

EU-CEE at the Forefront of Electric Vehicle Production and Export

Into the Maelstrom - The EU in the *Zeitenwende*

Russian Energy Dependence and European Inflation

Rising Public Debt Does not Drive up Short-term Interest Rates



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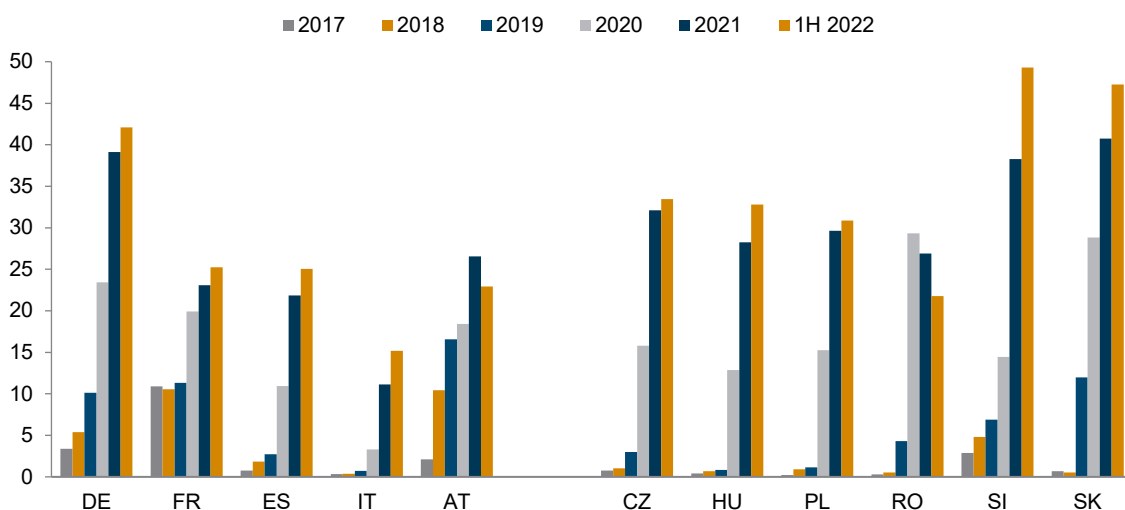
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Chart of the month: EU-CEE at the forefront of electric vehicle production and export

BY DORIS HANZL-WEISS

The automotive industry plays a prominent role in EU-CEE countries. In particular, Slovakia, Czechia and Hungary (but also Romania) are heavily involved in this industry, which accounts for about 20% of manufacturing value added in those three countries (and 14% in Romania) (as of 2019). As such, the structural changes affecting the automotive sector at a global level are of particular significance for those economies, and the question of how to cope with them is of vital importance for the future development of the industry. In the EU, concerns about climate change have given rise to a wave of policies aimed at reducing greenhouse gas emissions, and since 2020 that has led to an increase in the number of pure battery electric vehicles, plug-in hybrid electric vehicles and hybrid electric vehicles registered. Still, there is a long way to go, as these cars make up only 2.3% of the European passenger car fleet of today.

Figure 1 / Exports of electric and hybrid cars, as a percentage of all cars exported



Note: Electric vehicles encompassing pure battery electric vehicles (BEV), plug-in hybrid electric vehicles (PHEV) and hybrid electric vehicles (HEV).

Source: Eurostat Comext.

In order to see how EU-CEE countries have turned towards the production of electric vehicles, we should look at the share of exports of electric vehicles in total car exports (Figure 1). As one can see, before 2019 the share of electric vehicles exported was tiny. But then it jumped in 2020 and nearly doubled in 2021: that year, the share of electric vehicle exports was about 40% in Slovakia and Slovenia, and it reached almost 50% in the first half of 2022. In other EU-CEE countries, the share has been about 30%, which is higher than in France, Spain or Italy. Only in Germany has it been higher. The future expansion of electric vehicle production announced by car manufacturers, and the new manufacturing capacities dedicated to electric vehicle production (such as the BMW plant in Hungary or

the Volvo plant in Slovenia), will increase this share in the future. Still, the move towards electric vehicles is only in its infancy and the outcome remains uncertain. Further efforts must be undertaken by the EU-CEE countries, if they are to deal successfully with this structural change.¹

¹ For further information on the automotive industry, see the most recent OeNB/EIB/wiiw study: J. Delanote, M. Ferrazzi, D. Hanzl-Weiß, A. Kolev, A. Locci, S. Petti, D. Rückert, J. Schanz, T. Slacik, M. Stanimirovic, R. Stehrer, C. Weiss, M. Wuggenig and M. Ghodsi (2022), *Recharging the Batteries: How the electric vehicle revolution is affecting Central, Eastern and South-Eastern Europe*, EIB Economics-Thematic Studies, March, <https://op.europa.eu/en/publication-detail/-/publication/36ebc859-ae3e-11ec-83e1-01aa75ed71a1/language-en> and D. Hanzl-Weiss (2022), The automotive sector in EU-CEECs: Challenges and opportunities, FIW Policy Brief No. 56, December, https://fiw.ac.at/fileadmin/Documents/Publikationen/Policy_Briefs/56_FIW_Policy_Brief_Hanzl-Weiss.pdf

Opinion Corner*: Into the Maelstrom - The EU in the *Zeitenwende*

BY HUBERT GABRISCH

Multiple crises have hit the European Union since 2008, and a new global order is evolving. The EU needs to adjust its 1990s-era treaties in the direction of more democracy and sovereignty. There is a European momentum to reform; yet the political leadership that would enable the opportunity to be seized is lacking.



Illustration of a maelstrom by Harry Clarke (1919) for the Edgar Allan Poe short story 'A Descent into the Maelstrom'.¹

In Edgar Allan Poe's 1841 short story 'A Descent into the Maelstrom', a fisherman tells the narrator how he once ended up in an enormous whirlpool near the Lofoten Islands (Norway), which engulfed his boat and the crew, even as he miraculously escaped. To become the natural phenomenon that is a maelstrom, in a rough sea thousands of smaller and overlapping vortices can coalesce into a massive whirlpool of up to 1.5 kilometres in diameter, from which there is normally no escape.

We might find parallels between this story and the situation in which the European Union currently finds itself: surrounded by choppy global seas, plagued by multiple problems ranging from the Global Financial Crisis to the fallout from the Russian aggression against Ukraine, and with fresh adversities lying ahead (energy, inflation, high public debt).

Indeed, disasters never come alone. All of these difficulties are beginning to merge into a large crisis, which a German commentator has described as a 'fateful moment' in June 2022 - that is, a moment of the utmost danger. Following on from the turning point in history (or *Zeitenwende* in German) of Russia's aggression in Ukraine, there is now a turning point in global, supra-national and national politics.

* 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 To be found here: <https://archive.org/details/talesofmysteryim01poee/page/96/mode/2up?ref=ol&view=theater>

A TURN TO A SOVEREIGN EU MEANS A TURN TO A DEMOCRATIC EU

We know from previous turning points in history that they normally give rise to a new global order in political, as well as economic terms: witness the collapse of the Soviet Union and the socialist system (1989-1992). Now again, the EU has to find its place in an approaching new order. Its contours are not yet well defined, but one thing does seem to be clear: a Union that seeks to safeguard the welfare and individual rights of its citizens and to defend its own democratic character needs sovereignty – not perhaps in every field of politics, but certainly in the important ones – if it is to become more resilient in the face of the present and coming crises. Thus, the current turning point requires substantial reform of the EU architecture.

But treaty revisions are something of a hot potato for the political leaders of the EU and for many of their advisers in the main think tanks – even though the broader academic community has for many years been discussing the deficiencies of the EU architecture. In a nutshell: the European Council and the Council of Ministers are the ultimate decision-making bodies, but they represent the specific interests of their members' countries. The European Commission executes their decisions using formalised procedures and rules and is, therefore, merely a technocratic body. The European Parliament has only a bit part to play: it does not possess the legislative initiative and exclusive budget rights that the parliament of a nation state enjoys. Moreover, voting rights in the European Council and the Council of Ministers are weighted; and given the possibility of veto on sensitive matters, a single national government can block substantial reforms in European affairs – including the abolition of the right of veto itself.

Democratic reforms would equip the EU with what French President Emmanuel Macron probably had in mind when he called for the creation of a new 'European sovereignty', without clarifying what he actually meant by that. In fact, greater sovereignty would make the EU economically and politically stronger when dealing with the aggravating systemic rivalry with autocratic regimes and when addressing the fallout from global crises. In order to attain sovereignty, the primary guide to EU reforms should be not a *dethronement* of politics (using the famous phrase of Friedrich August von Hayek in outlining his neoliberal vision of a supra-national order), but rather a *re-enthronement* of politics, aimed at the democratic control of EU decisions and the replacement of mere technocratic governance in those policy fields that should belong among the EU's future competences. Democratic changes would elevate the status of the European Parliament to that of a body with the customary rights of a parliament with respect to European affairs, such as external economic relations, the single market, or elements of defence and security policy.

From the economic point of view, it would also be desirable to upgrade the role of European fiscal policies through the establishment of a central body, which could become a powerful partner for the (hitherto detached) European Central Bank (ECB). Greater democratic control would include giving the European Parliament the right to select and deselect the president of the Commission and the directorate of the ECB, as well as ensuring abolition of the right of veto by EU member countries. All these reforms would require treaty changes. But unfortunately, they are a 'non-topic' in official EU statements.

CONFERENCE ON THE FUTURE OF EUROPE: GREATER TRANSPARENCY INSTEAD OF GREATER DEMOCRACY

A recent example of how the issue of reform is treated as a hot potato is the Conference on the Future of Europe, launched by the European Commission. It was a first attempt by the Commission – often accused of being a technocratic body that lacks transparency – to demonstrate its willingness to get in touch with the broad audience of people. In June 2022, the Commission published the outcome of the conference, explicitly referencing ‘democracy’, but as usual contained in long, densely written documents.²

The problem with canvassing the public at large in this way is how to consolidate the great diversity of thousands of proposals from individual citizens, in order to arrive at a consistent and practicable reform concept. The first filter set by the Commission was the selection of conference participants; the second filter was the selection of nine overarching topics.³ And here, the Commission chose to filter the proposals according to its own technocratic competences: its focus was on greater transparency, while the need for democratic control – as voiced by the public over many years and as requested by just a handful of the (carefully sifted) conference participants – was ignored. In the Commission’s view, ignoring the topics of democratic control and treaty changes was justifiable, since it is the European Council, and not the Commission, that is responsible for taking steps towards substantial reforms. However, transparency is a function of democratic control: when that is lacking, sooner or later the bureaucracy will revert to operating in secret. Therefore, the Commission’s view on the future of the Union remains very limited.

THE EUROPEAN MOMENTUM

Most Europeans still dream the European dream: they feel European, even though nationalist parties are in government in some member countries. The summer 2022 Standard Eurobarometer survey showed increased citizen confidence in the EU, following the Russian attack on Ukraine, Macron’s repeat victory in the French presidential election, and the Brexit hangover in the UK. The democratic ideal is proving increasingly attractive – not only in Europe, but also in countries with an authoritarian regime. Indeed, the momentum exists for a *Zeitenwende*.

In his keynote speech to this institute’s 2018 spring seminar, the Bulgarian political scientist Ivan Krastev made it clear that if it is to be carried through, this momentum will rely on the capabilities, the ambitions and the fortunes of the leading European politicians – not on the technocratic Commission. Muddling through would be the worst possible option. In a time of deep crisis, sticking to the same old policies and rules would merely create uncertainty, and probably lead into a maelstrom of multiple crises. Now is the time for responsible leaders and substantial reform.

² https://ec.europa.eu/info/strategy/priorities-2019-2024/new-push-european-democracy/conference-future-europe_en#documents

³ https://ec.europa.eu/info/sites/default/files/annex_0.pdf

Russian energy dependence and European inflation

BY ESTHER LINTON-KUBELKA AND ROMAN STÖLLINGER

Despite a common monetary policy and closely synchronised business cycles in the euro area, the increase in inflation since the outbreak of war in Ukraine has varied considerably across member states. As the increase in inflation across the EU is positively associated with energy dependence on Russia, the overreliance on Russian gas and oil supplies may turn out to be rather costly both economically and politically. More evidence-based policy advice is warranted (rather than following groups with a vested interest).

INTRODUCTION

The invasion of Ukraine by Russia in February 2022 has had many political, economic and security-related implications for the West. Following the military action, the International Monetary Fund revised its growth forecast for the European Union for 2022 downward to 2.9% (from the previous 4%), on account of the economic impacts of the ongoing conflict (International Monetary Fund, 2022, p. 6). In particular, the war has revealed the economic and energy security risks associated with Europe's dependence on Russian energy imports.

In view of the dampening effect of sharp energy price rises on the business cycle (with even the threat of a 'cold winter' if Russia were to cease its gas supplies entirely), investigations into the reliance – or overreliance – on Russian energy have been launched in several EU member states. In Austria, one of the EU countries most dependent on Russian gas, for example, senior managers at OMV, the country's partially state-owned mineral oil company,¹ were quizzed by a parliamentary investigative committee on the company's ties with Gazprom. The hearings included questions regarding a long-term gas supply contract between OMV and Gazprom, which in 2018 was extended until 2040.² To date, details of this contract have not been made public for reasons of business confidentiality. Many influential economists, such as Joseph Stiglitz, have argued that the overreliance on cheap Russian energy was a political mistake and that energy companies should not reap windfall profits as a consequence of their mistakes, which are to the detriment of the general population.³

Given recent developments, and with the risk of energy shortages in Europe still looming, it is worth investigating the potential impact of the EU's dependence on Russian energy imports on the development of inflation within the bloc. In particular, we explore whether EU member states with greater energy dependence have experienced higher inflation than other member states.

¹ The Austrian government holds a 31.5% stake through the public holding company ÖBAG.

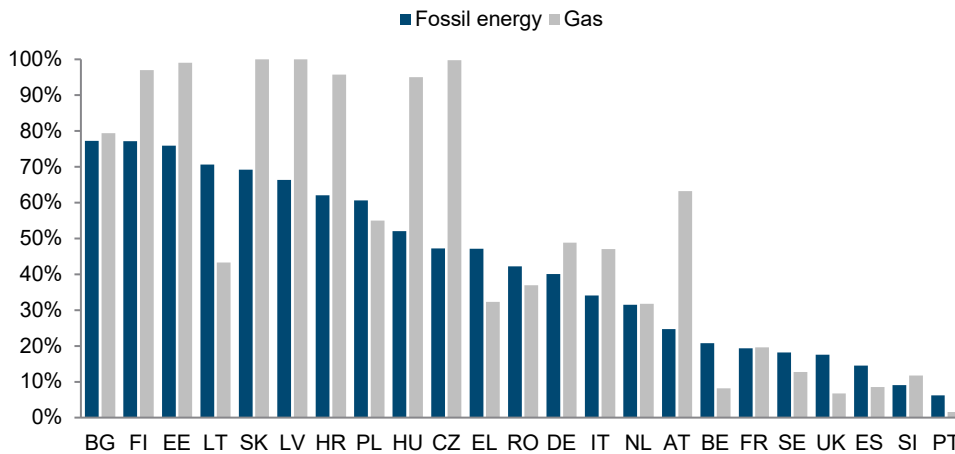
² See: 'OMV, Russland und die Politik', available at: <https://orf.at/stories/3283876/> (26.09.22).

³ J. Stiglitz, 'Die ganze Denkweise ist falsch', *Der Standard*, 24/25 September 2022.

ENERGY DEPENDENCE – THE EU’S ACHILLES HEEL

The EU’s dependence on Russian energy imports presents an immense challenge for Europe. In 2020, Russia accounted for more than 43% of total EU gas imports, 29% of oil imports and 53% of solid fossil fuel imports (Eurostat, 2022), though energy dependence rates vary considerably across EU member states (Figure 1).

Figure 1 / EU member states’ energy dependence on Russia, 2019



Note: Energy imports from Russia as a percentage of total energy imports. Fossil energy is the average of the oil import ratio, the gas import ratio and the solid fossil fuel ratio.

Source: Eurostat database.

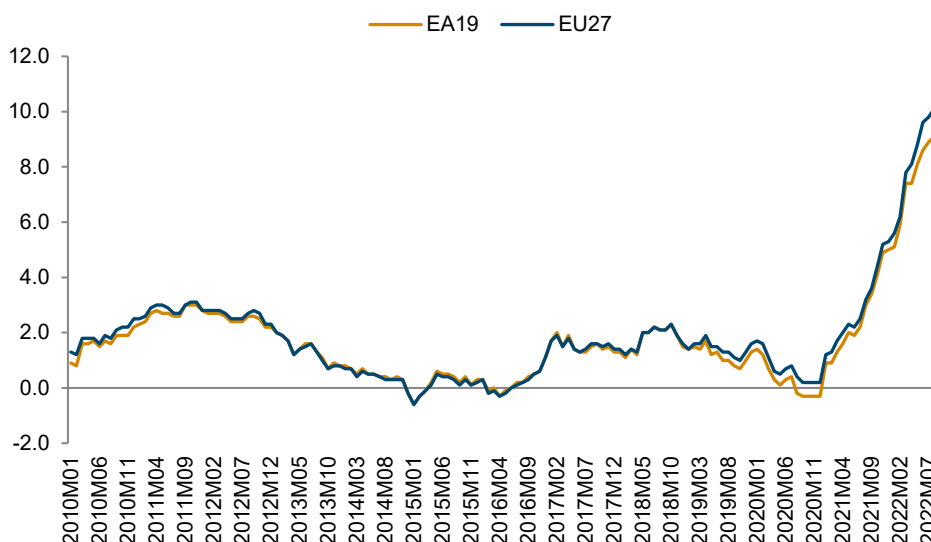
In March 2022, the European Commission announced its goal of reducing EU imports of Russian gas by two thirds before the end of the year, and of halting all Russian fossil fuel imports well before 2030 (European Commission, 2022). In addition, the EU’s sixth package of Russian sanctions bans the purchase and import transfer into the EU of crude oil and petroleum products that originate from Russia or that have been exported from that country. On 5 August 2022, the Council of the European Union adopted a regulation for EU countries to voluntarily reduce natural gas demand by autumn 2022 (Whitecase, 2022). The regulation enables the Council, at the instigation of the Commission, to implement a ‘mandatory gas demand reduction for all Member States’ (Council of the European Union, 2022).

The war in Ukraine has caused disruption to the long-standing energy trade flows from Russia to the EU, without completely severing them. Still, many EU member states have ramped up their efforts to diversify their energy supplies, reaching out to other potential suppliers from Norway to Qatar. This has come at a time when the energy market is already tight and prices are high, due to the recovery in demand following the easing of the COVID-19 pandemic.

AN UNPRECEDENTED RISE IN INFLATION IN THE EURO AREA

The years 2020-2022 witnessed unforeseeable 'Black Swan' events – the COVID-19 pandemic in 2020 and the war in Ukraine from February 2022. These events have left their mark on inflation rates in the EU. Initially, the pandemic and the associated sharp contraction in economic activity damped down inflationary pressures. However, more recently expansionary monetary policy and fiscal measures to combat the economic slump during the pandemic have fuelled consumption and, arguably, inflation. Energy prices have also contributed to this. As the economy started to recover in the second half of 2020, there was a sharp surge in energy demand, resulting in a tight market. As a result, prices started to rise in the last months of 2020 (Figure 2). The supply-chain disruptions – to a large extent themselves a product of the COVID-19-related lockdowns – added to the uptick of prices in the EU and elsewhere. And the rise in the inflation rate accelerated in February 2022, following the Russian invasion of Ukraine. By October 2022, the inflation rate in the EU had reached 11.5% on an annual basis.

Figure 2 / Inflation rates in the EU and the euro area, 2010-2022



Note: EU27 is the EU as of 2020. Inflation rates are annual changes against the same month of the previous year.

Source: Eurostat database.

The historic hike in inflation rates across the EU member states has been fuelled by several factors. Undoubtedly, the primary driver is the price of food and energy; however, other influences – such as the European Central Bank's decade-long super-loose monetary policy and the supply-chain disruptions mentioned above – have also contributed to the general trend.

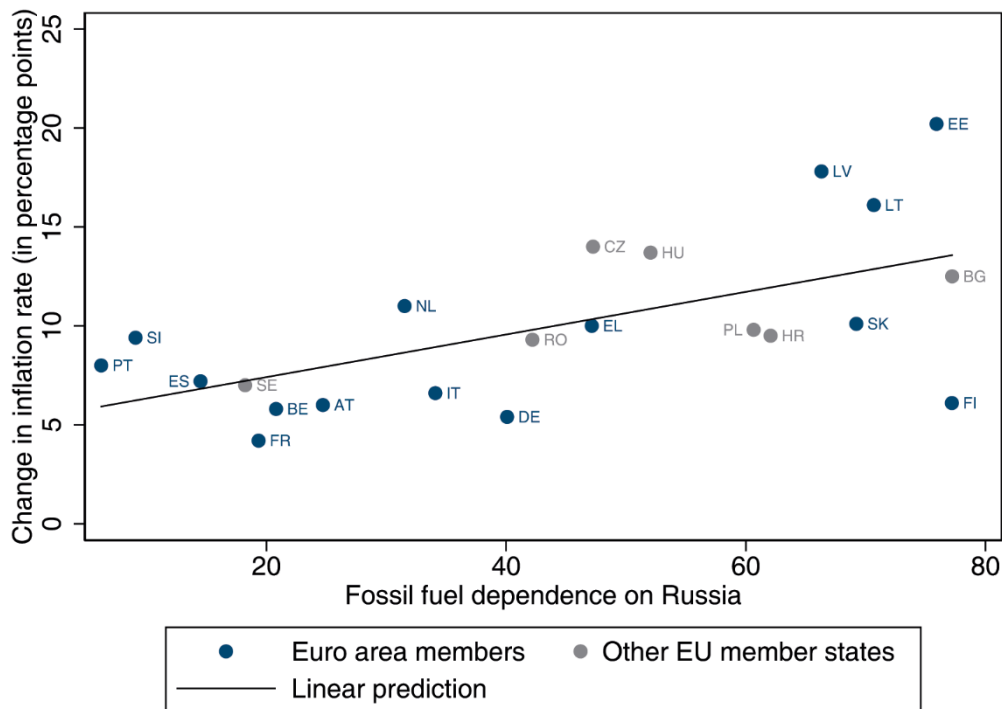
RUSSIAN ENERGY DEPENDENCE MATTERS!

High inflation has an impact on the daily lives of European citizens, with soaring prices for a variety of goods and services, ranging from food and beverages to heating. The increase in the rate of inflation, however, varies considerably from one member state to another. Moreover, changes in the rate of inflation also differ across the euro area, despite the common monetary policy. This may be explained by the fact that a large part of the rise in the inflation rate, especially since the war in Ukraine, is accounted for by imported inflation emanating from an energy-related supply-side shock. As a result, energy dependence has become a primary concern in Europe and beyond.

While all EU member states have been affected by the rise in energy prices, the impact has differed from country to country. Therefore, a key question is: has the level of dependence on Russian energy had any bearing on the inflation rate?

To answer this question, a regression model was set up that related the rise in the inflation rate to the dependence on energy from Russia. The outcome of this model suggests that there is indeed a positive and statistically significant relationship between the change in the inflation rate between August 2021 and August 2022 and a country's dependence on Russian gas (Figure 3).

Figure 3 / Fossil fuel dependence and change in inflation rates



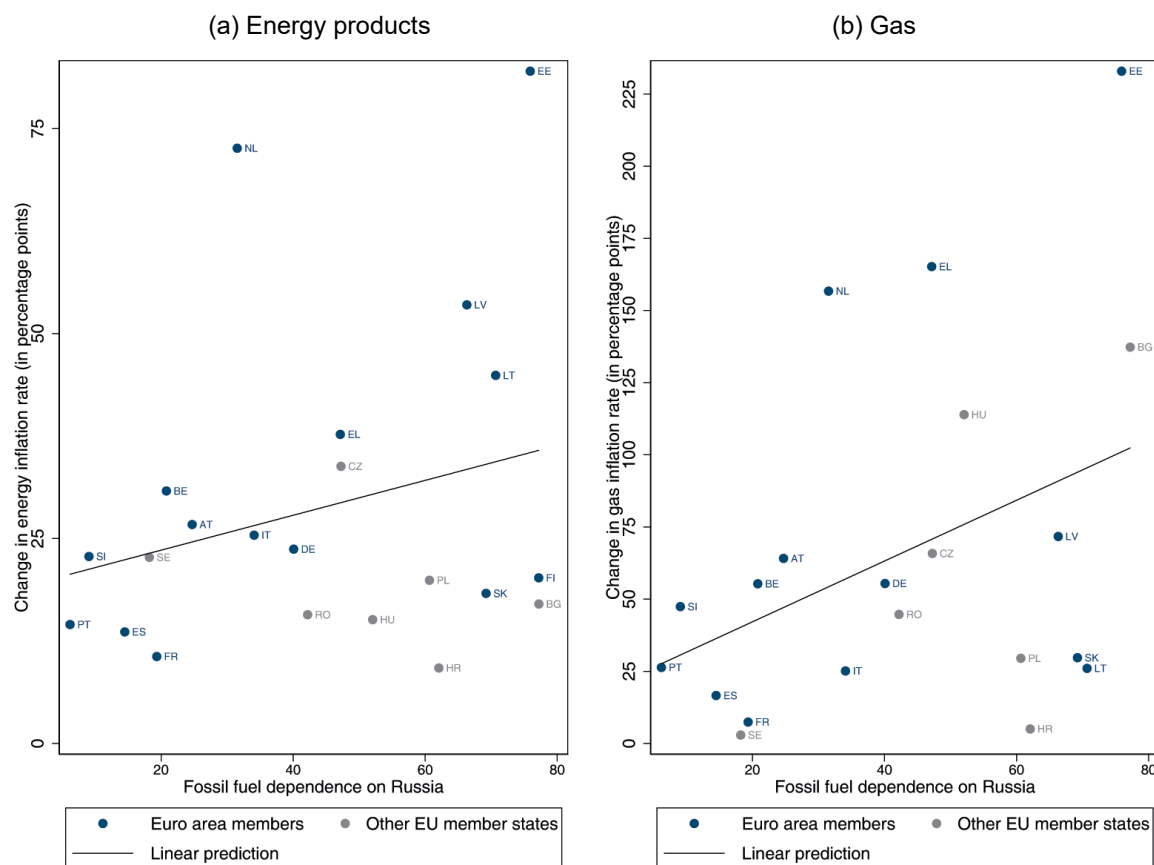
Note: The change in inflation is the annual change between August 2021 and August 2022. The linear prediction is the regression line obtained from a bivariate regression of the change in the overall inflation rate on dependence on Russian fossil fuels (as a percentage of total fossil fuel imports in 2019).⁴ The slope coefficient is statistically significant at the 1% level.

Source: Eurostat database, authors' own estimations.

⁴ This graph was created using the latest available data provided by each member country. Regarding natural gas, data for Austria had to be taken from 2013; for Sweden and Norway from 2020; and for Hungary from 2009.

At this stage, it should be mentioned that the econometrically captured positive association between the change in the inflation rate and the energy dependence on Russia presented in Figure 3 is partly attributable to the weight of energy in the consumption basket. On average, the weight of energy items in the Harmonised Index of Consumer Prices (HICP) is higher in EU-CEE countries, which also recorded bigger increases in their inflation rates than the countries of Western Europe. To account for this, we also looked at the relationship between the dependence on Russian energy imports and the change in inflation rates *in energy products and gas*, respectively (Figure 4). It turns out that, in both cases, a clear positive relationship with Russian energy dependence still holds. The relationship for gas is slightly stronger than for energy products overall. This was to be expected, given the lower substitutability of gas (see below).⁵

Figure 4 / Fossil fuel dependence and change in energy-related inflation rates



Note: The change in inflation is the annual change between August 2021 and August 2022. The linear prediction is the regression line obtained from a bivariate regression of the change in the inflation rate of energy/gas on dependence on Russian fossil fuel (as a percentage of total fossil fuel imports in 2019).

Source: Eurostat database, authors' own estimations.

⁵ The size of the coefficients in these regressions is higher than in the model for the overall inflation rate, because the changes in inflation rates were much higher for gas and energy. However, the statistical significance is lower in both cases (with p-values of 0.092 and 0.255, respectively).

POLICY IMPLICATIONS

The results of the above analyses should provide a wake-up call for politicians. First, they imply that the overreliance of many EU countries on (cheap) Russian energy could turn out to have been a costly gamble. With the supply of Russian oil and gas to EU member states seriously curtailed (or even cut completely) due to EU sanctions and/or Russia's retaliatory measures, EU member states are now forced to seek new sources of supply. Since for most EU member states the long-term supply contracts were presumably with the lowest-cost supplier,⁶ the switch to alternative suppliers implies additional cost, especially for gas, where substitution is more difficult owing to the infrastructure requirements (in the form of pipelines and/or liquefied gas terminals). Hence, in addition to search costs, the loss of Russia as a reliable energy supplier has also meant greater purchase prices per se – which were anyway spiralling upwards. Against this backdrop, the inability of EU countries to agree joint purchases of gas is clearly a missed opportunity to defray the extra costs.⁷

In addition to the economic costs, there are also potential political costs. Since large swathes of the population have been hit by inflation, voters may turn to more radical political parties. Hence, the myopic energy policy that was pursued by several EU member states – i.e. their overreliance on cheap Russian gas and energy more generally – could turn out to be extremely expensive politically, too.

Finally, alongside the huge economic (and potentially political) consequences, a heavy dependence on Russia has also resulted in deadlock among European countries in combating the aggressor. While dependence on Russia for natural gas, for example, is an infrastructural issue, it largely explains the different levels of willingness on the part of EU countries to impose sanctions on Russia in the wake of the war: France, for example, which is less reliant on Russia, was quick to advocate sanctions, whereas Germany was more hesitant. From the very beginning, Germany and certain other member states blocked initiatives to sanction fossil fuels (except for coal, the supply of which is the easiest to diversify).

CONCLUSION

Inflation is a complex phenomenon and the result of numerous factors, certainly including monetary policy and, in the current circumstances, additional policy measures such as price ceilings or subsidies on those products most affected (e.g. food and energy). The current surge in inflation, however, is largely on account of imported inflation. As such, it could have been softened (though probably not avoided) by a more far-sighted energy policy geared towards the diversification of both energy sources and sources of supply. One does not need to be an economic genius to figure out that putting all one's eggs in a single basket is unlikely to prove a winning strategy. Forecasts suggesting that energy might become scarce in the EU in the event of a cold winter in 2022/2023 highlight the current fragility of Europe's energy supply – a consequence of its dependence on Russia. The coming winter will be crucial: getting through it without Russian supplies could lead to diversification and a possible reduction in inflation. The loss of Russia as an energy import partner could force Europe to find other, more secure, ways of meeting its energy supply needs.

⁶ Unfortunately, the price arrangements in these contracts have still not been made public.

⁷ More precisely, the agreement on the EU-wide purchase of gas failed due to a lack of consensus on a price ceiling for gas within the EU, as those topics were jointly negotiated and a compromise on all issues was sought, but not reached.

This could be done through a twofold plan. First, Europe could encourage the diversification of energy supply by expanding its energy supply infrastructure and by seeking out alternative partners for the import of traditional energy sources. And second, the EU could go further in its plans for a green Europe and expand the infrastructure of renewable energy sources. If the current energy price shock sparks an acceleration in the (overdue) green transition, that could at least be a silver lining in the economic cloud that the war-related energy price shock has inflicted on the EU.

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Rising public debt does not drive up short-term interest rates¹

BY LEON PODKAMINER

Econometric models for the European countries, the US and Japan suggest that increasing public debt may have been of only minor importance in determining short-term real interest rates. Moreover, the effect appears to be negative almost everywhere: rising public debt has tended to reduce short-term interest rates, if only fairly marginally in most cases. The lingering opinion that fiscal deficits can drive up interest rates is not confirmed by the data.

‘CONVENTIONAL WISDOM’ AND INCONCLUSIVE EVIDENCE

The possibility that fiscal deficits may crowd out private spending used to be the focus of mainstream macroeconomics, especially during the heyday of monetarism (both applied and theoretical). The ‘crowding-out’ idea also lies behind the concept of ‘expansionary fiscal consolidation’ (Giavazzi and Pagano, 1990).² Rising fiscal deficits were often supposed to be capable of exerting a negative effect on private spending – primarily, if not exclusively, by driving up interest rates (Blanchard, 1991). Quantifying the effect of fiscal deficit or public debt on interest rates absorbed a huge amount of empirical research effort, which was exhaustively reviewed by Ussher (1998). Surprisingly, the results of that early research were rather ambiguous. ‘Traditional theories either support deficits having a positive or a neutral effect on interest rates. Various tests of these propositions yield diverse results, and one can find all conclusions – that deficits raise, decrease or do not affect interest rates’ (Ussher, 1998, p. 1). This ambiguity of the results arguably stemmed from two main problems with these attempts: (i) a tendency to include a rather large number of variables; and (ii) the rather simplified econometrics technique quite often applied in the early studies.

More recently there has been relatively little research published on the issue. Laubach (2003), who claimed to have found ‘new evidence’ of fiscal deficit and debt positively affecting interest rates, remains possibly the last Mohican of this genre. The waning interest in the issue probably reflects economic reality. Since the early 1980s, interest rates have trended downwards, while public deficits and debt levels have tended to rise. For example, for the US the simple correlation between the yearly values of real short-term (three-month interbank) interest rates and the public debt/GDP ratio is -0.7502, and the correlation between the fiscal deficit/GDP ratio and the annual increase in the real short-term interest rate (years 1981/1982 through 2019) is -0.4552. Similar tendencies have obtained in other developed countries.

The response to the Covid pandemic involved massive increases everywhere in the public deficit and public debt/GDP ratio. Similarly, shortly after the Great Recession that followed the eruption of the financial crisis in 2008, fiscal laxity did not provoke much determined opposition (at least outside Germany). But as soon as the crisis seemed to have been overcome, the proponents of ‘sound fiscal

¹ This is an abridged version of an article in *Bank i Kredyt/Bank & Credit*, 53(3) (2022).

² Afonso (2006) claimed to have found ‘new empirical evidence’ in favour of expansionary austerity policies.

policy' (i.e. austerity) regained the upper hand. For example, Reinhart and Rogoff (2010) paraded evidence which strongly suggested – in their opinion – that high public debt slows growth, as well as being responsible for runaway inflation and recurring sovereign default.³ The euro area returned to a policy of unconditional fiscal prudence – igniting the 'second-dip recession' of 2012-2013 and suppressing faster growth later on.

It is reasonable to expect that once the memory of the current 'pandemic' calamities fades, the old 'theory' phantoms will be resurrected, among them the 'common wisdoms' about private spending being crowded out by fiscal deficit. The crowding-out idea has already ventured a return (Huang et al., 2018). That attempt, involving misinterpreted correlation coefficients, was disputed by Podkaminer (2018). Similarly, the idea that rising public debt generates inflation was shown to be inconsistent with the empirical evidence (Podkaminer, 2020).

The likelihood of a return of the old way of thinking about 'crowding-out' should spark renewed examination of the empirical evidence on the links between the public deficit/debt and variables that potentially determine the real economic outcomes. This article reports the results of a study that examines the link between fiscal deficit and the real short-term interest rate in a number of industrial countries. The study involved the application of the augmented autoregressive distributed lag (ARDL) bounds approach to the data on increases in the public debt/GDP ratio and in short-term interest rates in recent decades.

ECONOMETRIC RESULTS FOR THE US

ARDL models involve regressing a variable on its own lagged values, as well as on the lagged and *contemporaneous* values of an explanatory variable (or a vector of such variables). Standard ARDL models using the ordinary least squares (OLS) technique may produce biased and inconsistent estimates. The modelling methodology developed by Pesaran et al. (2001) allows for a relatively unproblematic selection of meaningful ARDL models with unbiased parameter estimates and valid (asymptotic) testing statistics.

The variables considered in this article are *S*, defined as the increase in the real three-month interbank interest rate (deflated by the GDP deflator), and *Z*, the increase in the (percentage) ratio of public debt to GDP. Table 1 reports the outcome of the OLS estimation of an ARDL model for the US for 1982-2019, with lag lengths selected through the Akaike information criterion and assuming away the constant term.

Table 1 indicates that an increase in the public debt/GDP ratio in the US is associated, contemporaneously, with a *decrease* in the short-term interest rate: the short-run 'elasticity' of *S* with respect to *Z* is negative: -0.18765. That decrease is largely (but not completely) offset one year later: the short-run 'elasticity' of *S* with respect to *Z*(-1) is 0.160266. Observe that all regression coefficients ('elasticities') are statistically highly significant.

³ As it later turned out (Herndon et al., 2014), the calculations on which they had based their claims were fatally flawed, and the data referred to were peculiarly selective.

Table 1 / Short-term interest rate and public debt to GDP ratio: the ARDL model for the US

Dependent Variable: S				
Method: ARDL				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
S(-1)	0.408885	0.081978	4.987719	0.0000
Z	-0.187650	0.038345	-4.893671	0.0000
Z(-1)	0.160266	0.060184	2.662922	0.0116
R-squared	0.438856	Mean dependent var		-0.089857
Adjusted R-squared	0.406791	SD dependent var		0.970217
Durbin-Watson stat	1.979814			

The conclusion is that there is evidence that changes in the US real short-term interest rate are a *negative* response to contemporaneous increases in the public debt/GDP (percentage) ratio. In any case, the effects in question are rather small. A 1 percentage point (pp) increase in the debt/GDP ratio contemporaneously *lowers* the real short-term interest rate by about 0.19 pp, on average, which is then largely offset by a 0.16 pp rise the next year. Over a two-year period, a 1 pp one-off increase in the public debt/GDP ratio is expected to *lower* the short-term real interest rate by a mere 0.0274 pp ($-0.0274 = -0.1877 + 0.1603$). This is negligible: the average real short-term interest rate for the years 1960 through 2019 was 1.96% (median: 2.21%). Moreover, the sum of the short-run elasticities (-0.0274) is statistically insignificant: the probability of its being zero is 0.4418.

ECONOMETRIC RESULTS FOR A BROAD SET OF ADVANCED COUNTRIES

AMECO provides data on the short-term real interest rate and debt/GDP ratio of almost all European countries, the US and Japan. In a few cases (e.g. Italy) the data are available from as early as 1961. However, for individual European countries (including Italy) the definition of 'short-term interest rate' has been subject to change, sometimes quite radical, over the years. From 1995, a definition (the three-month interbank rate) was finally settled upon. Thus, only for Japan and the US is it possible to run the ARDL model with a time series spanning a relatively long period (38 years). For Croatia, Iceland and Turkey, the data are available for only 12-15 years. It is obviously inappropriate to run ARDL models for those three countries, if only because one would have to severely limit the maximum number of lags in the ARDL models (at present that number is set at four). Other countries not studied include the smallest (Malta, Cyprus and the three Baltic states) and the least advanced (Bulgaria and Romania).⁴ It goes without saying that the short duration of the time series (24 years at most) means the estimates for the remaining countries reported in Table 2 must be viewed with some caution.

Table 2 reports the relevant ARDL parameter estimates ('elasticities' of S with respect to Z) for European countries, the US and Japan for 1995-2019 (as well as parameter estimates for the US and Japan for 1982-2019). For Belgium, the *F* (Bounds) statistic is too low and does not reject the hypothesis on 'no long-run relationship' between the variables in question, even at a 5% significance level.

⁴ Time series for Bulgaria, Cyprus, Latvia and Lithuania are quite short (20-21 years). All four countries (as well as Romania) suffered major crises – some even well before the Great Recession. Their fiscal and monetary (and social) policies were guided by 'friendly' (but single-minded) IMF supervisors.

Consequently, the ARDL parameters for Belgium do not feature in Table 2. For the remaining countries, except Spain, the bounds tests reject the ‘no long-run relationship’ at less than a 1% significance level.

For Hungary, Greece and the Netherlands, the ‘elasticities’ of S with respect to contemporaneous Z are *positive* – with the lagged values of Z playing no role. However, only for Hungary is this ‘elasticity’ significant (at a 1% significance level), while the ‘elasticities’ for Greece and the Netherlands are very small (apart from being statistically insignificant). For the remaining European countries, as well as the US and Japan, the sums of the short-term elasticities are negative. The statistical significance and the size of the summed effects vary from country to country. The strongest (and statistically significant) summed negative effects are elicited for Norway, Slovakia, Finland and France. The summed effect for the US is very small and statistically insignificant (as indeed it is for the longer period, 1982-2019).

Table 2 / ‘Elasticities’ of S with respect to Z for major European countries, the US and Japan

	Z	Z(-1)	Z(-2)	Z(-3)	Z(-4)	Sum
1982-2019						
US	-0.1877	0.1603				-0.0274
Japan	-0.0162					-0.0162
1996-2019						
US	-0.1596	<u>0.1377</u>				-0.0219
Japan	-0.0118					-0.0118
Czechia	0.0812	-0.2082				-0.127
Denmark	0.0472	<u>-0.15</u>				-0.1028
Germany	-0.1626					-0.1626
Ireland	0.1416	-0.1446				-0.003
Greece	0.0093					0.0093
Spain	-0.0136	-0.091	0.1796	-0.1219		-0.0469
France	-0.0447	-0.1012	0.0615			-0.0844
Italy	-0.1629	<u>0.135</u>				-0.0279
Luxembourg	-0.2304					-0.2304
Hungary	0.2162					<u>0.2162</u>
Netherlands	0.0353					0.0353
Austria	-0.1699	0.043				-0.1269
Poland	-0.0532	<u>-0.3437</u>				-0.3969
Portugal	0.0599	-0.0842				-0.0243
Slovenia	-0.1141	0.2045	-0.1177			-0.0273
Slovakia	0.1076	<u>-0.3089</u>	<u>0.2097</u>	<u>-0.2423</u>		-0.2339
Finland	<u>-0.1183</u>					-0.1183
Sweden	-0.0918					-0.0918
UK	-0.1312	-0.1137	<u>0.2806</u>	-0.2674	0.1489	-0.2317
Norway	-0.1487					-0.1487

Source: Own calculations. P-values are less than 1% for the **underlined bold-font** estimates; less than 5% for those just in **bold**; and less than 10% for those just underlined.

All in all, Table 2 strongly supports the view that a rising public debt/GDP ratio has, on the whole, quite a small effect on short-term interest rates. Moreover, what effect there is tends to be *negative*. Contrary to what is so often believed, a rising debt/GDP ratio has tended to *lower* short-term interest rates, even if only marginally.

ALLOWING FOR LONG-TERM INTEREST RATES

The ARDL models with changes in the public debt/GDP ratio as the sole explanatory variable ignore other possible ‘causal’ factors. One such possible factor is the monetary policy stance. This stance is likely to be reflected in long-term interest rates. Arguably, the conclusions concerning the impact of an increase in the public debt/GDP ratio on changes in the short-term interest rates could be different if the ARDL models include an additional variable (*L*), defined as the rise in long-term real interest rates.

Table 3 shows the estimated ARDL model (with *Z* and *L* as explanatory variables) for the US.

Table 3 / ARDL model regressing *S* on *Z* and *L* for the US (years 1996-2019)

Dependent Variable: <i>S</i>				
Method: ARDL				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
S(-1)	0.279858	0.106837	2.619487	0.0164
Z	-0.166786	0.039580	-4.213866	0.0004
Z(-1)	0.149652	0.057521	2.601676	0.0171
L	0.598420	0.278907	2.145592	0.0444
R-squared	0.538742	Mean dependent var		-0.131592
Adjusted R-squared	0.469553	SD dependent var		0.977260
Durbin-Watson stat	1.774748			

The sum of short-run ‘elasticities’ with respect to the *Z* variable is now -0.0171 (-0.0171=-0.1668 +0.1497). The probability of this sum being equal to zero is 0.6656. Effectively, on average the change in the public debt/GDP ratio has no effect on the short-term interest rate in this model specification.⁵ What really matters here is that the estimates concerning the effect of changes in the debt/GDP ratio elicited from the extended ARDL model for the US qualitatively support those that follow the simple ARDL model presented in Table 1.

Extended ARDL models were also run for a broader set of the countries presented in Table 2. It appears that allowing for an increase in long-term interest rates as a second explanatory variable reduces the number of countries for which ARDL models can deliver meaningful results. For some countries, the *L* time series available are too short; and for some the requisite statistical tests fail. But the extended ARDL models still ‘work’ for 13 countries. For those countries, Table 4 reports the sums of the short-run ‘elasticity’ estimates from the extended ARDL models, together with the sums from the original ARDL models (as in Table 2).

According to Table 4, in the case of Japan the sum of the short-run ‘elasticities’ with respect to *Z*, which is negative in the simple ARDL, turns positive in the extended ARDL. However, both sums are very close to zero – and are anyway not statistically significant. On the other hand, the sum for Greece is negative, much larger and statistically significant. The sums for the remaining countries continue to be

⁵ However, the effect of a one-off rise in the long-term real interest rate is positive, quite large (0.5984) and statistically significant at the 5% level.

negative. However, whereas only two of those sums were statistically significant (at the 5% level) according to the simple ARDLs, according to the extended ARDLs the sums are statistically significant for eight countries (two of them at the 1%, five at the 5% and one at the 10% level). It may also be worth noting that the extended ARDLs suggest that a rise in long-term interest rates exerts a positive impact on increases in short-term interest rates. The impact is quite large and statistically highly significant. This is unsurprising: as a rule, the two variables (S and L) are highly correlated, with the correlation coefficient well in excess of +0.70 in most cases. But the most important fact worth stressing at this stage is that allowing for the variable relating to monetary policy (even if indirectly) only *strengthens* our conclusions concerning the (highly likely negative) effects of a rising public debt/GDP ratio on short-term money market interest rates.

Table 4 / The sums of short-term ‘elasticities’ from ARDL models without and with the increase in the long-term real interest rates (L) as a second explanatory variable, 1996-2019

	A	B	C
US	-0.0219	-0.0171	<u>0.5984</u>
Japan	-0.0118	0.0009	0.8133
Czechia	-0.127	-0.1357	1.42
Germany	-0.1626	-0.0212	3.146
Ireland	-0.003	-0.1498	2.69
Greece	0.0093	-0.0167	0.3252
France	-0.0844	-0.0706	0.4536
Italy	-0.0279	-0.0256	0.5968
Luxembourg	-0.2304	-0.1432	1.372
Poland	-0.3969	-0.3119	4.13
Portugal	-0.0243	-0.048	0.5874
Finland	-0.1183	-0.1	0.3643
Sweden	-0.0918	-0.276	3.784

Source: Own calculations. P-values are less than 1% for the **underlined bold-font** estimates; less than 5% for those just in **bold**; and less than 10% for those just underlined. Column A: the sum of short-run elasticities of S with respect to Z from the ARDL model without L as an explanatory variable (as in Table 2); Column B: the sum of short-run elasticities of S with respect to Z derived from the ARDL model with L as an explanatory variable; Column C: the sum of short-run ‘elasticities’ of S with respect to L .

CONCLUDING REMARKS: THE INTUITION BEHIND OUR FINDINGS IS STRAIGHTFORWARD

The lingering opinion that a fiscal deficit should drive up interest rates is not confirmed by the data.

Our results suggest that changing public debt/GDP ratios have rather a small effect on short-term real interest rates. And in any case, the effect has tended to be negative. This puts into question the usual ‘theoretical’ intuition behind the expectation that higher fiscal deficits will drive up interest rates – a variant of the ‘loanable funds’ doctrine, which states that, given there is a fixed amount of ‘loanable money’, higher public spending reduces the amount of money available to the private sector – thus bidding up its price: the interest rate.

The ‘theoretical rationale’ behind the empirical regularity detected in this article is different: it does not assume a fixed amount of ‘loanable funds’. Essentially, the mechanism capable of reducing interest rates

in conditions of fiscal expansion is quite straightforward. One way or another, normal fiscal relaxation boils down to injecting some *additional* monetary resources into the private sector. Unless this is successfully sabotaged by a monetary authority keen on 'sterilising' the injections, the fiscal relaxation should normally⁶ ease monetary conditions, and is thus conducive to a reduction in short-term interest rates.

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⁶ A fiscal relaxation *normally* benefits a country's own private sector. However, this is not the case if the rise in the fiscal deficit is due to increasing foreign debt service payments (especially if the latter are in foreign exchange). Increasing costs of servicing the foreign debt (implying a rise in the overall fiscal deficit) may require an increased flow of monetary resources *away from* the domestic private sector (e.g. by means of higher taxation). In such (admittedly 'abnormal') situations, higher deficits no longer represent a regular fiscal relaxation (and should not be expected to lower domestic interest rates).

Monthly and quarterly statistics for Central, East and Southeast Europe

The monthly and quarterly statistics cover **22 countries** of the CESEE region. The graphical form of presenting statistical data is intended to facilitate the **analysis of short-term macroeconomic developments**. The set of indicators captures trends in the real and monetary sectors of the economy, in the labour market, as well as in the financial and external sectors.

Baseline data and a variety of other monthly and quarterly statistics, **country-specific** definitions of indicators and **methodological information** on particular time series are **available in the wiiw Monthly Database** under: <https://data.wiiw.ac.at/monthly-database.html>. Users regularly interested in a certain set of indicators may create a personalised query which can then be quickly downloaded for updates each month.

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

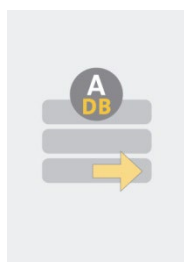
The following national currencies are used:

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.

Online database access



wiiw Annual Database



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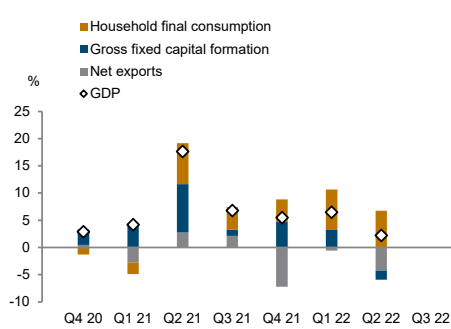
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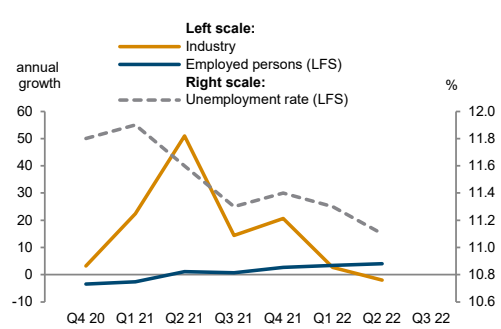
For more information on database access for Members and on Membership conditions, please contact Ms. Barbara Pill (pill@wiiw.ac.at), phone: (+43-1) 533 66 10.

Albania

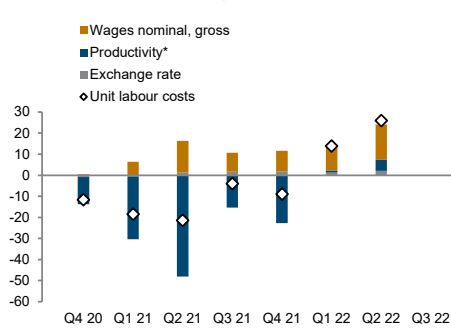
Real GDP growth and contributions



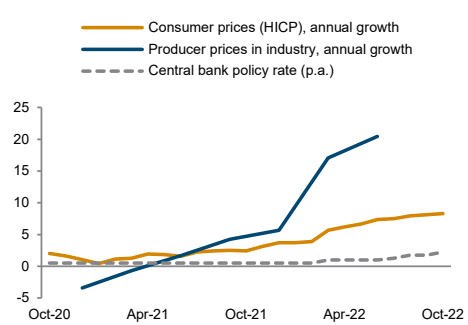
Real sector development



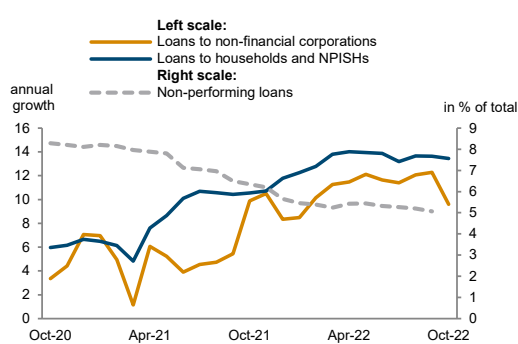
Unit labour costs in industry



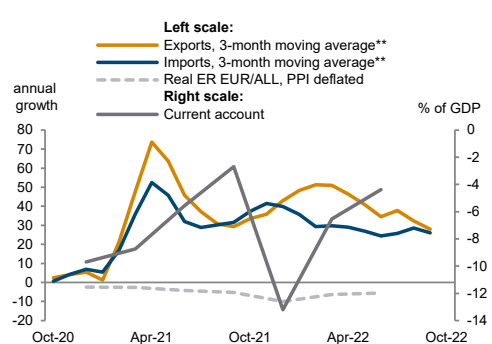
Inflation and policy rate



Financial indicators



External sector development



*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.

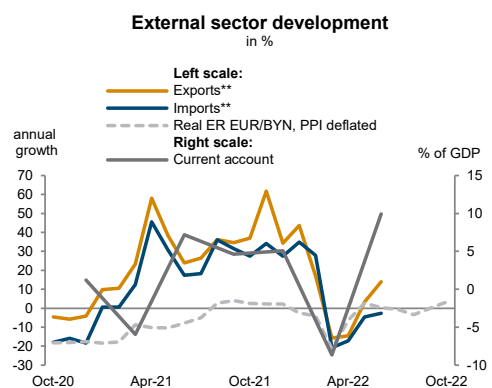
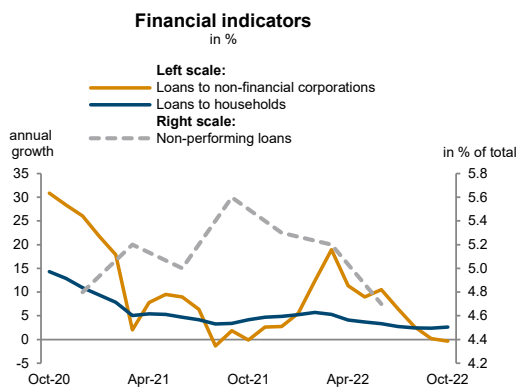
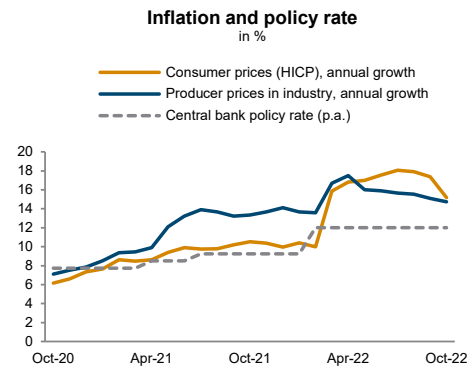
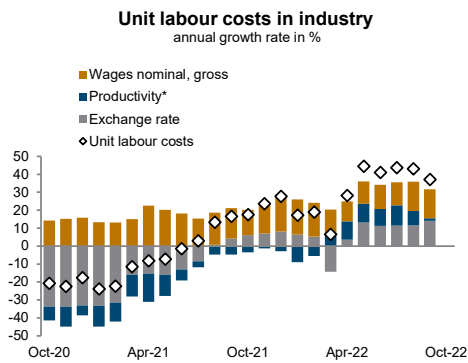
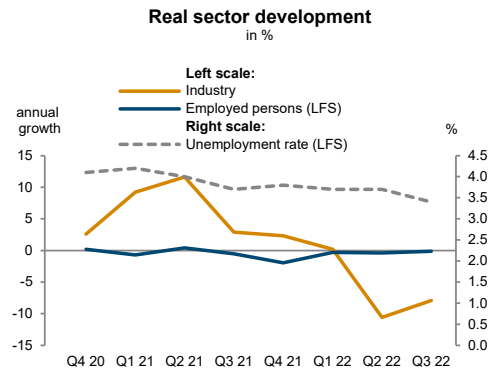
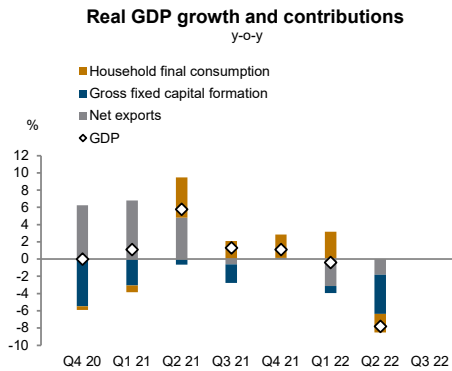
**EUR based.

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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Belarus



*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.
**EUR based.

Source: wiiw Monthly Database incorporating Eurostat and national statistics.

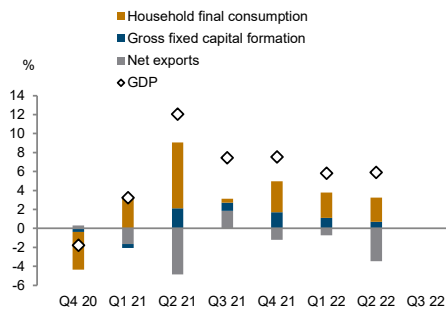
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Bosnia and Herzegovina

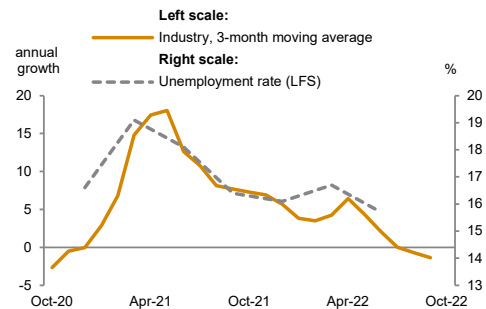
Real GDP growth and contributions

y-o-y



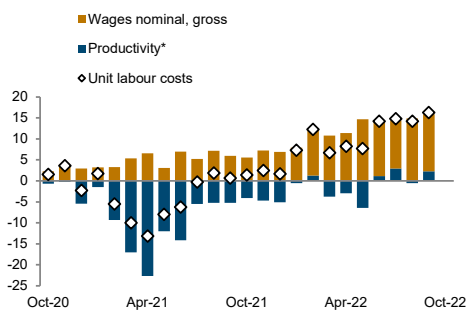
Real sector development

in %



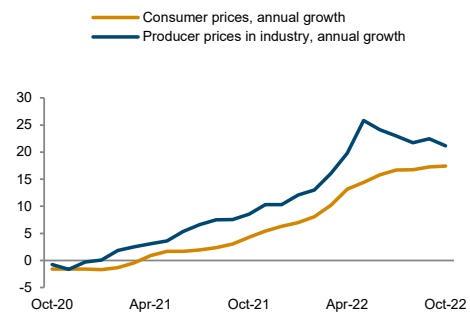
Unit labour costs in industry

annual growth rate in %



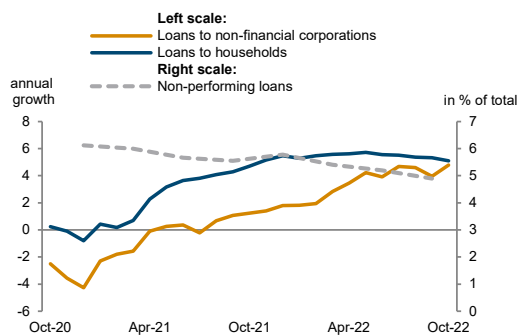
Inflation

in %



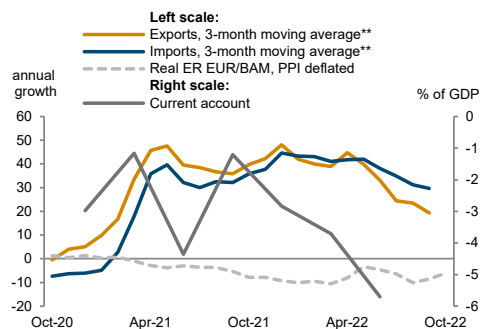
Financial indicators

in %



External sector development

in %



*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.

**EUR based.

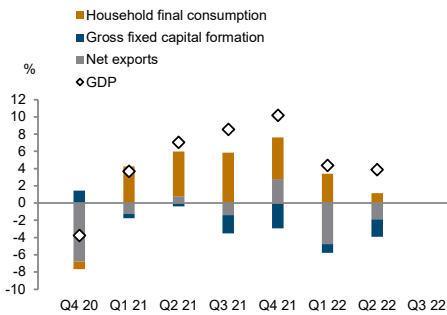
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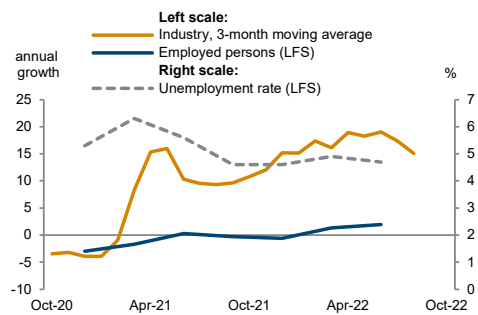
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Bulgaria

Real GDP growth and contributions
y-o-y



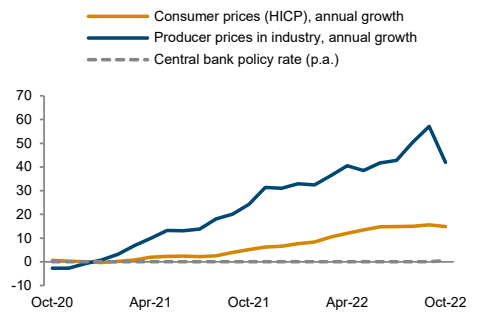
Real sector development
in %



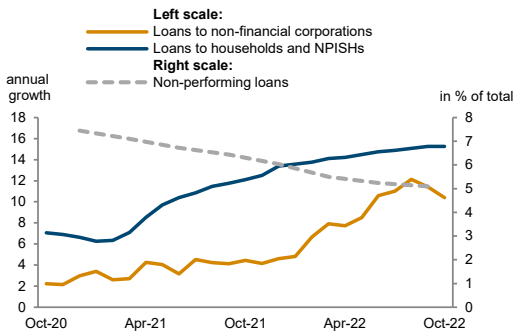
Unit labour costs in industry
annual growth rate in %



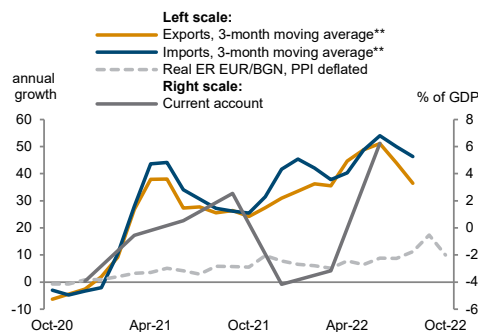
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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**EUR based.

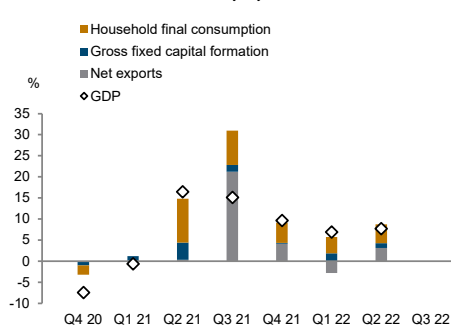
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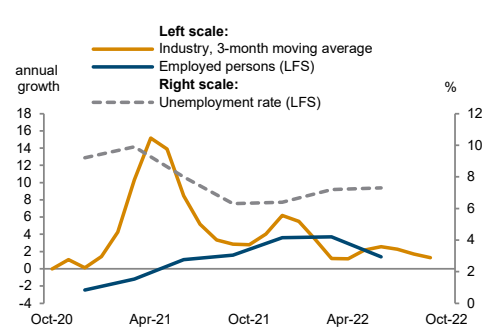
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Croatia

Real GDP growth and contributions



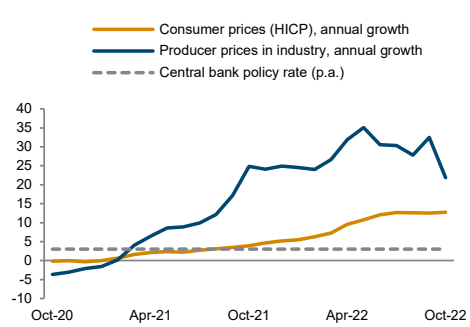
Real sector development



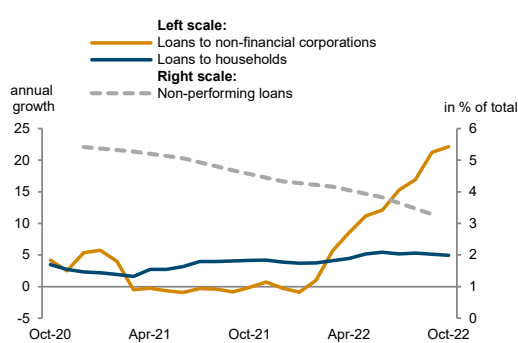
Unit labour costs in industry



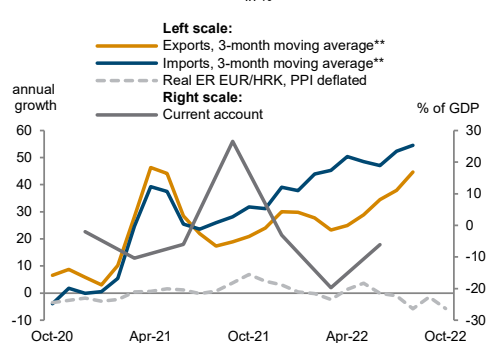
Inflation and policy rate



Financial indicators



External sector development



*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.

**EUR based.

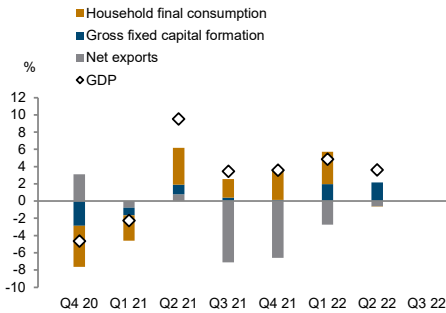
Source: wiiw Monthly Database incorporating Eurostat and national statistics.

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

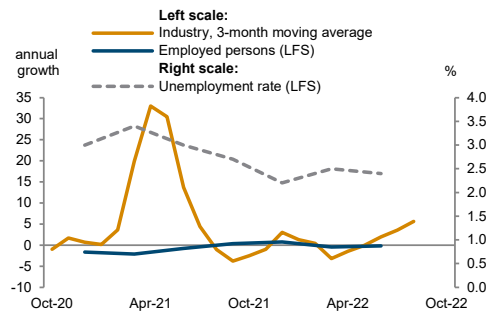
<https://data.wiiw.ac.at/monthly-database.html>

Czechia

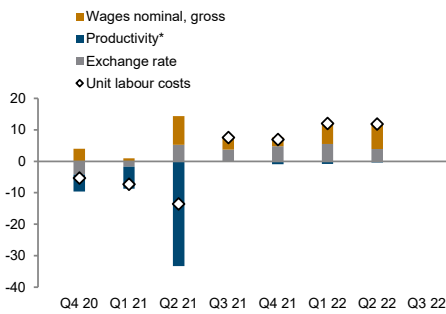
Real GDP growth and contributions
y-o-y



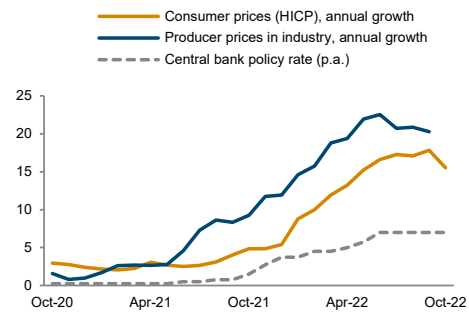
Real sector development
in %



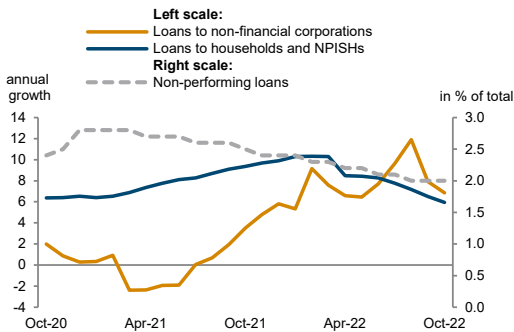
Unit labour costs in industry
annual growth rate in %



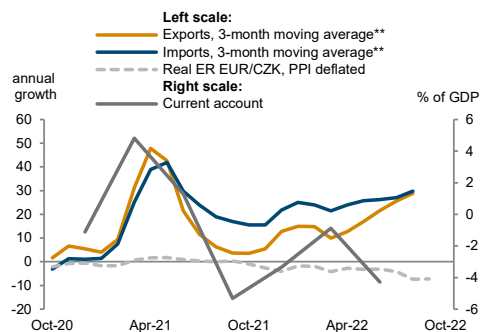
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.
**EUR based.

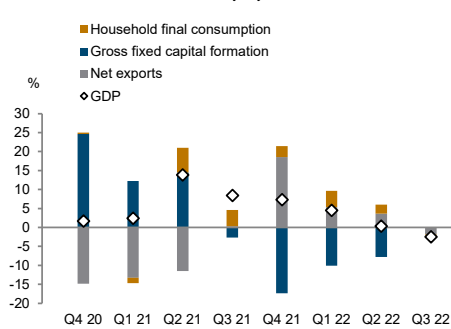
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Baseline data, country-specific definitions and methodological breaks in time series are available under:

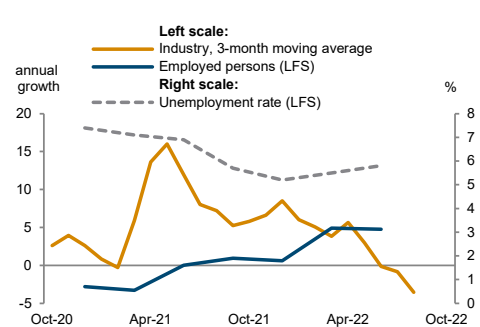
<https://data.wiiw.ac.at/monthly-database.html>

Estonia

Real GDP growth and contributions



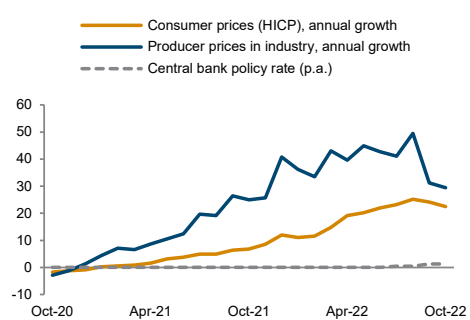
Real sector development



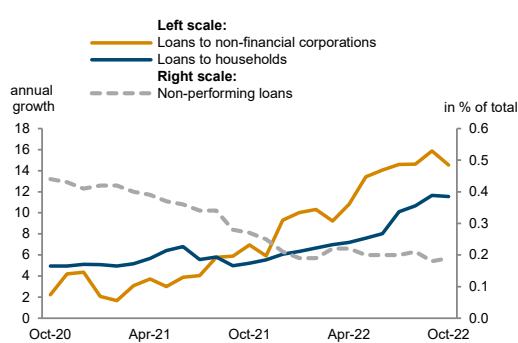
Unit labour costs in industry



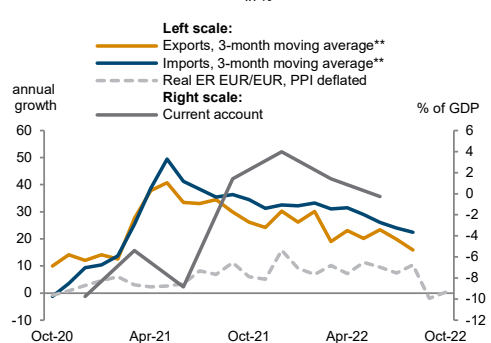
Inflation and policy rate



Financial indicators



External sector development



*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.

**EUR based.

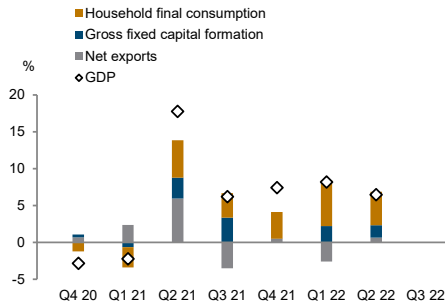
Source: wiiw Monthly Database incorporating Eurostat and national statistics.

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

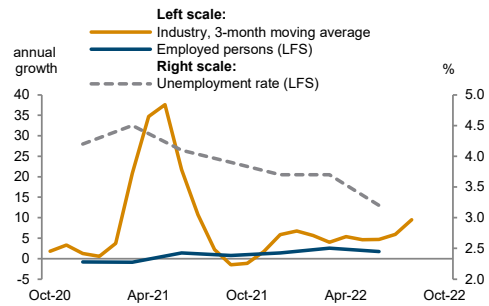
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Hungary

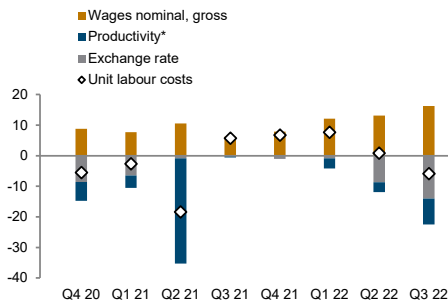
Real GDP growth and contributions
y-o-y



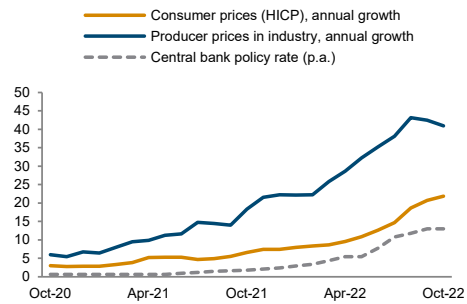
Real sector development
in %



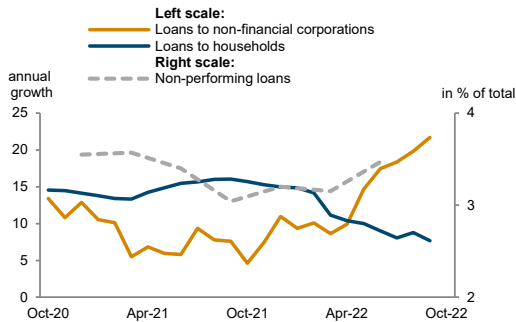
Unit labour costs in industry
annual growth rate in %



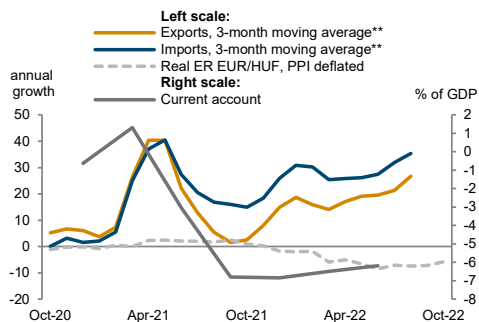
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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**EUR based.

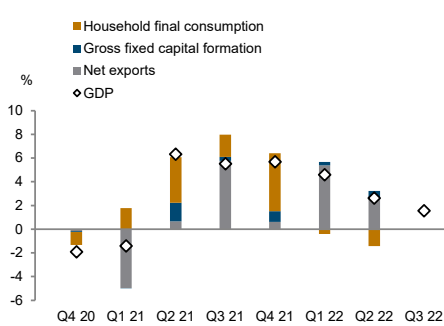
Source: wiiw Monthly Database incorporating Eurostat and national statistics.

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

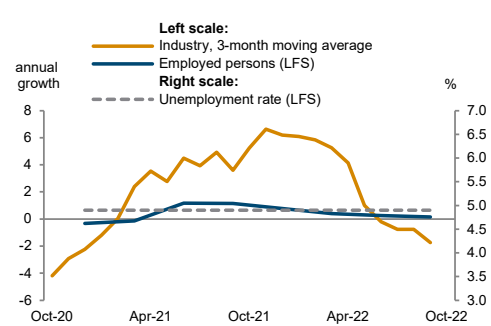
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Kazakhstan

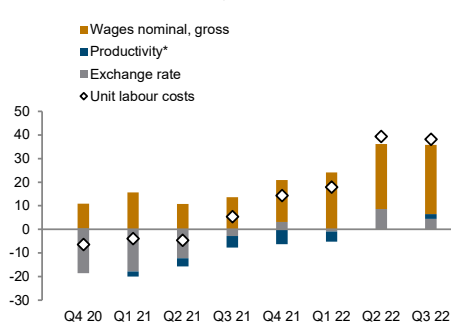
Real GDP growth and contributions



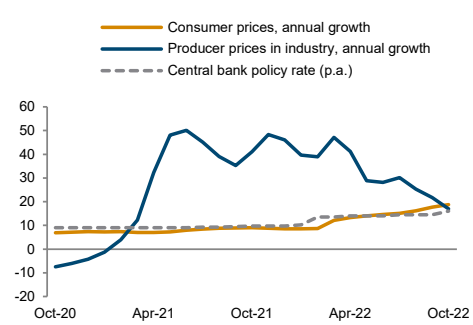
Real sector development



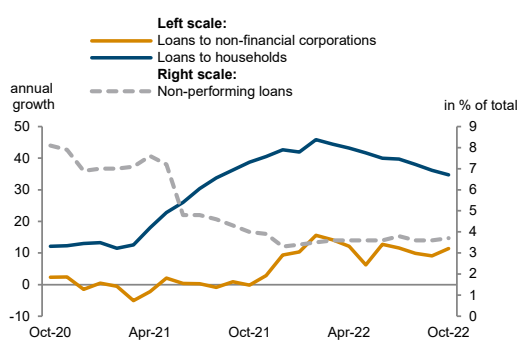
Unit labour costs in industry



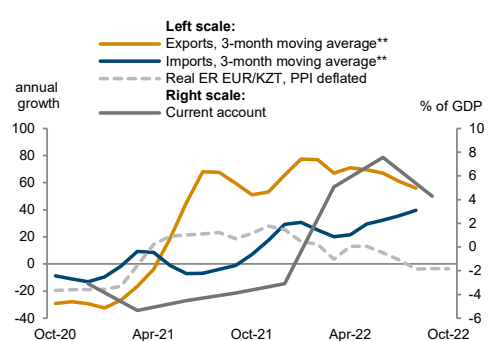
Inflation and policy rate



Financial indicators



External sector development



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**EUR based.

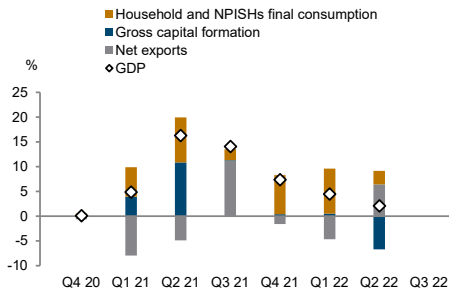
Source: wiiw Monthly Database incorporating Eurostat and national statistics.

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

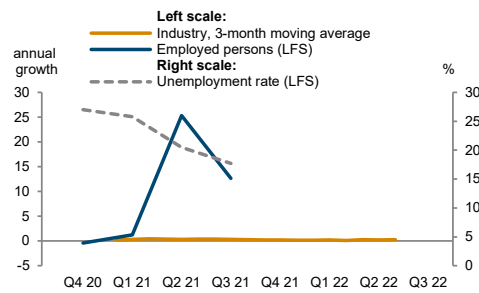
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Kosovo

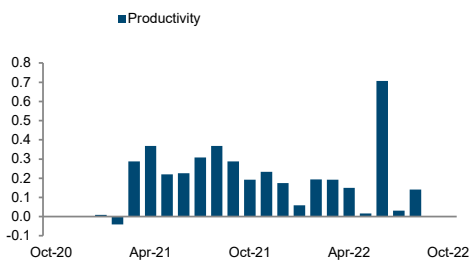
Real GDP growth and contributions
y-o-y



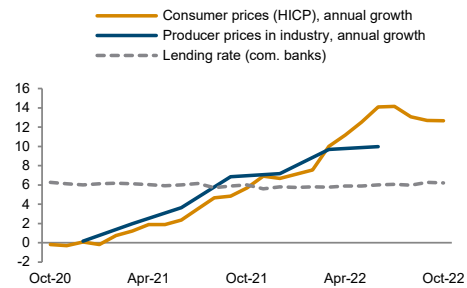
Real sector development
in %



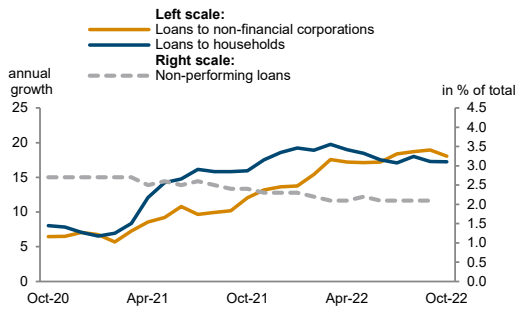
Productivity in industry
annual growth rate in %



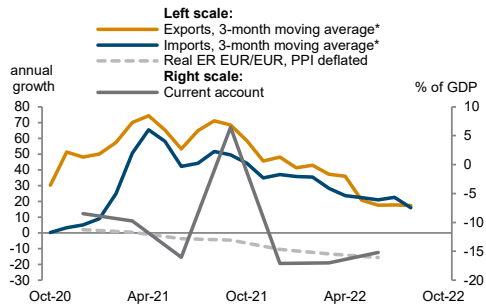
Inflation and lending rate
in %



Financial indicators
in %



External sector development
in %



*EUR based.

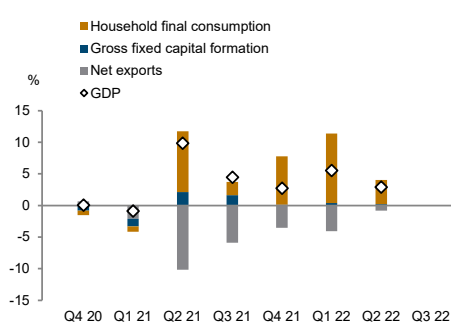
Source: wiiw Monthly Database incorporating Eurostat and national statistics.

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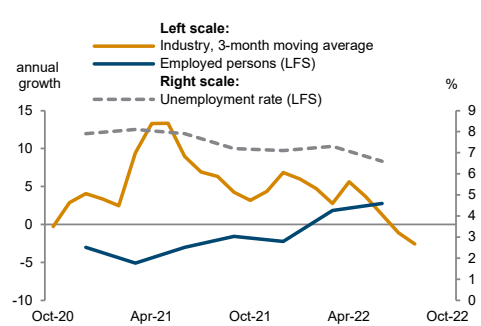
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Latvia

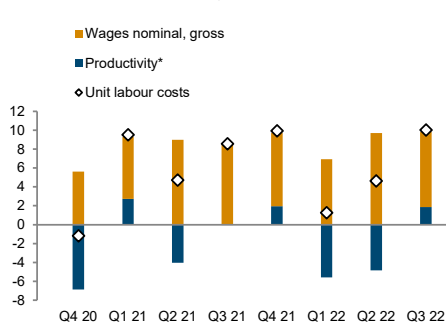
Real GDP growth and contributions



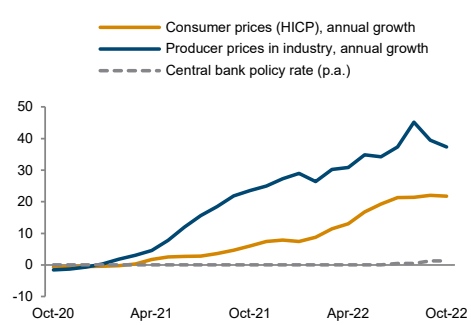
Real sector development



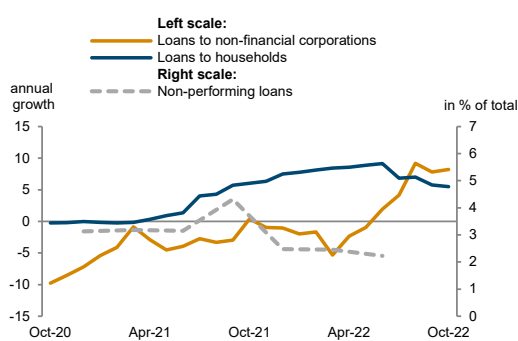
Unit labour costs in industry



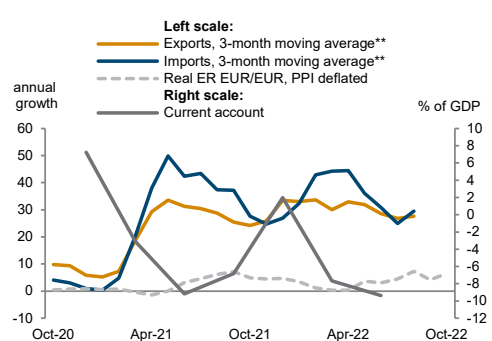
Inflation and policy rate



Financial indicators



External sector development



*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.

**EUR based.

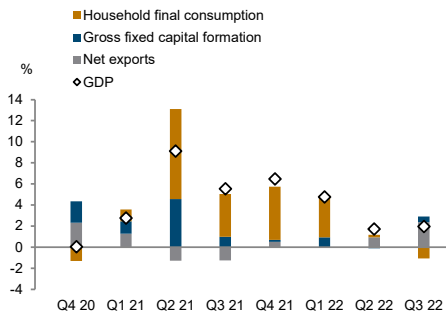
Source: wiiw Monthly Database incorporating Eurostat and national statistics.

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

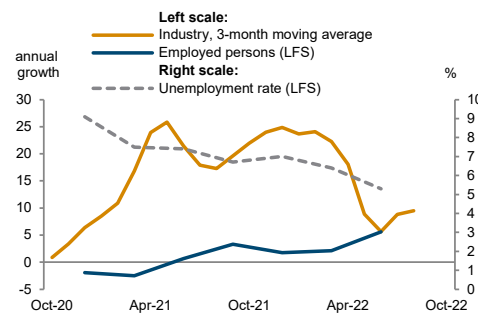
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Lithuania

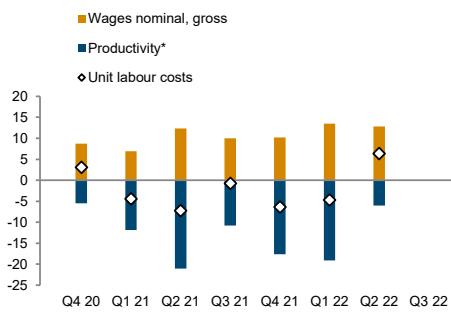
Real GDP growth and contributions
y-o-y



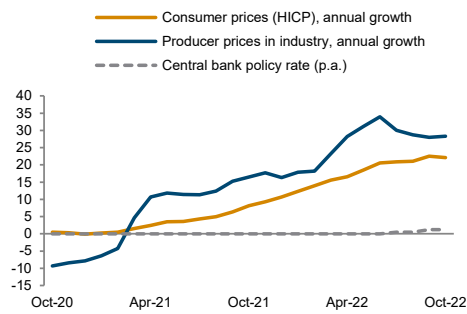
Real sector development
in %



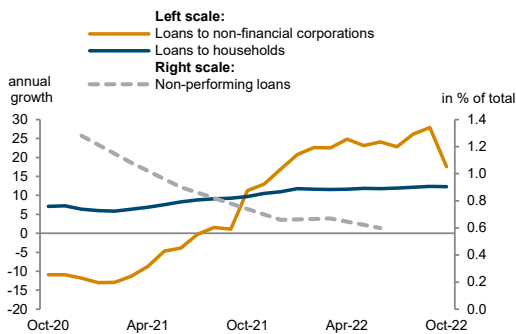
Unit labour costs in industry
annual growth rate in %



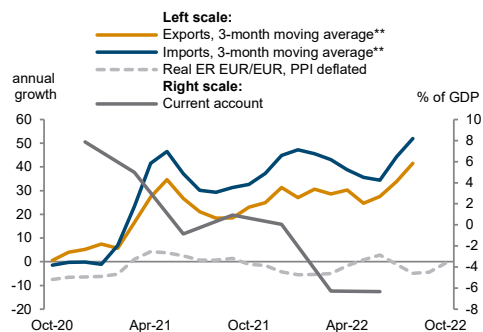
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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**EUR based.

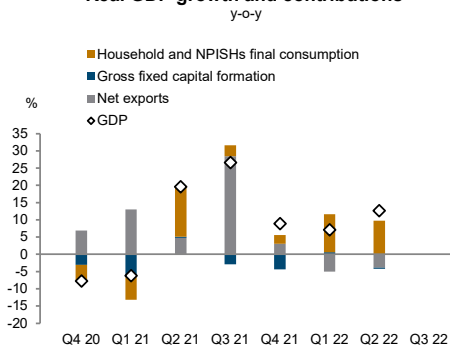
Source: wiiw Monthly Database incorporating Eurostat and national statistics.

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

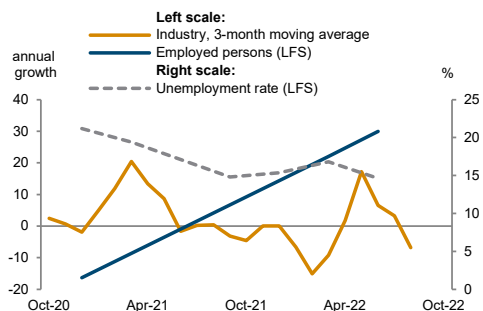
<https://data.wiiw.ac.at/monthly-database.html>

Montenegro

Real GDP growth and contributions



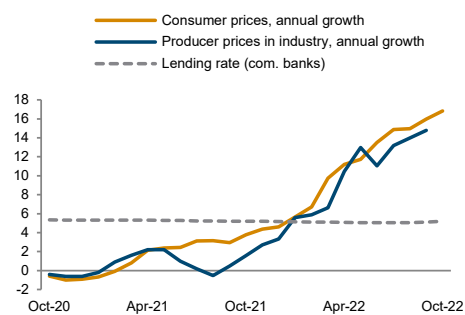
Real sector development



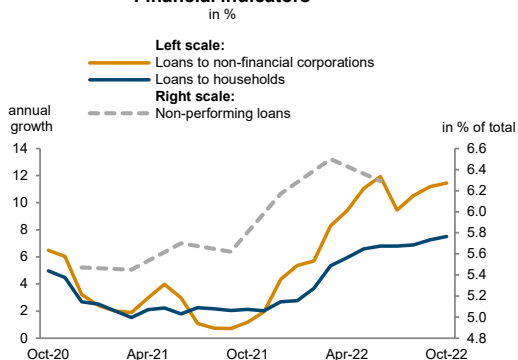
Unit labour costs in industry



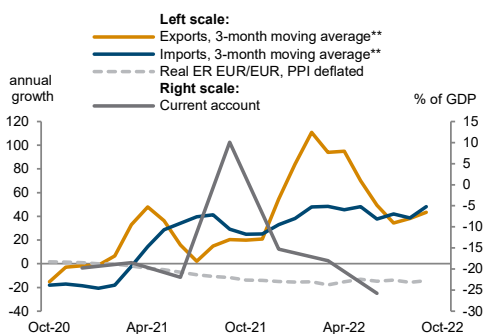
Inflation and lending rate



Financial indicators



External sector development



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**EUR based.

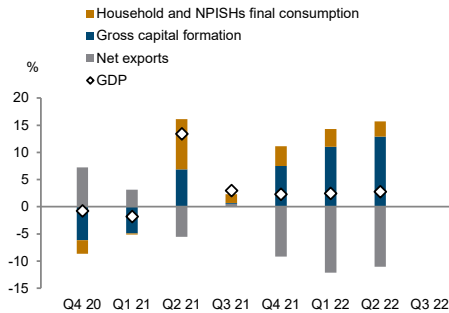
Source: wiiw Monthly Database incorporating Eurostat and national statistics.

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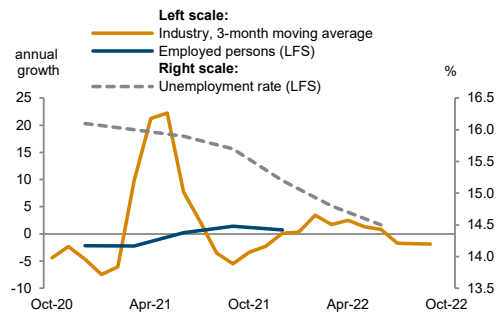
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North Macedonia

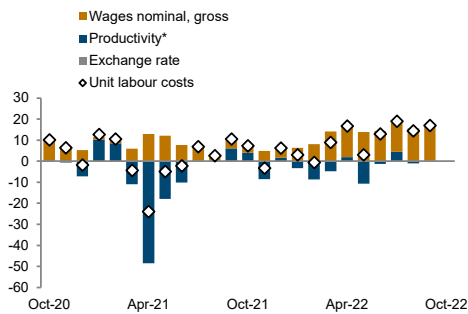
Real GDP growth and contributions
y-o-y



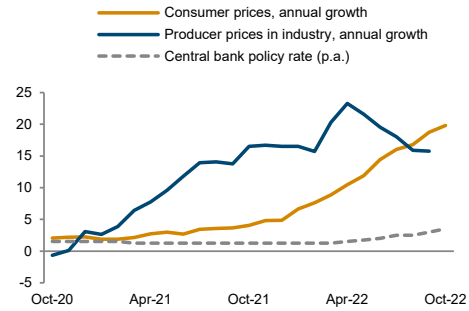
Real sector development
in %



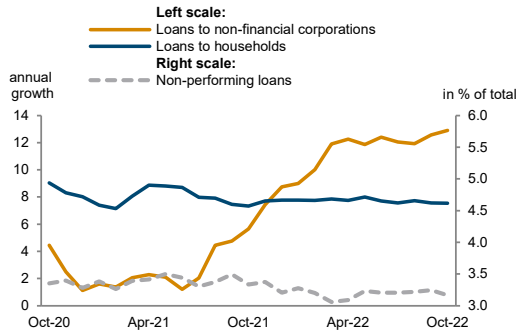
Unit labour costs in industry
annual growth rate in %



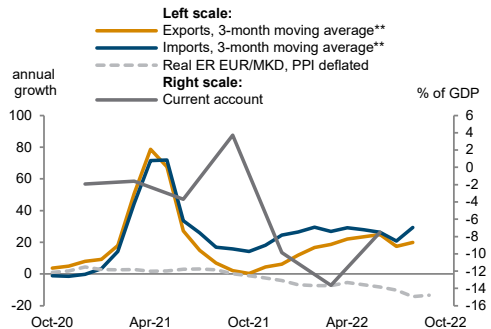
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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**EUR based.

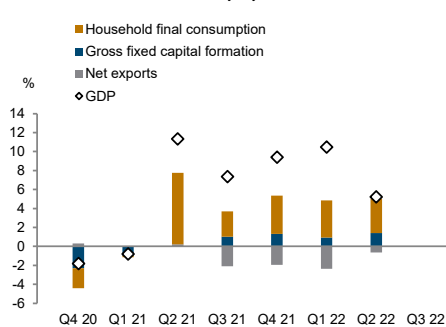
Source: wiiw Monthly Database incorporating Eurostat and national statistics.

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

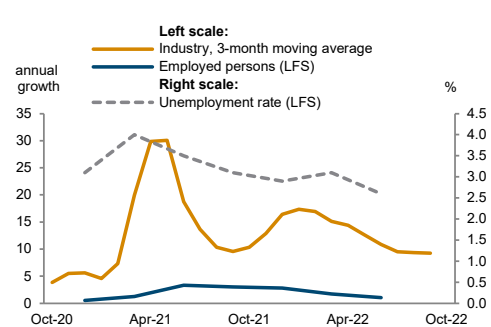
<https://data.wiiw.ac.at/monthly-database.html>

Poland

Real GDP growth and contributions



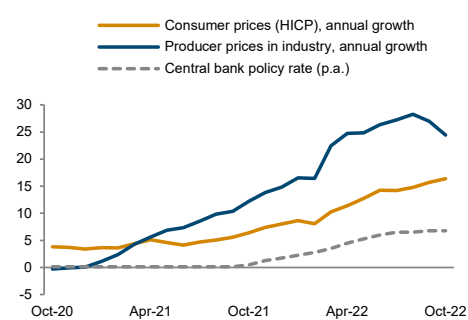
Real sector development



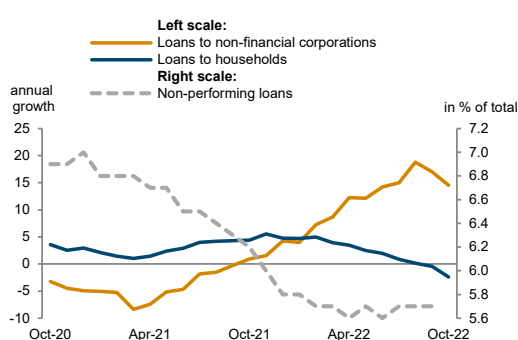
Unit labour costs in industry



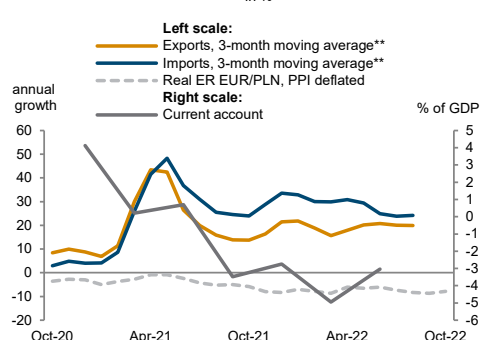
Inflation and policy rate



Financial indicators



External sector development



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**EUR based.

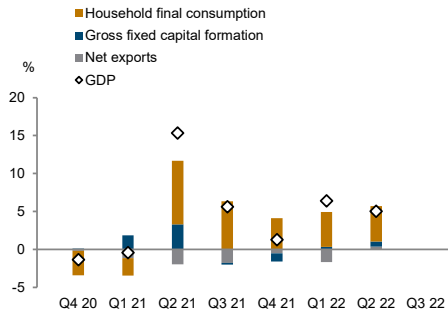
Source: wiiw Monthly Database incorporating Eurostat and national statistics.

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

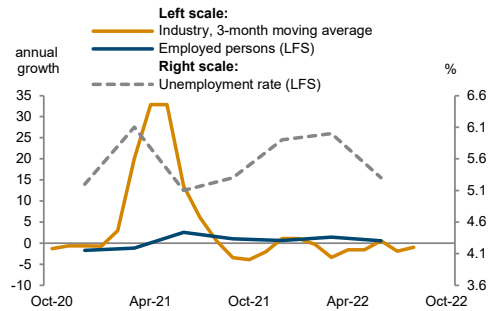
<https://data.wiiw.ac.at/monthly-database.html>

Romania

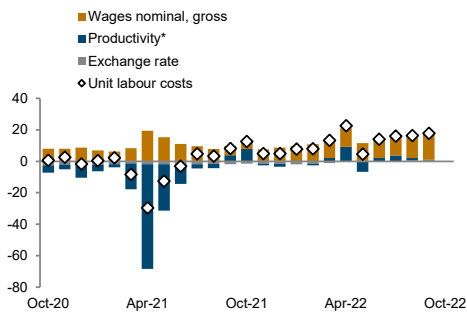
Real GDP growth and contributions
y-o-y



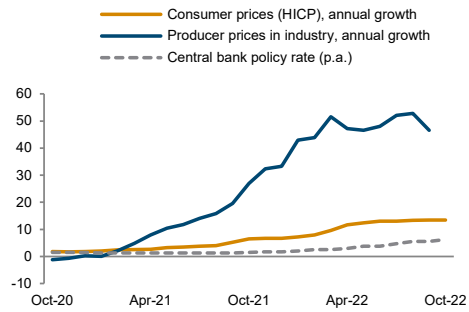
Real sector development
in %



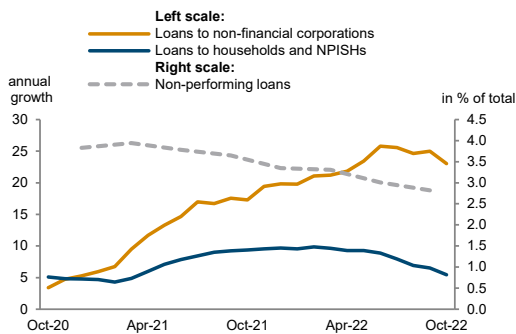
Unit labour costs in industry
annual growth rate in %



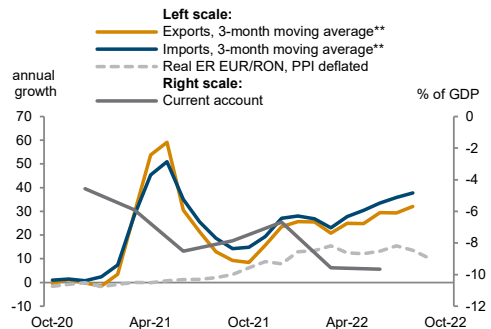
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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**EUR based.

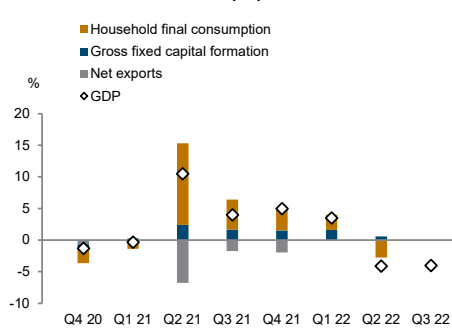
Source: wiiw Monthly Database incorporating Eurostat and national statistics.

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

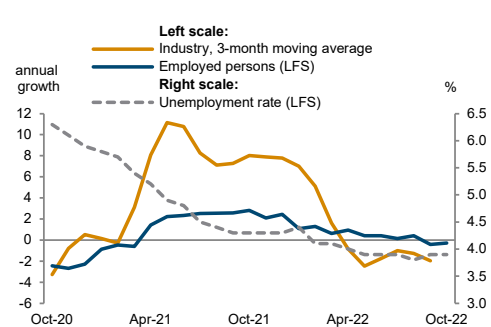
<https://data.wiiw.ac.at/monthly-database.html>

Russia

Real GDP growth and contributions



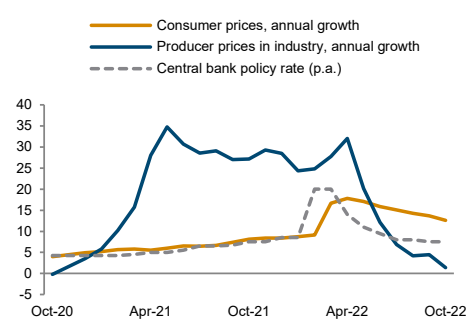
Real sector development



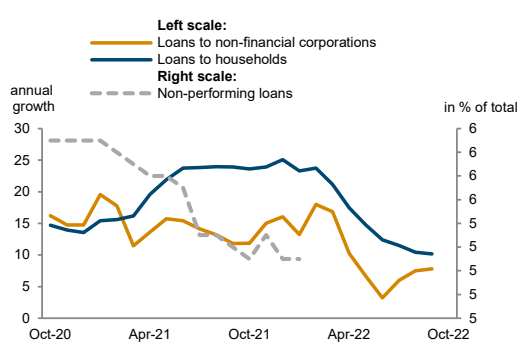
Unit labour costs in industry



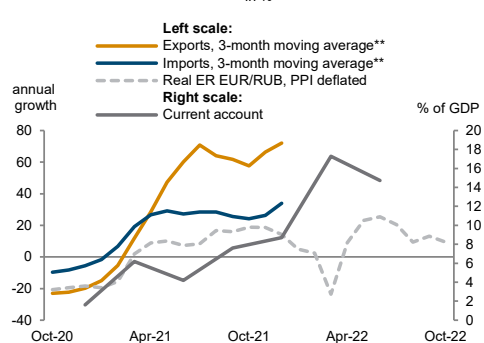
Inflation and policy rate



Financial indicators



External sector development



*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.

**EUR based.

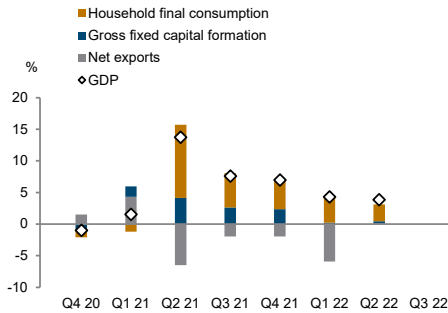
Source: wiiw Monthly Database incorporating Eurostat and national statistics.

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

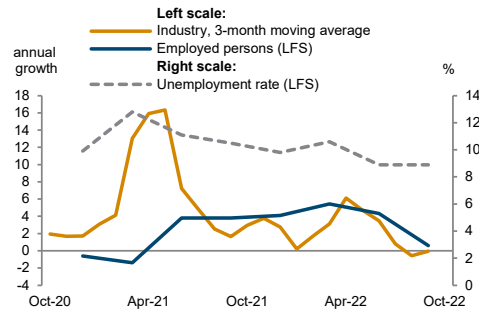
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Serbia

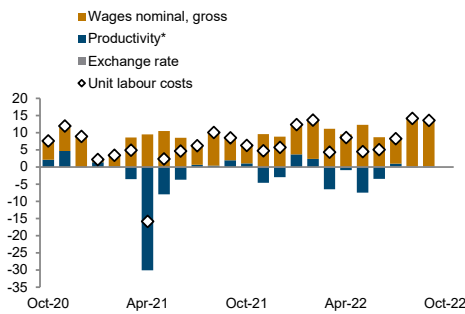
Real GDP growth and contributions
y-o-y



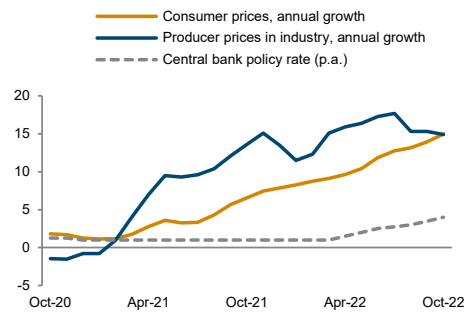
Real sector development
in %



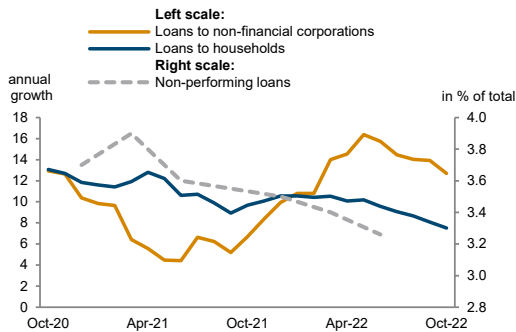
Unit labour costs in industry
annual growth rate in %



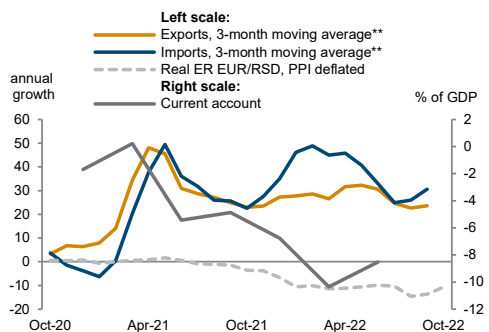
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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**EUR based.

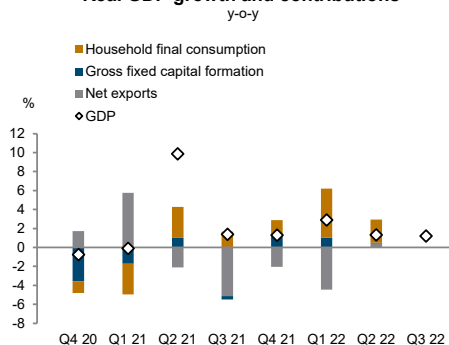
Source: wiiw Monthly Database incorporating Eurostat and national statistics.

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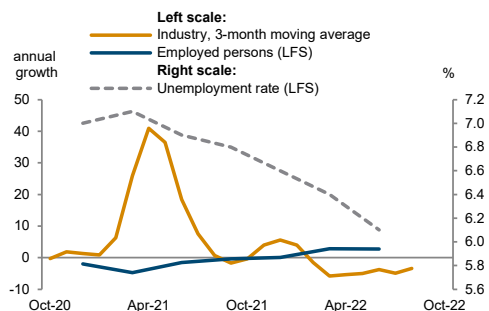
<https://data.wiiw.ac.at/monthly-database.html>

Slovakia

Real GDP growth and contributions



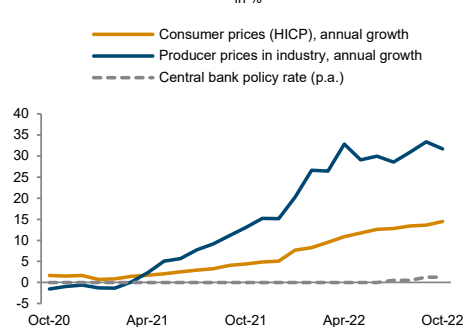
Real sector development



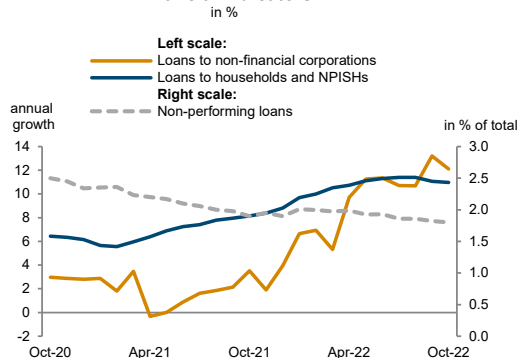
Unit labour costs in industry



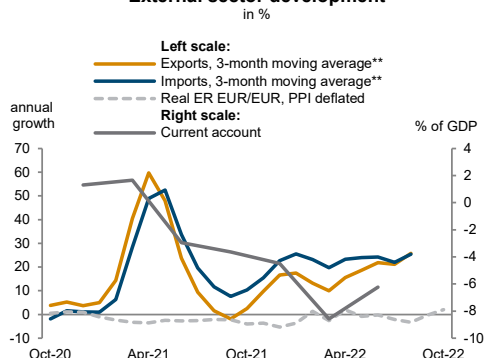
Inflation and policy rate



Financial indicators



External sector development



*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.

**EUR based.

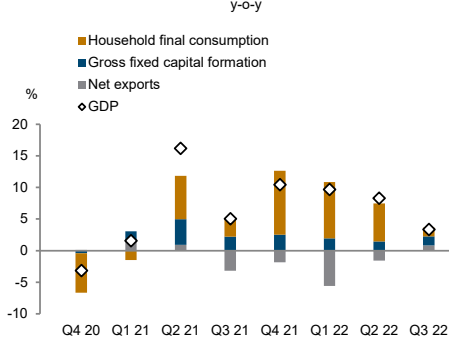
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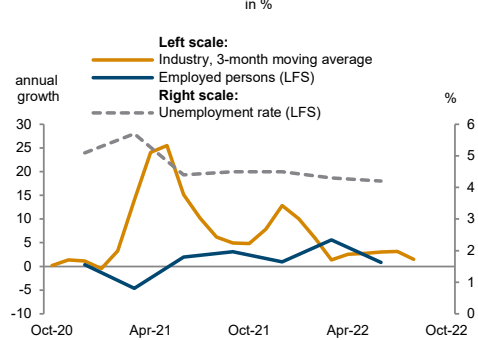
<https://data.wiiw.ac.at/monthly-database.html>

Slovenia

Real GDP growth and contributions



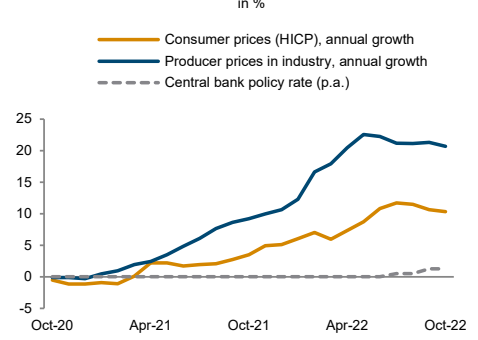
Real sector development



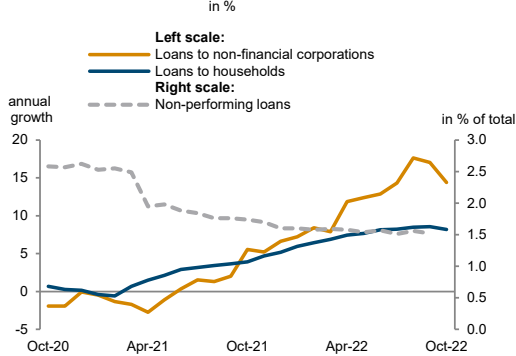
Unit labour costs in industry



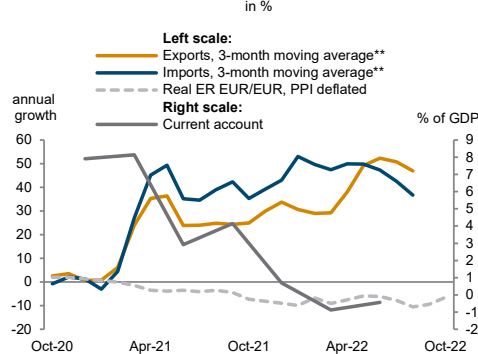
Inflation and policy rate



Financial indicators



External sector development

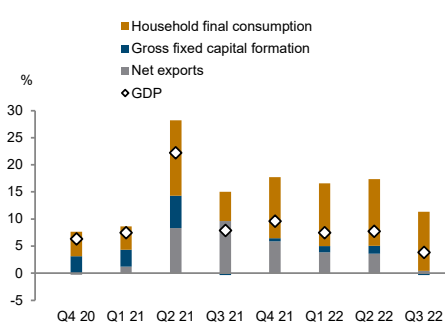


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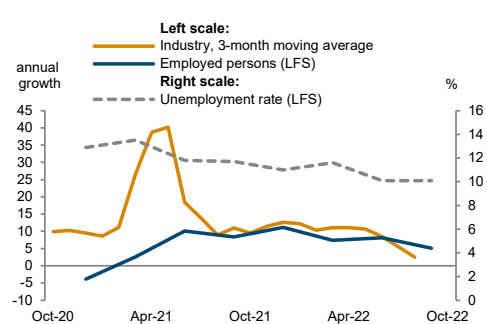
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Turkey

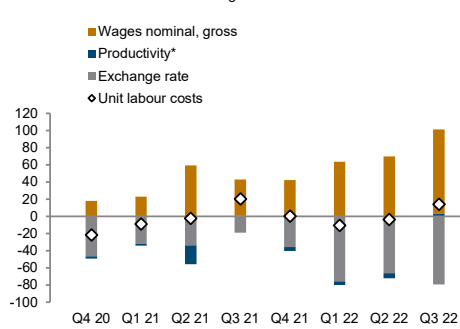
Real GDP growth and contributions



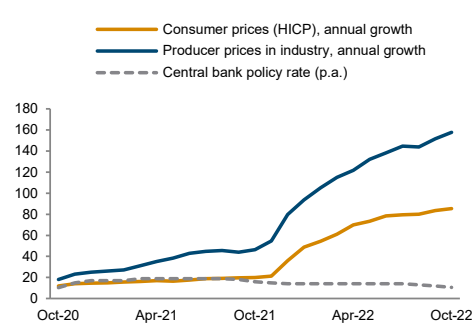
Real sector development



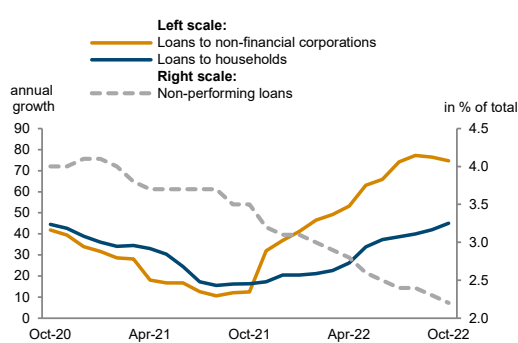
Unit labour costs in industry



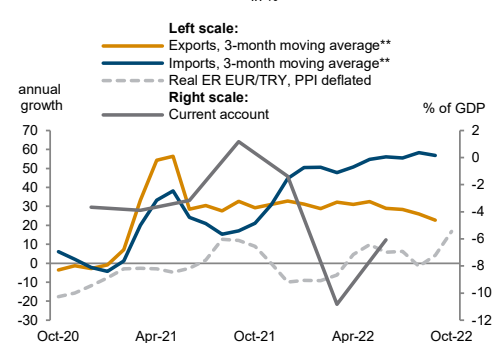
Inflation and policy rate



Financial indicators



External sector development



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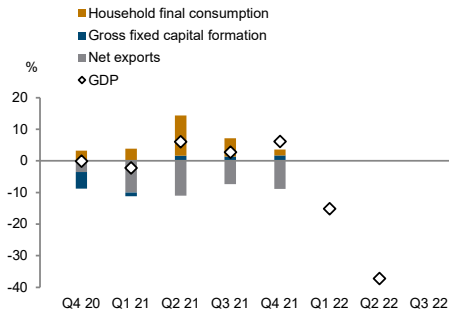
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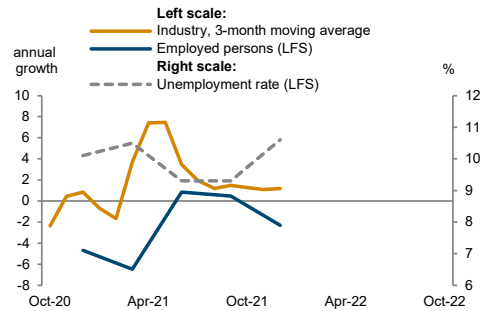
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Ukraine

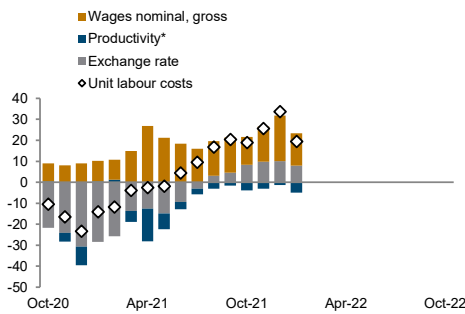
Real GDP growth and contributions
y-o-y



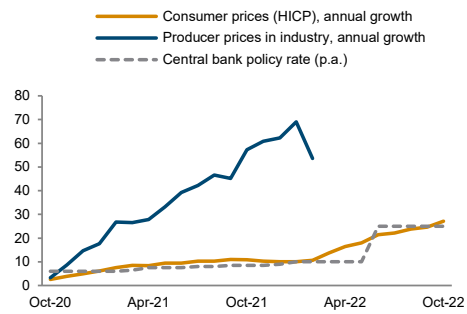
Real sector development
in %



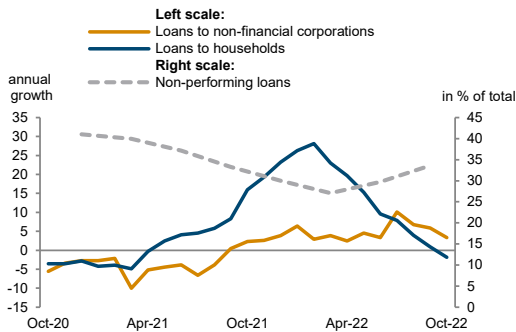
Unit labour costs in industry
annual growth rate in %



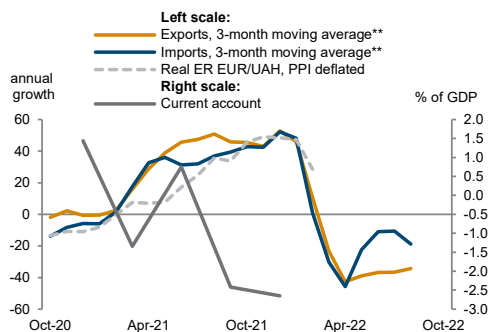
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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Economics editor: Vasily Astrov

IMPRESSUM

Herausgeber, Verleger, Eigentümer und Hersteller:
Verein „Wiener Institut für Internationale Wirtschaftsvergleiche“ (wiiw),
Wien 6, Rahlgasse 3

ZVR-Zahl: 329995655

Postanschrift: A 1060 Wien, Rahlgasse 3, Tel: [+431] 533 66 10, Telefax: [+431] 533 66 10 50
Internet Homepage: www.wiiw.ac.at

Nachdruck nur auszugsweise und mit genauer Quellenangabe gestattet.

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