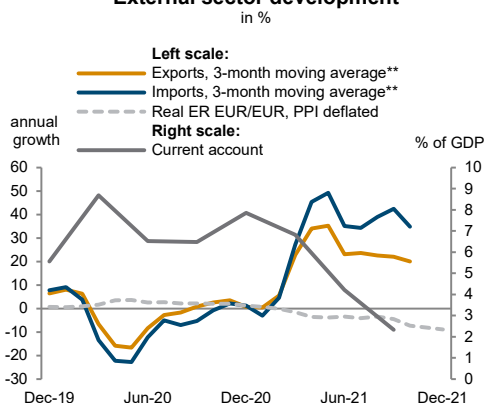
Inflation and policy rate



Financial indicators



External sector development



**EUR based.

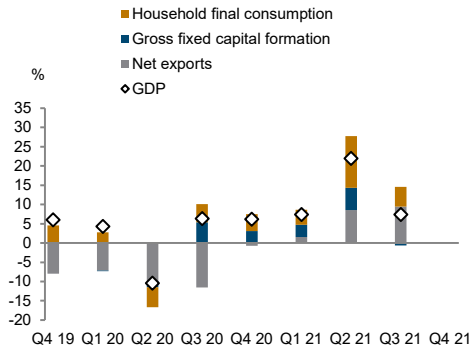
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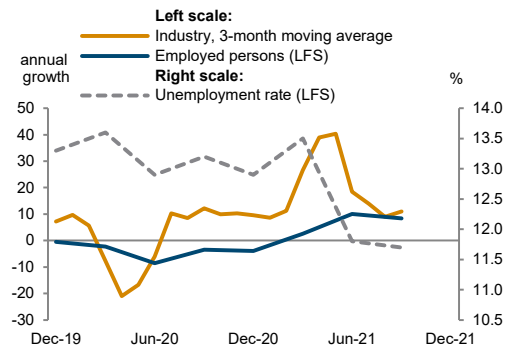
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Turkey

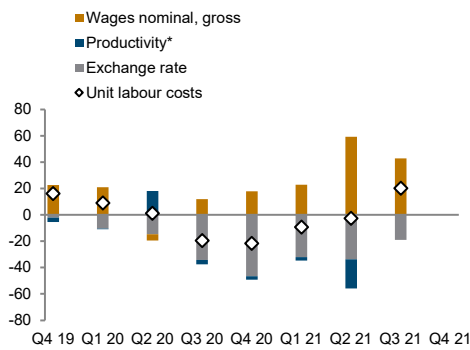
Real GDP growth and contributions
y-o-y



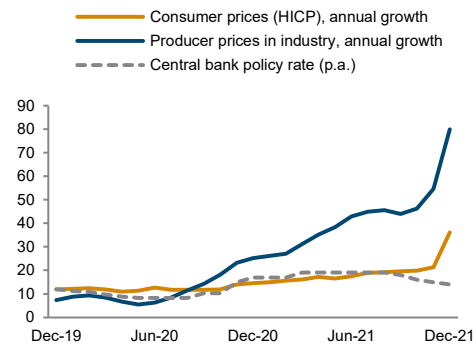
Real sector development
in %



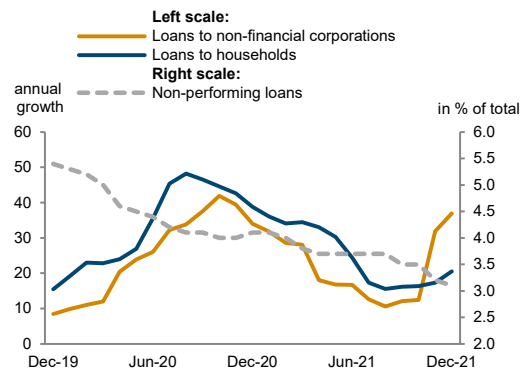
Unit labour costs in industry
annual growth rate in %



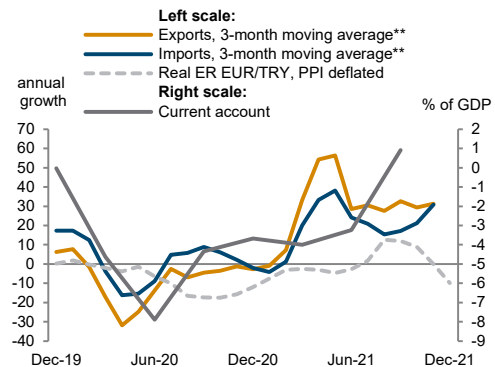
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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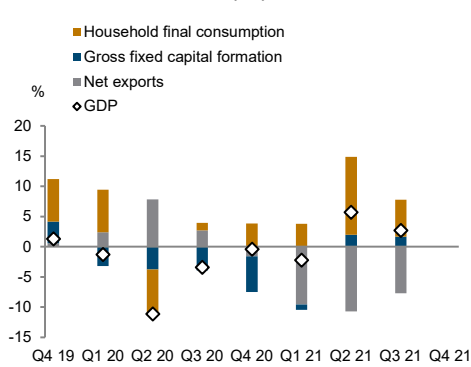
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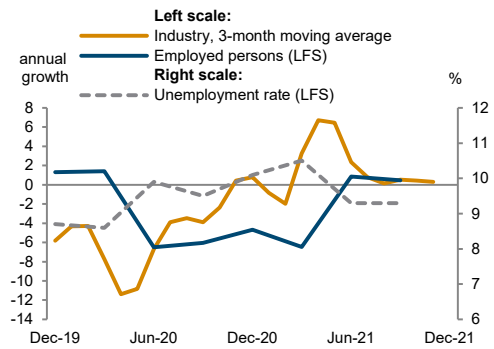
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Ukraine

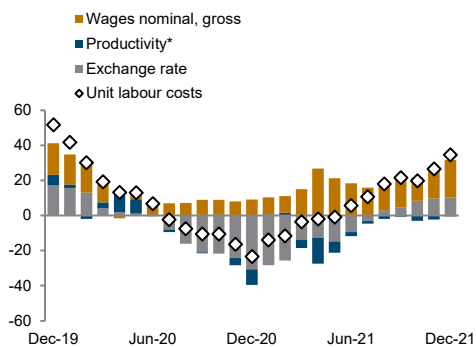
Real GDP growth and contributions



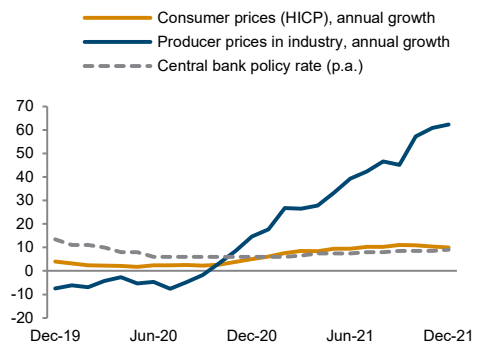
Real sector development



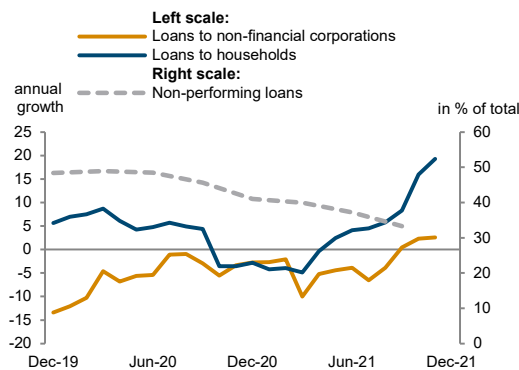
Unit labour costs in industry



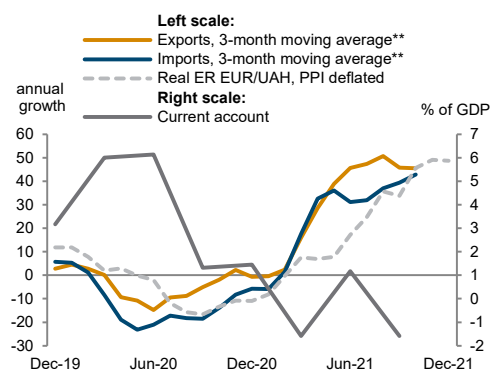
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