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# Monthly Report

Global Trade Expansion Stalled Even before the COVID-19 Pandemic

How to Explain the Deteriorating Trend in Turkey's Economic Performance?

Is Higher COVID-19 Mortality Hurting Economic Growth?

What do we Know about the Pharmaceutical Companies Producing Vaccine for COVID-19?

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The Vienna Institute for International Economic Studies
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VASILY ASTROV
SERKAN ÇIÇEK
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# Chart of the month: Global trade expansion stalled even before the COVID-19 pandemic

BY VASILY ASTROV

The first wave of the COVID-19 pandemic resulted in a sharp decline in global trade. In the second quarter of 2020, global trade volume in goods plunged by 11.7% (on a quarterly basis), mirrored by a similarly big drop in industrial production. This was mainly due to the lockdowns imposed and the border closures, which badly affected cross-border value chains (although the collapse in demand, for instance for cars, played a role as well). These disruptions proved largely temporary, and trade in goods rebounded strongly (by 11.5%) in the third quarter and by another 4% in the fourth quarter.[1] Still, because of the sharp contraction in the second quarter, trade in goods slumped by 5.3% for 2020 as a whole.

**Global trade and industrial production, January 2015 = 100**
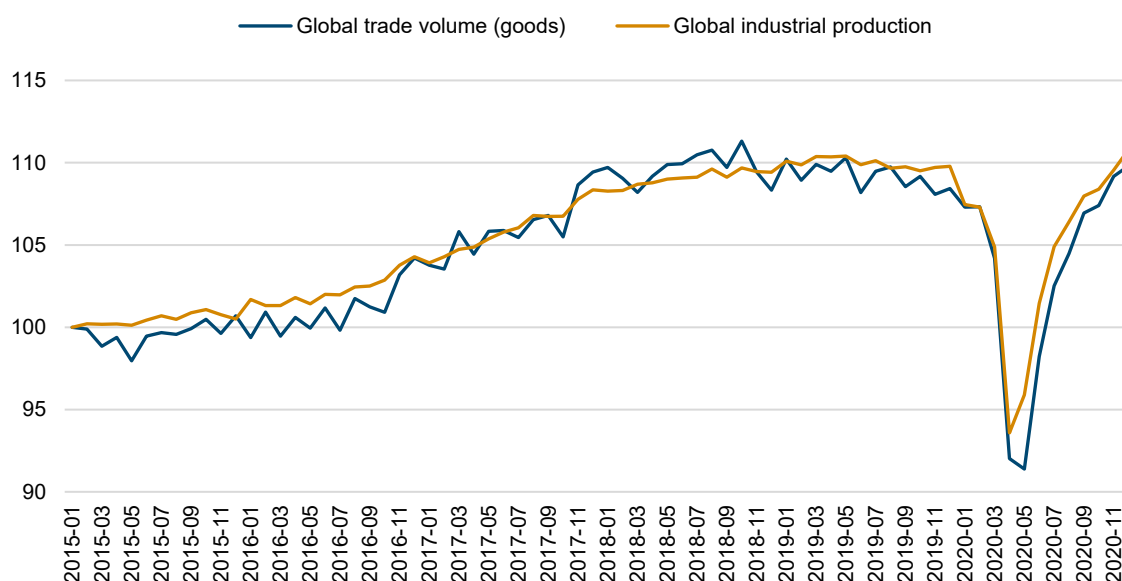


Source: Netherlands Bureau for Economic Policy Analysis (CPB), World Trade Monitor.

However, as the chart above demonstrates, trade expansion had lost momentum well before the outbreak of the COVID-19 pandemic. After having increased by 4.9% in 2017 and 3.5% in 2018, global trade volume shrank by 0.4% in 2019 – despite still solid global GDP growth of 2.7% recorded in that year.[2] The decoupling of trade dynamics from growth in 2019 was due primarily to increased protectionism, above all the trade conflict between the US and China. Not only did higher import tariffs

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[1]　This rebound was in sharp contrast to the performance of global trade in services, which recovered only moderately, with tourism flows affected particularly strongly.

[2]　World Bank, Global Economic Prospects, January 2021.

on both sides have an immediate dampening effect on trade flows, but they also increased uncertainty about future trade policy, which affected investments and the demand for heavily traded investment goods. The COVID-19 pandemic has further added to this decoupling: according to World Bank estimates,[3] global GDP dropped by only 4.3% in 2020 – less than the global trade volume. Besides, it may have a further dampening effect on trade in years to come, on account of the likely de-globalisation and 'near-shoring' of global value chains.

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[3]    Ibid.

# Opinion Corner*:
# How to explain the deteriorating trend in Turkey's economic performance?[1]

BY SERKAN ÇIÇEK

*After an economic boom throughout the 2000s, Turkish growth has slowed markedly over the past decade, in tandem with a sharp currency depreciation. We argue that the main reasons for this are: an overly high dependence on imports, the high level of foreign exchange indebtedness in the non-financial sector and increased authoritarianism. An improvement in economic performance would require a more active industrial policy, measures to be taken against currency mismatches and the creation of a safe investment environment.*

## THE LAST TWO DECADES: FROM SHINY TO DULL

At the beginning of 2001, Turkey experienced a severe economic crisis – largely a result of political instability and inflationary expansionary policies in the 1980s and 1990s. However, immediately following the crisis, a number of structural reforms were introduced: the adoption of an inflation targeting strategy; restructuring of the banking and financial sectors; the implementation of fiscal rules; and a new set of laws to increase transparency and competition. Thanks to these reforms and the accession to power in 2002 of Erdoğan's single-party government (following unsuccessful coalitions), Turkey made a significant leap forward during the 2000s. The investment environment improved dramatically, and the production structure of the private sector changed significantly. The shares of the automotive, petrochemical and electronics industries within Turkey's exports increased, to surpass the share of traditional sectors, such as food and beverages, tobacco and textiles.[2]

Moreover, during this period the government made substantial investments in infrastructure, taking advantage of the availability of international liquidity and the adoption of self-financing strategies. Intercity motorways were constructed, the existing road networks were updated and new projects both large and small got under way across Turkey – such as the Marmaray underground railway, the Eurasia Tunnel, the third İstanbul Bridge, the North Marmara Motorway, the Gebze-İzmir Motorway, the Osmangazi Bridge, İstanbul Airport, city underground railway lines and city bus lanes. Several other megaprojects are also currently either under construction or nearing completion, including the İstanbul Canal, TOGG Turkish national car and high-speed railways. These huge projects are expected to contribute significantly to economic growth, especially in the medium and long term. With massive capital inflows leading to high expenditure on consumption, economic growth accelerated and remained

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[2]  Atiyas, İ. and Bakis, O. (2015), 'Structural change and industrial policy in Turkey', *Emerging Markets Finance and Trade*, 51(6), 1209-1229.

at quite a high level for almost 10 years. During this period, Turkey joined the upper-middle-income group of countries.

However, in the aftermath of the global financial crisis, the monetary easing policies pursued by the developed countries have done considerable harm to the financial markets of Turkey – as they have done to other emerging markets, even though they contributed to economic growth in the short term. The current account deficit has widened, credit growth has gained steam and debt accumulation has accelerated. During this period, the Central Bank of the Republic of Turkey (CBRT) has undertaken a series of new policy initiatives to limit capital inflows, including the adoption of an unconventional interest rate corridor in late 2010. Following these developments and the announcement of the US Fed's tapering programme in mid-2013, the outflow of capital and the increased demand for foreign currency among residents resulted in depreciation of the Turkish lira (TRY). Ever since then, the currency's trend has generally been downward: in January 2013, one US dollar would buy TRY 1.76; by January 2021, the rate was TRY 7.41 to the US dollar. The currency depreciation has made intermediate imports more expensive and has inflated the debt of the non-financial private sector, a large part of which is denominated in foreign currency. As a result, Turkey's economic growth has slowed markedly. Economic dynamism and political stability have given way to political uncertainty, economic slowdown and mounting security concerns. The slowdown in growth, coupled with the currency depreciation, has contributed to a turnaround in income dynamics in Turkey: between 2002 and 2013, GDP per capita increased from USD 3,660 to USD 12,519; since then, however, it has been declining, reaching USD 9,042 in 2019.

## HIGH IMPORT DEPENDENCE AND INCREASED AUTHORITARIANISM

The reasons for the slowdown can be grouped into two basic categories: an inability to reduce foreign dependence in production and an increase in authoritarianism in politics. Both factors have contributed decisively to the depreciation of the Turkish lira and have undermined economic growth.

As mentioned above, the production structure of Turkey's private sector has changed significantly. For example, since 2006 the automotive industry has become the leading sector in exports, with a 15.9% share of manufacturing exports by 2019. Although Turkey has significantly shifted the structure of production from traditional sectors to modern sectors that are more productive, it has failed to reduce its dependence on foreign raw materials and intermediate goods. As Figure 1 shows, the import requirement ratios (IRRs) have risen since 2002 and are particularly high in the coke and refined petroleum products sector (over 70%), and in motor vehicles and basic metals (over 40%); all these are characterised by high capital intensity and use of advanced technology.[3] Moreover, the foreign currency liabilities of firms in the non-financial sector (especially their short-term ones) have increased significantly (Figure 2). Thus, the level of the exchange rate has become more crucial in industrial production and foreign trade.

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[3]   Erduman, Y., Eren, O. and Gül, S. (2020), 'Import content of Turkish production and exports: A sectoral analysis', *Central Bank Review*, 20(4), 155-168. The authors also indicate that the reason behind the increase in imports of intermediate goods in the industrial sector is the entry of large multinational and foreign-owned firms and their contribution to the strengthening of trade ties with global suppliers.
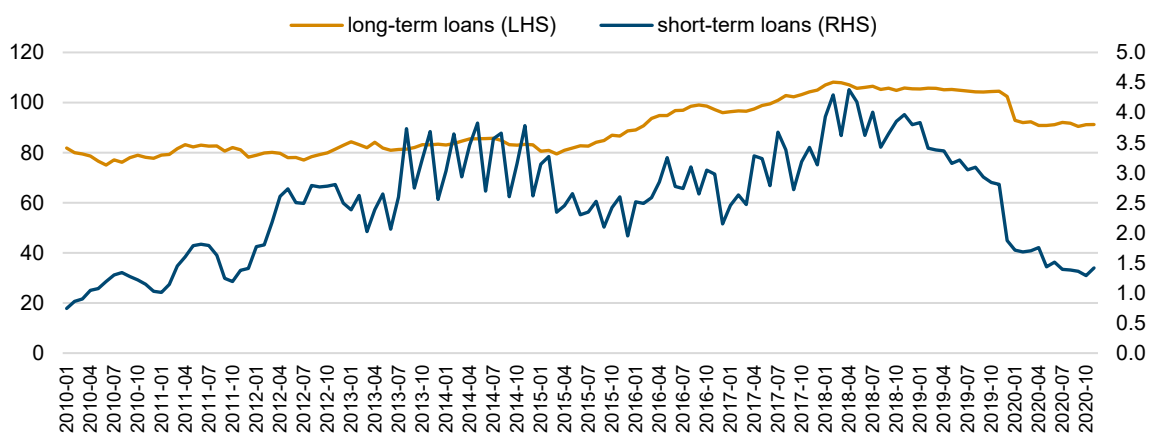
**Figure 1 / Import requirement ratios, by sector, %**
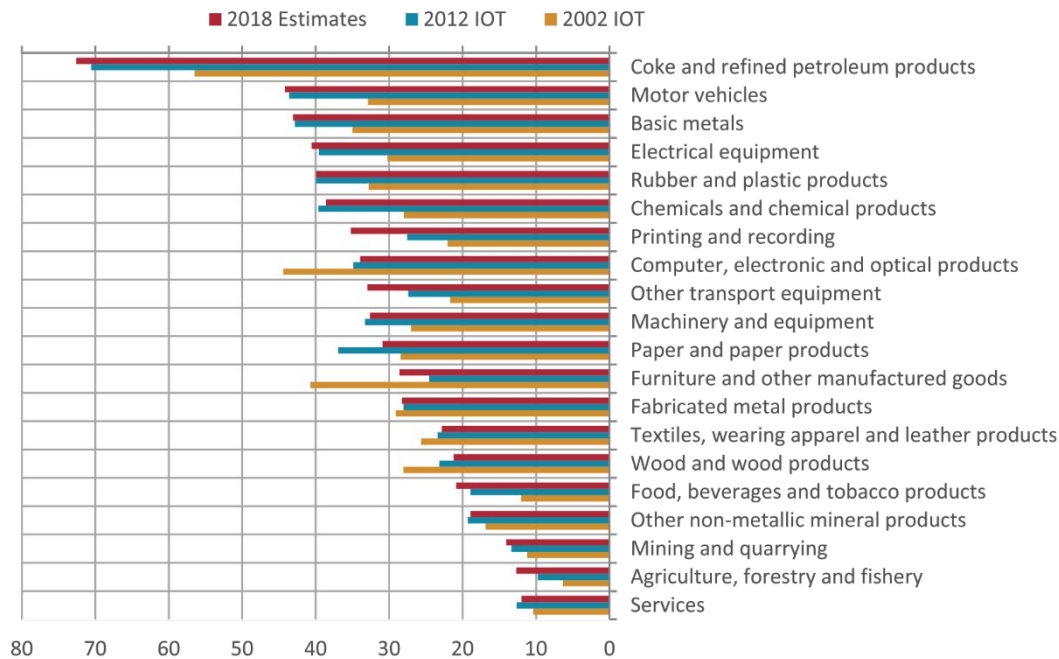


Note: IOT – input-output tables.
Source: Erduman, Y., Eren, O. and Gül, S. (2020), 'Import content of Turkish production and exports: A sectoral analysis', *Central Bank Review*, 20(4), 161.

**Figure 2 / Outstanding short- and long-term loans received from abroad by non-financial sector, in USD bn**



Source: Electronic Data Dissemination System (EVDS) of the CBRT.

Alongside mounting current account deficits, another critical factor that has contributed to lira depreciation has been a tendency toward authoritarianism, especially following the failed coup attempt against President Erdoğan in 2016. Besides, there has also been an increase in the pressure exerted by politics on the economic decision-making mechanisms. For example, under government pressure, the central bank lowered interest rates aggressively, leading to negative real interest rates (Figure 3). Hence, the exchange rates depreciated sharply and the CBRT had to raise the policy rate to curb this depreciation.

**Figure 3 / Policy rate, real interest rates and exchange rate**
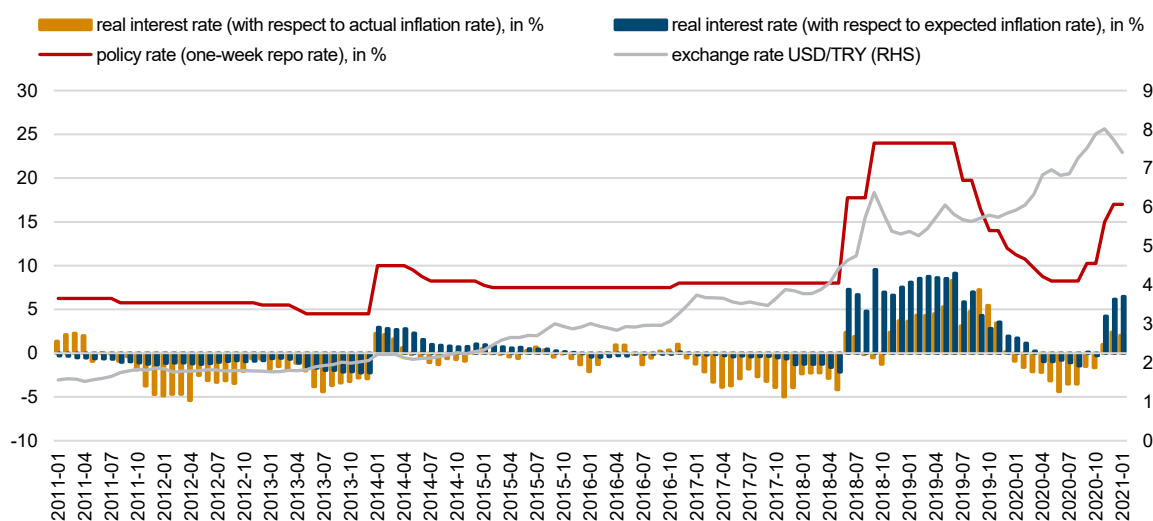


Source: Electronic Data Dissemination System (EVDS) of the CBRT.

Apart from negative interest rates and authoritarian pressures in domestic politics, the conflicts surrounding foreign policy have also affected the course of the exchange rate. The fall in the value of the lira has accelerated dramatically since 2018, due to the increased tensions in Turkey's relations with the USA, following the detention of a US pastor and the government's decision to purchase anti-missile systems from Russia.[4] Pastor Andrew Brunson was arrested in Turkey in October 2016, during the purges following the coup attempt in July 2016. In September 2017, Erdoğan proposed exchanging Brunson for Fethullah Gülen (the alleged mastermind behind the failed coup, who resides in the US), but nothing came of this. In July 2018, the US vice president called on Erdoğan to release Brunson or face significant sanctions. Since Turkey refused to release the pastor, in August 2018 the US Department of the Treasury imposed sanctions on two top Turkish government officials who had been involved in Brunson's detention: Turkish Justice Minister Abdulhamit Gül and Interior Minister Süleyman Soylu. After a few weeks of sanctions, Turkey had to release the pastor in order to halt the rise in the exchange rate.

So, what are the most important lessons to be learned from the Turkish experience? First, it should be recognised that massive government-led infrastructure investments are necessary for long-term economic growth – but are not sufficient on their own. As well as such investments, the country's industrial policy needs to be shaped in such a way as to reduce foreign dependence. Sectors with high import requirements should be given priority in determining incentives to increase the use of local inputs in production. Rather than pursuing a strategy that prescribes the same measures for all sectors, a strategy should be adopted with sector-specific features. To reduce the non-financial private sector's sensitivity to exchange rate movements, currency mismatches should be eliminated and limits placed on foreign exchange borrowing. But most importantly, a secure investment environment should be created, in order to mitigate investment risk. To this end, the government should take decisive steps to reduce the authoritarian nature of the regime – a move that, it would appear, is unlikely. Otherwise, investors' gains – often made at high cost – may melt away in short order.

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4    It should be noted that, despite US government's threats, no sanctions were applied against Turkey after the anti-missile systems were purchased.

# Is higher COVID-19 mortality hurting economic growth?

BY BRANIMIR JOVANOVIC

*Countries that have had a higher death toll during the COVID-19 pandemic have experienced a steeper decline in GDP, even after accounting for other factors, such as the stringency of the restrictions imposed. This implies that a no-lockdown policy is also costly for the economy, because of the higher mortality it causes, and that until the pandemic is brought under control, economic activity is likely to remain anaemic.*

## INTRODUCTION

When COVID-19 struck, Sweden acted differently from all the other European countries. As they introduced lockdowns in an effort to contain the spread of the virus, it decided to avoid restrictions. The bottom line? Its COVID-19 figures are several times higher than those of its Nordic peers; yet its economy has fared no better (Figure 1). Has the positive effect of the no-lockdown policy been offset by the negative effect of high mortality?

**Figure 1 / COVID-19 mortality and GDP growth in the Nordic countries in Q2 2020**



COVID-19 deaths in Q2, per million population

GDP decline in Q2 (%, y-o-y)
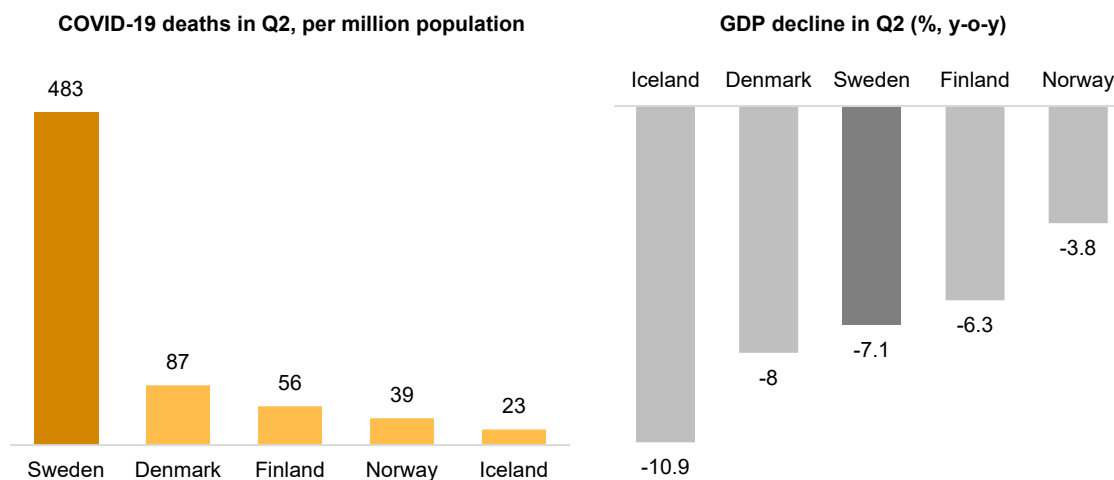
Source: COVID-19 deaths are from Oxford COVID-19 Government Response Tracker (Hale et al., 2020); GDP decline is from Eurostat.

Later in the pandemic, the number of European countries that followed the Swedish approach increased considerably. Many European countries that are outside the EU adopted such a laissez-faire strategy, justifying it by the dire economic cost of restrictions. That led them to be among the worst in Europe in terms of COVID-19 cases and deaths. So did the high COVID-19 numbers also affect their economies?

This article discusses the relationship between COVID-19 health outcomes and economic performance. It compares the year-on-year (y-o-y) growth rates of GDP in 40 European economies during the second and third quarters of 2020 with the number of COVID-19 deaths during the same periods.

## OF GROWTH AND DEATHS

The biggest economic contraction in Europe in the second quarter of 2020 was recorded by the UK, whose GDP declined by 21.7% year on year. During the same period, the UK had the second-worst death toll in the whole of Europe (after Belgium), with 571 deaths per million population. The next worst-hit European economies in the second quarter were Spain, France and Italy. They were all at the top of the list of European countries in terms of COVID-19 deaths.

The relationship between GDP growth rates and the number of COVID-19 deaths in 40 European countries during the second and third quarters of 2020 is shown in the scatterplots of Figure 2. There is a clearly negative correlation between the two variables – higher numbers of COVID-19 deaths are associated with a bigger decline in GDP. The correlation is present in both the second and the third quarters of 2020.

**Figure 2 / Relationship between GDP growth and COVID-19 mortality in 40 European countries**
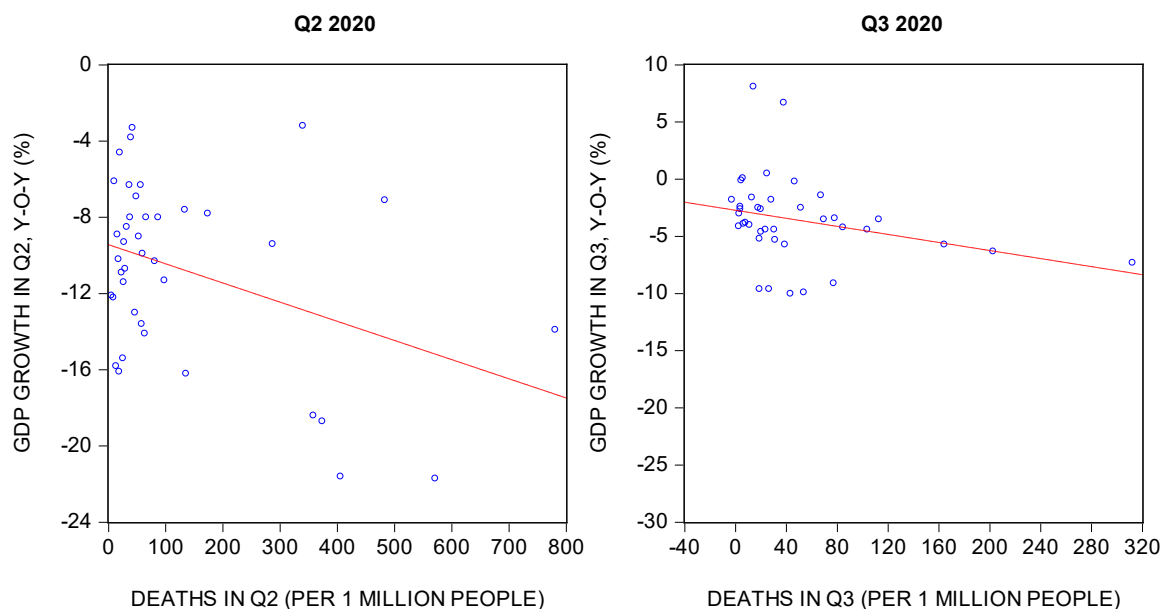


Source: COVID-19 death cases are from Oxford COVID-19 Government Response Tracker (Hale et al. 2020). GDP growth is from Eurostat and wiiw Monthly Database.

When we regress the GDP growth from the second and third quarters of 2020 on the number of COVID-19 deaths (per population) for the 40 European countries, we get the results shown in Table 1, column (1). The coefficient of the number of COVID-19 deaths is -0.017, and is highly significant statistically (at 1%). This coefficient implies that when COVID-19 mortality is 100 cases per million population higher, GDP growth is 1.7 percentage points lower, on average.

Of course, this relationship does not necessarily imply that mortality retards growth, as there might be many factors that are related to both of the outcomes – for example, the state of the healthcare system or the quality of institutions and governance. For instance, poorer governance might, at the same time, lead to worse health outcomes during the pandemic and lower economic growth. To account for these unobserved factors related to a country's characteristics, column (2) of Table 1 presents the results of a regression that also includes country fixed effects, which capture unobserved country heterogeneity. The results remain roughly unchanged – the coefficient of COVID-19 mortality is again significant and negative, even increasing slightly (in absolute terms) to -0.021.

Finally, there might be other observable factors that are affecting both GDP growth and health outcomes during the pandemic, such as the government-imposed restrictions on movement, or the fiscal support provided by a government. If these factors are unaccounted for, one might spuriously conclude that there is a relationship between GDP growth and mortality, whereas in fact it is these omitted factors that are driving both variables. To account for this, column (3) of Table 1 presents the results when a variable measuring the stringency of the government-imposed restrictions is added in the regression, as well as the government budget deficit. Both these variables turn out to be significant for GDP growth. The coefficient of COVID-19 mortality declines somewhat (in absolute terms), to -0.012; but it remains highly significant, implying that a higher death toll during the pandemic is indeed associated with greater GDP decline – even after accounting for other factors.

### Table 1 / Results of regressions between GDP growth and COVID-19 mortality in 40 European economies in Q2 2020 and Q3 2020

|  | (1) GDP growth y-o-y | (2) GDP growth y-o-y | (3) GDP growth y-o-y |
|---|---|---|---|
| **Deaths per million people** | -0.017*** | -0.021*** | -0.012*** |
|  | (0.000) | (0.000) | (0.000) |
| **Stringency Index** |  |  | -0.217*** |
|  |  |  | (0.000) |
| **Government budget deficit** |  |  | 0.229** |
|  |  |  | (0.016) |
| **Constant** | -5.640*** | -5.311*** | 8.005*** |
|  | (0.000) | (0.000) | (0.000) |
| **Country fixed effects** | No | Yes | Yes |
| **No. observations** | 79 | 79 | 78 |
| **Adjusted R squared** | 0.18 | 0.28 | 0.80 |

Notes: *** represents significance at 1%; ** significance at 5%; the Stringency Index is the COVID-19 Government Response Stringency Index from the Oxford COVID-19 Government Response Tracker; COVID-19 deaths are also from the Oxford COVID-19 Government Response Tracker; government budget deficit is expressed as a percentage of GDP and is from Eurostat and wiiw Monthly Database; GDP growth is from Eurostat and wiiw Monthly Database.

## WHY WOULD THIS HAPPEN, AND HOW BIG IS THE EFFECT?

Why would worse health outcomes be associated with bigger GDP contraction? One reason is voluntary social distancing. When people see and hear about high numbers of COVID-19 cases and deaths every day, they voluntarily decide to restrict their own mobility, staying at home and postponing spending for better times – all of which drags down economic activity. This effect was discussed by the International Monetary Fund (IMF) in its October 2020 World Economic Outlook (IMF, 2020). Another potential

channel is through increased uncertainty: doubt about future economic developments, about the duration of the pandemic and about the course of the recovery reduces business investment, as companies do not like uncertainty. This channel was discussed in the European Central Bank (ECB) Economic Bulletin from June 2000 (Gieseck and Rujin, 2020). Finally, worse health outcomes may undermine confidence among both consumers and businesses, causing them to refrain from consumption and investment spending, and thus further slowing economic activity. These effects were elaborated by the Organisation for Economic Co-operation and Development (OECD) in its Interim Report from September 2020 (OECD, 2020).

So how big is the estimated effect of COVID-19 mortality on economic growth? The size of the coefficient of COVID-19 deaths from the last regression (-0.012) implies that if a country had 100 more deaths per million population in a quarter, its GDP in that quarter would decline by an additional 1.2 percentage points, on average, holding everything else constant.

To illustrate the size of the effect, let us return to Sweden. In the second quarter of 2020, it had COVID-19 mortality of 483 per million population. The results of the regression imply that, had its mortality been equal to the average of the other four Nordic countries (51 per million), its GDP decline in the second quarter would have been 5.2 percentage points smaller (432*0.012) – i.e. only 1.9% (rather than 7.1%). Or, if one takes the UK as an example, if its mortality in Q2 (571 per million) had been the same as Germany's (97 per million), its GDP contraction would have been 5.7 percentage points smaller – i.e. 16% (rather than 21.7%).

## WHAT ARE THE POLICY IMPLICATIONS OF THESE FINDINGS?

The finding that worse health outcomes during the COVID-19 pandemic are associated with worse economic performance has at least two very important implications for policy makers.

**The first concerns the use of lockdown as an instrument to contain the spread of the disease.** Lockdowns have often been criticised for being too costly for the economy, especially in economically less-advanced countries. On these grounds, they were almost completely discarded during the winter wave of the pandemic by some European countries, such as the Western Balkan or the CIS countries. Lockdowns are indeed costly for the economy, and our analysis confirms that (see the significant and negative coefficient on the Stringency Index in the above regression). But not having a lockdown is also costly, as that leads to the unrestrained spread of the pandemic and a high number of COVID-19 cases and deaths, which in turn hinders economic activity. Thus, instead of rejecting lockdowns outright as too costly, governments – even in economically poorer countries – should introduce targeted, selective and well-designed restrictions that can contain the spread of the virus, without inflicting too severe economic damage. They should carefully weigh up the pros and cons of different restrictive measures on various activities, and should restrict the riskiest activities, leaving the least risky activities in place.

**The second implication refers to expectations for economic recovery.** Removing restrictions will not make economies recover by default. Full recovery can be expected only once the pandemic has been fully contained. Until such time as COVID-19 cases and deaths are reduced to very low levels, economic activity will remain anaemic, as people and businesses will still refrain from spending. This is

an additional argument for why countries must do their best to organise an efficient and effective vaccination process: without it, economic activity is likely to remain weak.

## CONCLUSION

This article has investigated the relationship between COVID-19 mortality and economic growth in 40 European countries, during the second and third quarters of 2020. It has found that there is a clearly negative relationship between them – higher COVID-19 death figures are associated with a stronger economic contraction. This can be explained by the voluntary social distancing, greater uncertainty and undermined confidence that the high COVID-19 death toll brings. The effect is considerable, and implies that governments should not reject lockdowns on the grounds that they are costly for the economy, as it is also costly to have no lockdowns; instead, they should adopt well-targeted and selective restrictions. Finally, one should not expect economies to get back onto the growth track until the pandemic is fully under control; this will take several months (at least), and can only be achieved through efficient and effective vaccination.

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Hale, Thomas, Sam Webster, Anna Petherick, Toby Phillips and Beatriz Kira (2020), Oxford COVID-19 Government Response Tracker, Blavatnik School of Government. Available at: https://covidtracker.bsg.ox.ac.uk/

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# What do we know about the pharmaceutical companies producing vaccine for COVID-19?

BY MAHDI GHODSI

*The COVID-19 pandemic has claimed many lives and has upset people's existence, social norms and international economic patterns. However, coordinated efforts by governments, international organisations such as the World Health Organization (WHO) and pharmaceutical companies are starting to yield results. This article describes some features of the major producers of COVID-19 vaccines and of the pharmaceutical sector generally. Some of the firms own swathes of patents, possess large quantities of fixed intangible assets and have very high labour productivity, suggesting that they are very innovative.*

## INTRODUCTION

The COVID-19 pandemic has claimed more than 2.5 million lives so far, and the number of new infections is on the rise. The only glimmer of hope is the vaccines produced by the frontrunners of pharmaceutical technology. Currently, 70 candidate vaccines are undergoing clinical evaluation;[1] these are produced using various technologies, and include inactivated virus vaccines, non-replicating viral vector vaccines, protein subunit vaccines, DNA-based vaccines and RNA-based vaccines. This last is the messenger ribonucleic acid (mRNA) technology[2] discovered in the early 1970s, which has recently been developed by high-tech pharmaceutical companies to produce vaccines against SARS-CoV diseases (Schlake et al., 2012; Jackson et al., 2020).

However, to date only 15 candidate vaccines have completed the third phase of trials. It is thus important to understand why those companies that have completed that phase have been more successful than the others. A crucial factor behind their success is their financial capacity and economic health: this allows for greater spending on research and development (R&D) and more innovative activities. The European Commission has approved contracts with several of these companies, pre-ordering billions of doses of vaccines for EU member states. If there is oversupply at any point, the vaccines could be donated to lower- and middle-income countries.

## WHAT ARE THE MAIN PHARMACEUTICAL SECTORS?

The major companies producing vaccines to combat COVID-19 are active in two main sectors. One is the manufacture of pharmaceutical preparations (NACE 2120), and the other is a service sector, focusing on research and the experimental development on biotechnology (NACE 7211). Worldwide, the former is much larger than the latter. The global pharmaceuticals manufacturing sector consists of about

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[1]   https://www.who.int/publications/m/item/draft-landscape-of-covid-19-candidate-vaccines

[2]   https://www.statnews.com/2020/11/10/the-story-of-mrna-how-a-once-dismissed-idea-became-a-leading-technology-in-the-covid-vaccine-race/

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20,000 active firms, with total turnover in 2019 standing at about USD 2 trillion. The global service sector in research and experimental development on biotechnology consists of about 32,000 firms, but its total turnover is only USD 150 billion.

In terms of total turnover, the manufacturing sector has higher labour productivity than the service sector. As Figure 1 shows, aggregate labour productivity in 2019 was USD 0.43 million per employee in the manufacturing sector, but only USD 0.23 million in the service sector. The superior productivity of the manufacturing sector can partly be explained by its larger capital intensity, its greater intensity of fixed intangible assets and its greater use of intermediate inputs (which means that in terms of *value-added* per employee, productivity would be lower). As Figure 1 shows, the global manufacturing sector has USD 0.83 million capital for each employee, while in the service sector capital intensity is only USD 0.38 million. Furthermore, the ratio of fixed intangible assets relative to total assets in the manufacturing sector stands at over 40%, while for the service sector it is below 30%. Intangible assets usually reflect the value of a firm's intellectual property, which consists of the firm's trademarks, brand, goodwill, its managerial skills and – most importantly – its patenting and innovation activities.

**Figure 1 / Selected economic indicators of the two global major pharmaceutical sectors, 2019**
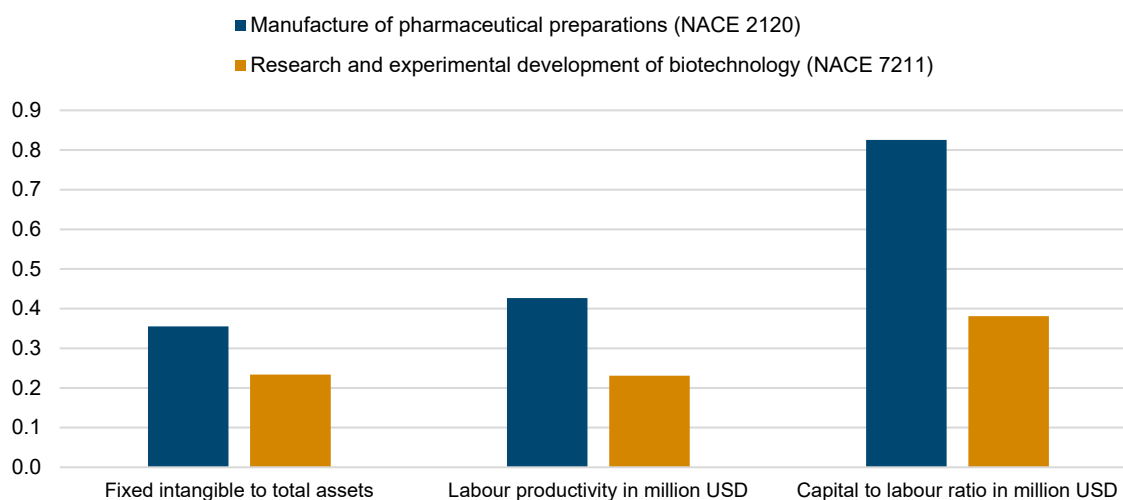


Source: Orbis, author's elaboration.

The top 20 countries that host the largest number of firms where productivity is higher than the global average in each sector are presented in the two panels of Table 1. The geographical distribution of these highly productive firms resembles the origin of many producers of COVID-19 vaccine, according to the list provided by the WHO. Developing countries do not show up in the list of highly productive service firms, while they host many very productive manufacturing pharmaceutical firms. It is thus evident that, while the manufacture of pharmaceuticals can be located across many countries, the same is not true of R&D in biotechnology. Capital-intensive manufacturing can be performed using high-tech and advanced machinery produced by the advanced economies, but transported to and installed in developing countries. However, knowledge-intensive services are not yet as mobile as manufacturing industries, since skilled labour cannot be voluntarily and easily located elsewhere. However, it is worth mentioning that the COVID-19 pandemic has facilitated remote working in a new technological shock; this could assist in the mobility of skilled labour across countries for these knowledge-intensive services.

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WHAT DO WE KNOW ABOUT THE PHARMACEUTICAL COMPANIES PRODUCING VACCINE FOR COVID-19?

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**Table 1 / Top 20 countries hosting the largest number of pharmaceutical firms with above-average productivity, averaged over the period 2017-2019**

| Manufacture of pharmaceutical preparations (NACE 2120) | | | Research and experimental development on biotechnology (NACE 7211) | | |
|---|---|---|---|---|---|
| Country | Number of active firms | Average productivity of all firms, USD | Country | Number of active firms | Average productivity of all firms, USD |
| United States | 8,760 | 405,901 | United States | 26,030 | 200,935 |
| Brazil | 1,214 | 815,349 | Canada | 2,292 | 146,878 |
| China | 5,998 | 2,464,522 | Japan | 468 | 321,333 |
| Italy | 435 | 578,519 | Italy | 698 | 150,521 |
| Germany | 203 | 883,467 | United Kingdom | 301 | 372,724 |
| United Kingdom | 120 | 540,641 | France | 381 | 305,795 |
| Cayman Islands | 52 | 3,749,661 | Sweden | 415 | 140,075 |
| Vietnam | 435 | 183,769 | Spain | 348 | 107,131 |
| France | 241 | 1,101,912 | Hungary | 311 | 124,584 |
| Netherlands | 38 | 7,143,549 | Germany | 90 | 556,223 |
| Belgium | 65 | 910,968 | Norway | 151 | 198,259 |
| Ireland | 33 | 2,335,851 | Belgium | 34 | 2,196,322 |
| Russia | 806 | 96,857 | Poland | 248 | 118,774 |
| Spain | 227 | 325,710 | Finland | 92 | 130,826 |
| Canada | 563 | 202,532 | Vietnam | 440 | 24,630 |
| South Korea | 689 | 336,663 | Denmark | 36 | 316,661 |
| Austria | 47 | 1,167,596 | Russia | 178 | 61,973 |
| Sweden | 146 | 241,678 | Netherlands | 14 | 536,163 |
| Bermuda | 11 | 1,114,419 | Portugal | 100 | 61,549 |
| Japan | 152 | 363,331 | Iceland | 19 | 213,061 |

Notes: Countries are ranked by the number of pharmaceutical firms with above-average productivity. However, the data in the table refer to *all* firms in the country in the respective sector. Average productivity is a simple average of firm-level productivity, defined as turnover per employee.
Source: Orbis and author's elaboration.

## WHO ARE THE COVID-19 VACCINE FRONTRUNNERS?

We found the financial statements of the producers of COVID-19 vaccines in the Orbis database, provided by the Bureau van Dijk, a Moody's Analytics company. Almost all the companies operate in the two main sectors of activity discussed above. Figure 2 shows the main features of the most innovative producers of vaccines, who also have very large global market shares in their sectors of activity. As is observed on the left-hand axis of this figure, these companies own a large proportion of the patents granted within the two global sectors. Patents – usually considered to be the ultimate outcome of the R&D and innovative activities of firms – are granted by regional patent offices to protect the intellectual property rights of the innovators, provided the innovation is proved to be original. The French Sanofi, the American Pfizer Inc. and the British GlaxoSmithKline plc own the largest number of patents granted in their sectors of activity. Moreover, these companies supply more than 2% of the global sector, averaged over the period 2017-2019. As is shown on the right-hand axis of Figure 2, the labour productivity of many of these major companies is substantially higher than average productivity in the sector, discussed above. Furthermore, many of them have a very large share of fixed intangible assets in their total assets, as shown on the right-hand axis. This additionally indicates that the value of knowledge, trademarks, managerial skills and intellectual property rights in these companies comprises a large proportion of their total assets.

**Figure 2 / Some features of the most innovative producers of COVID-19 vaccines, averaged over period 2017-2019**
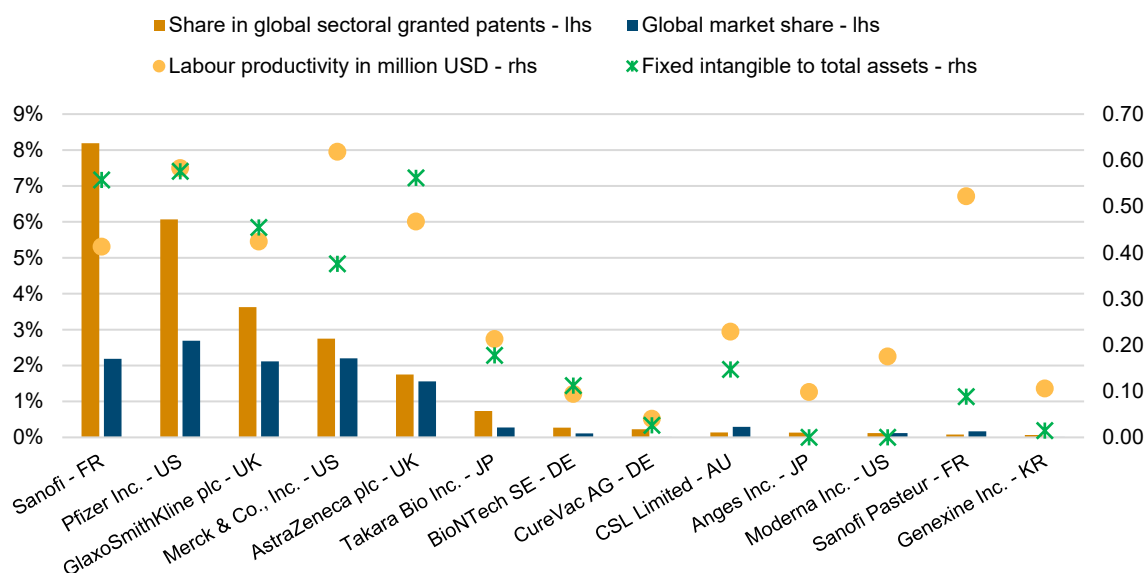


Source: Orbis, author's elaboration.

## THE LEADING MRNA CONSORTIUM: PFIZER-BIONTECH-FOSUN

On 9 November 2020, an important new vaccine, produced by a consortium of BioNTech SE, Shanghai Fosun Pharmaceutical Co. Ltd and Pfizer Inc., was announced to have proved effective on more than 90% of patients in the third phase of trials.[3] In this consortium, Pfizer is the clear leader, enjoying the largest global market share (3%) in the manufacture of pharmaceutical preparations (NACE 2120) in 2018. Shanghai Fosun Pharmaceutical enjoys a 0.2% global market share in the manufacture of pharmaceutical preparations, with a turnover of around USD 4.1 billion, while BioNTech can claim a 0.11% of market share in research and experimental development on biotechnology (NACE 7211), with a turnover of USD 125 million.

In fact, Pfizer Inc.'s scale of activities can be demonstrated by the following figures. Its total operating revenue in 2018 stood at USD 53.7 billion – the equivalent of around 12% of Austrian GDP in that year. In 2021, it forecasts USD 15 billion in COVID-19 vaccine sales.[4] It is a large, multinational enterprise based in New York and holds a major share in 698 subsidiaries across the globe that are active in various sectors. This extensive network of ownership indicates Pfizer Inc.'s enormous capacity to utilise resources through its global supply chains across many countries. These resources are not only limited to intermediate inputs or financial instruments, but also extend to technology and know-how owned by this large conglomerate through its subsidiaries in patent boxes. Studies in the literature – such as Alstadsæter et al. (2018) and Bösenberg and Egger (2017) – argue that such large multinational enterprises pursue their R&D activities in countries where the costs of, and taxes on, R&D activities are lowest, in order to maximise the benefits from patent registrations. Pfizer Inc. has filed 242,000 patent

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[3]   https://www.businesswire.com/news/home/20201109005539/en/

[4]   https://www.bloomberg.com/news/articles/2021-02-02/pfizer-forecasts-15-billion-in-covid-vaccine-sales-for-2021

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WHAT DO WE KNOW ABOUT THE PHARMACEUTICAL COMPANIES PRODUCING VACCINE FOR COVID-19?

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applications, of which 51% have been granted by patent offices. That is about 6% of all granted patents owned by global firms active in the same sector (i.e. NACE 2120). Pfizer Inc.'s ratio of fixed intangible assets to total assets has averaged 53% over the past 10 years, which is much larger than the average figure for the industry generally (33%). Pfizer Inc.'s acquisition of more intangible assets in the period 2014-2016 has contributed to an improvement in its labour productivity, which currently stands at around USD 0.6 million per employee. This is much higher than the average level of labour productivity in the sector (USD 0.46 million).

## THE SECOND MRNA CONSORTIUM: MODERNA-NIAID

On 16 November 2020, a second vaccine against COVID-19 was announced. It is produced by the joint venture of Moderna Inc. and the National Institute of Allergy and Infectious Diseases (NIAID). While the latter is a public entity, the former is a company established in 2016 that is active in research and experimental development on biotechnology (NACE 7211). Unlike Pfizer, Moderna is a rather small company: in 2018, its operating turnover was USD 135 million – just 0.14% of the total turnover generated in the global sector and only slightly larger than that of BioNTech SE. However, it forecasts USD 18 billion in sales of COVID-19 vaccines this year.[5] Despite its extreme youth, Moderna Inc. has filed 1,406 patent applications, of which 240 have already been granted. That amounts to 0.12% of all granted patents owned by firms in this sector. Moderna Inc. owns major shares in only four subsidiaries, which are active in the US.

## STOCK MARKET VALUATION OF MAJOR COVID-19 VACCINE PRODUCERS

However, many investment and banking companies (such as the Goldman Sachs Group) and national funds (such as the Government of Canada) have invested in Moderna Inc. by acquiring shares. It is not only technological know-how that matters to the growth of such pharmaceutical frontrunners, but also their managerial skills in acquiring financial resources. Figure 3 indicates how the stock prices of the youthful Moderna Inc. and BioNTech SE have risen over the past 36 months, in comparison with other major producers of COVID-19 vaccines. It is evident that since approval of their vaccines, the stock prices of the young Moderna Inc. and BioNTech SE have soared. (BioNTech SE was established in 2008, much later than many other major producers of COVID-19 vaccine, and its initial public offering was on 24 September 2019.)

Why have the stock prices of other major pharmaceutical companies not increased as much as those of Moderna and BioNTech? The reason could be that other companies are very large and old, and produce many other pharmaceutical goods; thus revenue from the sale of COVID-19 vaccines will be only a small part of their total turnover. Interestingly, while the stock price of Moderna Inc. increased after approval of the first vaccine, produced by Pfizer Inc.'s joint venture (which implied that a COVID-19 vaccine was feasible), the stock price of Pfizer Inc. dropped sharply after approval of the second vaccine, produced by Moderna Inc. The main reason for this could be the better performance of the second vaccine, which has a 5% greater efficacy rate than the first one. This may signal the second vaccine's better quality, which means it could command a higher price and ensure a larger mark-up for its producer. Another reason is simply that – unlike Pfizer's vaccine, which should be stored at a temperature of between -

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[5]    https://www.theguardian.com/business/2021/feb/25/moderna-forecasts-18bn-in-sales-of-covid-vaccine-this-year

WHAT DO WE KNOW ABOUT THE PHARMACEUTICAL COMPANIES PRODUCING VACCINE FOR COVID-19?

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80ºC and -60ºC[6] – Moderna's could be stored at between -25°C and -15°C.[7] Besides, as noted above, total sales of COVID-19 vaccines by Moderna Inc. in 2021 are expected to be USD 3 billion larger than the expected sales of Pfizer Inc.

**Figure 3 / Stock prices of most innovative pharma companies producing vaccines against COVID-19, in EUR**
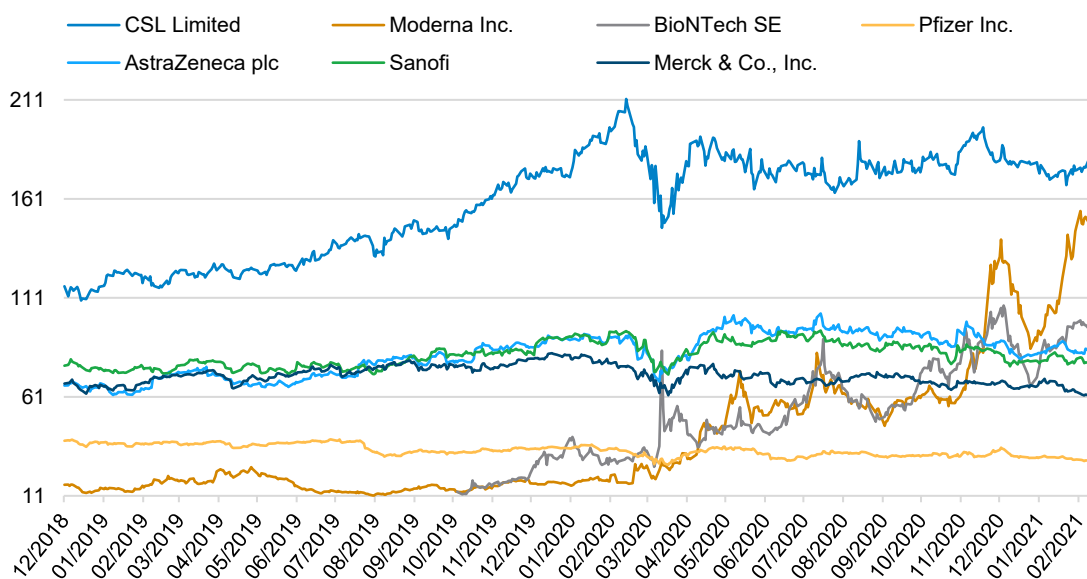


Source: Domestic stock market prices from Orbis in local currency; daily currency exchange rates of euro from European Central Bank; and author's elaboration.

After the new, much more contagious variants of COVID-19 appeared in England and South Africa around mid-December 2020, the stock prices of Moderna and BioNTech plunged. Then, after those vaccines proved themselves effective against the new variants of COVID-19, fresh expectations in the market allowed the shares of the companies to soar again, returning to their peak at the beginning of February 2021.

## SUMMARY AND CONCLUDING REMARKS

The COVID-19 pandemic has claimed many lives, and has upset people's existence, social norms and international economic patterns. So there has been a lengthy global crisis, which will only finally end with the vaccine. The management of this global crisis has proved challenging. However, coordinated efforts by governments, international organisations such as the WHO and pharmaceutical companies are starting to yield results in terms of impeding this global pandemic. Several COVID-19 vaccines are now being produced, using various technologies, by the frontrunners in the two main pharmaceutical sectors: manufacture of pharmaceutical preparations and research and experimental development on biotechnology. Some of these vaccines have successfully completed the third phase of trials and their

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6    https://www.pfizer.com/news/press-release/press-release-detail/pfizer-and-biontech-submit-covid-19-vaccine-stability-data

7    https://www.cdc.gov/vaccines/covid-19/info-by-product/moderna/downloads/storage-summary.pdf

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high efficacy rates have been proved. Mass vaccination is now being undertaken in many countries of the world.

None of this would have been possible, had the resources necessary for the development of these vaccines by major innovative firms not been made available in time. Those companies tend to be very innovative – something that is reflected in the large number of patents that they have been granted over the years. And that has also contributed to their considerable intangible assets and very high labour productivity. Many governments have allocated credits and funds to these companies, in return for a share in ownership or advance purchase contracts for the delivery of vaccine doses. This financial support for major innovative firms has finally borne fruit. One can only hope that such coordinated efforts will continue in the future in the search for technologically advanced medicines to combat other fatal diseases, such as cancer or HIV.

## REFERENCES

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Bösenberg, S. and Egger, P.H. (2017). R&D tax incentives and the emergence and trade of ideas, *Economic Policy*, 32(89), 39-80.

Jackson, L.A., et al. (2020). An mRNA vaccine against SARS-CoV-2 – preliminary report, *New England Journal of Medicine*, 383, 1920-1931.

Schlake, T., Thess, A., Fotin-Mleczek, M. and Kallen, K.J. (2012), Developing mRNA-vaccine technologies. *RNA Biology*, 9(11), 1319-1330.

# 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 | wiiw Monthly Database | wiiw FDI Database |
|---|---|---|

The wiiw databases are accessible via a simple web interface, with only one password needed to access all databases (and all wiiw publications).

You may access the databases here: https://data.wiiw.ac.at.

If you have not yet registered, you can do so here: https://wiiw.ac.at/register.html.

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We offer an additional service package that allows you to access all databases – a Premium Membership, at a price of € 2,300 (instead of € 2,000 as for the Basic Membership). Your usual package will, of course, remain available as well.

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
y-o-y
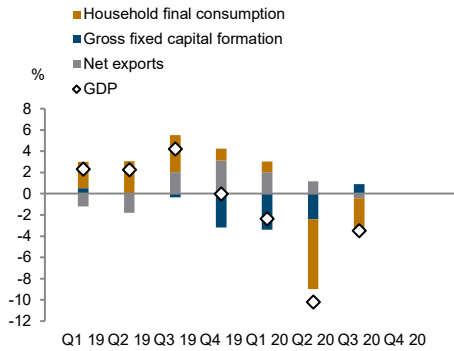


### Real sector development
in %
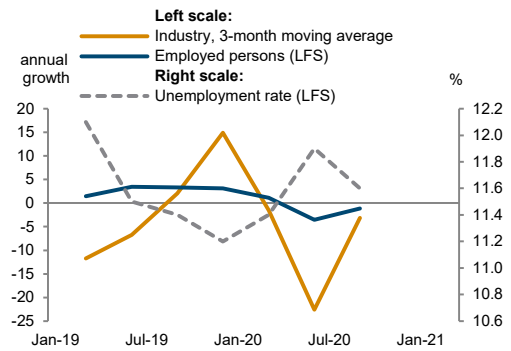


### Unit labour costs in industry
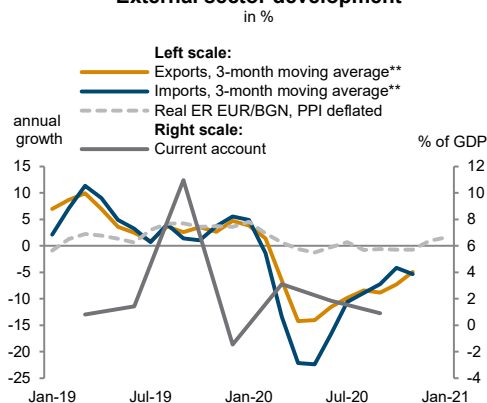annual growth rate in %
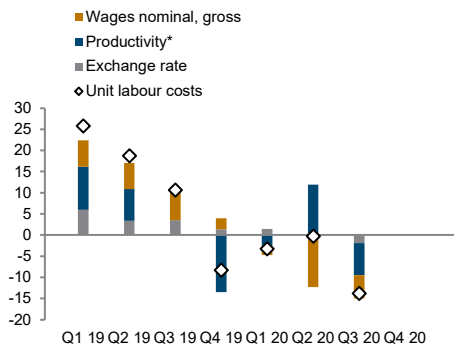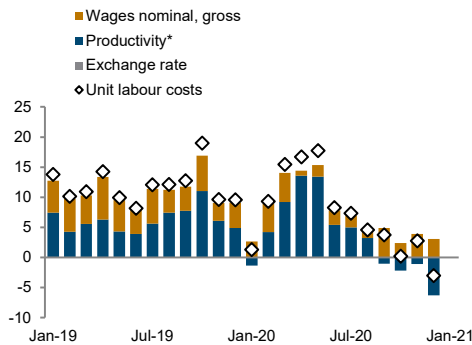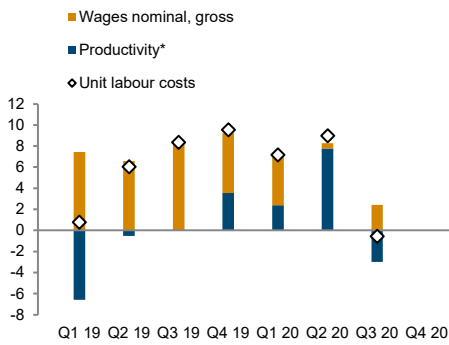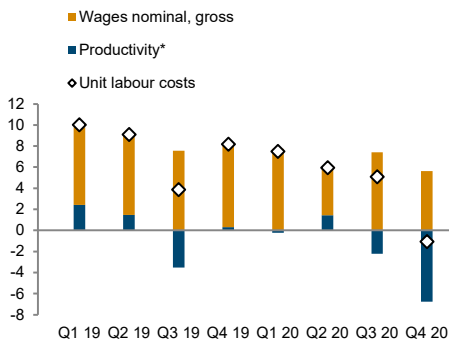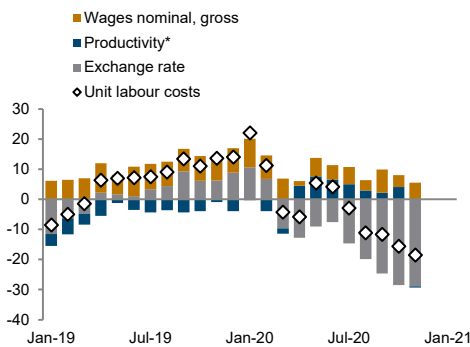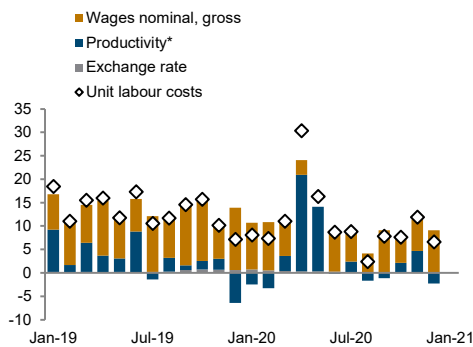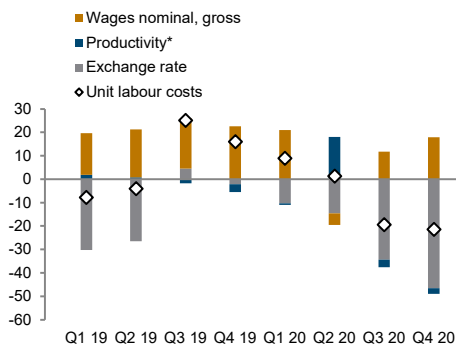


### Inflation and policy rate
in %
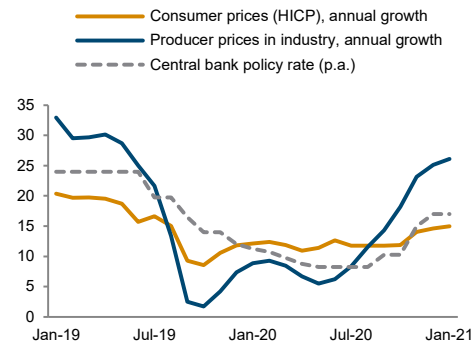


### Financial indicators
in %
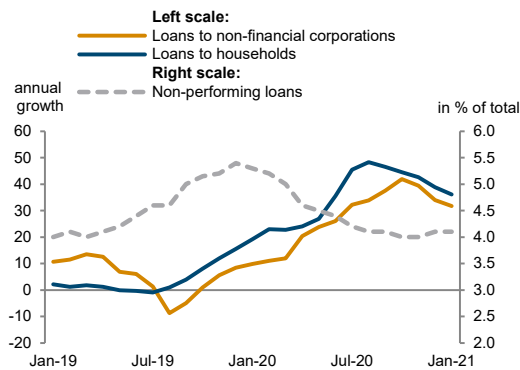


### External sector development
in %



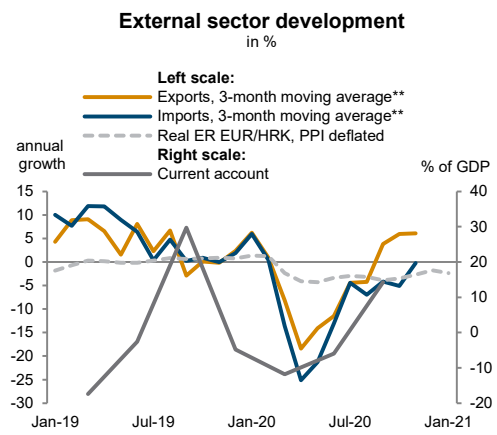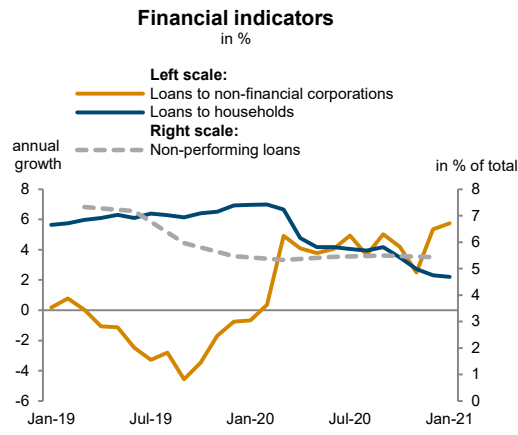*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.
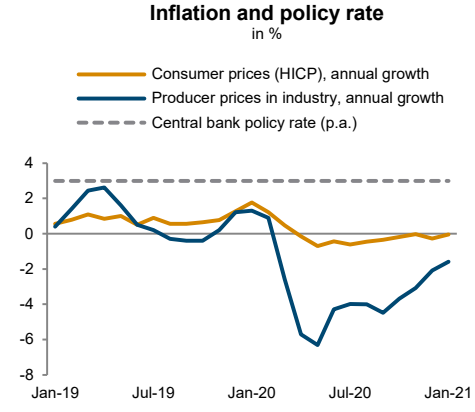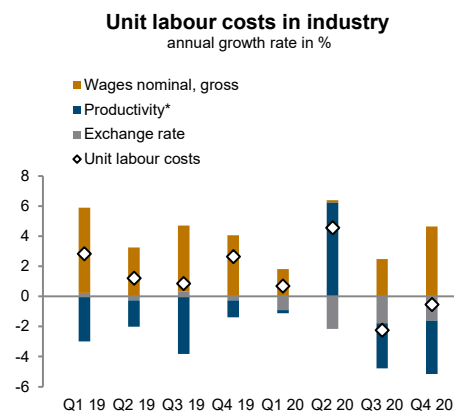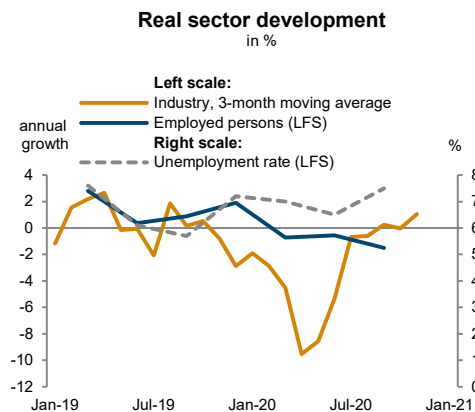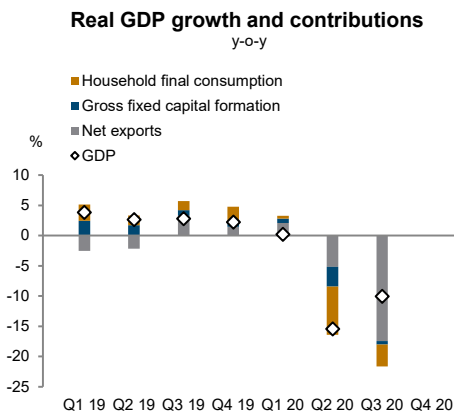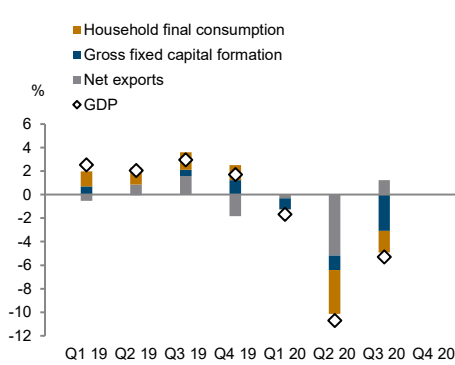**EUR based.

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
y-o-y

- Household final consumption
- Gross fixed capital formation
- Net exports
- GDP

### Real sector development
in %

Left scale:
- Industry
- Employed persons (LFS)

Right scale:
- Unemployment rate (LFS)

annual growth

### Unit labour costs in industry
annual growth rate in %

- Wages nominal, gross
- Productivity*
- Exchange rate
- Unit labour costs

### Inflation and policy rate
in %

- Consumer prices (HICP), annual growth
- Producer prices in industry, annual growth
- Central bank policy rate (p.a.)

### Financial indicators
in %

Left scale:
- Loans to non-financial corporations
- Loans to households

Right scale:
- Non-performing loans

annual growth

in % of total

### External sector development
in %

Left scale:
- Exports**
- Imports**
- Real ER EUR/BYN, PPI deflated

Right scale:
- Current account

annual growth

% of GDP

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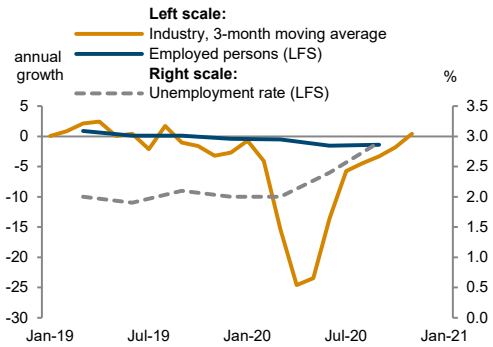**EUR based.

Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
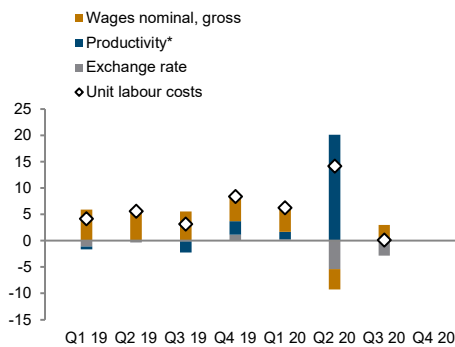https://data.wiiw.ac.at/monthly-database.html
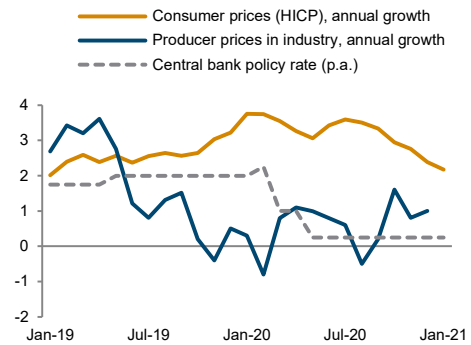
# Bosnia and Herzegovina

### Real GDP growth and contributions
y-o-y

- Household and NPISHs final consumption
- Gross capital formation
- Net exports
- GDP



### Real sector development
in %

**Left scale:**
- Industry, 3-month moving average
- Employed persons (reg.)

**Right scale:**
- Unemployment rate (reg.)



### Unit labour costs in industry
annual growth rate in %

- Wages nominal, gross
- Productivity*
- Exchange rate
- Unit labour costs



### Inflation
in %

- Consumer prices, annual growth
- Producer prices in industry, annual growth



### Financial indicators
in %

**Left scale:**
- Loans to non-financial corporations
- Loans to households

**Right scale:**
- Non-performing loans



### External sector development
in %

**Left scale:**
- Exports, 3-month moving average**
- Imports, 3-month moving average**
- Real ER EUR/BAM, PPI deflated

**Right scale:**
- Current account



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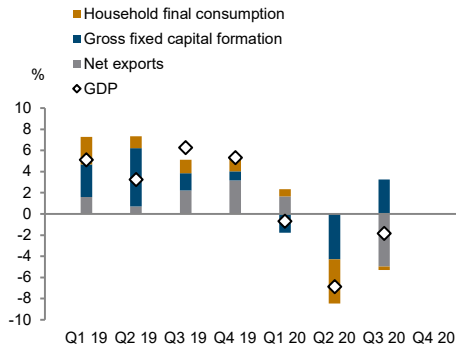**EUR based.

Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
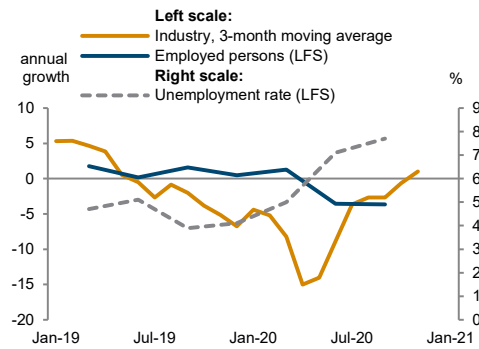https://data.wiiw.ac.at/monthly-database.html

# Bulgaria

### Real GDP growth and contributions
y-o-y

- Household final consumption
- Gross fixed capital formation
- Net exports
- ◇ GDP

### Real sector development
in %

Left scale:
- Industry, 3-month moving average
- Employed persons (LFS)

Right scale:
- Unemployment rate (LFS)

annual growth

### Unit labour costs in industry
annual growth rate in %

- Wages nominal, gross
- Productivity*
- ◇ Unit labour costs

### Inflation and policy rate
in %

- Consumer prices (HICP), annual growth
- Producer prices in industry, annual growth
- Central bank policy rate (p.a.)

### Financial indicators
in %

Left scale:
- Loans to non-financial corporations
- Loans to households and NPISHs

Right scale:
- Non-performing loans

annual growth

in % of total

### External sector development
in %

Left scale:
- Exports, 3-month moving average**
- Imports, 3-month moving average**
- Real ER EUR/BGN, PPI deflated

Right scale:
- Current account

annual growth

% of GDP

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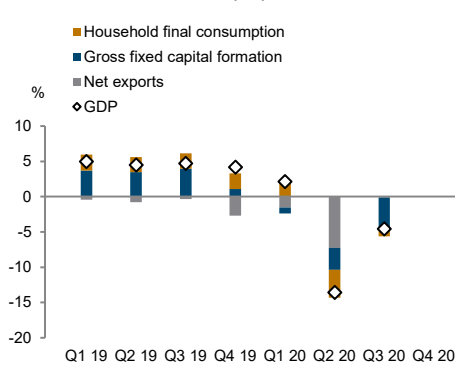**EUR based.

Source: wiiw Monthly Database incorporating Eurostat and national statistics.
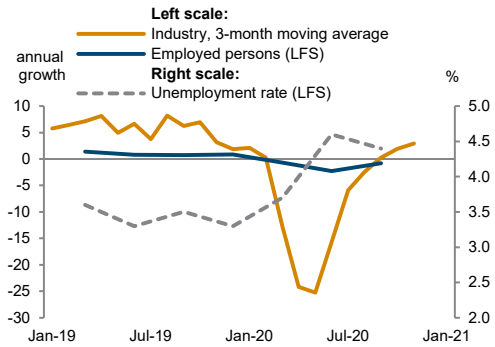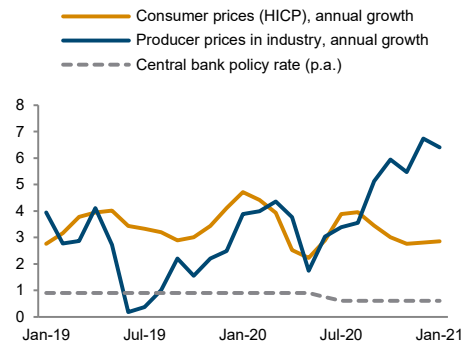Baseline data, country-specific definitions and methodological breaks in time series are available under:
https://data.wiiw.ac.at/monthly-database.html

# Croatia

### Real GDP growth and contributions
y-o-y

- Household final consumption
- Gross fixed capital formation
- Net exports
- GDP



### Real sector development
in %

**Left scale:**
- Industry, 3-month moving average
- Employed persons (LFS)

**Right scale:**
- Unemployment rate (LFS)



### Unit labour costs in industry
annual growth rate in %

- Wages nominal, gross
- Productivity*
- Exchange rate
- Unit labour costs



### Inflation and policy rate
in %

- Consumer prices (HICP), annual growth
- Producer prices in industry, annual growth
- Central bank policy rate (p.a.)



### Financial indicators
in %

**Left scale:**
- Loans to non-financial corporations
- Loans to households

**Right scale:**
- Non-performing loans



### External sector development
in %

**Left scale:**
- Exports, 3-month moving average**
- Imports, 3-month moving average**
- Real ER EUR/HRK, PPI deflated

**Right scale:**
- Current account



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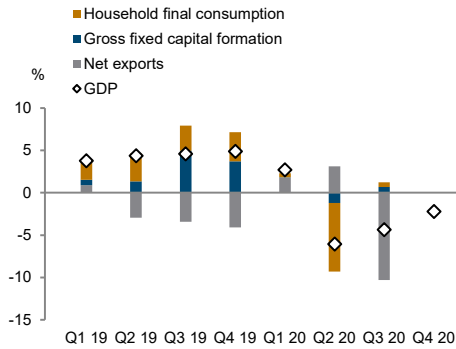**EUR based.

Source: wiiw Monthly Database incorporating Eurostat and national statistics.
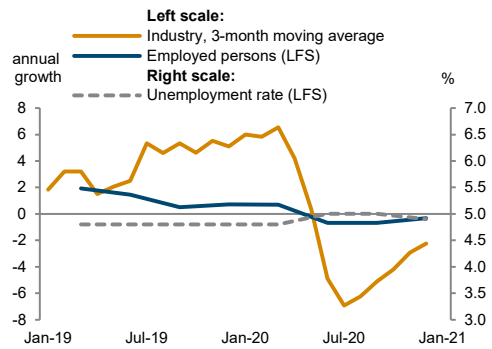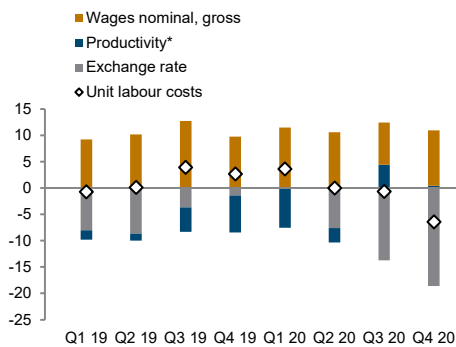Baseline data, country-specific definitions and methodological breaks in time series are available under:
https://data.wiiw.ac.at/monthly-database.html

# Czechia

### Real GDP growth and contributions
y-o-y

- ■ Household final consumption
- ■ Gross fixed capital formation
- ■ Net exports
- ◇ GDP

### Real sector development
in %

**Left scale:**
- Industry, 3-month moving average
- Employed persons (LFS)

**Right scale:**
- Unemployment rate (LFS)

### Unit labour costs in industry
annual growth rate in %

- ■ Wages nominal, gross
- ■ Productivity*
- ■ Exchange rate
- ◇ Unit labour costs

### Inflation and policy rate
in %

- Consumer prices (HICP), annual growth
- Producer prices in industry, annual growth
- Central bank policy rate (p.a.)

### Financial indicators
in %

**Left scale:**
- Loans to non-financial corporations
- Loans to households and NPISHs

**Right scale:**
- Non-performing loans

### External sector development
in %

**Left scale:**
- Exports, 3-month moving average**
- Imports, 3-month moving average**
- Real ER EUR/CZK, PPI deflated

**Right scale:**
- Current account

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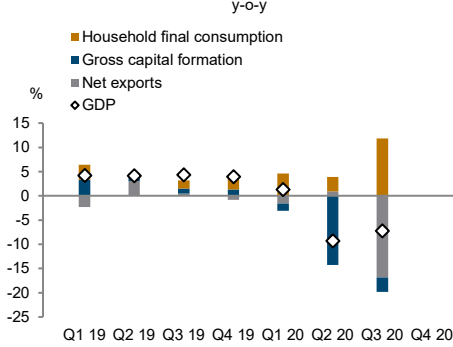**EUR based.

Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
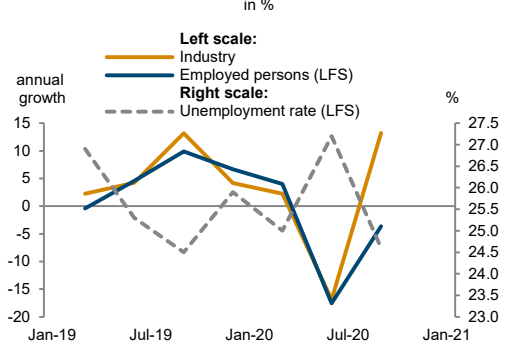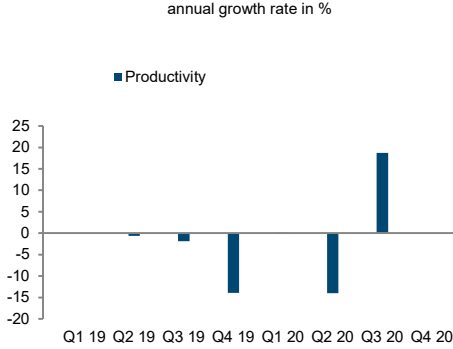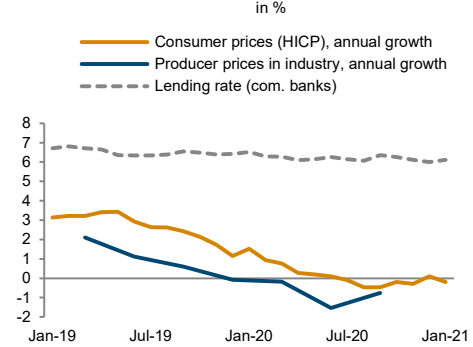https://data.wiiw.ac.at/monthly-database.html

# Estonia

### Real GDP growth and contributions
y-o-y

- Household final consumption
- Gross fixed capital formation
- Net exports
- GDP

### Real sector development
in %

Left scale:
- Industry, 3-month moving average
- Employed persons (LFS)

Right scale:
- Unemployment rate (LFS)

### Unit labour costs in industry
annual growth rate in %

- Wages nominal, gross
- Productivity*
- Unit labour costs

### Inflation and policy rate
in %

- Consumer prices (HICP), annual growth
- Producer prices in industry, annual growth
- Central bank policy rate (p.a.)

### Financial indicators
in %

Left scale:
- Loans to non-financial corporations
- Loans to households

Right scale:
- Non-performing loans

### External sector development
in %

Left scale:
- Exports, 3-month moving average**
- Imports, 3-month moving average**
- Real ER EUR/EUR, PPI deflated

Right scale:
- Current account

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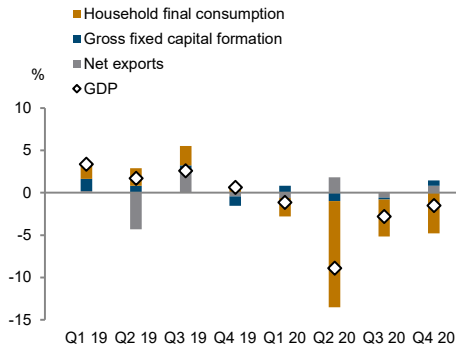**EUR based.

Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
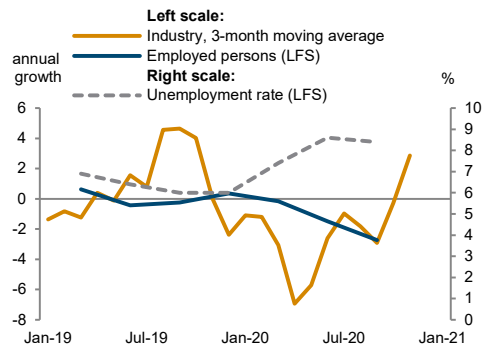https://data.wiiw.ac.at/monthly-database.html

# Hungary

## Real GDP growth and contributions
y-o-y

■ Household final consumption
■ Gross fixed capital formation
■ Net exports
◇ GDP

## Real sector development
in %

Left scale:
— Industry, 3-month moving average
— Employed persons (LFS)
Right scale:
---- Unemployment rate (LFS)

## Unit labour costs in industry
annual growth rate in %

■ Wages nominal, gross
■ Productivity*
■ Exchange rate
◇ Unit labour costs

## Inflation and policy rate
in %

— Consumer prices (HICP), annual growth
— Producer prices in industry, annual growth
---- Central bank policy rate (p.a.)

## Financial indicators
in %

Left scale:
— Loans to non-financial corporations
— Loans to households
Right scale:
---- Non-performing loans

## External sector development
in %

Left scale:
— Exports, 3-month moving average**
— Imports, 3-month moving average**
---- Real ER EUR/HUF, PPI deflated
Right scale:
— Current account

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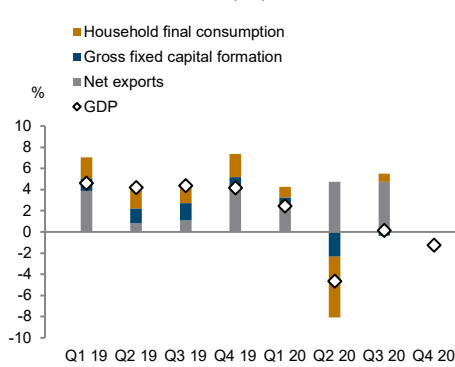**EUR based.

Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
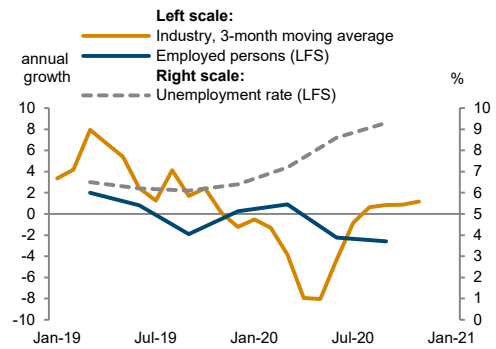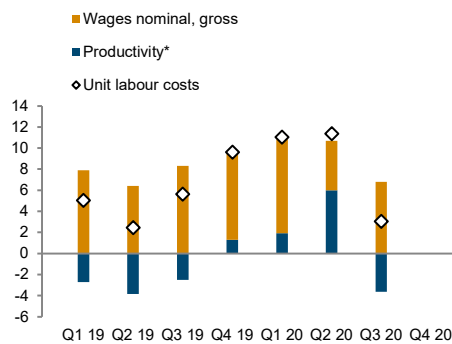https://data.wiiw.ac.at/monthly-database.html

# Kazakhstan

### Real GDP growth and contributions
y-o-y

- Household final consumption
- Gross fixed capital formation
- Net exports
- ◇ GDP



### Real sector development
in %

**Left scale:**
- Industry, 3-month moving average
- Employed persons (LFS)

**Right scale:**
- Unemployment rate (LFS)



### Unit labour costs in industry
annual growth rate in %

- Wages nominal, gross
- Productivity*
- Exchange rate
- ◇ Unit labour costs



### Inflation and policy rate
in %

- Consumer prices, annual growth
- Producer prices in industry, annual growth
- Central bank policy rate (p.a.)



### Financial indicators
in %

**Left scale:**
- Loans to non-financial corporations
- Loans to households

**Right scale:**
- Non-performing loans



### External sector development
in %

**Left scale:**
- Exports, 3-month moving average**
- Imports, 3-month moving average**
- Real ER EUR/KZT, PPI deflated

**Right scale:**
- Current account



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

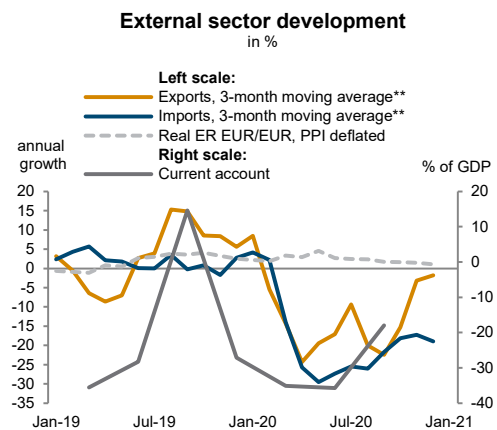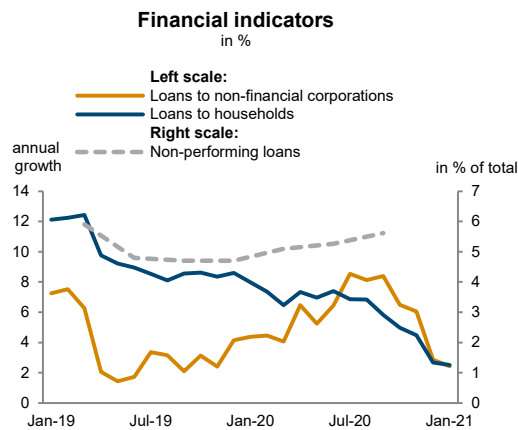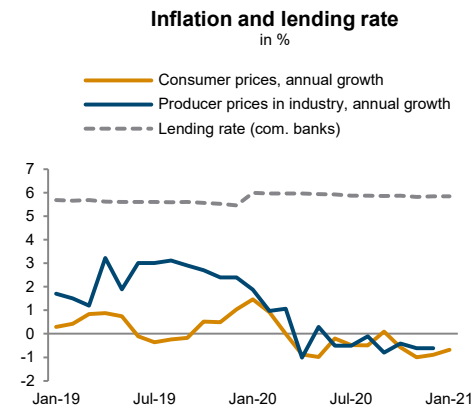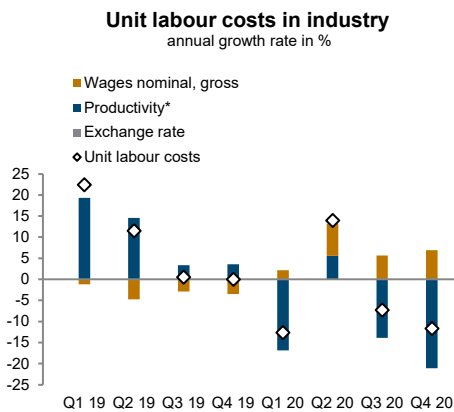Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
https://data.wiiw.ac.at/monthly-database.html

# Kosovo

### Real GDP growth and contributions
y-o-y

- Household final consumption
- Gross capital formation
- Net exports
- GDP



### Real sector development
in %

Left scale:
- Industry
- Employed persons (LFS)

Right scale:
- Unemployment rate (LFS)



### Productivity in industry
annual growth rate in %

- Productivity



### Inflation and lending rate
in %

- Consumer prices (HICP), annual growth
- Producer prices in industry, annual growth
- Lending rate (com. banks)



### Financial indicators
in %

Left scale:
- Loans to non-financial corporations
- Loans to households

Right scale:
- Non-performing loans



### External sector development
in %

Left scale:
- Exports, 3-month moving average*
- Imports, 3-month moving average*
- Real ER EUR/EUR, PPI deflated
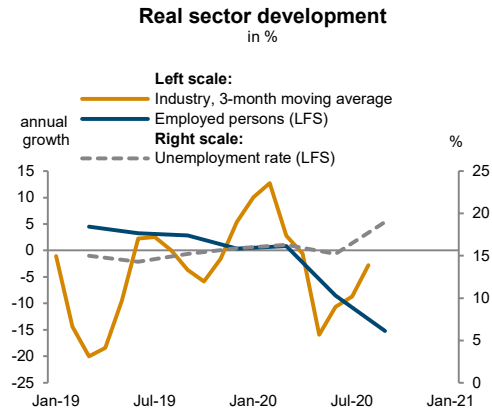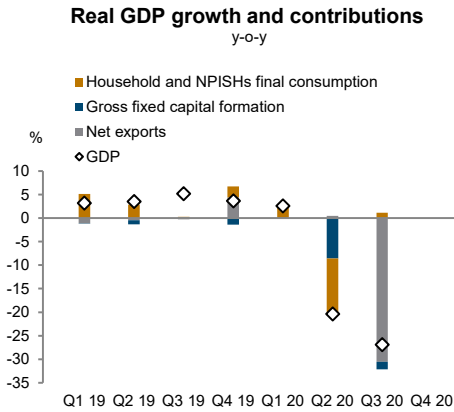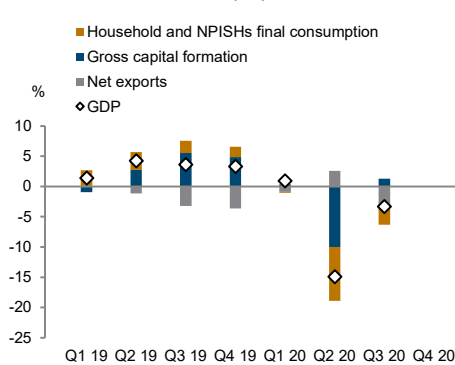
Right scale:
- Current account



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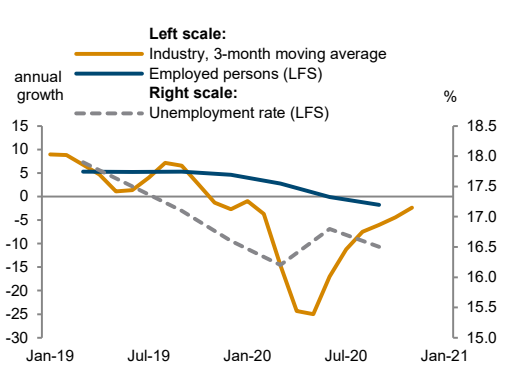https://data.wiiw.ac.at/monthly-database.html

# Latvia

### Real GDP growth and contributions
y-o-y

- Household final consumption
- Gross fixed capital formation
- Net exports
- ◇ GDP

### Real sector development
in %

Left scale:
- Industry, 3-month moving average
- Employed persons (LFS)

Right scale:
- Unemployment rate (LFS)

### Unit labour costs in industry
annual growth rate in %

- Wages nominal, gross
- Productivity*
- ◇ Unit labour costs

### Inflation and policy rate
in %

- Consumer prices (HICP), annual growth
- Producer prices in industry, annual growth
- Central bank policy rate (p.a.)

### Financial indicators
in %

Left scale:
- Loans to non-financial corporations
- Loans to households

Right scale:
- Non-performing loans

### External sector development
in %

Left scale:
- Exports, 3-month moving average**
- Imports, 3-month moving average**
- Real ER EUR/EUR, PPI deflated

Right scale:
- Current account

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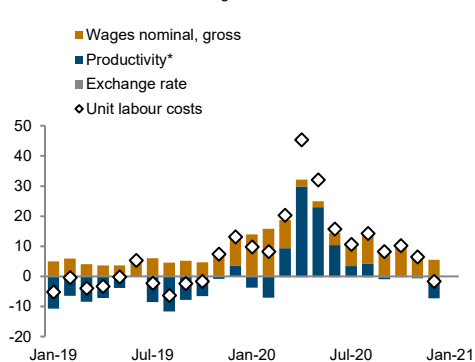https://data.wiiw.ac.at/monthly-database.html

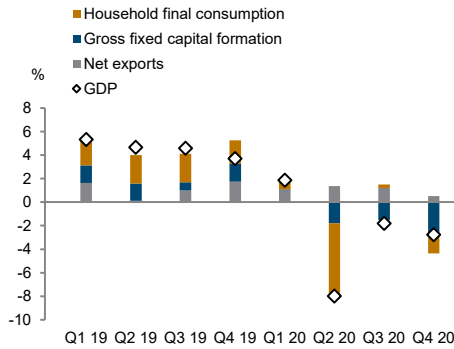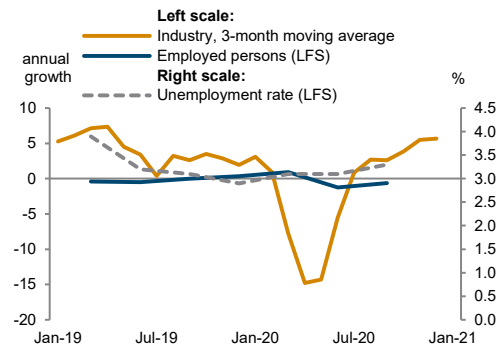# Lithuania

### Real GDP growth and contributions
y-o-y

- Household final consumption
- Gross fixed capital formation
- Net exports
- ◇ GDP

### Real sector development
in %

**Left scale:**
- Industry, 3-month moving average
- Employed persons (LFS)

**Right scale:**
- Unemployment rate (LFS)

### Unit labour costs in industry
annual growth rate in %

- Wages nominal, gross
- Productivity*
- ◇ Unit labour costs

### Inflation and policy rate
in %

- Consumer prices (HICP), annual growth
- Producer prices in industry, annual growth
- Central bank policy rate (p.a.)

### Financial indicators
in %

**Left scale:**
- Loans to non-financial corporations
- Loans to households

**Right scale:**
- Non-performing loans

### External sector development
in %

**Left scale:**
- Exports, 3-month moving average**
- Imports, 3-month moving average**
- Real ER EUR/EUR, PPI deflated

**Right scale:**
- Current account

*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.
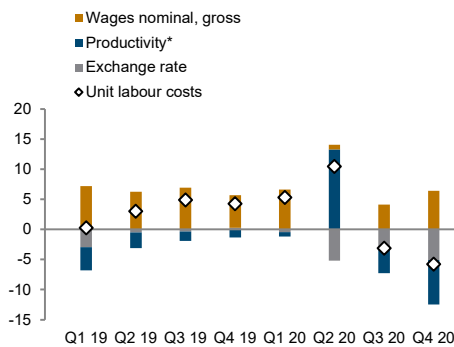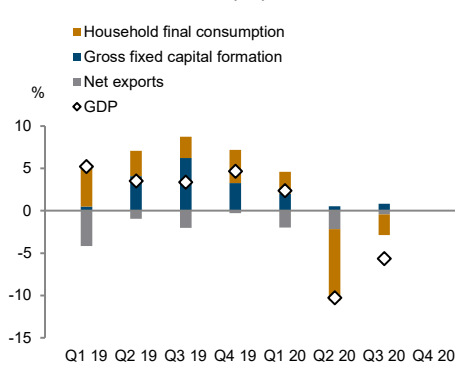Baseline data, country-specific definitions and methodological breaks in time series are available under:
https://data.wiiw.ac.at/monthly-database.html

# Montenegro

### Real GDP growth and contributions
y-o-y

- Household and NPISHs final consumption
- Gross fixed capital formation
- Net exports
- ◇ GDP

### Real sector development
in %

**Left scale:**
- Industry, 3-month moving average
- Employed persons (LFS)

annual growth

**Right scale:**
- Unemployment rate (LFS)

### Unit labour costs in industry
annual growth rate in %

- Wages nominal, gross
- Productivity*
- Exchange rate
- ◇ Unit labour costs

### Inflation and lending rate
in %

- Consumer prices, annual growth
- Producer prices in industry, annual growth
- Lending rate (com. banks)

### Financial indicators
in %

**Left scale:**
- Loans to non-financial corporations
- Loans to households

annual growth

**Right scale:**
- Non-performing loans

in % of total

### External sector development
in %

**Left scale:**
- Exports, 3-month moving average**
- Imports, 3-month moving average**
- Real ER EUR/EUR, PPI deflated

annual growth

**Right scale:**
- Current account

% of GDP

*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.
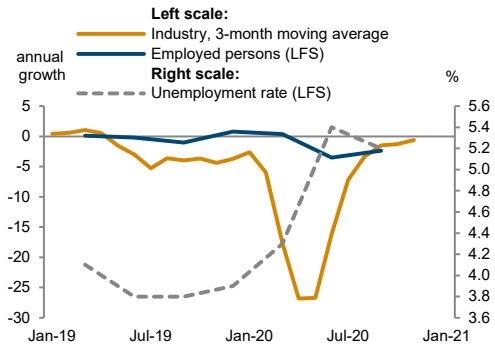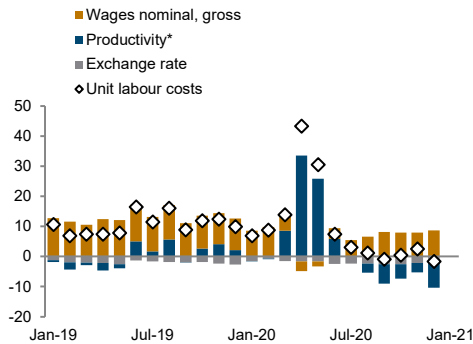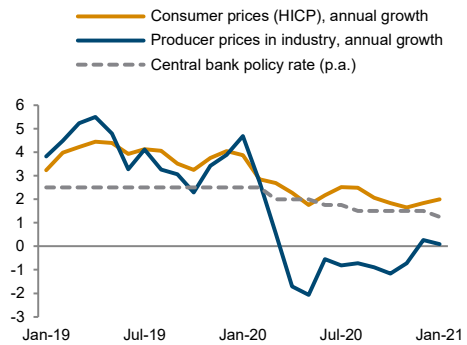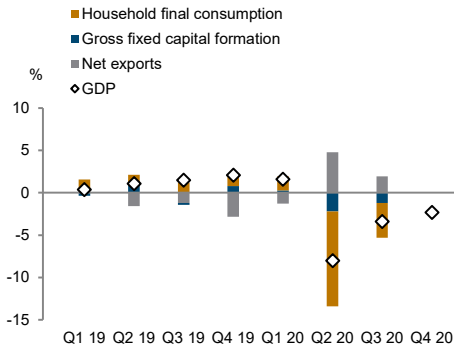Baseline data, country-specific definitions and methodological breaks in time series are available under:
https://data.wiiw.ac.at/monthly-database.html

# North Macedonia

### Real GDP growth and contributions
y-o-y

- Household and NPISHs final consumption
- Gross capital formation
- Net exports
- ◇ GDP

### Real sector development
in %

**Left scale:**
- Industry, 3-month moving average
- Employed persons (LFS)

**Right scale:**
- Unemployment rate (LFS)

### Unit labour costs in industry
annual growth rate in %

- Wages nominal, gross
- Productivity*
- Exchange rate
- ◇ Unit labour costs

### Inflation and policy rate
in %

- Consumer prices, annual growth
- Producer prices in industry, annual growth
- Central bank policy rate (p.a.)

### Financial indicators
in %

**Left scale:**
- Loans to non-financial corporations
- Loans to households

**Right scale:**
- Non-performing loans

### External sector development
in %

**Left scale:**
- Exports, 3-month moving average**
- Imports, 3-month moving average**
- Real ER EUR/MKD, PPI deflated

**Right scale:**
- Current account

*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.
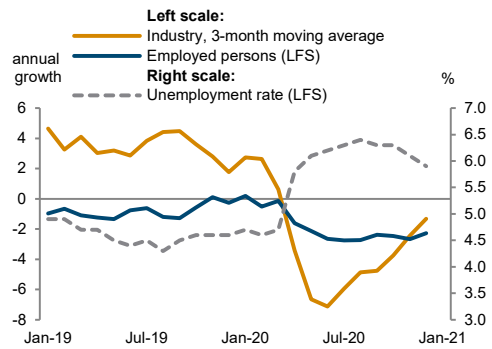Baseline data, country-specific definitions and methodological breaks in time series are available under:
https://data.wiiw.ac.at/monthly-database.html

# Poland

### Real GDP growth and contributions
y-o-y

- ■ Household final consumption
- ■ Gross fixed capital formation
- ■ Net exports
- ◇ GDP

### Real sector development
in %

Left scale:
- Industry, 3-month moving average
- Employed persons (LFS)

Right scale:
- Unemployment rate (LFS)

### Unit labour costs in industry
annual growth rate in %

- ■ Wages nominal, gross
- ■ Productivity*
- ■ Exchange rate
- ◇ Unit labour costs

### Inflation and policy rate
in %

- Consumer prices (HICP), annual growth
- Producer prices in industry, annual growth
- Central bank policy rate (p.a.)

### Financial indicators
in %

Left scale:
- Loans to non-financial corporations
- Loans to households

Right scale:
- Non-performing loans

### External sector development
in %

Left scale:
- Exports, 3-month moving average**
- Imports, 3-month moving average**
- Real ER EUR/PLN, PPI deflated

Right scale:
- Current account

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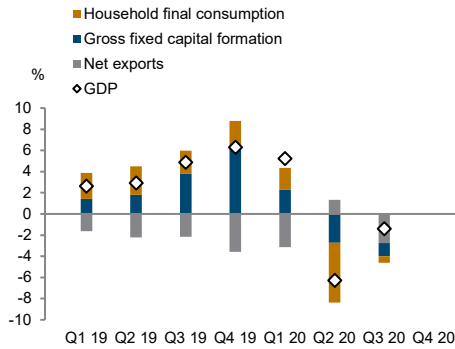**EUR based.

Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
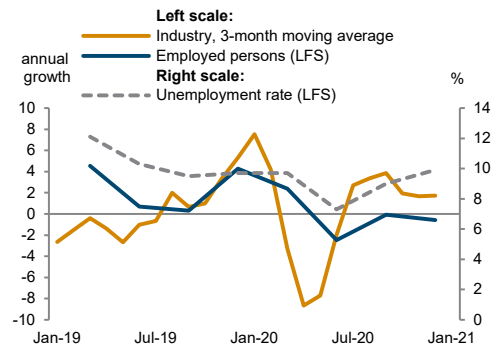https://data.wiiw.ac.at/monthly-database.html

# Romania

### Real GDP growth and contributions
y-o-y

- Household final consumption
- Gross fixed capital formation
- Net exports
- GDP



### Real sector development
in %

Left scale:
- Industry, 3-month moving average
- Employed persons (LFS)

Right scale:
- Unemployment rate (LFS)



### Unit labour costs in industry
annual growth rate in %

- Wages nominal, gross
- Productivity*
- Exchange rate
- Unit labour costs



### Inflation and policy rate
in %

- Consumer prices (HICP), annual growth
- Producer prices in industry, annual growth
- Central bank policy rate (p.a.)



### Financial indicators
in %

Left scale:
- Loans to non-financial corporations
- Loans to households and NPISHs

Right scale:
- Non-performing loans



### External sector development
in %

Left scale:
- Exports, 3-month moving average**
- Imports, 3-month moving average**
- Real ER EUR/RON, PPI deflated

Right scale:
- Current account



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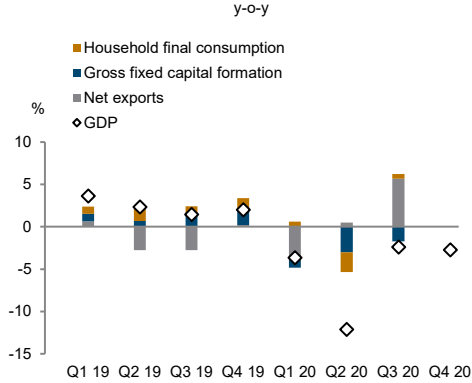**EUR based.

Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
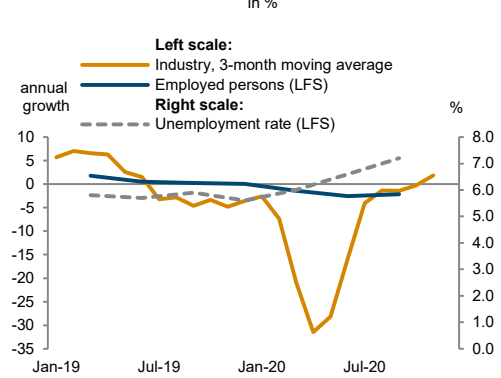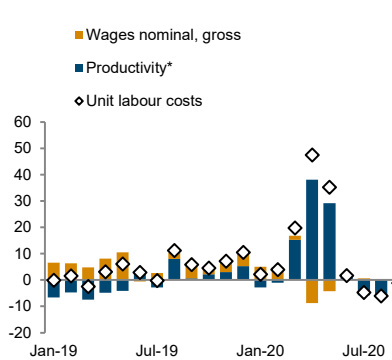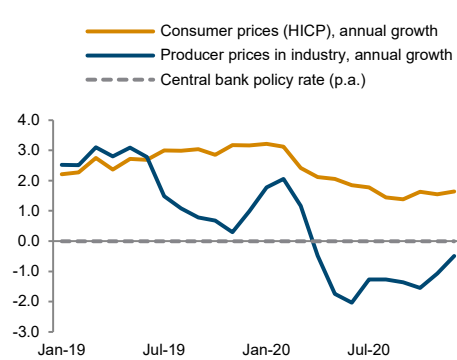https://data.wiiw.ac.at/monthly-database.html

# Russia

### Real GDP growth and contributions
y-o-y

- Household final consumption
- Gross fixed capital formation
- Net exports
- ◇ GDP



### Real sector development
in %

**Left scale:**
- Industry, 3-month moving average
- Employed persons (LFS)

**Right scale:**
- Unemployment rate (LFS)



### Unit labour costs in industry
annual growth rate in %

- Wages nominal, gross
- Productivity*
- Exchange rate
- ◇ Unit labour costs



### Inflation and policy rate
in %

- Consumer prices, annual growth
- Producer prices in industry, annual growth
- Central bank policy rate (p.a.)



### Financial indicators
in %

**Left scale:**
- Loans to non-financial corporations
- Loans to households

**Right scale:**
- Non-performing loans



### External sector development
in %

**Left scale:**
- Exports, 3-month moving average**
- Imports, 3-month moving average**
- Real ER EUR/RUB, PPI deflated
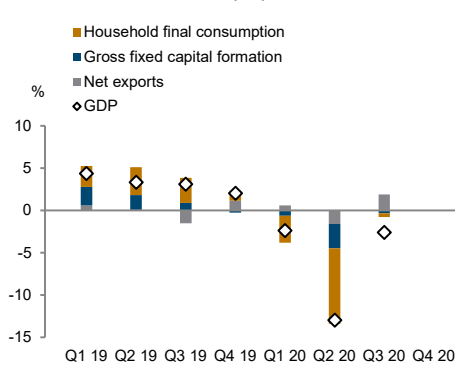
**Right scale:**
- Current account



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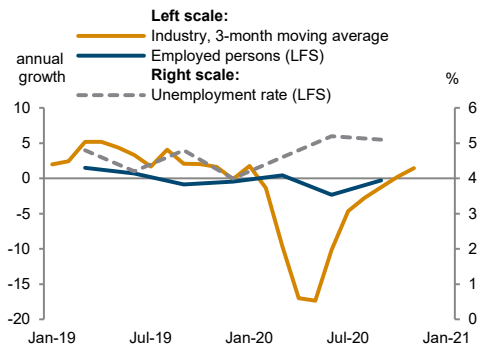**EUR based.

Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
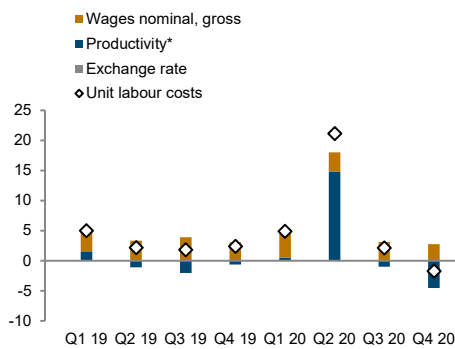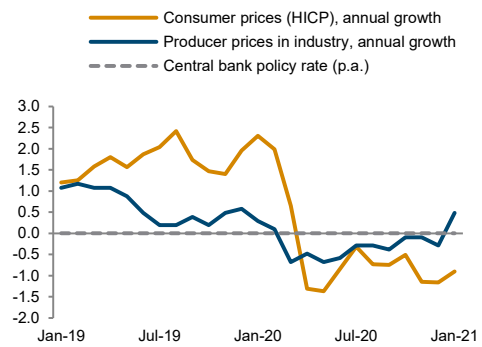https://data.wiiw.ac.at/monthly-database.html

# Serbia

### Real GDP growth and contributions
y-o-y

- Household final consumption
- Gross fixed capital formation
- Net exports
- GDP

### Real sector development
in %

Left scale:
- Industry, 3-month moving average
- Employed persons (LFS)

Right scale:
- Unemployment rate (LFS)

### Unit labour costs in industry
annual growth rate in %

- Wages nominal, gross
- Productivity*
- Exchange rate
- Unit labour costs

### Inflation and policy rate
in %

- Consumer prices, annual growth
- Producer prices in industry, annual growth
- Central bank policy rate (p.a.)

### Financial indicators
in %

Left scale:
- Loans to non-financial corporations
- Loans to households

Right scale:
- Non-performing loans

### External sector development
in %

Left scale:
- Exports, 3-month moving average**
- Imports, 3-month moving average**
- Real ER EUR/RSD, PPI deflated

Right scale:
- Current account

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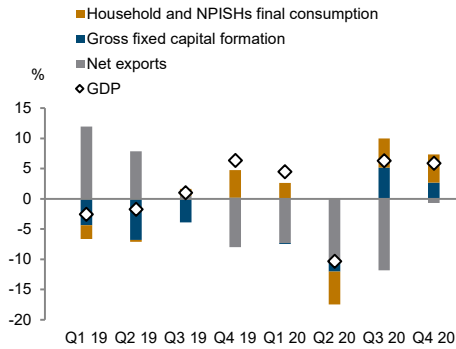**EUR based.

Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
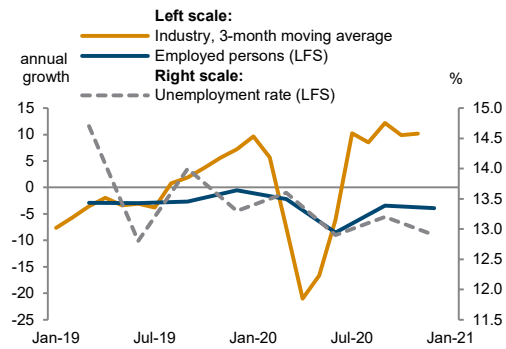https://data.wiiw.ac.at/monthly-database.html

# Slovakia

### Real GDP growth and contributions
y-o-y

- Household final consumption
- Gross fixed capital formation
- Net exports
- GDP

### Real sector development
in %

**Left scale:**
- Industry, 3-month moving average
- Employed persons (LFS)

**Right scale:**
- Unemployment rate (LFS)

annual growth

### Unit labour costs in industry
annual growth rate in %

- Wages nominal, gross
- Productivity*
- Unit labour costs

### Inflation and policy rate
in %

- Consumer prices (HICP), annual growth
- Producer prices in industry, annual growth
- Central bank policy rate (p.a.)

### Financial indicators
in %

**Left scale:**
- Loans to non-financial corporations
- Loans to households and NPISHs

**Right scale:**
- Non-performing loans

annual growth

in % of total

### External sector development
in %

**Left scale:**
- Exports, 3-month moving average**
- Imports, 3-month moving average**
- Real ER EUR/EUR, PPI deflated

**Right scale:**
- Current account

annual growth

% of GDP

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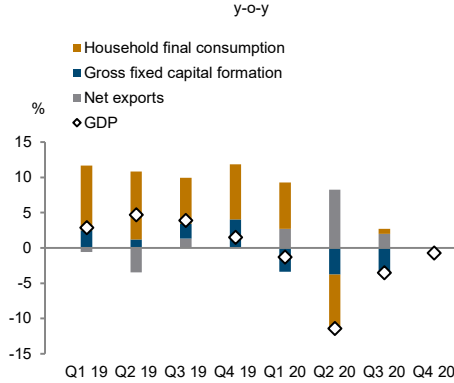**EUR based.

Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
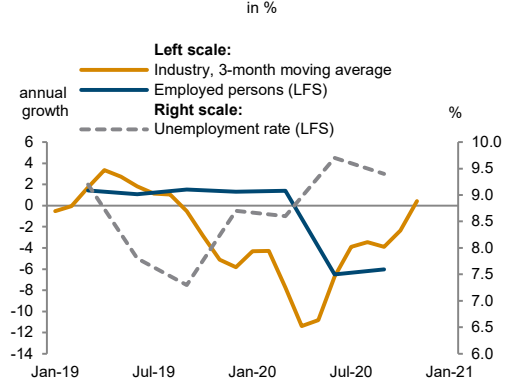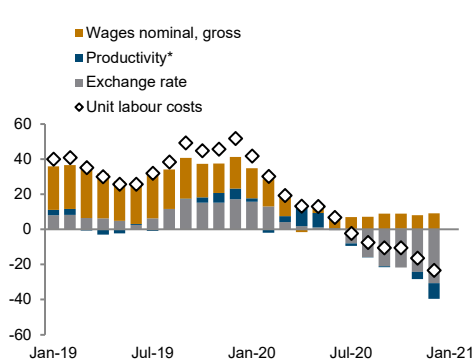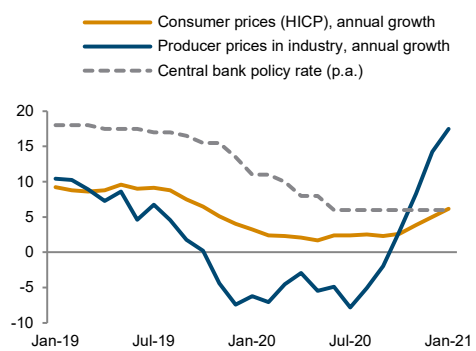https://data.wiiw.ac.at/monthly-database.html

# Slovenia

### Real GDP growth and contributions
y-o-y

- ■ Household final consumption
- ■ Gross fixed capital formation
- ■ Net exports
- ◇ GDP

### Real sector development
in %

**Left scale:**
- Industry, 3-month moving average
- Employed persons (LFS)

**Right scale:**
- Unemployment rate (LFS)

annual growth

### Unit labour costs in industry
annual growth rate in %

- ■ Wages nominal, gross
- ■ Productivity*
- ■ Exchange rate
- ◇ Unit labour costs

### Inflation and policy rate
in %

- Consumer prices (HICP), annual growth
- Producer prices in industry, annual growth
- Central bank policy rate (p.a.)

### Financial indicators
in %

**Left scale:**
- Loans to non-financial corporations
- Loans to households

**Right scale:**
- Non-performing loans

annual growth

in % of total

### External sector development
in %

**Left scale:**
- Exports, 3-month moving average**
- Imports, 3-month moving average**
- Real ER EUR/EUR, PPI deflated

**Right scale:**
- Current account

annual growth

% of GDP

*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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# Turkey

### Real GDP growth and contributions
y-o-y

- Household and NPISHs final consumption
- Gross fixed capital formation
- Net exports
- ◇ GDP

### Real sector development
in %

**Left scale:**
- Industry, 3-month moving average
- Employed persons (LFS)

**Right scale:**
- Unemployment rate (LFS)

annual growth

### Unit labour costs in industry
annual growth rate in %

- Wages nominal, gross
- Productivity*
- Exchange rate
- ◇ Unit labour costs

### Inflation and policy rate
in %

- Consumer prices (HICP), annual growth
- Producer prices in industry, annual growth
- Central bank policy rate (p.a.)

### Financial indicators
in %

**Left scale:**
- Loans to non-financial corporations
- Loans to households

**Right scale:**
- Non-performing loans

annual growth

in % of total

### External sector development
in %

**Left scale:**
- Exports, 3-month moving average**
- Imports, 3-month moving average**
- Real ER EUR/TRY, PPI deflated

**Right scale:**
- Current account

annual growth

% of GDP

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

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# Ukraine

### Real GDP growth and contributions
y-o-y

- Household final consumption
- Gross fixed capital formation
- Net exports
- GDP

### Real sector development
in %

**Left scale:**
- Industry, 3-month moving average
- Employed persons (LFS)

**Right scale:**
- Unemployment rate (LFS)

### Unit labour costs in industry
annual growth rate in %

- Wages nominal, gross
- Productivity*
- Exchange rate
- Unit labour costs

### Inflation and policy rate
in %

- Consumer prices (HICP), annual growth
- Producer prices in industry, annual growth
- Central bank policy rate (p.a.)

### Financial indicators
in %

**Left scale:**
- Loans to non-financial corporations
- Loans to households

**Right scale:**
- Non-performing loans

### External sector development
in %

**Left scale:**
- Exports, 3-month moving average**
- Imports, 3-month moving average**
- Real ER EUR/UAH, PPI deflated

**Right scale:**
- Current account

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

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**multi-country articles
and statistical overviews**

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