Periodical Part

Lithuanian Economic Review ; 2022

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EUROSISTEMA

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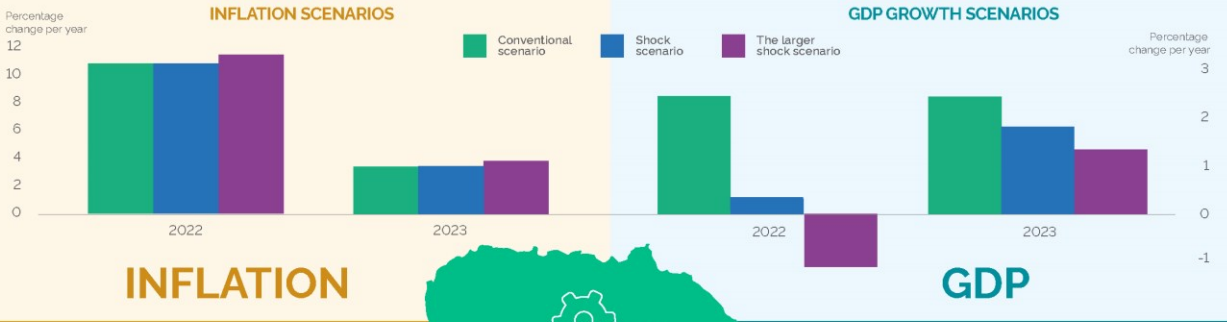

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Lithuania's economic development and outlook

22 March 2022

In February, when the Russian military invasion of Ukraine began, the world economy, still coping with the aftermath of the pandemic, was dealt another blow. The ongoing war in Europe and the increasing retaliatory actions of states are affecting the global economy through a variety of channels, namely, international trade, spikes in the prices of energy and other commodities, the financial sector, currency and capital markets, investor and consumer confidence. The continuing high uncertainty and volatility of these and other factors makes it extremely difficult to assess the development of the economies of Lithuania and other countries over the next few years. For this reason, the latest Lithuanian Economic Review presents three possible Lithuanian economic development paths: the conventional scenario and the shock and larger shock sensitivity analyses. The conventional scenario is based on the data and information available before 1 March, while the sensitivity analyses are built upon hypothetical assumptions based on more recent data and information. Also, in all cases it is assumed that military action will be limited to the Ukrainian territory.

Following the outbreak of Russian military action in Ukraine, Western democracies condemn it and impose economic sanctions against the Russian and Belarusian regimes. On 25 February, the European Commission adopted a wide-ranging package of sanctions covering not only individuals, but also various economic sectors such as finance, energy, transport and technology, as well as a visa issuance policy for citizens of the Russian Federation. In addition, the US and other countries around the world have also imposed sanctions on the Russian Federation for its military actions on the Ukrainian territory. As hostilities continue, on 2 March, the EU and other countries agreed on additional sanctions against the Russian Federation to isolate it and force it to end its military invasion of Ukraine. For its part, on 8 March, the US banned imports of Russian oil, liquefied natural gas and coal in a further extension of sanctions against the Russian Federation, thus further isolating the country's economy. On 9 March, the EU has also announced an additional package of sanctions against Belarus, which is complicit in the unprovoked and unmotivated military aggression against Ukraine. In addition to official sanctions by foreign countries, many multinational companies have put on hold or exited business activities in the Russian Federation, thus further reinforcing economic isolation. The international credit rating agency Fitch has downgraded the rating of the Russian Federation to C, indicating that the country is unable to meet its financial obligations. The impact of these sanctions is expected to affect both Lithuanian and EU economies through three main channels – foreign trade, raw material supply and prices, and business and household sentiment.

Russia's aggression in Ukraine will have a negative impact on Lithuania's economy through declining exports, a shortage of imported raw materials, an uncertain investment climate and rising energy prices. The negative impact of these factors on Lithuania is mitigated by the fact that Lithuania's foreign trade with Russia has changed considerably, and trade relations before the outbreak of the war were much less intense than they were a decade ago. Exports to Russia accounted for 6% of Lithuania's total exports, 3% to Ukraine and 3% to Belarus, according to the latest data available[1]. The largest share of exports to Russia and Belarus are re-exports of goods, the loss of which would not be very painful for the Lithuanian economy as a whole, and exports of transport services. Our main exports to Ukraine are of Lithuanian origin. The complete loss of these markets could lead to a slowdown in Lithuania's economic growth by up to 3 percentage points over the 2022–2024 period. Imports from these countries accounted for 15% of total Lithuanian imports, of which 44% are energy products. However, the restriction of import flows from these countries is likely to lead to temporary disruptions in production due to a shortage of the necessary raw materials, and the cost of acquiring these raw materials from alternative suppliers will be somewhat higher. Since 20% of metals and 45% of wood in

[1] Q4 2020 – Q3 2021.

2021 were imported from Russia, Belarus and Ukraine, supply shortages of metal raw materials as well as wood imports are likely to be the most acute, particularly important for the construction sector and some industries, such as metal processing and furniture sector. Due to the economic consequences of Russian military aggression in Ukraine on Lithuania's other export partners, the overall foreign demand will reduce, which will worsen the growth prospects for the rest of Lithuania's exports. Further increases in the price of oil and natural gas, as Western countries refuse to buy Russian resources, will raise the cost of electricity, heating and transport for all sectors of the economy and further fuel consumer price inflation. Increased uncertainty is likely to dampen business investment, at least in the short term, and also affect consumers' choice to consume less and save more. The crisis may also have an additional impact on the Lithuanian labour market, as the flow of refugees from Ukraine to Lithuania continues to increase. If some of these people were to stay in the country longer and enter the labour market, this would increase Lithuania's labour force and alleviate the labour shortages that have recently become more pronounced.

The impact of these factors is only partially assessed in the conventional scenario, which is based on information available before 1 March. However, it already foresees a markedly slower GDP growth than forecasted in December and higher-than-previously-forecasted average annual inflation. Even before the outbreak of the war in Ukraine, Lithuania's real GDP growth forecast was undermined by declining exports to China, disruptions in the supply of raw materials, a slower development of the transport sector as a result of the EU's mobility package, and a slower growth in overall external demand. Continued disruptions in the supply chains due to the pandemic have led to stagnant growth in public investment and the construction sector. On the other hand, the financial situation of Lithuanian businesses and households was strong before the outbreak of the war, which mitigated the inflationary challenges facing households. The decline in the savings rate and the use of savings during the pandemic were expected to cushion the negative impact of inflation on household consumption in the future. As labour market shortages have become more pronounced, wage growth has been strong and was expected to continue this year and throughout the next year. In the run-up to the war, the impact of domestic factors on the price growth was becoming more pronounced, most notably in the form of accelerating growth in service prices. Relatively strong domestic demand has facilitated the pass-through of cost increases to the prices of consumer goods and services. Although the increased energy and raw material costs were extremely significant, the impact of domestic factors was strengthening too, mostly signalled by the growing prices of services. Higher-than-expected annual inflation data in January and February (strongly influenced by the faster-than-expected rise in energy prices due to heightened geopolitical tensions) and the revision of the CPI basket weights at the beginning of the year also contributed to the higher-than-expected inflation. The information available by 1 March on the consequences of the war in Ukraine and the sanctions that came into force at that time led to a significant deterioration in external demand developments and to a significant increase in assumptions for the development of energy commodity prices. This has further worsened the outlook for Lithuania's exports, investment and household consumption[2]. Household income and consumption decisions will also be affected by higher-than-expected inflationary pressures. The increase of inflation projections in this scenario is mainly due to the rise in energy commodity prices, for example, while in December 2021 the average oil price was expected to be close to USD 90 per barrel this year, in this scenario it is around USD 93 per barrel. The gas price assumption used in this scenario for 2022 has increased from EUR 53/MWh to EUR 102/MWh, based on the futures data, compared to the December assumption. Under this scenario, in 2022, Lithuania's real GDP would grow by 2.7% and average annual inflation would reach 10.5%.

[2] The March 2022 forecasts project stronger export growth in 2022 than the December 2021 forecasts. This export performance, even after a significant deterioration in the economies of Lithuania's main export partners, is due to significantly better-than-expected foreign trade performance in the last quarter of 2021, which has led to a very strong base effect in 2022.

As hostilities intensified and Western governments and businesses retaliated, uncertainty increased dramatically, and additional changes, which might have a significant impact on future economic development, began to emerge. Based on some of these, and on the information available on financial and commodity markets up to 17 March, the shock sensitivity analysis was drafted. The key assumptions for this, larger shock sensitivity analyses and the conventional scenario are summarised in Table 2. Under this sensitivity scenario, exports to Russia, Belarus and Ukraine could shrink by two-thirds due to the sanctions, the voluntary refusal of Lithuanian businesses to trade with the aggressors' markets, and difficulties in transportation or payment. Slower export growth will also be driven by slower economic development in Lithuania's main trading partners (based on the ECB's adverse scenario[3]) and the assumption that companies will not be able to find cost-effective substitutes for around one tenth of their imports of wood and metal raw materials. Increased uncertainty in global markets is expected to lead to a deterioration in household and business sentiment in Lithuania. In this sensitivity analysis, it is assumed that both household and business confidence will deteriorate significantly, and that the magnitude of the deterioration will be close to that observed in other crises (e.g. at the start of the COVID-19 pandemic, or at the onset of the global financial crisis). The oil and gas price assumption in this sensitivity analysis is based on the information available on 17 March on the prices in international markets and futures contracts, which provide an indication of the future evolution of these prices. Under this sensitivity analysis, the oil price reaches USD 107 per barrel and only starts to decline gradually towards the end of the year. Under these assumptions, Lithuania's real GDP growth in 2022 would be 2.3 percentage points slower than in the conventional scenario and average annual inflation would still be 10.5%.

The larger shock sensitivity analysis includes a more hawkish assessment of economic developments, based on weaker assumptions about the international economic situation, the domestic economy and tougher sanctions. Under this sensitivity analysis, Lithuanian businesses practically stop exporting to Russia, Belarus and Ukraine, while demand from EU countries slows down even more (based on the ECB's severe scenario). Also, for around a fifth of imports of wood and metal raw materials, firms are unable to find economically viable substitutes, and household and business confidence falls twice as much as in the shock sensitivity analysis. It was also assumed that the prices of the raw materials assessed would equal to the highest daily level observed between 28 February and 17 March. This could be the case, for example, if Western countries were to refuse oil and gas imports from Russia and fail to agree on a significant increase in alternative supply. Under these assumptions, in 2022, Lithuania's GDP would decline by 1.2%, and average annual inflation would rise to 11.1%.

Table 1. Projected economic developments in Lithuania based on the conventional scenario

	March 2022 forecast[a]			December 2021 forecast		
	2021	**2022[b]**	**2023[b]**	**2021[b]**	**2022[b]**	**2023[b]**
Price and cost developments (annual percentage change)						
Average annual HICP inflation	4.6	10.5	2.7	4.5	5.1	–
Gross Domestic Product deflator[c]	6.6	8.4	3.3	4.5	3.4	–
Wages	10.5	10.7	7.7	10.0	8.2	–
Import deflator[c]	12.0	7.5	1.9	8.5	5.4	–
Export deflator[c]	5.9	6.3	3.0	4.2	4.9	–
Economic activity (constant prices; annual percentage change)						
Gross domestic product[c]	4.8	2.7	2.7	5.1	3.6	–
Private consumption expenditure[c]	7.2	4.7	4.9	6.1	5.8	–
General government consumption expenditure[c]	0.5	0.0	0.0	0.3	0.0	–
Gross fixed capital formation[c]	7.0	5.6	3.6	8.7	6.3	–
Exports of goods and services[c]	14.1	5.2	1.9	12.6	4.8	–

[3] ECB staff macroeconomic projections for the euro area, March 2022, available online here.

Imports of goods and services[c]	17.8	5.3	3.6	16.2	6.6	–
Labour market						
Unemployment rate (annual average as a percentage of labour force)	7.1	7.1	7.3	7.1	6.7	–
Employment (annual percentage change)[d]	1.2	1.0	–0.8	0.7	0.2	–
External sector (percentage of GDP)						
Balance of goods and services	3.8	3.0	2.5	5.1	3.6	–
Current account balance	1.6	0.6	0.1	2.3	1.3	–
Current and capital account balance	3.0	3.3	2.8	4.2	4.1	–

[a] The projections for macroeconomic indicators are based on international environment assumptions based on information published by 28 February 2022 as well as other data and information made available before 1 March 2022.
[b] Projection.
[c] Adjusted for seasonal and workday effects.
[d] National accounts data; employment in domestic concept.

Table 2. Comparison of the conventional scenario and the sensitivity analyses assumptions

	Conventional scenario	Shock sensitivity analysis	Larger shock sensitivity analysis
Decline in exports to RU, BY and UA	No additional expert assessment applied	Export volumes fall by 2/3	No exports to these countries
Declining demand in EU countries	Consistent with the evolution of the ECB baseline scenario	Consistent with the impact of the ECB's adverse scenario	Consistent with the impact of the ECB's severe scenario
Shortages and rising costs of imported raw materials	No additional expert assessment applied	LT companies are unable to find substitutes for 10% of raw materials imported mainly from RU, BY and UA. Prices of these raw materials increase by a third	LT companies are unable to find substitutes for 20% of raw materials imported mainly from RU, BY and UA. Prices of these raw materials increase by a third
Rising energy and food prices	Based on market prices on 28 February	Based on market prices on 17 March	Prices correspond to the highest daily level reached between 28 February and 17 March
Impact of increased uncertainty about the future	No additional expert assessment applied	Confidence deteriorates to a similar extent as in previous crises	Double the deterioration in confidence than in shock scenario

Table 3. The conventional scenario and the shock and larger shock sensitivity analyses for economic and inflation developments in Lithuania

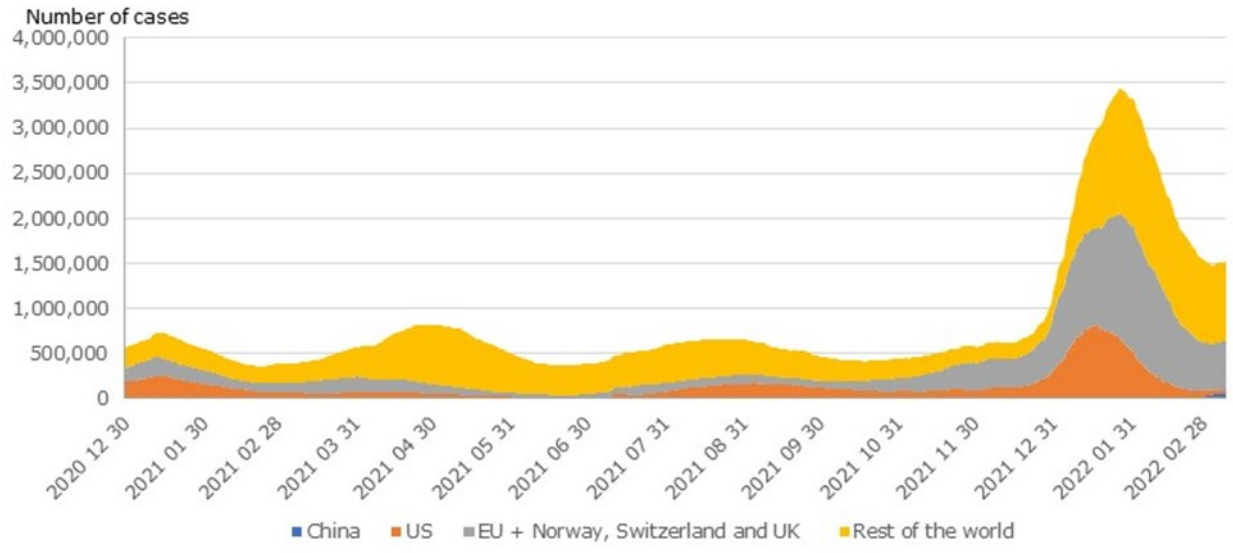
	2022	2023
Gross domestic product		
Conventional scenario	2.7	2.7
Shock sensitivity analysis	0.4	2.1
Larger shock sensitivity analysis	–1.2	1.5
Average annual HICP inflation		
Conventional scenario	10.5	2.7
Shock sensitivity analysis	10.5	2.7
Larger shock sensitivity analysis	11.1	3.0

1. International environment

In the first half of last autumn, as vaccination rates continued to accelerate and COVID-19 containment measures eased, the global economy gained momentum and moved towards the pre-pandemic levels. The emergence of the new Omicron variant of COVID-19 in the second half of the autumn was quickly recognised as a "virus of concern" by the World Health Organisation and has once again forced many countries around the world to reintroduce containment measures to control the rapidly spreading strain of the virus (see Chart 1). The spread of this new variant of COVID-19 had an impact on the global economic recovery and future forecasts. The spreading Omicron variant impacted the economy through financial market fluctuations and volatility, and through longer-than-expected international supply bottlenecks that hampered the economic recovery. These bottlenecks led to energy supply disruptions that contributed to the autumn surge in inflation, which rose faster than expected in many parts of the world, with a significant rise in energy prices at the end of 2021 further accelerating inflation.

Despite vaccination and COVID-19 restrictions, a new variant of COVID-19 has led to a sharp increase in new cases.

Chart 1. Number of new COVID-19 cases



Sources: Macrobond and Bank of Lithuania calculations.

The world economy entered 2022 with worse-than-expected performance. According to the IMF's assessment, the world economy grew by 5.9% in 2021. It is projected to grow by 4.4% in 2022 and by 3.8% in 2023, i.e. 0.5% and 0.2% below the October 2021 projections respectively. These revisions to the global economic outlook are the result of the spreading Omicron variant, restrictions on movement and border closures. However, according to the IMF, the negative effects of COVID-19 will only affect the global economic development in the first quarter of 2022. The negative impact of the virus on the economic recovery is expected to disappear in the second quarter, as the subsequent COVID-19 mutations will not restrict movement, reducing the likelihood of severe complications with effective vaccines.[4] In the January 2022 update of the IMF's World Outlook, the US growth forecast for 2022 was downgraded by 1.2 percentage points, due to the removal of the Build Back Better fiscal policy package from the baseline scenario and disruptions to global supply chains. Euro area growth was affected by the COVID-19 containment measures in the last quarter of 2021, which had a negative impact on the growth

[4] Read more about the US President Joe Biden's Build Back Better plan here.

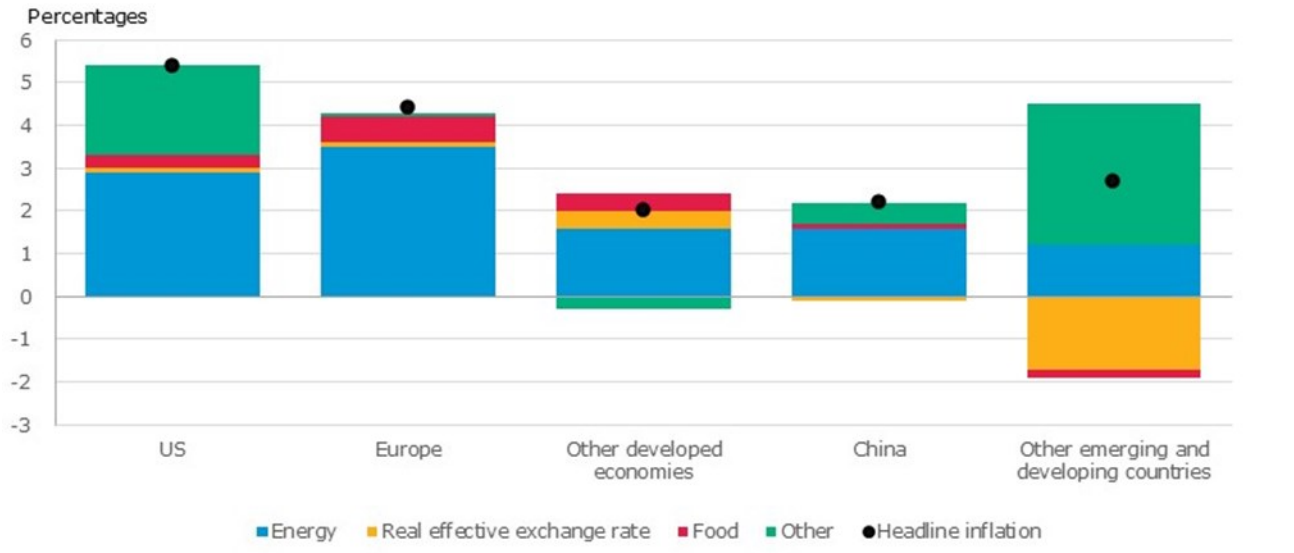
forecast for the first quarter of 2022. Meanwhile, China's real GDP growth in 2022 was revised down by 0.8 percentage point due to the real estate (RE) sector and lower-than-expected private consumption.

Continued disruptions in supply chains, energy shortages and increased global demand for commodities led to higher inflation in many countries. The global spread of new variants of COVID-19 continued to disrupt global supply chains. In the face of the pandemic, the demand-supply relationship was affected by asymmetric economic factors which caused a sharp rise in demand and a sharp fall in supply.[5] Inflation in the world's major economies started to pick up in the second half of 2021. According to the IMF, the doubling of natural fuel prices over the past year pushed up energy prices, which increased inflation rates, especially in the European countries.

Inflation is set to be higher this year than last year but is expected to fall in 2023. According to the IMF forecasts, inflation will reach 3.9% in developed countries and 5.9% in emerging market economies in 2022, before starting to fall in 2023. According to the World Bank, in the medium term, inflation is projected to return to the pre-pandemic levels as the pandemic recedes, supply chain disruptions fade, monetary tightening gradually takes hold, and the balance between consumption of goods and services is restored. According to the IMF, the rise in energy prices at the end of 2021 is expected to begin to ease in 2022–23, pushing down consumer prices. Global food prices are projected to rise in a similar way, rising by 4.5% in 2022 and falling in 2023 (see Chart 2).

Sharp increases in energy prices contributed to the rise in inflation.

Chart 2. Detailed change in inflation in the previous year, December 2020–January 2022



Sources: IMF and Bank of Lithuania calculations.

The US economy grew more slowly than forecasted in 2021, and the forecasts for 2022 have been revised downwards again. The GDP in the US increased by 5.6% in 2021, but the forecast for 2022 is down, compared to the IMF's forecasts for October, which were revised downwards by as much as 1.2 percentage points. In the US labour market, there was a decline in the unemployment rate in 2021, but it remains above the pre-pandemic levels, and the MMW has risen. If unemployment rates remain above the pre-pandemic levels and the unemployed hesitate to return to the labour market, opting instead for the increased unemployment benefits due to the COVID-19 pandemic, the IMF argues that this will further boost the prices of goods and services. As a result of this labour market situation, the US Federal Reserve stated in December that it would reduce its net asset purchases at a much faster

[5] Read more about supply chain disruptions and the impact of the pandemic on the demand and supply factors here.

pace, signalling a future rise in the federal funds rate of 0.75–1.00 percentage points by the end of 2022, i.e. 50 basis points more than in the previous guidelines. Finally, a less accommodative monetary policy programme in the US will lead to a tightening of global financial conditions, putting pressure on emerging market and frontier currencies. Borrowing will become more expensive globally due to higher interest rates, especially for countries with large national debt denominated in foreign currency.

The global spread of the new variant of COVID-19 severely affected not only developed countries, but also emerging Asian countries such as China. In addition to the negative impact of the new diseases, the Chinese economy was affected by the stagnation of the real estate market. China's economic growth in the fourth quarter of 2021 was the slowest in recent years due to the following adverse events: the downturn in the RE market, the severe impact on the economic recovery of the strict containment measures due to the zero-COVID policy and the disruption of energy supply that has affected the industrial plans. In addition, public sector investment has been declining faster than expected and has had a negative impact on the already slowing RE market investment. The latest IMF projections for 2022 China's real GDP growth are revised down by 0.8 percentage point compared to the October projections. The latest January baseline projection scenario included a downturn in RE demand in 2022, reflecting a strict RE risk management policy to manage the risk factors related to property developers. The risk remains as the slowdown in the RE market intensifies and the financial position is more severely affected. The risk factor may affect banks and other lenders, thereby affecting the wider regional and global economy.

The euro area was one of the hardest hit by the new Omicron variant of COVID-19 in the fourth quarter of 2021, significantly slowing down the economic recovery. In 2021, it was 0.4 percentage point lower than expected, and the projections for 2022 have been revised downwards by 0.7 percentage point compared to the October projections (see Table 1). According to the IMF, the euro area economy grew by 5.2% in 2021, and is forecast to grow by 3.9% next year and 2.5% in 2023. As the economy continues to grow and the containment measures to prevent the spread of COVID-19 are lifted, disruptions to supply and production chains and higher energy prices are contributing to rising inflation in the euro area. However, these factors behind the current increase in inflation are expected to normalise over time. According to the IMF projections, inflation is expected to return to 2.0% and to around 1.8% in 2023 and 2024.

The global economic outlook has deteriorated according to the October projections.

Table 1. Actual data for 2020 and projections

Geography	Historical data	Latest data	Latest projections		Change in the October and year-end projections	
	2020	**2021**	**2022**	**2023**	**2022**	**2023**
Whole world	-3.1	5.9	4.4	3.8	-0.5	0.2
Developed economies	-4.5	5.0	3.9	2.6	-0.6	0.4
US	-3.4	5.6	4.0	2.6	-1.2	0.4
Euro area	-6.4	5.2	3.9	2.5	-0.4	0.5
Germany	-4.6	-2.7	3.8	2.5	-0.8	0.9
France	-8.0	6.7	3.5	1.8	-0.4	0.0
Italy	-8.9	6.2	3.8	2.2	-0.4	0.6
Spain	-10.8	4.9	5.8	3.8	-0.6	1.2
Japan	-4.5	1.6	3.3	1.8	0.1	0.4
UK	-9.4	7.2	4.7	2.3	-0.3	0.4
Canada	-5.2	4.7	4.1	2.8	-0.8	0.2
Other developed economies	-1.9	4.7	3.6	2.9	-0.1	0.0
Emerging markets and developing economies	-2.0	6.5	4.8	4.7	-0.3	0.1

Emerging markets and developing economies in Asia	-0.9	7.2	5.9	5.8	-0.4	0.1
China	2.3	8.1	4.8	5.2	-0.8	-0.1
India	-7.3	9.0	9.0	7.1	0.5	0.5
Emerging markets and developing economies in Europe	-1.8	6.5	3.5	2.9	-0.1	0.0
Russia	-2.7	4.5	2.8	2.1	-0.1	0.1
Brazil	-3.9	4.7	0.3	1.6	-1.2	-0.4
Mexico	-8.2	5.3	2.8	-2.7	-1.2	0.5
Middle East and Central Asia	-2.8	4.2	4.3	3.6	0.2	-0.2

The military invasion of Ukraine launched by the Russian Federation at the end of February has destabilised the geopolitical situation not only in Eastern Europe but has also had a strong impact on global financial markets and economies. The Russian Federation's hostilities towards Ukraine have been condemned by many countries around the world, which have imposed some of the toughest sanctions on the Russian Federation to date. The sanctions have isolated the world's 11th largest economy and one of the largest producers of raw materials. On 25 February, the European Commission has adopted a wide-ranging package of sanctions, which covers not only individuals but also various economic sectors such as finance, energy, transport, technology and the visa policy for citizens of the Russian Federation.[6] In addition, the US and other countries around the world have imposed various sanctions on the Russian Federation for its military actions on the Ukrainian territory. Despite the sanctions and the continuing hostilities, the EU and other countries have supported further sanctions to isolate the Russian Federation and force it to stop its military invasion of Ukraine. The isolation of the Russian Federation due to hostilities and sanctions has contributed to rising inflation, slower economic growth and disruptions in financial markets. The EU also announced an additional package of sanctions against Belarus, contributing to unprovoked and unmotivated military aggression against Ukraine.[7] In turn, the US continues to expand sanctions against the Russian Federation by banning Russian imports of oil, liquefied gas and coal, thereby further insulating the Russian Federation's economy.[8] Sanctions forced the Russian rouble to fall into historical lows compared to the US dollar, and after freezing the reserves of the Russian Central Bank, the interest rate was raised from 9.5% to 20.0%. In addition to official sanctions of foreign countries, many international companies withdrew from the Russian Federation, stopping the trade and production of their products, thereby further strengthening its economic isolation. The international credit rating agency Fitch changed the rating of the Russian Federation to C, meaning the state is unable to meet its financial obligations. Considering the volatility of the economic and geopolitical situation, the ECB published an updated monetary policy plan[9] and updated economic forecasts to contain the impact of sanctions and military actions on the economy.

[6] Read more about the EU sanctions against the Russian Federation of 25 February 2022 here.

[7] Read more about the EU sanctions against Belarus of 9 March 2022 here.

[8] Read more about the US sanctions against the Russian Federation here.

[9] Read more about the ECB's updated monetary policy plan of 10 March 2022 here.

2. Monetary policy of the Eurosystem

Over the past six months, rising inflation and the economic recovery have led to the scaling back of accommodative monetary policy. It has been decided to gradually reduce net asset purchases and to raise key interest rates in the future, once they have been completed and once there is enough confidence of achieving the 2% inflation target in the medium term. However, the right is reserved to react flexibly and to adjust all available measures as necessary.

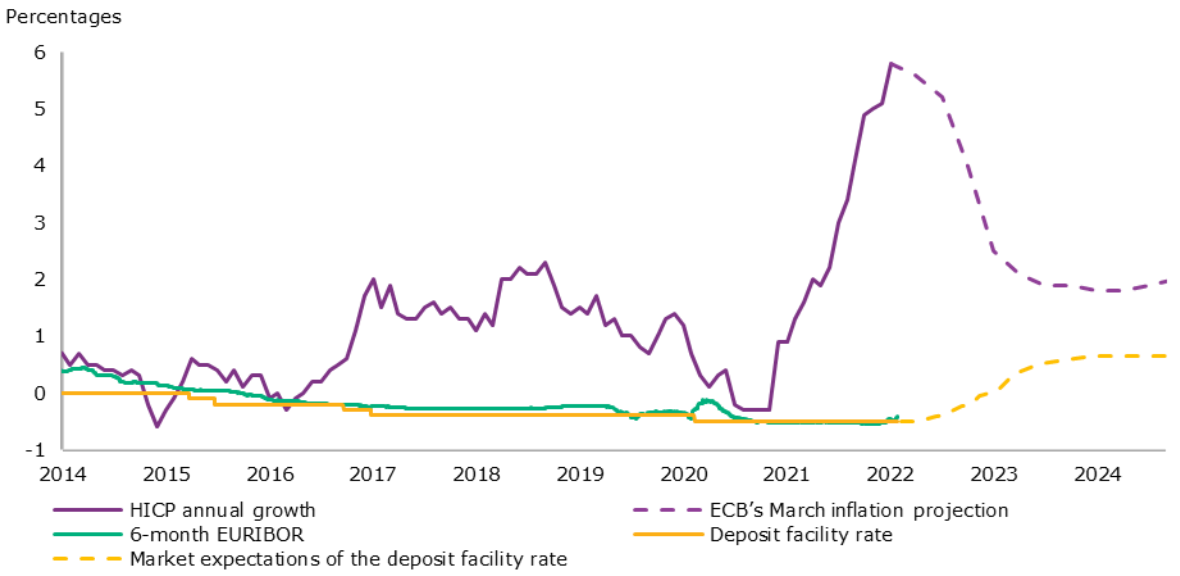
In the second half of 2021, as the economic recovery continued, the Governing Council of the ECB gradually started to reduce the pace of asset purchases. With financing conditions still favourable and economic growth continuing to recover, the Governing Council in its October monetary policy meeting confirmed the decisions taken in September, including a lower volume of net asset purchases than in the first months of 2021. In December, the ECB's economic growth forecasts for 2022 were downgraded following the countries' renewed pandemic-related restrictions on economic activity. Although inflation has picked up and inflation forecasts have been revised upwards, the projected rate of 1.8% in 2023 and 2024 was still below 2%. The Governing Council has therefore decided to continue the slow reduction of net asset purchases. Net asset purchases under the PEPP were foreseen to gradually decrease during the first quarter of 2022, to be completed in March, and to temporarily increase net asset purchases under the APP from April onwards, in order to avoid that a sharp reduction in the total volume of purchases would worsen financing conditions. In addition, the reinvestment period for PEPP purchases has been extended until the end of 2024.

In early 2022, important decisions were taken to reduce the level of accommodative monetary policy. No new decisions were taken in February 2022, but ECB President Christine Lagarde highlighted the risk of higher inflation, especially in the short term. At the March meeting, it was decided to accelerate the reduction of net asset purchases under the APP, taking into account increased inflation forecasts and higher inflation risks. It was also underlined that any adjustments in the key ECB interest rates will be gradual and take place only some time after the Governing Council has completed net asset purchases. In the face of increased uncertainty, it was decided that the planned purchase process, including all available instruments, could be adjusted flexibly in line with the inflation outlook.

Rising inflation and high uncertainty about its future path have led to higher interest rate expectations (see Chart 3). In the second half of 2021, financial markets started pricing so that the ECB could start raising key interest rates in late 2022, although the ECB's forecasts did not point to the inflation target being met. However, with inflation exceeding expectations in December 2021 and January 2022 (mainly due to energy prices), the ECB's Governing Council has put more emphasis on high uncertainty and risks of higher inflation. The increase in inflation and such ECB's assessment reinforced market participants' expectations of an earlier interest rate hike.

The ECB interest rates remain at very low levels.

Chart 3. Actual interest rates, inflation in the euro area and market expectations



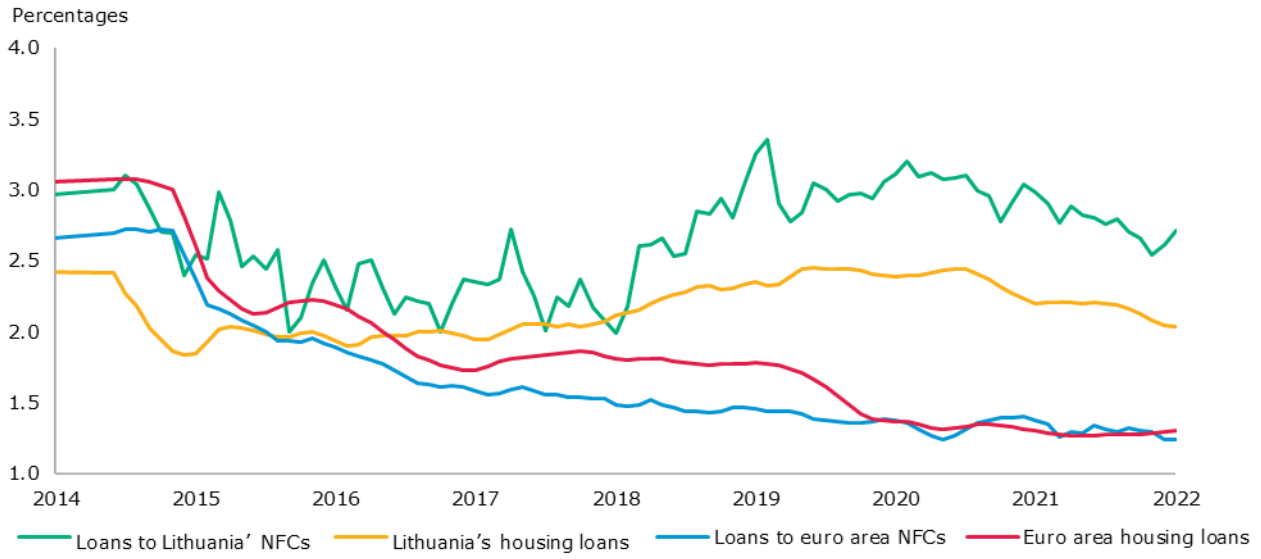
Sources: ECB and Refinitiv.
Note: Data as of 10 March.

The Eurosystem's monetary policy measures continue to contribute to low loan interest rates. Loan interest rates in the euro area have been decreasing consistently since mid-2014. During the COVID-19 pandemic, the rates saw no significant changes and remain at historically low levels (see Chart 4). In Lithuania, average interest rates on new mortgages and loans to non-financial corporations are even lower compared to the situation before the coronavirus pandemic. However, the average interest rates in the country remain higher than the euro area average. High concentration in the banking sector and other factors contribute to this.[10] Yet it should be noted that if the Eurosystem had not implemented its accommodative monetary policy, loan interest rates in the euro area and Lithuania would most probably have been even higher.

[10] Read more here about the situation on lending to SMEs in Lithuania.

Financing conditions have remained favourable.

Chart 4. Average interest rates on new MFI housing loans and loans to NFCs



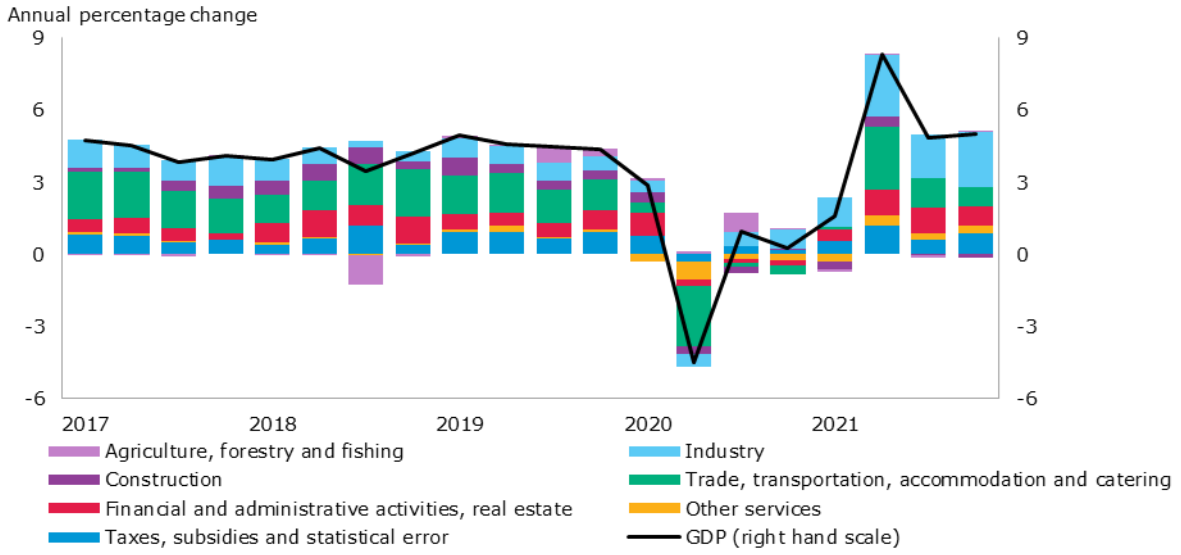
Sources: ECB and Bank of Lithuania calculations.
Notes: 3-month moving average. Excluding revolving loans and overdrafts.

3. Real sector

Despite an unusually high number of adverse risk factors, Lithuania's economic growth momentum continued to be strong in the second half of 2021. The economy grew at an annual rate of 4.8% in the third quarter of last year and 4.4% over the fourth quarter. These economic developments caused Lithuania's GDP to be 4.8% higher in 2021 than a year earlier. Manufacturing and production of petroleum products and the services sector, which recovered from the pandemic restrictions, were the main contributors to economic growth, while the financial services and real estate sectors also rebounded from the pandemic contraction, but growth in the agriculture sector slowed considerably and the construction sector contracted (see Chart 5). However, protracted supply chain disruptions in the second half of last year, labour shortages and increased inflationary pressures, as well as challenges related to geopolitical conflicts, which dampened Lithuania's economic expansion, led to lower-than-expected growth in the second half of last year. The negative impact of supply chain disruptions is expected to diminish in the second half of 2022, but labour shortages will remain an issue and the main negative impact on economic development will come from the increase in energy prices and commodity shortages caused by the economic sanctions against Russia and Belarus, as well as the likelihood of continued trade restrictions with China. Based on currently available data, GDP growth is projected to slow to 2.7% this year, before rising at the same pace in 2023. The slowdown in growth in 2022 will be mainly due to the slower expansion of exports of goods and services as a result of the sanctions imposed due to the war in Ukraine, the prolonged disruption of supply chains in the first half of the year, the slower growth of real consumption due to the increase in energy prices, and the labour shortage. There is also considerable uncertainty about the negative impact of geopolitical factors on commodity prices and trade channels – tougher economic sanctions due to the war in Ukraine, restrictions on energy commodity supplies could lead to slower economic growth than currently expected.

In 2021, GDP growth in Lithuania was mainly driven by the expansion of industry, real estate and services, while construction and agriculture declined.

Chart 5. Contributions to GDP growth by the production approach



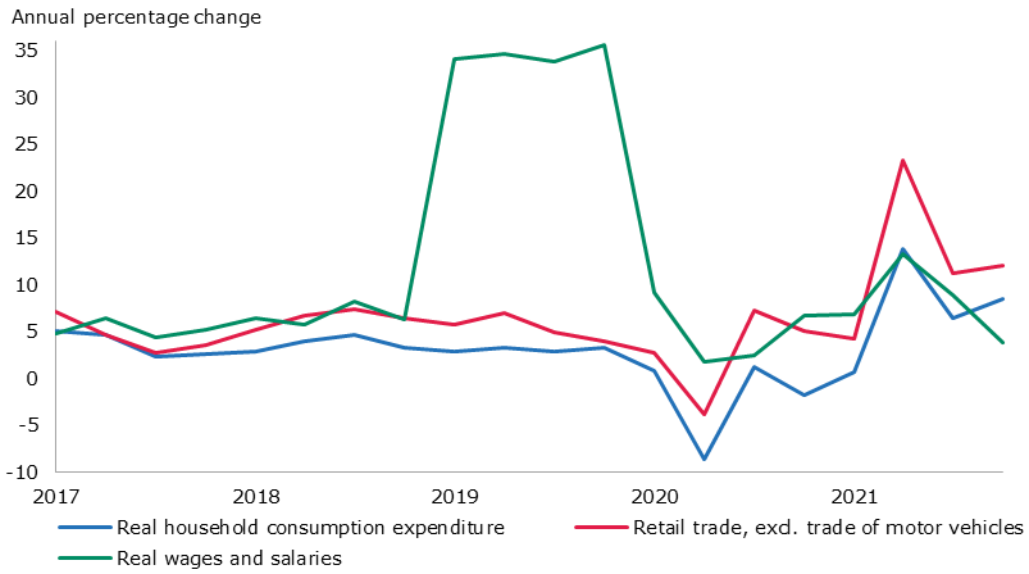
Sources: Statistics Lithuania and Bank of Lithuania calculations.

Domestic demand, in particular household consumption, contributed significantly to the strong economic growth, with growth outpacing real wage growth in the last quarter of last year (see Chart 6). Private consumption was mainly influenced by a rapid increase in household disposable income, as well as a significant increase in consumption of services in Lithuania and globally due to the lifting of

pandemic restrictions. The main contributors to such evolution of household disposable income are the strong wage growth (average annual gross wages grew by 9.9% in the third quarter of 2021) and the decisions taken by the authorities, most notably changes to pensions, the minimum wage and the general government wage, and changes to child benefits. However, real disposable income growth this year will be undermined by a double-digit acceleration in price increases, which is likely to dampen growth in consumption, especially of non-essentials.

In the fourth quarter of last year, household consumption grew faster than real income.

Chart 6. Consumption and wages

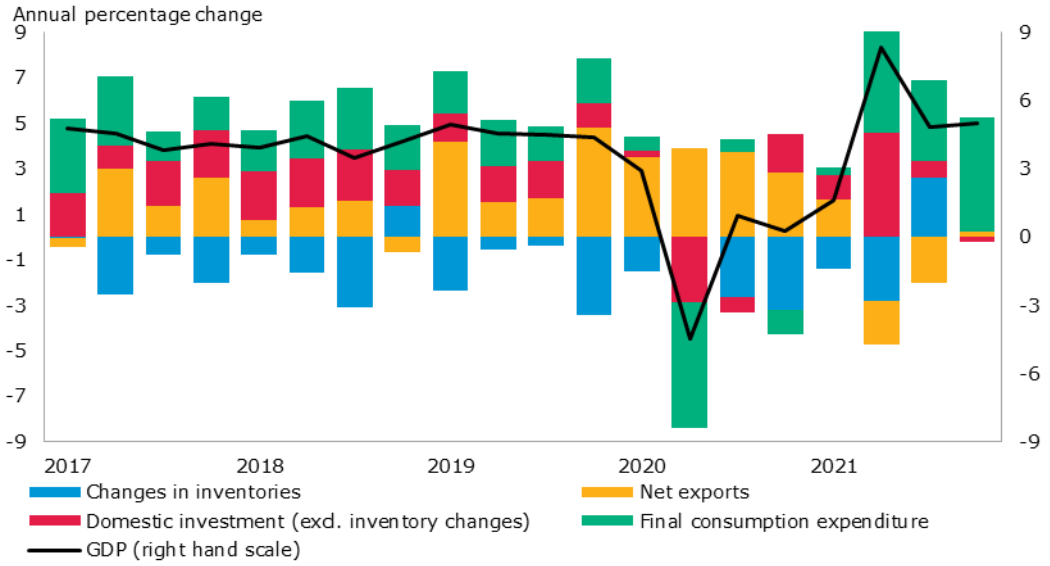


Sources: Statistics Lithuania and Bank of Lithuania calculations.

Government decisions and pension indexation will continue to make a significant contribution to further growth in household disposable income this year. In 2022, some of the most important discretionary decisions of the general government are the increase in the minimum wage, the tax-free income rate, teachers' and government employees' salaries, which will add € 577 million to personal income and EUR 760 million to pension and social benefits expenditure. The available data suggest that this year, both household disposable income and consumer price inflation are expected to outpace the last year's growth, resulting in a modest increase in real disposable income, but further growth in private consumption is expected due to the post-pandemic decline in the saving rate. As a result of these factors, the expansion in household consumption will be lower than observed last year, but still above the pre-pandemic growth rate.

Growth was mainly driven by domestic demand, with consumer spending rising rapidly and investment growth slowing in the second half of 2021.

Chart 7. Contributions to real GDP growth measured by the expenditure approach



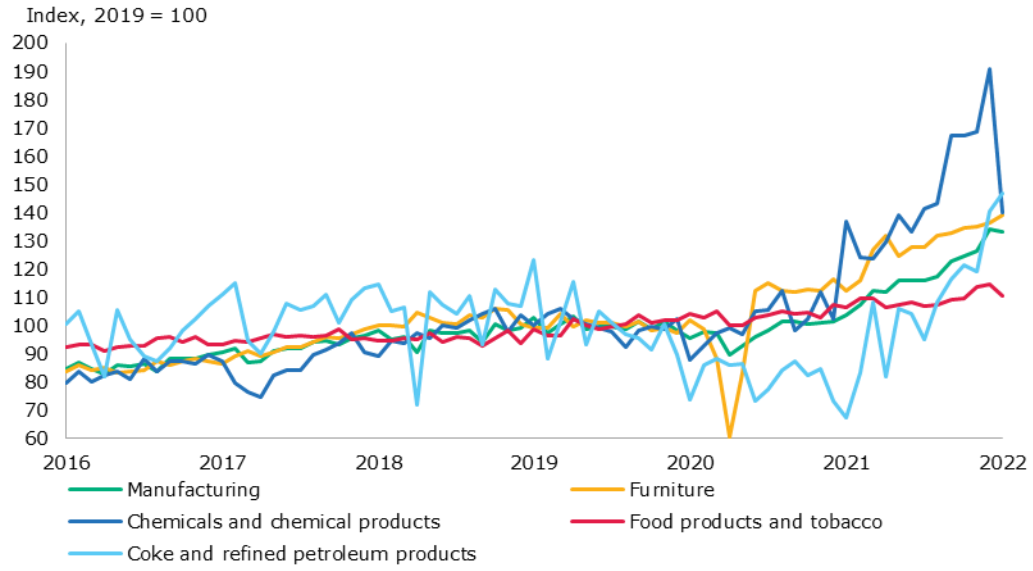
Sources: Statistics Lithuania and Bank of Lithuania calculations.

The other driver of domestic demand, investment, rebounded strongly in 2021 after a significant drop in 2020, but growth slowed in the second half of the year (see Chart 7). The growth in the first half of the year was driven by a very strong increase in investment in machinery and transport equipment, which slowed down in the second half of the year, while investment in the construction sector contracted last year (see Chart 5). This latter development is mainly due to a significant drop in civil engineering construction in the second half of 2021, most likely as a result of a sharp slowdown in the implementation of government investment projects (mainly due to the increase in investment project cost estimates). Non-residential construction showed signs of recovery in 2021 after a sharp drop in 2020. After a year of growth, residential construction started to slow down in the middle of last year and shrank faster than during the pandemic in the fourth quarter of last year. This development in the construction sector as a whole is affected by shortages of workers, production facilities and materials. In business surveys, the share of construction firms citing labour shortages as a limiting factor is now at its highest since the global financial crisis, while the share of construction firms experiencing shortages of production facilities or materials is at its highest since the data began to be published.

However, increasing risks of less favourable further developments in Lithuania's main trading partners, as well as sanctions against Russia and Belarus, are expected to dampen the growth of private sector investment this year. However, the projected strong recovery in government investment this year, as well as the implementation of the measures in Lithuania's Recovery and Resilience Plan, are likely to lead to positive dynamics in the investment balance.

In 2021, production records are observed for all industries.

Chart 8. Industrial production indices (adjusted for seasonal and workday effects)



Sources: Statistics Lithuania and Bank of Lithuania calculations.

Even in the face of challenges in international markets, last year saw a very strong recovery in foreign trade, with Lithuanian manufacturing setting records for sales volume (see Chart 8). Meanwhile, the transport services sector faced development challenges. Last year, trade restrictions with Belarus, the consequences of the conflict with China, as well as continued disruptions in supply chains and tensions in raw materials markets, did not slow down strong export growth and the expansion of manufacturing industries. Recently, manufacturing has improved its sales records in chemicals, food, petroleum refining, capital goods, furniture and wood, plastics and other non-metallic mineral products almost every month. Machinery and equipment manufacturing grew rapidly. Although there were no clear signs of a slowdown in the sector's activity prior to the hostilities in Ukraine, such a development should not be completely ruled out due to the extremely high number of adverse risk factors, such as the tightening of financial and trade sanctions against Russia, which could exacerbate the current disruption of supply chains, the shortage of labour, and the high utilisation of existing production capacity.

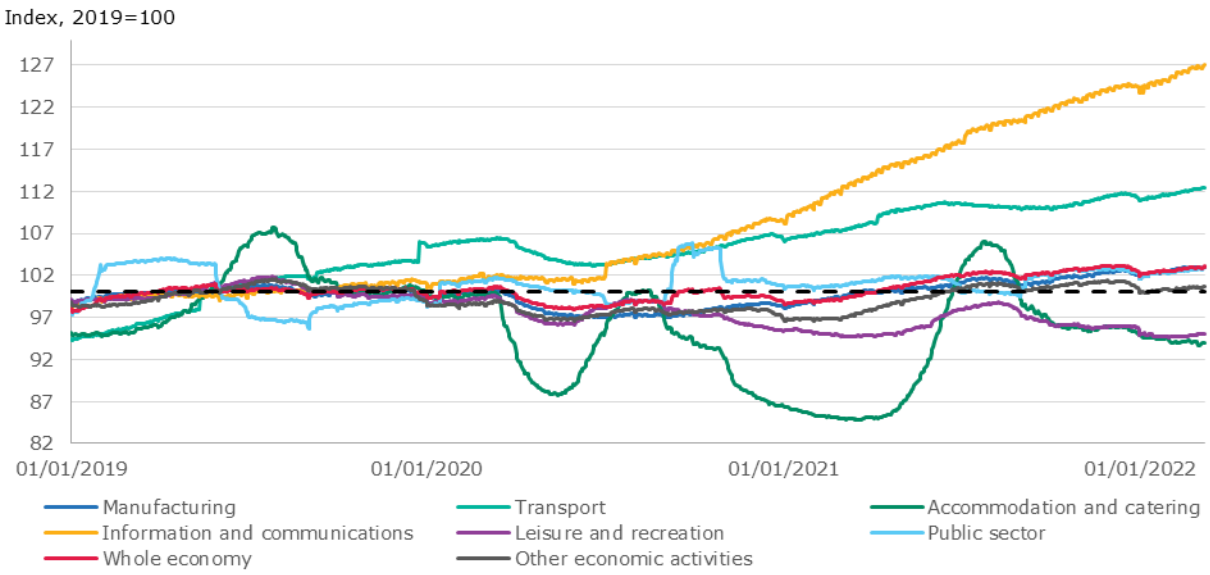
In the transport sector, after the good performance in the first half of last year, the second half of the year saw a return to a lower level of freight turnover than before the pandemic at the end of 2019. The main contributing factor was the decline in both rail and road freight volumes. With the challenges facing both of these transport sectors (rail transport with the sanctions imposed on Belarus, road freight transport with the additional requirements of the Mobility Package that entered into force in February this year), their further development could be significantly limited, and the requirements of the Mobility Package could lead to the relocation of these services to territories closer to the main transport flows.

4. Labour market

The labour market situation is stabilising, with the total number of employed and unemployed returning to the pre-pandemic levels and demand for workers continuing to increase. In the fourth quarter of 2021, the numbers of employed and unemployed were close to those recorded at the end of 2019. Although the number of people employed in the country grew at a relatively fast pace over the past year (0.8% change over the year), employment developments varied across sectors. These disparities are reflected by differences in hiring across economic activities. According to the latest daily frequency data published by Sodra, the number of employees is currently increasing especially in the information and communication, transport and public sectors, while the situation is worst in accommodation and catering, leisure and recreation segments, where the number of employees is still below the average in 2019 (see Chart 9). However, at the beginning of the third quarter of 2021, with the lifting of quarantines and the relaxation of restrictions on the contact-intensive sectors, even in these activities most affected by the pandemic, employment growth accelerated significantly. The largest changes in hiring due to the easing of restrictions were in the contact-intensive accommodation and catering sector, where hiring was above the pre-pandemic level throughout the third quarter of last year, but hiring was again below the average for 2019 by the end of the year. Seasonal fluctuations also contributed to these job developments. As employers increase their rate of job creation, the country is facing a growing shortage of workers.

The number of people employed is increasing and is above the pre-pandemic levels, but the recovery is uneven.

Chart 9. Changes in jobs in different sectors



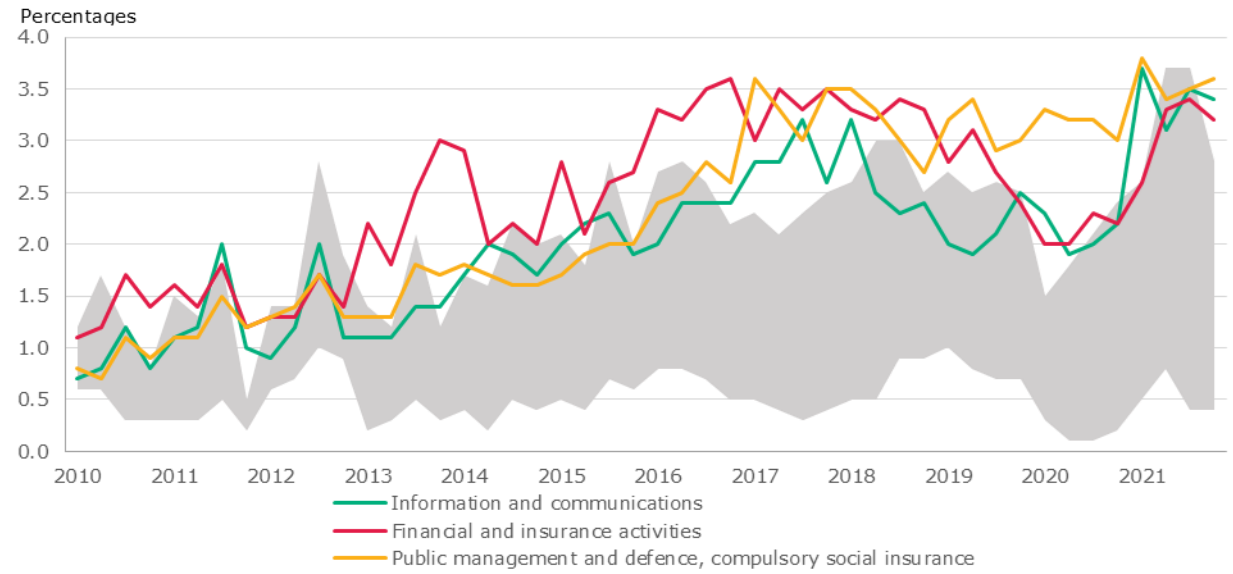
Sources: Sodra and Bank of Lithuania calculations.
Note: Data as of 10 March.

Record labour shortages have a significant impact on the labour market: the imbalance between labour demand and supply puts significant pressure on wages. The job vacancy statistics (adjusted for seasonal and workday effects) shows that there is currently a very high number of job vacancies for employees in the country (around 27,000), i.e. about one and a half times more than a year ago. The job vacancy rate (the ratio of vacancies to total jobs) is also a signal of the increasing demand for labour and the growing tensions in the country's labour market. In the third quarter of last

year, the job vacancy rate was 2%[11], catching up with the record set in the third quarter of 2008. In the fourth quarter of 2021, the job vacancy rate stood at 1.8%, rising by 0.6 percentage point year-on-year, the highest annual change since the beginning of the measurements. The highest job vacancy rate in the fourth quarter of 2021 was recorded in public administration and defence, compulsory social security (3.6%), information and communication (3.4%) and financial and insurance activities (3.2%) (see Chart 10). This huge number of high-skilled job vacancies indicates a possible mismatch in the skills of potential employees. The problem of labour shortages is also contributing to the factors limiting the expansion of production, as can be seen from the monthly business trend statistics. Although the unemployment rate (seasonally adjusted) in the fourth quarter of last year was still around 0.5 percentage point higher than the pre-pandemic level, the share of firms reporting labour shortages as a limiting factor rose to its highest level since the global financial crisis. This increase is evident in all major sectors of the economy such as industry, trade, construction and services. The fact that employers who struggle to find the suitable employees have to compete with higher wages shows that the tensions in the labour market related to labour shortages are not abating.

There is a severe labour shortage in the high value-added sectors, signalling a mismatch between the existing supply of skilled labour and the demand for higher-skilled labour.

Chart 10. Evolution of job vacancy rate by economic activity in Lithuania



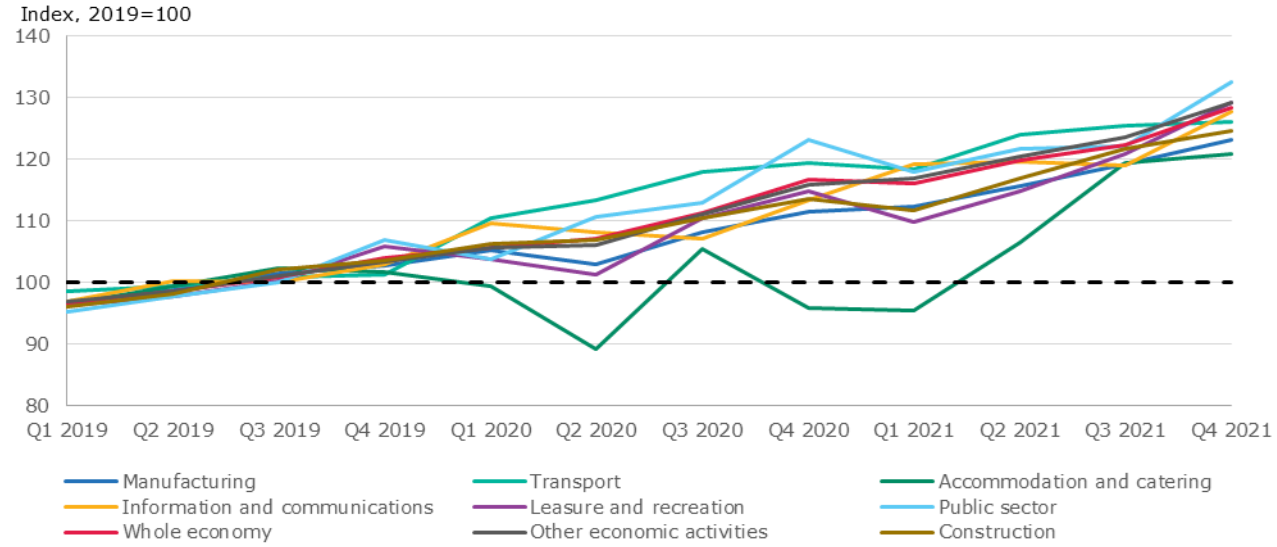
Sources: Statistics Lithuania and Bank of Lithuania calculations.
Note: The grey background shows the dynamics of job vacancies in other economic activities.

Higher wages are a key weapon in the fierce competition for employees. The exceptionally strong wage growth last year was supported by a favourable labour market situation for employees, which was associated with the falling unemployment rate, increased labour demand and supply of jobs. The competition for professionals by means of raising salaries resulted in double-digit wage growth in the third quarter of last year. The annual growth rate of gross average monthly wages in the country during this period was almost 10%. Moreover, in most economic activities, wages did not lose their upward momentum throughout the pandemic period (see Chart 11). Even in the hard-hit leisure and recreation, catering and accommodation sectors, wages are expected to be around 21% higher in the fourth quarter of 2021 compared to the 2019 average. A technical factor contributing to this strong growth in these sectors is the low base effect resulting from the rapid wage decline in the second quarter of 2020.

[11] Based on the data that are not adjusted for seasonal and workday effects.

In many economic activities, wages are more than a fifth above the average for 2019, and in the national economy, wages are now around 28% above the average for 2019.

Chart 11. Changes in wages in economic activities



Sources: Statistics Lithuania and Bank of Lithuania calculations.
Note: Some economic activities are abbreviated in the legend.

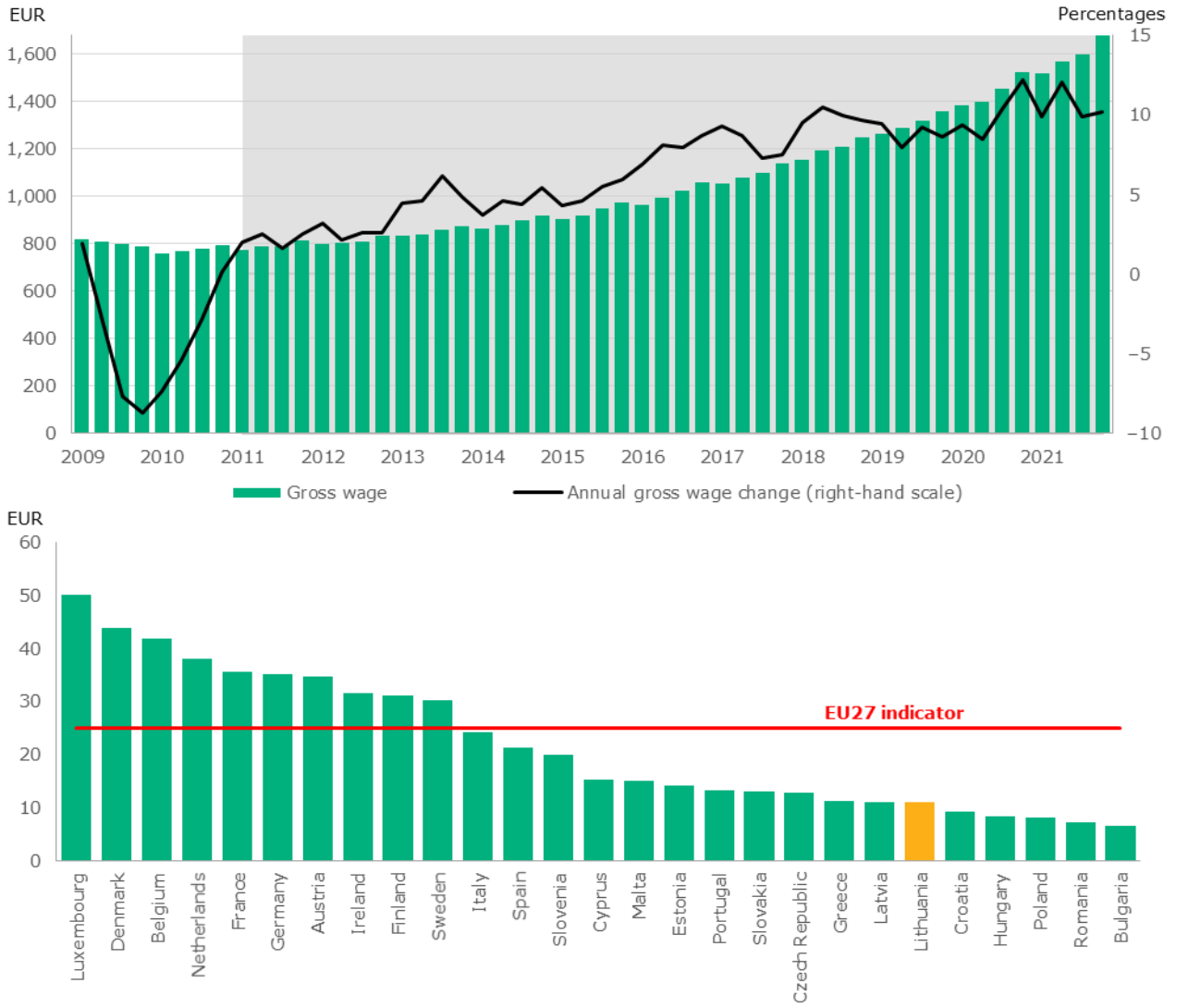
Box 1. Are rapidly rising wages hindering Lithuania's success in the competitiveness race?

With the rapid growth of wages in Lithuania in recent years, there are concerns about whether this will begin to undermine the international competitiveness of Lithuanian companies. This box therefore looks more closely at recent trends in wages, productivity and competitiveness indicators.

Even with the rapid wage growth, the pay gap compared to the EU average is still large. Wages in the Lithuanian labour market have been rising steadily for a decade, and workers are currently enjoying very rapid, double-digit wage growth (see Chart A). In the fourth quarter of last year, wages were around 10% higher than a year earlier. Despite the pandemic, wages are now about 20% above the 2019 average in most economic activities. The increasing pace of wage growth can partly be explained by the ongoing convergence. According to the latest available data, in Lithuania, hourly pay is still among the third lowest in the EU, at just 44% of the EU average (see Chart A). While we are ahead of Bulgaria, Romania, Poland, Hungary and Croatia, we are behind Latvia, Estonia and other Western European countries. Nevertheless, we are catching up, as evidenced by one of the fastest growth rates in the EU for compensation per hour worked between 2015 and 2020, behind only Romania, and slightly ahead of Estonia, Bulgaria and Latvia. The cyclical situation of the economy also creates favourable conditions for wage growth – according to the Bank of Lithuania's assessment, economic activity has been exceeding its potential for almost five years, i.e. Lithuania has a positive output gap. As the volume of goods produced and services rendered increases, the potential of the labour force is increasingly being used. As unemployment rate falls, labour market tensions are rising due to increased competition for workers, which translates into rising average wages.

Even with the rapid wage growth, the pay gap with the EU average is still large.

Chart A. Level and change in average monthly wage in Lithuania (top of the chart) and comparison of pay per hour worked in the EU (2020 data, bottom of the chart)

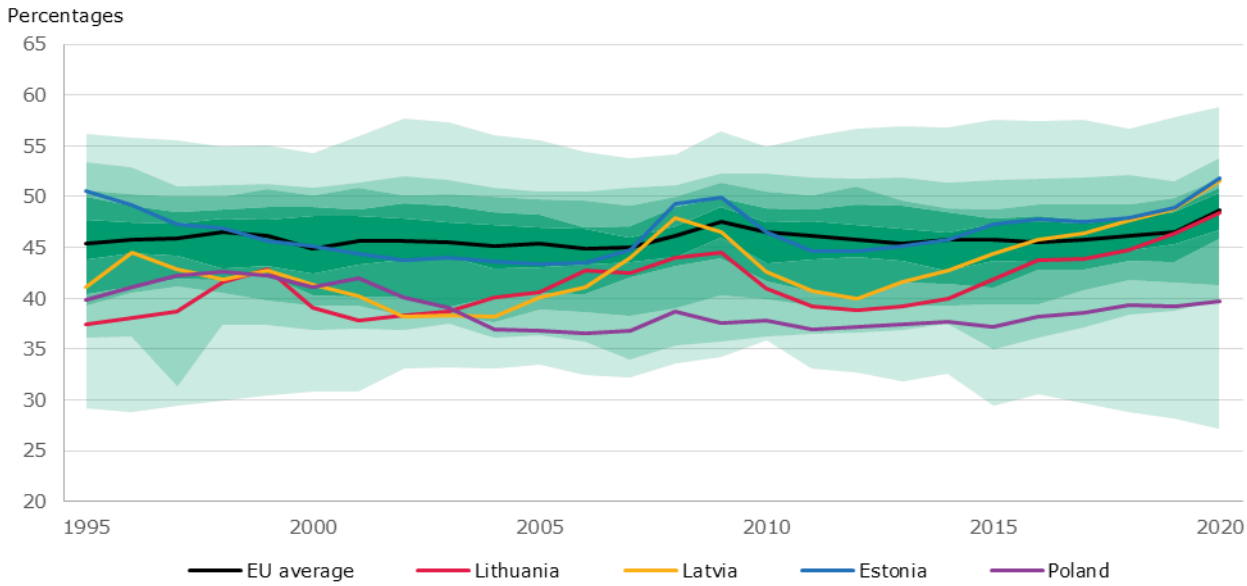


Sources: Statistics Lithuania and Bank of Lithuania calculations.

The labour share in 2020 is close to the EU average and is the highest since the beginning of the data series. In 2020, around half of the value added generated was accounted for by compensation of employees (see Chart B). The labour share in Lithuania was higher than in Poland, but still lower than in Latvia and Estonia. The trend towards an excessively fast increase in the share of wages paid in the value added structure could be risky. Labour costs rising faster than productivity growth can make firms less competitive in foreign markets for their products and services: as productivity growth fails to keep pace with wage growth, it becomes more and more expensive for firms to produce the same amount of goods, and they have to compensate for growing costs by raising the prices of services and goods. However, the data show that Lithuania does not yet stand out as a significant performer in terms of labour share compared to other EU countries (see Chart B). Moreover, even though wages have been rising rapidly for some time, the pay gap compared to the EU average is still bigger than labour productivity. Labour productivity is lagging behind the EU average less and moving towards it faster than wages.

The long-standing gap compared to the EU average in terms of labour share has disappeared, but Lithuania does not stand out among other EU countries.

Chart B. Labour share in EU countries

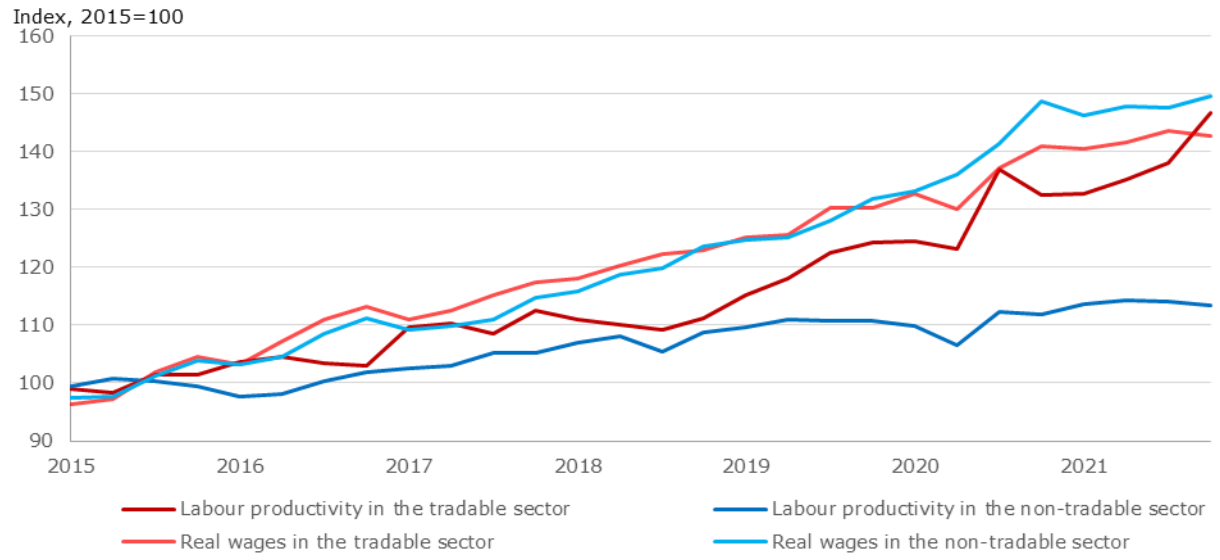


Sources: Eurostat and Bank of Lithuania calculations.
Note: The lightest shade shows the dispersion of indicators of all EU countries, the darkest shade marks the dispersion of 20% of EU countries.

Lithuania's labour productivity development is mainly driven by developments in the tradable sector, which means that the tradable sector is driving the faster productivity growth, and thus the country's international competitiveness. In analysing the dynamics of wage and productivity growth, it is important to identify economic activities oriented towards domestic and external markets. A sector such as manufacturing, for example, exports a lot and competes in the international market, so constant technological progress and investment are important. The situation is different for the service sector or the public sector – the level of wages paid to hairdressers or construction workers, for example, is unlikely to have much impact on the country's international competitiveness. In the non-tradable sector, goods and services are mainly produced, created and supplied to the domestic market, and there are often limited ways to improve productivity, which is largely dependent on the number of hours worked. These and other reasons may be responsible for the fact that productivity growth in Lithuania's non-tradable sector is slower than wage growth (see Chart C). Looking at the historical data of the tradable sector, recent trends show that, compared to the pre-pandemic average, labour productivity in the tradable sector has grown slightly faster than wages. Based on the Balassa-Samuelson effect, as productivity rises faster in the tradable sector, firms that are outward-oriented can also pay higher wages, which in the long run boosts domestic demand for goods and services and provides an incentive to raise wages in the non-tradable sector. However, there is a risk that if wages in the non-tradable sector rise too fast, workers could start to move from the tradable sector to the non-tradable sector, which would put more upward pressure on wages in the tradable sector and could make it less competitive.

In Lithuania, wages rise faster in the non-tradable sector, while productivity grows more rapidly in the tradable sector.

Chart C. Changes in labour productivity and real wages in the non-tradable and tradable sectors

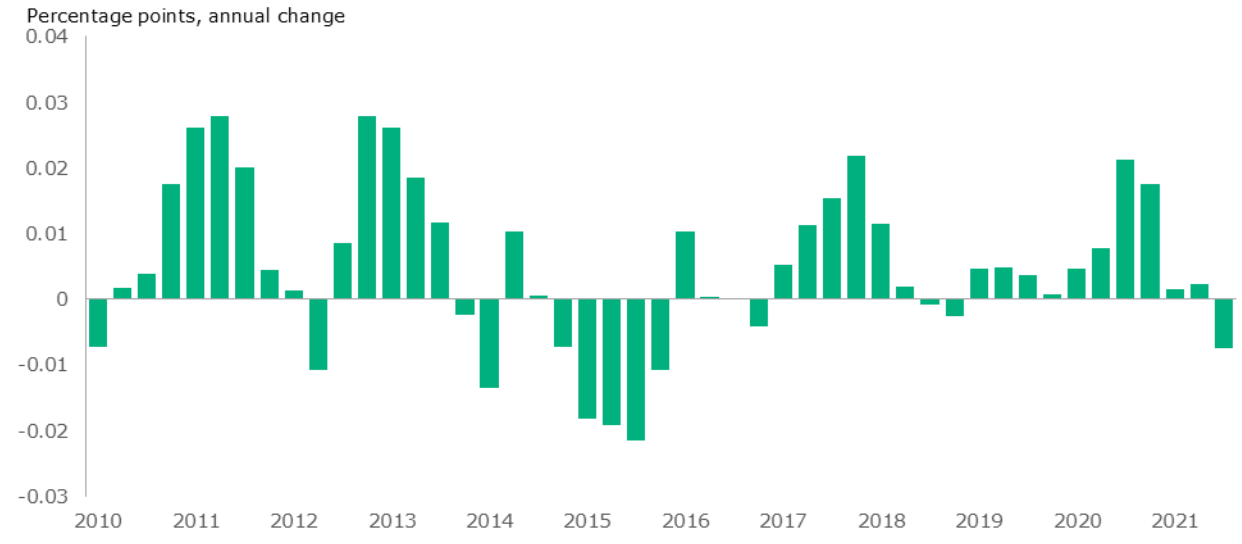


Sources: Statistics Lithuania and Bank of Lithuania calculations.
Notes: The tradable sector consists of agriculture and manufacturing. Labour productivity data are seasonally adjusted.

Lithuania's growing export market share does not yet show any signs of losing competitiveness in foreign markets. Lithuanian exports have performed surprisingly well: the share of the Lithuanian market in foreign trade has been growing over the past year (see Chart D). In Lithuania, the export market share of reagents related to the management of the COVID-19 pandemic was exceptionally strong in the second half of 2020. In addition, Lithuania's exports are growing faster than the demand for goods in its main trading partners. For example, in 2015–2021, Lithuania's real exports grew by an average of 7.5% per year, while external demand increased by 2.6% per year.

The growing market share of Lithuania's exports in its main trading partners shows that the competitiveness of Lithuanian companies in foreign markets is still quite high.

Chart D. Annual growth in Lithuania's market share worldwide

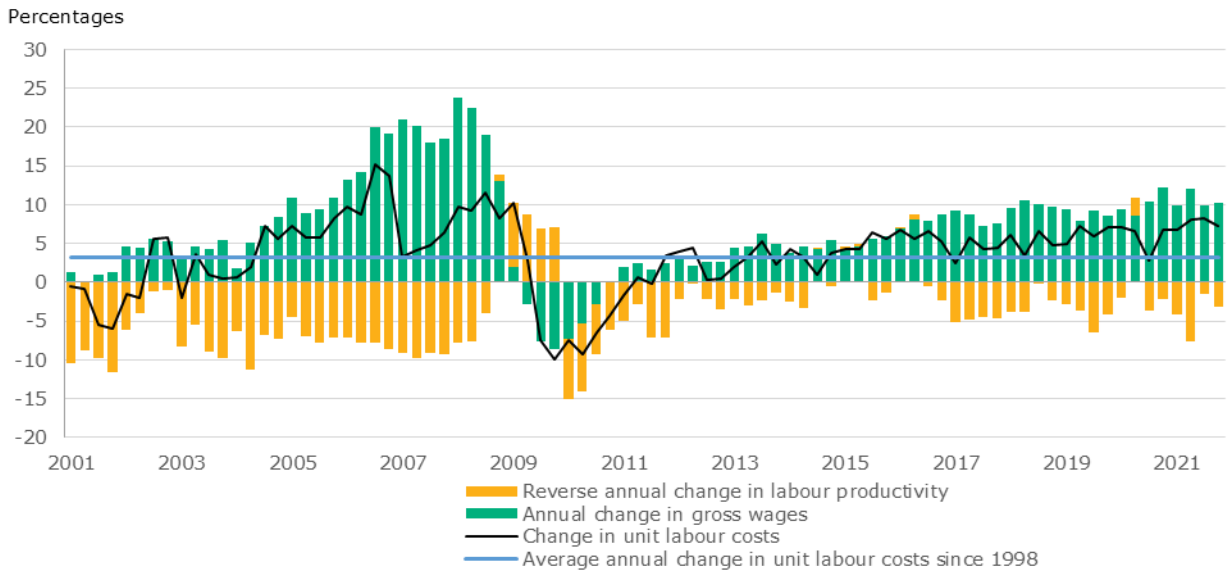


Sources: Eurostat and Bank of Lithuania calculations.

Although the export market share is increasing, the unit labour cost indicator signals challenges to price competitiveness. With the rapid convergence to Western European income levels, rising unit labour costs are an inevitable consequence, and not only for Lithuania: the decline in price competitiveness at the real effective exchange rate is also a feature of the other Baltic countries. Unit labour costs which have been rising for quite some time (see Chart E) also reflect the growing importance of non-price competitiveness drivers. In order to maintain economic growth and wage growth in the future, the importance of factors other than price or cost is highlighted: for example, the level of development of technological infrastructure, clustering, good trade links, competition on quality, reliable services, and a variety of choice. According to the Bank of Lithuania's study[12], as Lithuanian exports grow, the share of non-price-competitive goods in the export structure increases.

Accelerating unit labour costs highlight the price competitiveness challenges in Lithuania.

Chart E. Evolution of unit labour costs



Sources: Statistics Lithuania and Bank of Lithuania calculations.

[12] Kostinas A., Vilniškis M. (2021). Non-price competitiveness of Lithuanian exports. Occasional Paper Series, No 38. Available online here.

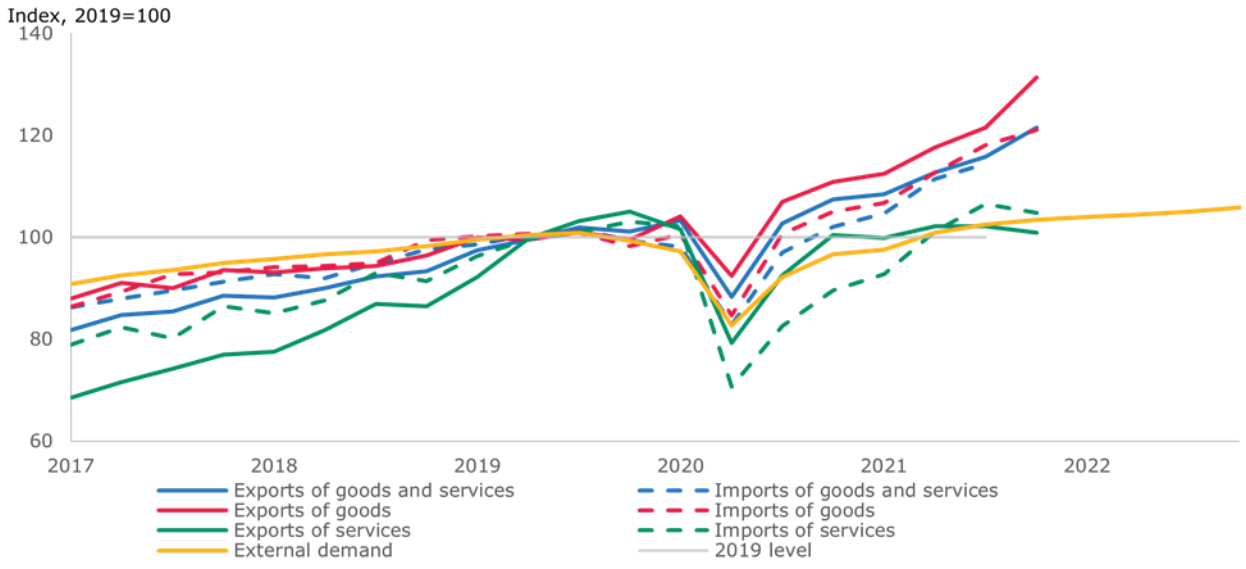
5. External sector

In the second half of 2021, Lithuania's export and import volumes continued to grow and the growth rates of imports and exports converged. Based on the National Accounts, real exports of goods and services increased by 7.3% and imports by 7.1% in the second half of 2021, compared to the first half of the year. The return of external demand to its pre-pandemic trend and the increase in investment during the year allowed exports to continue to grow, while the increased geopolitical risks (uncertainty about the future and rising prices encouraged early sourcing of goods and raw materials) and the reduction in corporate inventories during the pandemic had a positive impact on imports. In the second half of 2021, most of the growth in foreign trade was driven by trade in goods (see Chart 12). Growth in trade in services remained sluggish in the second half of the year. With demand in external and domestic markets following an upward trajectory, Lithuania's exports and imports are expected to rise, yet imports are seen to expand at a faster pace due to the expected stronger demand for commodities and equipment underpinned by the development of production as well as due to the recovery of household consumption. Geopolitical tensions and related risks are the main source of risk to the export outlook, as they may adversely affect Lithuania's exporting companies that are directly or indirectly linked to China and Belarus. The current situation and the military conflict and global sanctions against Russia have greatly increased the uncertainty of the future. This has significantly reduced the level of projected demand, but in addition to falling demand, there are also risks related to raw materials (metals, timber), a large part of which is imported from Russia and Belarus. Price increases for important raw materials, which are mainly imported from these countries, are not yet clear, but will be inevitable, both because of the fall in market supply and the loss of cheaper markets.

Lithuania's foreign trade volume in 2021 reached historic highs, and the return of external demand to its pre-pandemic trend suggests further growth.

Chart 12. Dynamics of Lithuania's foreign trade and external demand

(at constant prices, seasonally adjusted data)



Sources: ECB, Statistics Lithuania, Bank of Lithuania and Bank of Lithuania calculations.

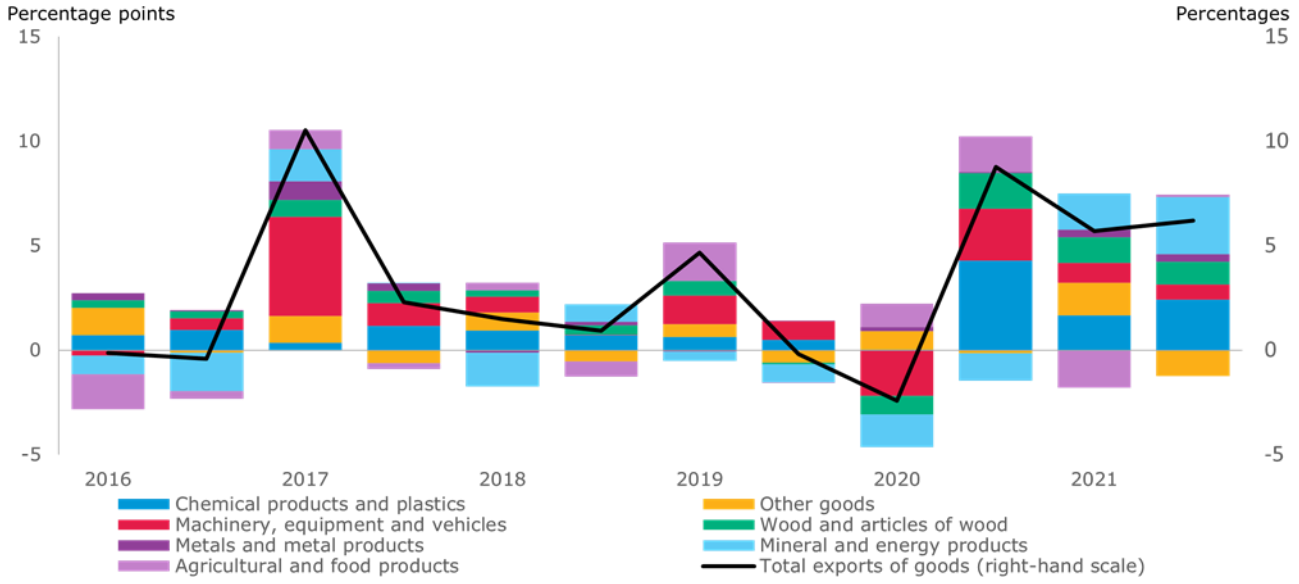
Lithuania's chemical exports continue to be the best performers in foreign markets, but exports of mineral and energy products also had a significant positive impact on growth. In comparative prices, mineral and energy products had the largest impact on the growth of goods exports, but chemical products were not far behind (see Chart 13). Lithuania's exports of plastics and plastic products and fertilisers increased rapidly throughout the second half of the year. The rapid growth of

reagent exports slowed down, but exports in 2021 were 13% higher than a year earlier. This high value-added group was replaced by the growth of export of nucleic acids (€ 223) and enzymes (€ 318 million). Although the export volumes of these goods individually are not yet at the level of exports of reagents (€ 736 million), their combined value totalled € 541 million in 2021. Exports of furniture and wood and wood-based products have also steadily increased, thanks to steady market demand, new products and recovering investment. Further developments in furniture and wood products will be influenced by the evolution of raw material prices, a significant part of which is imported from Belarus and Russia. Rising commodity prices may limit production and thus exports.

The volume of real exports of goods continued to increase in the second half of 2021, with the chemicals industry accounting for the bulk of the growth.

Chart 13. Growth factors of real exports of goods

(change in export levels seasonally adjusted, compared to the previous period)



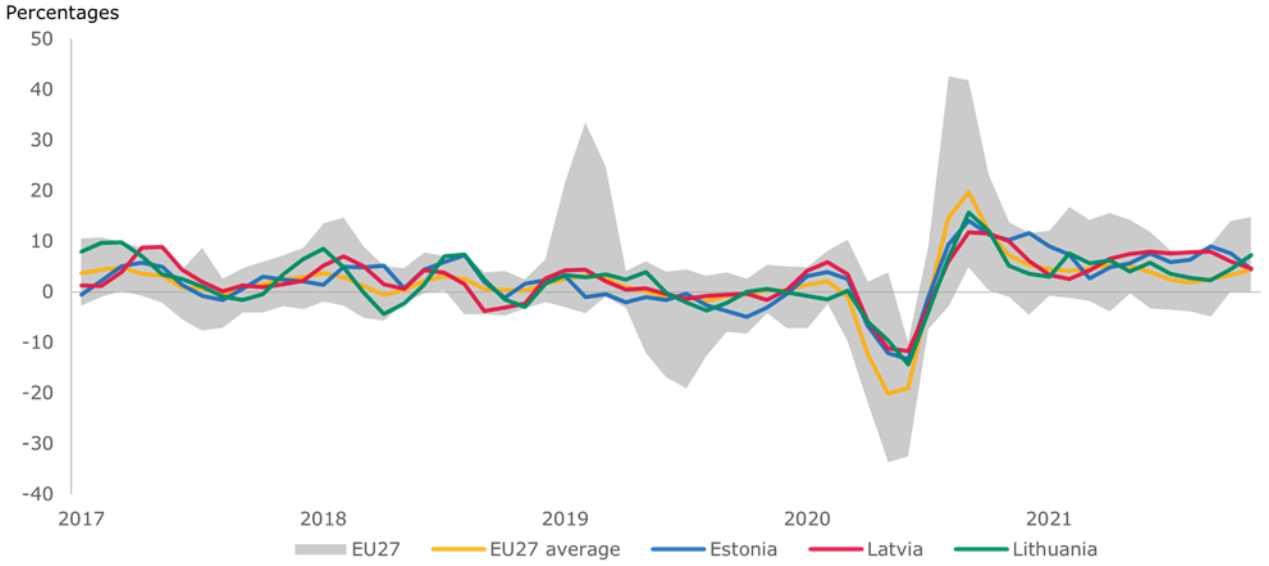
Sources: Statistics Lithuania and Bank of Lithuania calculations.

As global foreign trade recovered, Lithuania's share of the world export market for goods declined. The growth of Lithuania's share of the world export market for goods slowed down in the first and second quarters of 2021 and turned negative in the third quarter. In the EU market, Lithuania's market share fell in the second quarter, but rose again in the third quarter. During the pandemic, exports of pandemic-related goods contributed to the rapid increase in market shares. As its impact fades and competition in the market increases, Lithuania's exports of reagents have grown more slowly than its competitors since the second quarter of 2021. In 2021, as the global economy recovered, foreign trade volumes increased in almost all EU countries, with Lithuanian exports growing slightly faster than the EU average (see Chart 14). In the short term, Lithuania's share of the foreign trade market will decline. In 2022, this decline is attributed to the risks from trade with Belarus and China and the situation in the transport sector. The market share growth may be hampered by the production capacity utilisation rate, which has risen to historic highs and may limit further expansion of production and thus exports. Labour shortages and disruptions to global supply chains are also playing an increasingly important role as production and exports continue to expand. Political tensions also pose a risk to the development of the Lithuanian market share; if they materialise, export expansion may be restricted for political rather than economic reasons.

Lithuania's goods export growth was close to the EU average until the end of 2021, and exceeded it at the end of the year, when growth slowed in Latvia and Estonia.

Chart 14. Development of exports of goods in the Baltic and EU countries

(3-month moving average, change compared to the previous period)



Sources: Eurostat and Bank of Lithuania calculations.
Note: EU27 – the range is between the lowest and the highest value in EU countries (except Malta and Cyprus).

Geopolitical uncertainty, disruptions in supply chains and rising prices have increased the need to secure stocks of raw materials and components, stimulating imports. In the second half of 2021, imports continued to grow faster than exports. This has been driven to a large extent by higher commodity and energy prices, but also by heightened uncertainty and geopolitical risks. The main contributor to the growth in imports, excluding fuels, is intermediate goods used in manufacturing. Apart from energy products, the main groups contributing to import growth were plastics and plastic products, ferrous metals and electrical machinery and equipment. Most imports of ferrous metals come from Russia and Belarus, while electrical machinery and equipment are imported from China. Mineral fuels and oils were the main contributors to the increase in total imports due to seasonal factors and price increases.

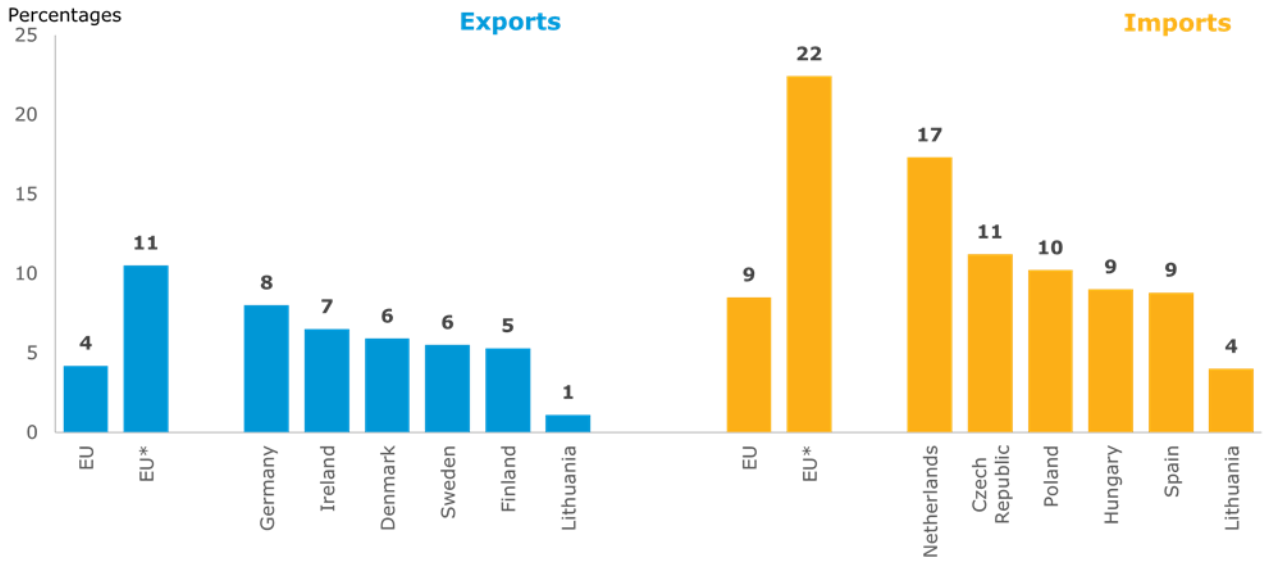
Trade in services continued to grow sluggishly in the second half of last year. Exports of services remained at a slightly lower level than in 2019 throughout the year, while imports of services continued to increase after picking up at the start of the year. Exports of other business services and telecommunications, computer and information services grew fastest, while transport services remained stable. It should be noted that the share of imported transport services in the total service imports is increasing. This is likely to be linked to the expansion of transport companies abroad as a result of the mobility package. In addition, the new requirements of the Mobility Package on regular return of trucks to their country of origin came into force this year, which has led some Lithuanian companies to plan expansion in countries closer to the main freight transport flows.

With foreign trade reaching historic highs in 2021, more moderate growth is projected. After the exceptionally strong growth in the second half of 2021, further growth in external trade is expected, but at a more moderate pace. The Bank of Lithuania forecasts that exports will grow by 5.2% and imports by 5.3% in 2022. The rapid expansion of Lithuania's main trading partners is underpinning strong growth, which has a positive impact on demand for Lithuania's exports, which is returning to the pre-pandemic levels. Nevertheless, uncertainties in the external sector are still heightened in 2022 due to the tense geopolitical situation regarding China and Belarus, while the balance of risks is also negatively affected by the situation in Ukraine.

Box 2. Analysis of the trade relations between Lithuania and China

Over the last decade, China's importance in world trade has increased rapidly. China is now the world's second largest economy, behind only the US. In 2010, China's GDP accounted for around 13% of the global GDP at constant prices and is projected by the IMF to reach around 17% in 2021. Looking at EU trade as a whole (including trade between EU countries), exports of goods to China accounted for 4% of the total EU exports of goods in 2020, while imports of goods from China accounted for around 9% of the total EU imports of goods (see Chart A). Looking only at trade with non-EU countries, exports to China account for 11% of total exports and 22% of total imports.

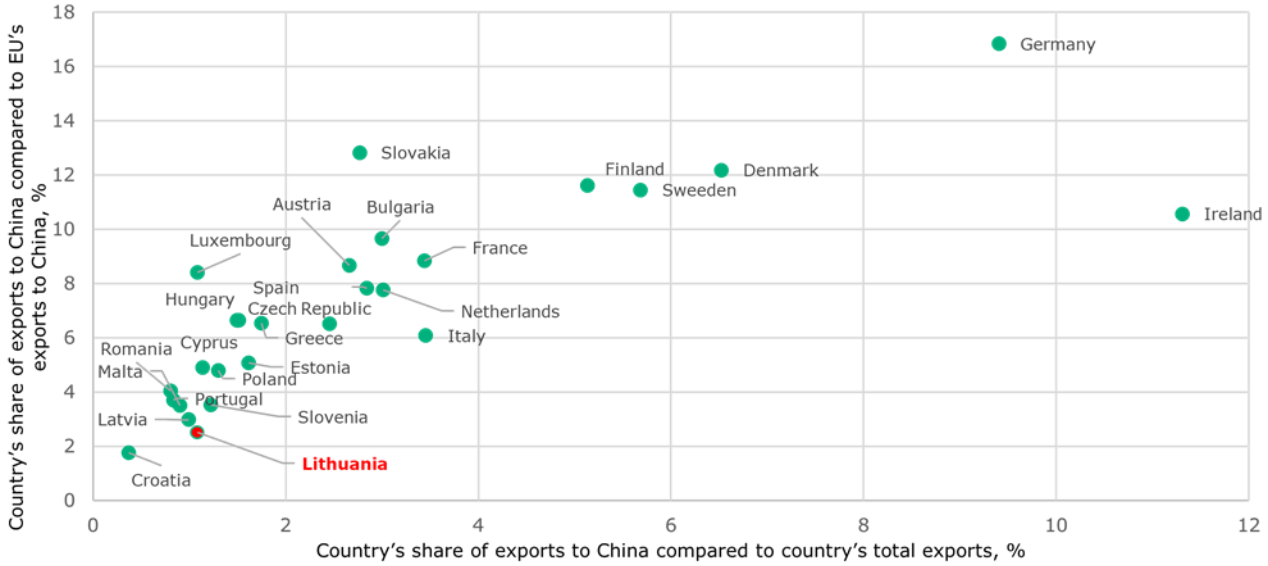
Chart A. The share of trade with China in total exports and imports (Lithuania, EU and EU countries that trade most with China)



Sources: Eurostat and Bank of Lithuania calculations.
Note: EU* is China's share of EU trade with non-EU countries.

Most EU economies import more from China than they export to it, due to China's dominance in the production of consumer goods and electronics. It is also worth noting that a large number of EU companies have relocated their production to China, and that labour-intensive mass production remains important for the Chinese economy. This has led to mutual dependence. EU machinery and equipment, specialised tools, raw materials and components are important for low and high complexity manufacturing in China, while electronics and consumer goods already produced in China are important for EU consumers and businesses. The importance of China for foreign trade varies across EU countries. Germany and Ireland are the biggest exporters to China (see Chart B). The Netherlands and the Czech Republic account for the largest share of imports from China. The Chinese market is less important to Lithuania directly, like other Central and Eastern European countries (due to the less developed high-technology industries and international brands), but indirectly, these countries are also involved in value chains with other EU countries, through which their final products reach China.

Chart B. Importance of China in EU exports



Sources: Eurostat and Bank of Lithuania calculations.

Lithuania's trade with China has also been increasing over the past decade but remains small in terms of direct trade links. In the fourth quarter of 2020–21, Lithuania's exports of goods and services to China accounted for 0.7% of the country's total exports, while imports from China accounted for 3.7% of total imports. Lithuania's exports to China are ranked below the 20th most important country, but its imports are among the top 10 markets. The majority of exports to China are Lithuanian-made goods, or more specifically Lithuanian agricultural and food products, but their exports are highly diversified. It should be noted that, despite its small share in total foreign trade, China's importance for some commodity groups in both exports and imports is much higher. Detailed data on Lithuanian exports published by the Lithuanian Statistics Department[13] show that Lithuania mainly exports furniture and parts[14], diagnostic and laboratory reagents[15] and liquid crystal devices[16] to China. Exports to China of each of the above-mentioned product groups account for 3%, 2% and 15% respectively of total exports of the corresponding product group originating in Lithuania. Exports of the product group LCD devices represent the largest share compared to exports of other product groups and compared to total exports to China. Lithuanian lasers and similar optical products also fall into this category, with as much as 30% of exports to China. Lithuania's share of exports to China is relatively small, but it is an important market for some sectors, such as agriculture and lasers. In other words, while China's importance in Lithuania's foreign trade is not significant, specific sectors, such as the laser industry, are likely to suffer greater losses due to the closing of the market. The direct impact also excludes Lithuania's involvement in global value chains, so the overall impact of trade restrictions with China would be higher.

The size of the market makes China particularly important for EU multinationals, whose value chains are spread across the globe. Germany, the EU's industrial leader, and other countries have strong trade links with China. This is because some German and other EU multinationals have moved their production processes to China and have factories there. In addition, the factories in China use workpieces, equipment or parts produced in other EU countries. These goods reach China as imports of intermediate consumption or investment goods from EU countries, using intermediate products from other EU countries. Lithuania is also indirectly involved in these global value chains through its foreign

[13] Export of goods, Combined Nomenclature, four-digit detailed commodity codes.

[14] Mainly product group 9403, under the four-digit Combined Nomenclature code. Available online here.

[15] Mainly product group 3822, under the four-digit Combined Nomenclature code.

[16] Mainly product group 9013, under the four-digit Combined Nomenclature code.

trade with other countries. In terms of trade relations between Lithuania and China, the trade relations with China are more intense than indicated by direct trade flows, taking into account the origin of value added. When taking into account the value added directly exported to China and including the value added exported to China via other countries, the share of Lithuania's exports to China rises to 3.2% of total exports (see Chart C). When the value added generated in China is taken into account for the value added imported directly from China and the value added generated in that country imported to Lithuania via other countries, the share of imports from China rises to 3.5% of total imports (according to the OECD trade in value added (TiVA), 2015 statistics).

Chart C. Share of trade with China in Lithuania's foreign trade

(standard foreign trade flows in 2020 (left). Value-added flows in 2015 (right))

Sources: OECD, Statistics Lithuania, Bank of Lithuania and Bank of Lithuania calculations.
* VA – value added.

Chinese machinery and equipment and electronics are important to Lithuanian industry, and companies dependent on these goods may face production difficulties. Detailed import data[17] show that the largest imports from China are telephone sets and other data transmission equipment[18], motor vehicles[19] and transport parts and equipment.[20] Chinese imports of these goods represent 13%, 9% and 35% of total imports of these goods respectively. Lithuania imports most of these commodity groups indirectly from China, and in the event of import restrictions from China, it is likely that they would be available from other countries. Nevertheless, among the most important imports, there are also goods that are mostly imported from China. These include amino compounds, printed circuits and enzymes, which account for 69%, 68% and 47% respectively of total imports from China. Amino compounds are used as raw materials in the chemical and biochemical industries, while printed circuits are widely used in manufacturing, for example, in electronics, microchips and various electronic components.

Restrictions on exports to China could mean a complete halt in the sale of Lithuanian products on this market. As disagreements over the name of the Taiwan representative office continue, businesses have become increasingly vocal about the disruption at the Chinese border. Lithuanian exports to China encountered bottlenecks in the customs declaration system, while timber and food

[17] Imports of goods, Combined Nomenclature, four-digit detailed commodity codes.
[18] Mainly product group 8517, under the four-digit Combined Nomenclature code.
[19] Mainly product group 8708, under the four-digit Combined Nomenclature code.
[20] Mainly product group 8714, under the four-digit Combined Nomenclature code.

shipments are stuck at the Chinese border. These difficulties have been exacerbated by China's announcement that imports containing Lithuanian components will also be restricted. Such indirect pressure through multinational companies in whose value chains Lithuania is involved could result in significant business losses, the extent of which is difficult to assess due to data delays. However, until November, Lithuania's exports to China did not decline significantly, while imports from China have increased rapidly. This growth is likely to be linked to the need to secure Chinese components and goods needed for production due to the uncertainty of the future. However, preliminary indicators for December 2021 show that Lithuania's exports to China fell sharply and were close to zero.

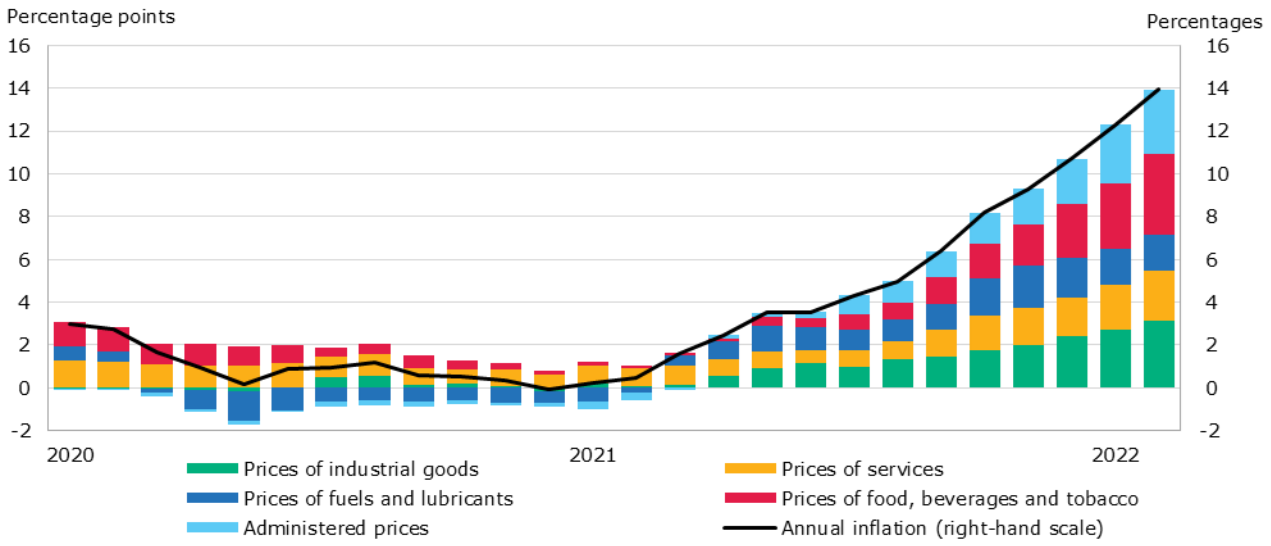
A complete halt in Lithuania's direct exports to China would reduce real GDP growth by 0.1 and 0.2 percentage point in 2022 and 2023, respectively. China's actions are likely to have the strongest impact on the Lithuanian economy through foreign trade (imports and exports) and investment. The most likely, and already evident from preliminary trade data, a drop in exports to China to zero would reduce Lithuania's GDP growth by 0.3 percentage point over two years. Uncertainty about China's actions is very high and, in addition to the direct effects, indirect effects are likely, depending on China's further actions.

6. Prices

Continued global disruptions in supply chains, rising prices of various raw materials and energy resources are fuelling inflation worldwide. Lithuania was not an exception. Annual inflation, which had been picking up since March last year, has been in double-digit territory since December and stood at 14.0% in February (see Chart 15). Rising energy prices continue to account for most of the inflation. This is mainly due to the fact that prices on the markets for some energy sources, such as electricity and gas, have increased several-fold. While external factors account for the bulk of inflation, the impact of domestic factors has also intensified, with the prices of services, which are mainly linked to domestic economic developments, rising faster in recent months. Under the conventional scenario, average annual inflation is projected at 10.5% this year. However, since the outbreak of the war, the situation on the markets is changing very quickly and the uncertainty that can affect the forecast price developments has increased significantly.

Inflation in Lithuania is mainly driven by rising energy prices.

Chart 15. HICP inflation and its contributions



Sources: Statistics Lithuania and Bank of Lithuania calculations.

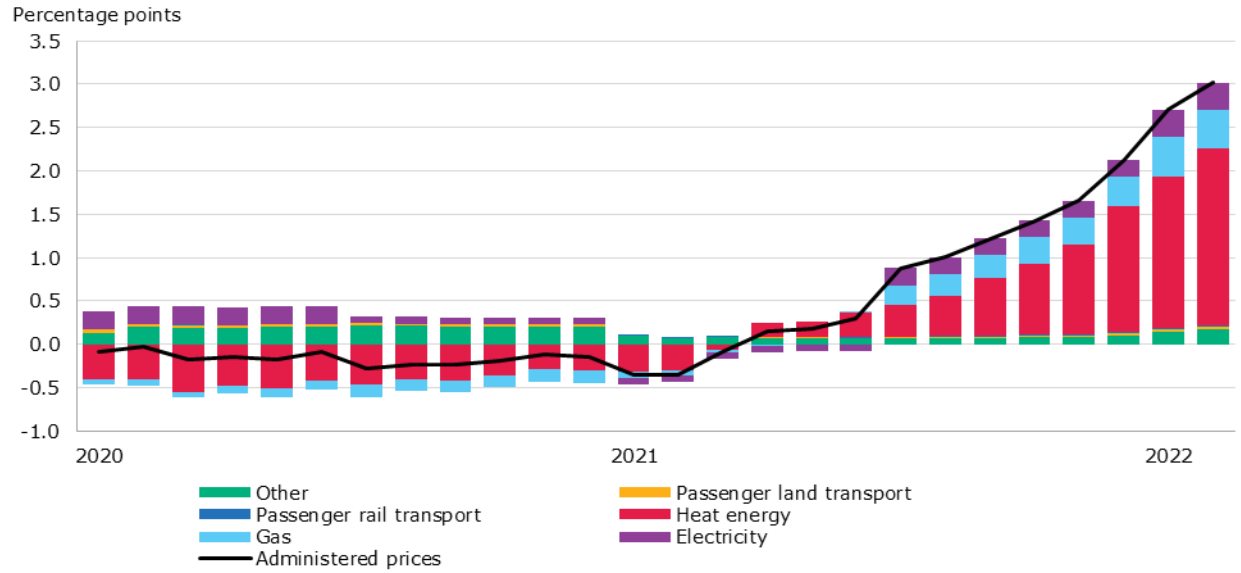
As economies recover rapidly due to increased demand, geopolitical tensions on the continent have further exacerbated the rise in energy prices. The price of Brent crude oil had exceeded USD 130 per barrel when Russia invaded Ukraine. Russia produces around 10 million barrels of oil every day – on average, 10% of the world's daily consumption. There are fears that the invasion could disrupt the global energy supply chains. This threat significantly increases oil prices. In addition to oil prices, natural gas prices rose even more, almost five times higher in February than in the same period a year earlier. Expectations for future gas price reductions are also changing. Based on futures contracts, as early as November last year, gas prices were expected to fall to €48/MWh by April 2022 (more than double compared to December last year). However, in the context of geopolitical tensions and sanctions imposed against Russia, which was already restricting gas supplies to Europe before the invasion of Ukraine, the current expected price of natural gas in April is around 3.3 times higher. Rising gas prices also affect electricity prices on the market. Last December, electricity prices on the Nord Pool power exchange were almost 5 times higher than a year ago. Although electricity prices on the market fell slightly in February this year, they were still almost 1.8 times higher than last year. The outbreak of war creates great uncertainty. If hostilities intensify or other significant developments occur, this could have a significant

impact on energy prices in a number of directions. This could have a corresponding impact on both energy and headline inflation projections.

As energy prices rise, so do the prices of energy products for consumers. In February this year, fuel prices increased at an annual rate of 29.8%, contributing as much as 1.7 percentage points to headline inflation (see Chart 16). Headline inflation was even more influenced by heat prices, which were 93.2% higher in February than a year earlier, contributing 2.0% points to headline inflation (see Chart 16). Heat prices are reviewed monthly, therefore increases in energy prices are quickly assessed. For example, the prices of fuel purchased in December 2021 were used to calculate the heat prices in February: in December, the price of the raw material for biofuel was 128.7% higher and the price of natural gas was 369.2% higher than a year earlier.[21] The increase in energy prices on the market has led to a significant increase in other administered – electricity[22] and gas – prices for household consumers. Electricity and natural gas prices which are reviewed twice a year were revised upwards in January this year, increasing their impact on annual headline inflation (see Chart 16).

Among administered prices, heat prices are the main contributor to headline inflation.

Chart 16. Impact of administered prices on annual headline inflation



Sources: Statistics Lithuania and Bank of Lithuania calculations.

As global supply chain disruptions continue, industrial commodity price inflation picked up to around 9% in February. Increased prices for various raw materials and the cost of shipping by sea containers are pushing up the cost of industrial goods, both indirectly and directly. The indirect impact of supply bottlenecks and tensions in raw material markets on prices of final consumer goods is reflected in higher prices of imported intermediate goods, which rose by 20.5% year-on-year in December. This raises costs for producers, some of which are eventually passed on to the prices of the products sold by producers, which in turn affects the prices of industrial goods for final consumption. In general, producer prices react more quickly to increases in raw material prices, with producer prices changing more frequently than consumer prices.[23] The good economic situation in Lithuania and the strong demand create favourable conditions for passing on the cost increase to the prices of industrial goods for final

[21] National Energy Regulatory Council. Available online here.

[22] Since January this year, the electricity price statistics take into account not only price changes for regulated household customers, but also price changes for customers who have chosen their supplier.

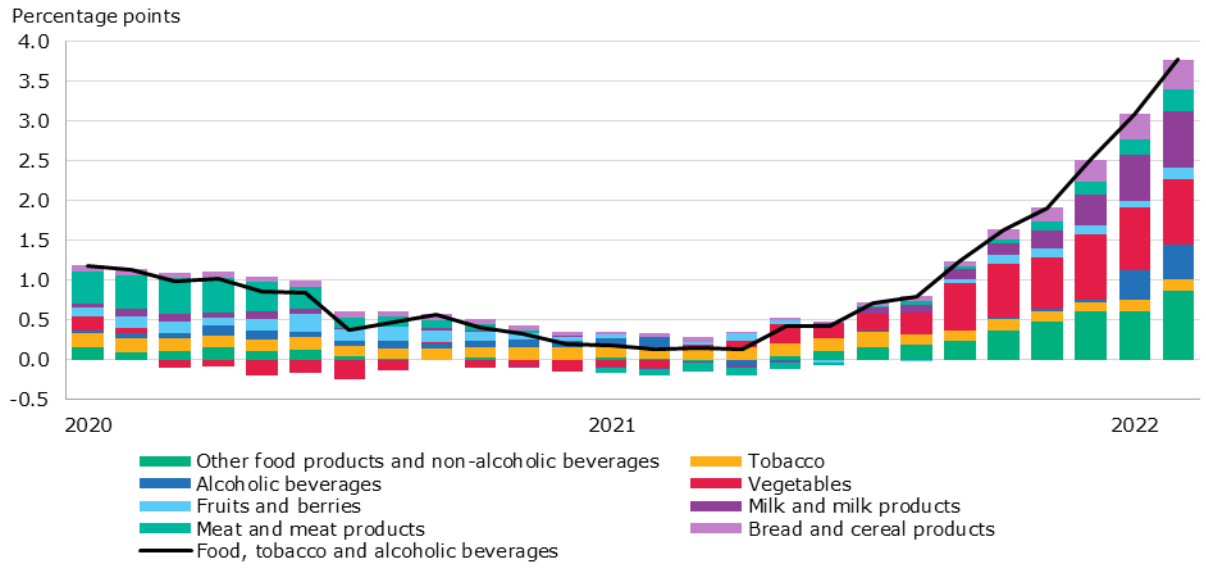
[23] For more on the rigidity of producer and consumer prices, see Box 3 "Cosumer and producer price rigidity".

consumption, which also has an impact on the increase in the prices of industrial goods.[24] The direct impact is felt when goods that are not normally involved in the production process but are intended for consumption are imported. For example, in December last year, imports of consumer durables rose by 7.7% year-on-year, while imports of non-durables grew by 7.2%. Industrial goods price growth will continue to be significantly dependent on global supply chains, where tensions could be exacerbated by the outbreak of war. Supply bottlenecks are likely to continue throughout 2022.[25]

Food, including alcoholic beverages and tobacco, increased by 13.5% in February, after rising by less than 3% until September last year. Much of the increase in food prices is due to a significant rise in vegetable prices, which were 35.3% higher in February than a year earlier and contributed as much as 0.8 percentage point to headline inflation (see Chart 17). Looking at the vegetable group in more detail, the poor harvest has led to a particular increase in potato prices, which rose by more than 64% year-on-year in February. However, other food commodities, such as dairy products, meat and oil, are also currently experiencing increased price growth. The acceleration in food prices is due to higher global prices of food raw materials, which were almost 21% higher in February than a year earlier. In addition, higher feed and fertiliser prices are also likely to increase the prices of future agricultural harvests and livestock. Against this background, and taking into account the increase in energy prices, the conventional scenario projects food prices to rise faster this year than last year, at an average annual rate of 10.1%.

Most of the increase in food prices is due to higher vegetable prices.

Chart 17. Impact of food prices on annual headline inflation



Sources: Statistics Lithuania and Bank of Lithuania calculations.

Prices of services that are most closely linked to domestic economic development are also rising faster. Prices of services, which have been rising at a faster pace since September last year, were already rising at an annual rate of 9.9% in February. Various services are becoming more expensive. In terms of services that make up a larger share of the consumption basket, catering services are one of the most important, accounting for 4.1% of consumption expenditure on average. Price growth for these services has also increased in recent months, reaching 11.3% in February. With wages rising rapidly and

[24] For more on the factors behind the rise in industrial commodity prices, see Box 4: "Inflation has picked up: are internal or external factors driving the increase?".

[25] "Sources of supply chain disruptions and their impact on euro area manufacturing". Economic Bulletin, Issue 8, ECB, 2021. Available online here.

other costs increasing due to higher energy and industrial commodity prices, services are expected to become more expensive this year than last year. After rising at an average annual rate of 4.3% last year, prices of services are expected to grow at an average rate of 8.8% this year under the conventional scenario.

Box 3. Consumer and producer price rigidity

The evolution of consumer and producer prices in Lithuania can be studied using indicators such as the frequency and size of price changes. These statistics shed light on the degree and nature of price rigidities, which is essential to better understand business cycle fluctuations and the impact of macroeconomic policies. They are also essential for calibrating and improving the design of price rigidity in New Keynesian models. In the latter, a high degree of price flexibility implies that most of the effects of a nominal shock would be absorbed by prices, but little by output. In this box, we provide evidence of price rigidity between 2010 and 2018 in Lithuania, a period of low inflation in the euro area (Ciccarelli and Osbat (2017)).

The statistics of this box are based on two anonymised monthly price databases (source: Statistics Lithuania). The first one contains about 5 million retail price records that were collected to produce the HICP, or about 73% of the average ECOICOP4[26] weights over the period. Each record represents the selling price of a target product in a particular outlet in a specific city. In other words, we do not observe the prices of a particular brand of product, but those of a representative product, such as 1kg of rice. The second database has approximately 125,000 producer price records underlying the PPI. The data cover almost all Statistical classification of economic activities in the European Community (NACE) Rev. 2 categories that the index encompasses at the 2-digit level. Each record refers to the price of a targeted product, excluding VAT and excise taxes, such as the producer price of apple juice.

To obtain aggregate statistics, we proceed as follows. First, we average the product-level statistics for each ECOICOP4 and NACE2 2-digit category. Then, we aggregate the category-level statistics by a weighted average using HICP and PPI weights, as appropriate. Column 1 of Table A shows that the average frequency of price changes in the PPI is 58%. This compares to 18.1% in the CPI. Let us now assume that price changes can occur at any time, so the duration between two price changes is equal to -1/ln(1-F), where F is the frequency measure. Using the aggregate frequencies above, this translates into an average duration of price episodes of about 1.15 and 5 months for the PPI and HICP, respectively. A comparison of these Lithuanian indicators to the euro zone indicators has found producer prices to be more flexible than consumer prices in the euro area, but within a difference of 5-10 percentage points (Vermeulen et al. (2012)). This high flexibility of the PPI in Lithuania is mainly explained by the dominance of energy prices in the index.

Table A. Aggregate weighted statistics

Indicators	Frequency	Frequency +	Frequency -	Size	Size +	Size -	% increases	% adjusted	Observation
HICP	18.1	10.1	8	1.7	17.3	-18.7	58.4	–	5,207,152
PPI	58	29.7	28.3	0.3	7.4	-7.6	51.8	–	126,815
Adjusted series									
HICP	8.9	5.8	3.1	4.5	12.9	-11.6	66.8	11.6	5,207,152
PPI	48.6	25.2	23.4	0.4	6.1	-6.2	53.1	14.3	126,815

Notes: A superscript "+" or "-" indicates upward or downward price changes, respectively. "% increases" stands for the share of price increases in total price changes. "% adjusted" means the share of prices adjusted for sales and replacements.

The databases also allow us to identify many of the price changes due to product replacements, sales/promotions, and other reasons for temporary price changes. We use this information to produce

[26] The Classification of individual consumption by purpose.

"regular" price change series, smoothing out the impact of the mentioned pricing factors. The overall frequency of price changes in the HICP and PPI decreases by about 9 percentage points after adjustment (Table A). Therefore, the marked difference in consumer and producer price rigidities is not due to these phenomena.

Frequency and size of price changes are two inflation components, but we will discuss it in more detail later. For now, column 4 of Table A shows that the average size of a price change is 1.7% in the HICP versus 0.3% in the PPI. In the latter, the average size of upward and downward prices is almost identical at 7.5% (in absolute terms). The average sizes in the HICP are about 17% up and almost 19% down (in absolute terms). When prices are adjusted (after eliminating the effects of sales, product changes, etc.), the average size of consumer prices increases by about 3 percentage points, indicating the importance of sales. In comparison, the average price in PPI is virtually unaffected by the correction.

For 11 euro area countries between 2010 and 2019, Gautier et al. (2022) finds that the overall frequency in the HICP is 12.3%, of which 64% are increases and average price change sizes of 12.3% up and 16.2% down. The price changes then were comparatively more frequent and of larger sizes in Lithuania over the period.

We now present how the frequency and size of price changes shaped inflation between 2010 and 2018. To do so, we regress inflation rates on counterfactual inflation rates. The latter correspond to category-level recompositions of inflation rates, assuming that one of its margins remains fixed over time. Hence, we set the frequency component to its time-averaged category level, so that the inflation series varied only with changes in size. Similarly, we assume that inflation was driven solely by the overall frequency of price changes. The regressions are supplemented with monthly ECOICOP4 price groups or NACE2 2-digit fixed effects. These allow us to take into account the seasonal effects and category heterogeneities.

The first two columns of Table B show that it was variations in the average size of price changes, rather than shifts in frequency of price changes, that fuelled inflation (high within-R2 in column 1 and low in column 2). To take this a step further, we construct two additional counterfactual inflation series. First, we assume that only changes in the average size of price increases and decreases explained inflation. Finally, we assume that variations in inflation were caused only by fluctuations in the share of price increases. Columns 3 and 4 show that shifts in the average size of price increases and decreases contributed to changes in inflation as much as or less than variations in the share of price increases (indicated by the difference in within-R2 of columns 3 and 4). In other words, variation in the average size of price changes was mainly due to shifts in the number of upward prices.

Table B. Category-level regressions: inflation against counterfactuals

Indicators	π^{Size}	$\pi^{Frequency}$	$\pi^{Size+,Frequency-}$	$\pi^{\%\,increase}$
PPI				
	0.967***	-1.568	1.379***	1.405***
	(0.025)	(1.032)	(0.217)	(0.190)
Within–R^2	0.946	0.031	0.610	0.595
Obs.	2,730	2,730	2,730	2,583
HICP				
	1.051***	1.228***	1.1154***	1.087***
	(0.019)	(0.135)	(0.177)	(0.047)
Within–R^2	0.866	0.028	0.234	0.674
Obs.	18,416	18,416	18,416	17,524

Notes: π^{Size} means that the overall frequency is held at its average value by category, so inflation is only explained by changes in the average size. The superscripts in the other columns indicate which margin varies inflation. The regressions are run at the category level, namely ECOICOP4 for the HICP and NACE2 2-digit for the PPI. They include monthly and economic activity or price groups effects. The regressions are weighted using HICP and PPI weights as appropriate. Standard errors are clustered at the category level. ***, ** and * denote statistical significance at 0.1, 1 and 5 percentage levels, respectively.

This relationship between the frequency and size of price changes is therefore an important factor to consider in modelling. It should be noted that our data do not allow us to determine whether these

patterns continue during the times of great unrest, such as COVID-19. However, there is evidence that the role of the frequency margin is much more important in the face of hyperinflation (Alvarez et al. (2019)) or large VAT changes (Karadi and Reiff (2019)). That is, prices tend to be quite flexible in response to large aggregate shocks and are relatively rigid in normal times, when the shocks are idiosyncratic.

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Box 4. Inflation has picked up: are internal or external factors driving the increase?

The factors that lead to inflation change over time. Currently, when Lithuania is experiencing a significant increase in inflation, it is particularly important to understand the drivers of inflation, their volatility and origins, distinguishing between external and internal economic factors.

The analysis of the drivers of inflation follows the approach of J. Stakėnas (2018)[27] based on the structural Bayesian VAR model. In particular, the model's structural shocks were identified based on the sign restrictions and Cholesky decomposition. The method of sign restrictions was the main one, as it tends to provide more economic insights. The Cholesky decomposition was mainly used to ensure the robustness of the results and to gain additional insights. By decomposing the annual growth rates of the components of inflation (unprocessed and processed food[28], services, industrial goods and energy), the impact of each identified shock on the annual inflation of the components over the respective period was determined. The analysis covers the period between January 2015 and October 2021, with the following variables included in the model: oil prices, global food commodity prices, global demand for Lithuanian exports, GDP, the import deflator, unit labour costs, and the aforementioned components of inflation, such as energy, prices of processed and unprocessed food, and prices of industrial goods and services. It should also be noted that in the case of the sign restrictions approach, the unit labour cost

[27] Stakėnas J. (2018). Slicing up inflation: analysis and forecasting of Lithuanian inflation components. Bank of Lithuania, Working Paper Series, No 56. Available online here.

[28] Unprocessed food includes products such as meat, fish or eggs, while processed food include, for example, smoked or salted fish and meat, cheese, etc.

variable was replaced by the real wage variable for the purpose of defining the wage bargaining variable. The sign and zero restrictions that were used to identify the five structural shocks are shown in Table A.

Table A. Signs and zero restrictions for shock identification

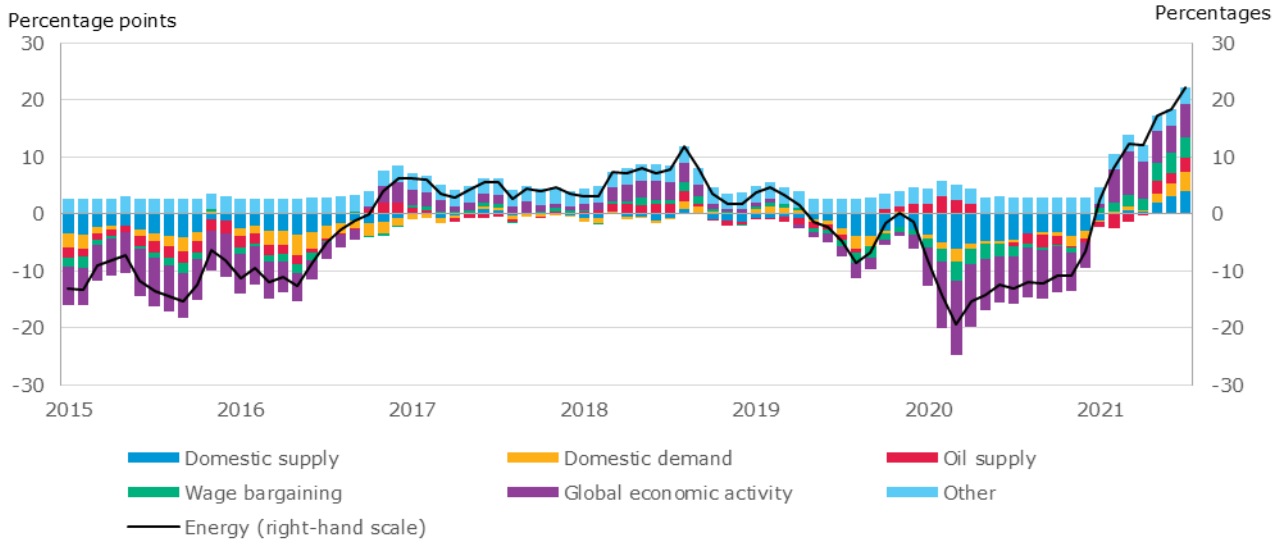
Indicators	GDP	HICP	Energy	Real wages	Oil price	Global demand
Domestic demand	+	+			0	0
Domestic supply	+	–		+	0	0
Wage bargaining	+	–		–	0	0
Oil supply	–		+		+	–
Global economic activity	+				+	+

Note: Signs in the table indicate positive (+), negative (-) or zero (0) effects.

Fluctuations in global economic activity have a major impact on energy prices, which accounted for most of the inflation in Lithuania last year (see Chart A). The introduction of various containment measures in the wake of the pandemic and the significant increase in uncertainty dampened global economic activity, which was the main factor driving down energy prices in 2020. And as the world economy recovers, rising economic activity has become the key driver of inflation. Oil prices also contributed significantly to inflation last year. Looking at the decomposition of energy price growth, it is interesting to note the significant importance of the domestic supply component, both in recent years and over the whole period analysed. In this context, it can be expected that increased competition in the energy sector and greater use of renewable energy sources could help reduce energy prices in Lithuania in the future.

In the wake of the pandemic, energy prices are most affected by fluctuations in global economic activity.

Chart A. Decomposition of the annual growth rate of energy prices under the sign-restrictions approach



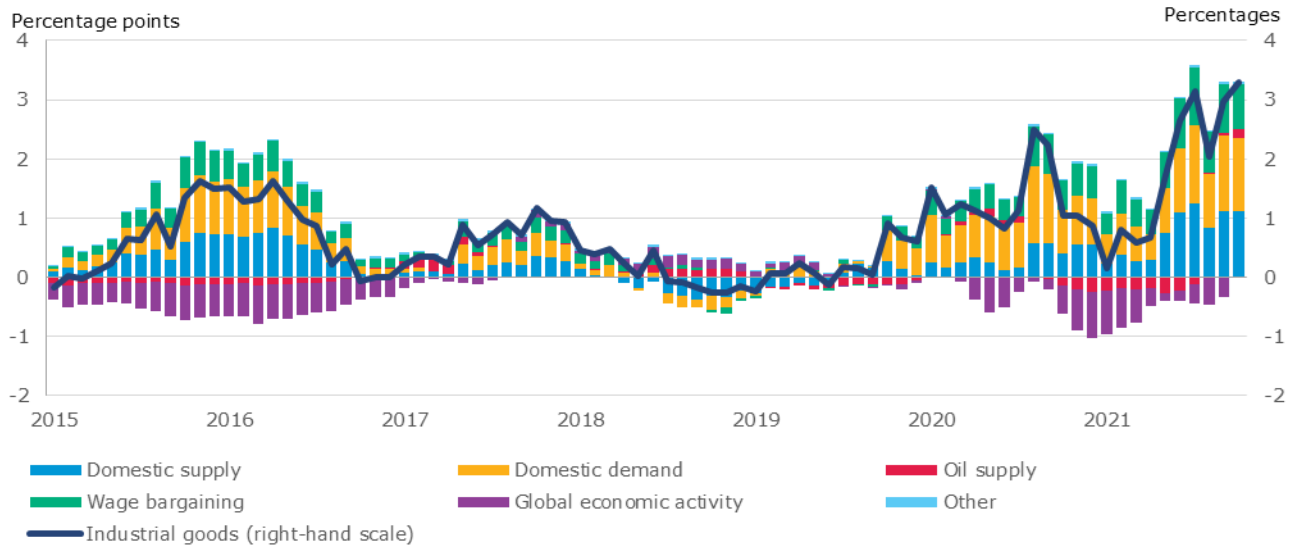
Sources: Eurostat and Bank of Lithuania calculations.

The decomposition of price growth for industrial goods, excluding energy products, revealed a significant impact of the domestic demand and supply components (see Chart B). Lithuania is a small open economy, so the influence of external factors seems to be important. This is particularly relevant in the face of the pandemic, as in 2021, with the recovery of the global economy, the supply of various commodities was not sufficient to meet the increase in global demand, which led to a spike in the

prices of various raw materials and to the development of supply bottlenecks, including increases in the cost of delivery of goods in sea containers and longer delivery times. This influence of external factors was clearly reflected in the rising prices of imported goods, e.g. in October, the prices of imported intermediate goods were 17.6% higher than a year earlier, while those of consumer durables were 7.3% higher, and those of non-durable goods were 4.5% higher. While the importance of global economic activity indeed increased in 2020 according to the signs-recognition approach, in 2021 domestic demand and supply were the main drivers of price dynamics for industrial commodities, excluding energy products. Given the existing tensions in supply chains, this analysis could be interpreted as suggesting that Lithuania's good economic situation and strong demand created favourable conditions for producers and sellers to pass on increases in the cost of goods (mainly due to the external factors) to the prices of final consumer goods.

Strong domestic demand created favourable conditions for passing on the cost increases to the prices of final consumer goods.

Chart B. Decomposition of the annual growth rate of prices of industrial goods, excluding energy products, under the sign-restrictions approach



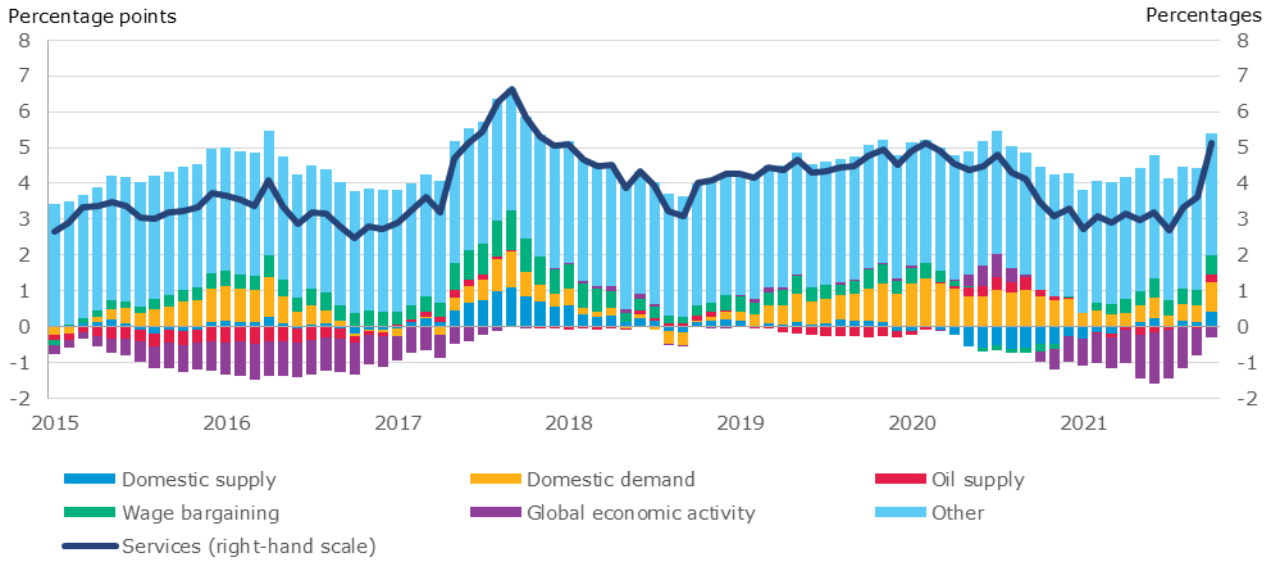
Sources: Eurostat and Bank of Lithuania calculations.

The decomposition of services price inflation shows that services price inflation is mainly driven by the domestic factors (domestic demand and wage bargaining) and by the long-term trend in prices of services, which is marked by the "Other" component (see Chart C). This long-term inflation trend reflects the move of the price level of services, which stood at 53% in 2020, towards the EU average price level, as a result of Lithuania's economic convergence processes. However, in 2020, the impact of the wage bargaining shock on the service price dynamics was outweighed by the component of service supply. After the outbreak of the pandemic and the introduction of containment measures, contact services were not available at all for some time, and when restored, they were subject to a number of security requirements that increased costs. The analysis shows that all of this has had a significant impact on the evolution of service prices. Looking at the results presented by the Cholesky decomposition, it is notable that this methodology reveals a more rapid increase in the importance of the wage component for the dynamics of services prices in recent years, which is consistent with the actual wage growth figures for 2020 and 2021.[29]

[29] Wages in Lithuania rose at an annual rate of 8.8% in 2019, 10.2% in 2020 and 10% in 2021.

The evolution of service prices is mainly driven by a long-term trend.

Chart C. Decomposition of the annual growth rate of prices of services under the sign-restrictions approach



Sources: Eurostat and Bank of Lithuania calculations.

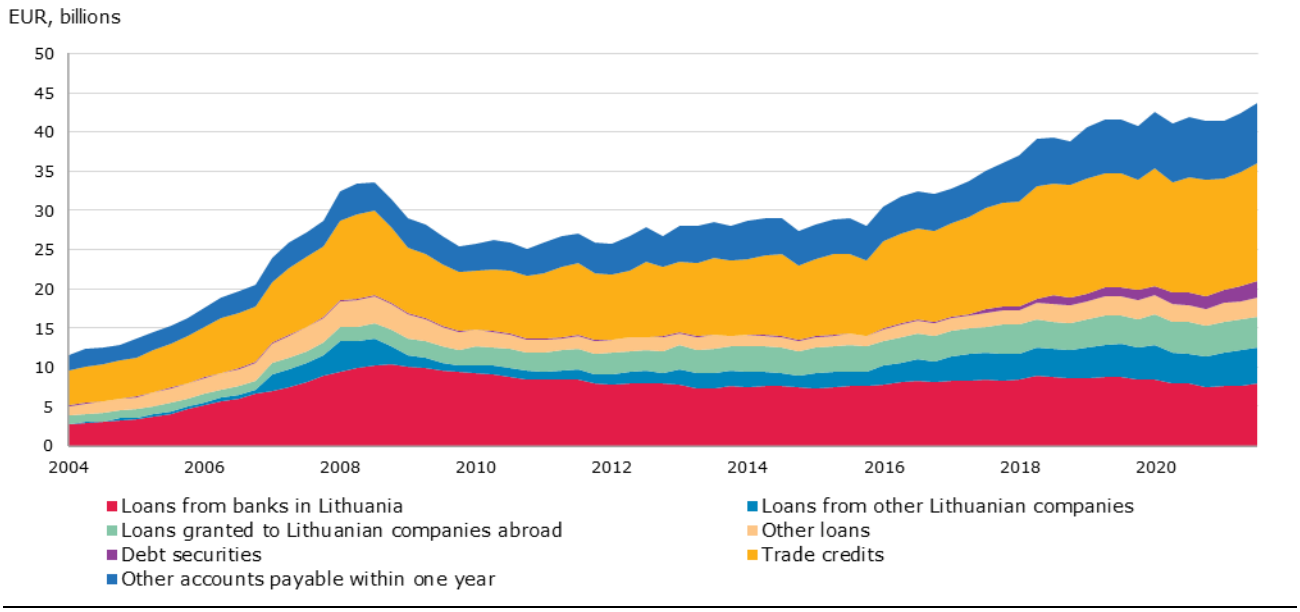
The decomposition of the price increases for unprocessed and processed food revealed different factors that significantly contributed to the price evolution of these product groups at the onset of the pandemic. Under the sign-restrictions approach, it was found that the impact of the external factor – global economic activity – on unprocessed food prices increased at the onset of the pandemic. The results from the Cholesky decomposition add insights into the impact of global food commodity prices, which made a stronger contribution to the evolution of unprocessed food prices at the onset of the pandemic compared to 2017–19. In the case of processed food, on the contrary, the sign-restrictions approach revealed that the domestic factors, such as domestic demand and supply, mainly shaped the price evolution of these products at the onset of the pandemic. The Cholesky decomposition reveals a significant increase in the impact of the global food commodity component, which was pushing up processed food prices (especially in 2021). Global food commodity prices, which rose at an annual rate of around 28% last year, are likely to have been an important factor driving up food prices. Global food commodity price shocks could not be estimated using the sign-restrictions approach, so it is likely that in many cases their impact was attributed to domestic supply shocks.

7. Financing of the economy

As the Lithuanian economy continued to grow, financial liabilities of households increased at an accelerating pace, while non-financial corporations recovered from the pandemic recession. Based on the latest data from the Bank of Lithuania, in the third quarter of 2021, the financial liabilities of the Lithuanian population amounted to EUR 13.8 billion and increased by 4.4% on a half-yearly basis (annual growth of financial liabilities of households stood at 6.0%). The main contributor to the overall increase in household financing was a significant increase in financing from financial institutions, with the amount of loans held by households in the third quarter of 2021, 8.7% higher than a year earlier. During the projection period, financial liabilities of non-financial corporations increased by 5.5% on a half-yearly basis to EUR 43.7 billion (the annual growth in corporate financial liabilities amounted to 4.5% (see Chart 18). As the economy continued to grow, confidence among businesses and investors also increased, with the increase in corporate financing mainly driven by borrowing from other non-financial corporations and issuance of debt securities, which increased by 16.8% and 32.6% year-on-year, respectively. In the third quarter of 2021, compared to the corresponding quarter of the previous year, financial assets of households and non-financial corporations grew at a faster pace than their liabilities, resulting in an increase in net financial assets (the difference between financial liabilities and financial assets) by 19.3% and 11.4% respectively.

Corporate financing has recovered after a short-term pause.

Chart 18. Structure of NFC liabilities



Source: Bank of Lithuania.

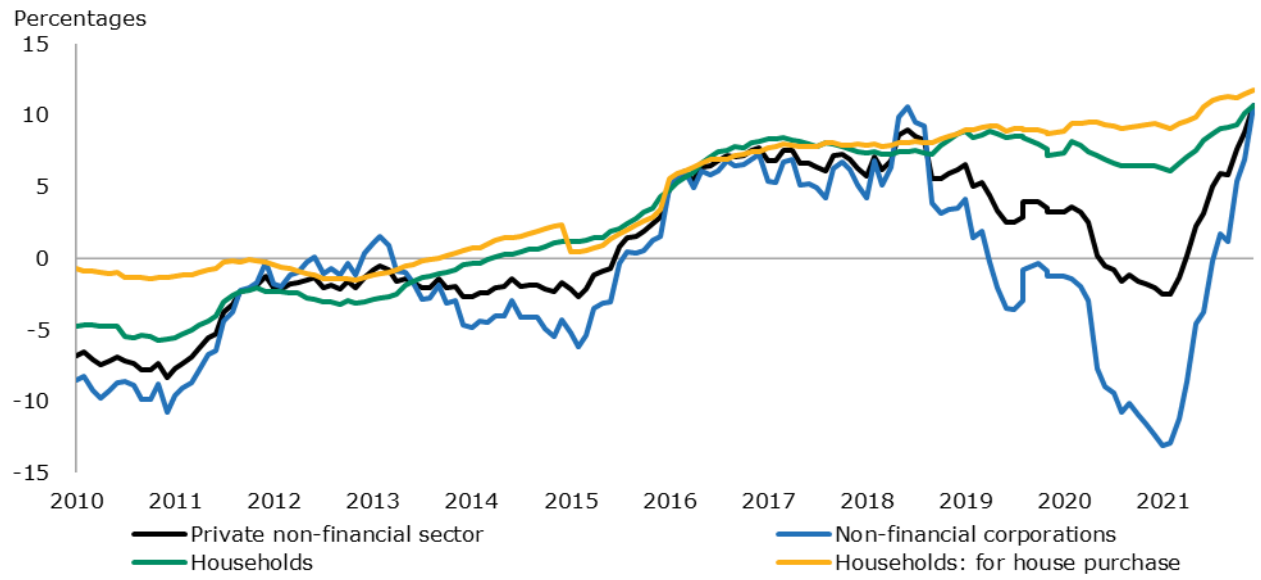
With the flows of lending for house purchase, consumption and other purposes following an upward trend, the portfolio of loans granted by MFIs to households moved along the same path in the fourth quarter of 2021. The flow of new loans granted by MFIs to households in the fourth quarter of 2021 increased by 16.8%, compared to the previous quarter, and exceeded the average quarterly flow recorded in 2019 by 55.4%. The main contributor to the growth in the flow of loans was housing loans, which grew by 16.8% in the fourth quarter of 2021, amid historically high housing market activity. The flow of new loans for consumption and other purposes soared by 16.9% in the third quarter of 2021, and its growth was fuelled by improvements in the labour market and the easing of lockdown restrictions over the recent months. As the flow of loans to households increased, the portfolio of loans granted by MFIs to households also grew at an accelerated pace. In December 2021, this portfolio was

10.7% higher than a year earlier (1.4% percentage points higher than in October) (see Chart 19). The main contributor to the portfolio growth was housing loans, which grew at an annual rate of 11.7% (0.5% percentage point higher than in October), the highest since May 2009. The portfolio of consumer and other loans resumed its upward trend after almost two years of contraction: in December, the portfolio was 5.5% higher than a year earlier (0.7% in October).

Lending flows by MFIs to Lithuanian non-financial corporations (NFCs) grew significantly in the fourth quarter of 2021, leading to an acceleration in the annual growth rate of the NFC loan portfolio. In the fourth quarter of 2021, the flow of loans granted by MFIs to non-financial corporations increased and was 47.5% higher than in the third quarter and 81.0% higher than the average quarterly flow in 2019. The total portfolio of non-financial corporate loans of PFIs in December 2021 was 10.6% higher than a year earlier (5.2% percentage points higher than in April and the highest growth rate since June 2018).[30] The main contributors to the annual growth rate of the total portfolio were the portfolios of real estate operations, transport and storage, and manufacturing, which grew by 14.7%, 44.2%, and 19.6%, respectively.

Strong growth in housing loans is driving the high pace of household financing, while growth in the corporate loan portfolio picked up rapidly in the last quarter of 2021.

Chart 19. Annual growth of the portfolio of MFI loans issued to NFCs and households



Source: Bank of Lithuania.

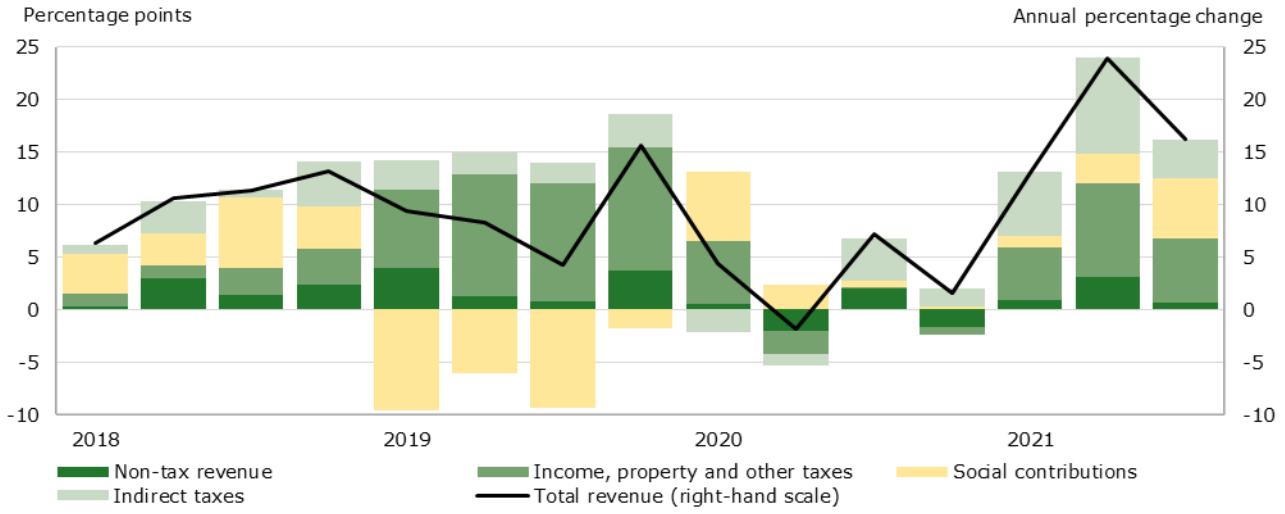
[30] This strong acceleration in growth is partly due to the merger of the group's business leasing subsidiary OP Finance into OP Corporate Bank in October 2021. Removing this factor would result in a 5.7 percentage point lower annual growth of the non-financial corporations' loan portfolio of 4.9% in December 2021.

8. General government finance

The general government deficit-to-GDP ratio declined sharply and is likely to be close to 3% in 2021. This is significantly less than planned in the 2021 budget revised in June. The general government deficit in 2021 was projected to account for 6.9% of GDP. The rapid decline in the deficit was driven by a significant increase in general government revenues in 2021 (see Chart 20). The main reasons for the growth in revenues are described below. First, the macroeconomic indicators that have a significant impact on tax collection increased quite significantly in 2021, with a pick-up in household consumption expenditure, which in turn benefited from higher wages and employment, the easing of the pandemic restrictions, improving population expectations and, to some extent, a reduction in saving. The narrowing of the deficit has been facilitated first and foremost by the growing economic activity leading to a more rapid growth in revenue from major taxes and social contributions as well as to the revenue collection exceeding the target by approx. one-tenth. Second, the return of tax deferrals for previous years (until 31 August 2021, pandemic-affected firms were temporarily allowed to defer tax payments) also contributed to the relatively strong growth in government revenue, reducing the tax gap by around one fifth in 2021. A better-than-projected general government balance in 2021 suggests a more favourable balance in 2022 as well, but a number of proposals have recently appeared in the public domain[31] aimed at mitigating the impact of accelerating inflation on lower incomes. If approved, these proposals could worsen the expected government deficit-to-GDP ratio by around 0.3 percentage point in 2022.

The increase in general government revenue is driven by the pick-up in activity in the Lithuanian economy and the collection of previously deferred taxes.

Chart 20. Annual changes in general government revenue and contributions



Sources: Statistics Lithuania and Bank of Lithuania calculations.

Government expenditure is likely to have grown more slowly in 2021 and was lower than planned, mainly due to lower investment spending. The much slower increase in spending in 2021 is primarily due to the implementation of fiscal measures to mitigate the impact of the pandemic and the restrictions on economic activity, which are smaller in scope than in 2020. In 2021, these measures accounted for around 3% of GDP, around a quarter lower than a year ago (4.1% of GDP in 2020). Another factor that has significantly slowed growth in total spending was government investment, which in 2021 was around one fifth lower than a year earlier. The main contributors to the decline were a fall in

[31] It proposes to increase the tax-free income to EUR 510 and to provide a one-off payment of EUR 100 for the most vulnerable groups, see here for details.

investment in civil engineering buildings and structures, as well as a decrease in military-related investment. There is reason to believe that the lower investment in civil engineering buildings and structures is most likely due to difficulties in attracting the contractors needed to fulfil government contracts. As raw material prices on international markets started to rise rapidly from the second half of 2021, the cost of contractors' works increased. If public tenders for engineering works were launched in the first half of 2021, it is likely that the maximum amounts of money earmarked for the works are insufficient to ensure the participation of contractors in public tenders. Weaker EU funds may have contributed to the drop in investment: the State Budget Implementation Report shows that only 60% of the annual plan for expenditure paid for by EU and other international assistance in 2021 was met. There also seem to be difficulties in using the funds foreseen for 2021 from the Next Generation Lithuania plan approved in July, funded by the EU's Recovery and Resilience Facility. However, these flows are expected to intensify between 2022 and 2023, reaching between 0.6% and 1.0% of GDP annually.

The government debt-to-GDP ratio in 2021 was lower than a year earlier and stood at around 45%. The decrease in the debt ratio is mainly due to the redemption of the issue of bonds worth EUR 1.5 billion in March also contributed to the reduction in the need to borrow to finance the deficit, due to a smaller-than-expected deficit. The debt-to-GDP ratio is set to decline further in 2022 on the back of upcoming large bond redemptions, expected strong nominal GDP growth and a further decline in the average interest rate paid on debt.

Annex. Wage and employment impact of minimum monthly wage

The minimum monthly wage (MMW) legislation constitutes the main policy regulating the MMW remuneration to which workers in Lithuania are legally entitled. The MMW is raised typically every year by the Government, following the recommendation of the Tripartite Council, a national institution for social dialogue comprised by labour unions, employer associations, and the government. If no agreement is reached during the Tripartite Council negotiations, the decision on raising the MMW is ultimately taken by the Government. Whether the level of the MMW is high or low is ultimately an empirical question, however the existing evidence on the labour market effects of the MMW in Lithuania is limited.

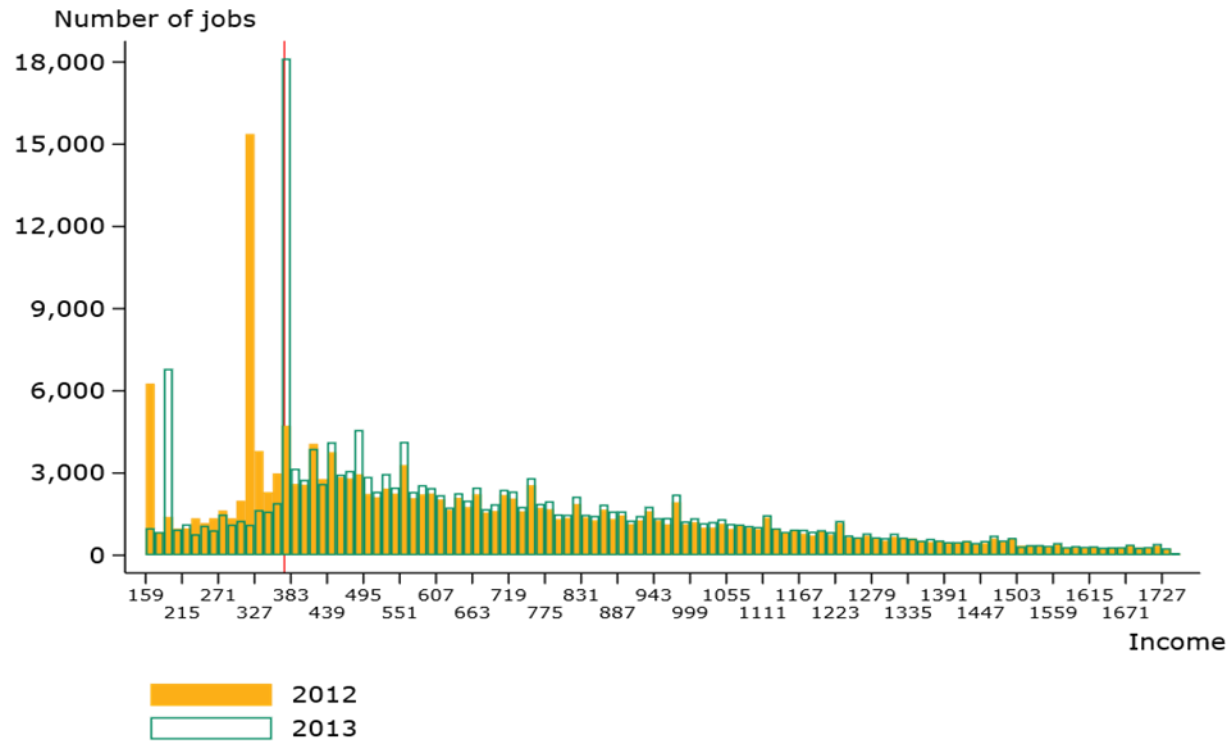
In this annex, we analyse the labour market prospects of low-wage workers following a significant increase in the MMW in Lithuania.[32] On 19 December 2012, the Government announced an increase in the MMW from €317 to €373, effective from 1 January 2013. This 17.7% increase represents the largest relative increase in Lithuania's history and has several features that make it particularly well suited for investigating the causal effect of the MMW on the labour market. First, the new MMW profoundly altered the earnings distribution, as around 25% of wage earners had monthly income of less than €373 at the end of 2012. Second, it was enacted only 5 months after an earlier, relatively smaller raise that followed 4 years of no change. Third, the decision was a result of successful negotiations between the social partners. Fourth, this historically large increase was adopted in a context of favourable economic conditions and sustained price growth.

The change in the MMW resulted in a significant shift in the wage distribution around the MMW. In Chart A, we examine the evolution of the frequency distribution of monthly income after the increase in the MMW in January 2013. We compare the income distribution in the last month before the MMW increase (December 2012) with the one 12 months after (December 2013). The figure reveals three key facts. First, there is substantial bunching in the pre-policy income distribution at the prevailing MMW (€317), but also at half that value, likely reflecting part-time employees working half the usual hours. Second, given the relatively low incidence of part-time employment, the prevalence of jobs below the existing MMW suggests that not all firms are in full compliance with the legislation. Third, the January

[32] This box is based on Garcia-Louzao and Tarasonis (2022). Online source here.

2013 MMW increase clearly altered the income distribution. A significant number of jobs below the new MMW disappeared, a response that was accompanied by an increase in the number of jobs at or (slightly) above the level of the new MMW.

Chart A. Income distribution in 2012 and 2013

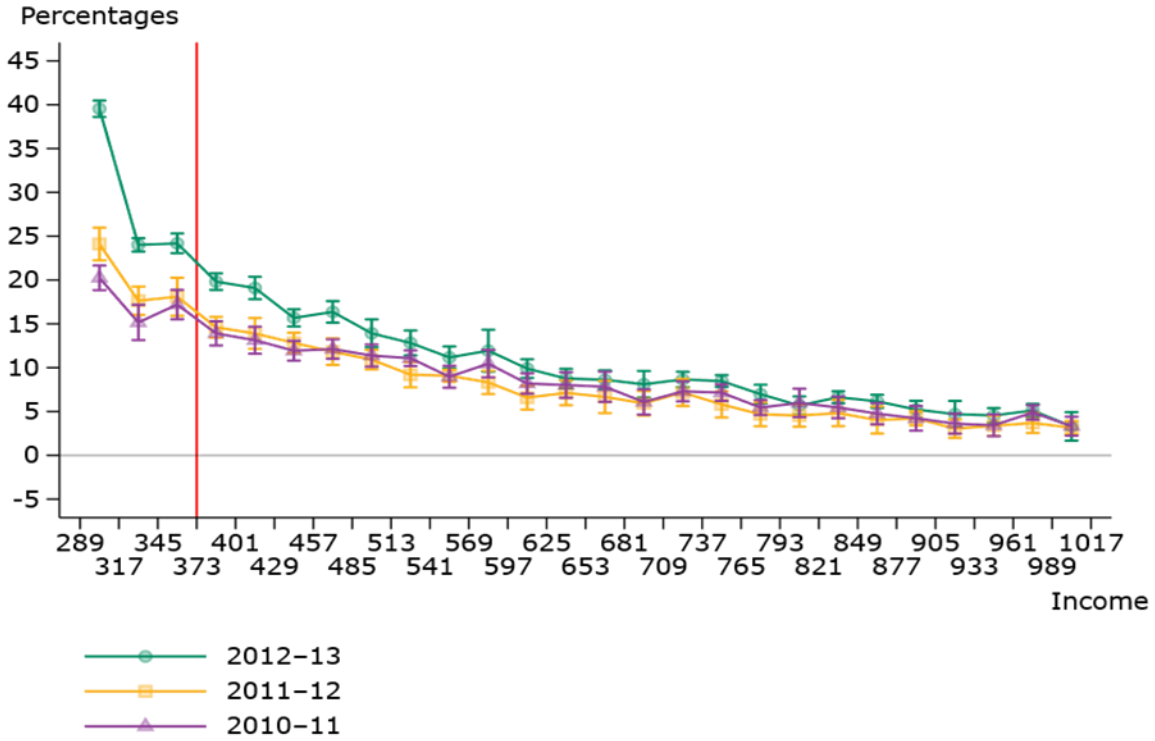


Notes: Frequency distribution of monthly income in December 2012 (pre-policy period) and December 2013 (post-policy). Income refers to monthly insured labour income in nominal terms. The vertical line represents the MMW level enacted in January 2013, i.e. €373.

Jobs below the new MMW did not disappear but rather were retained, gained a pay raise and caused bunching at and slightly above the MMW. To formally evaluate the impact of an increase in the MMW, we use detailed monthly Social Security records covering a quarter of the Lithuanian population that allows to track workers' labour market outcomes, i.e. income and employment, before and after the legislative change. We exploit the high-frequency nature of our data and make use of the variation in workers' exposure to the new MMW prior to its increase to identify both the direct and indirect effects of the MMW.

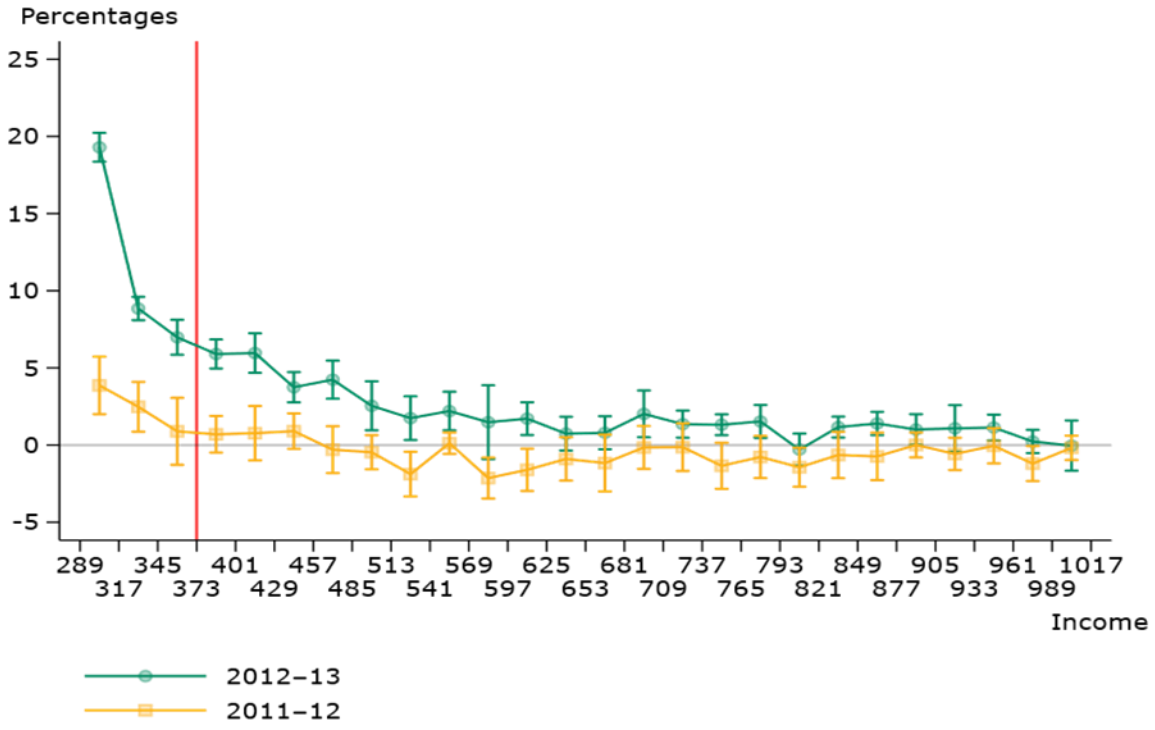
Importantly, labour market outcomes of low-wage workers differ from those of workers higher up in the income distribution both in terms of employment retention probabilities and potential income growth, regardless of any change in the MMW. We take advantage of the period in which we observe no change in the level of the MMW (2010-11) to contrast labour market outcomes over such period to those after the MMW increase and use the upper tail of the income distribution to account for economy-wide effects. In this framework, we identify the causal effect of the MMW increase on worker-level outcomes under the assumption that, in the absence of the MMW increase, labour market outcomes would have evolved in the same way for workers exposed differently to the MMW.

Chart B. MMW increase and income growth: baseline changes



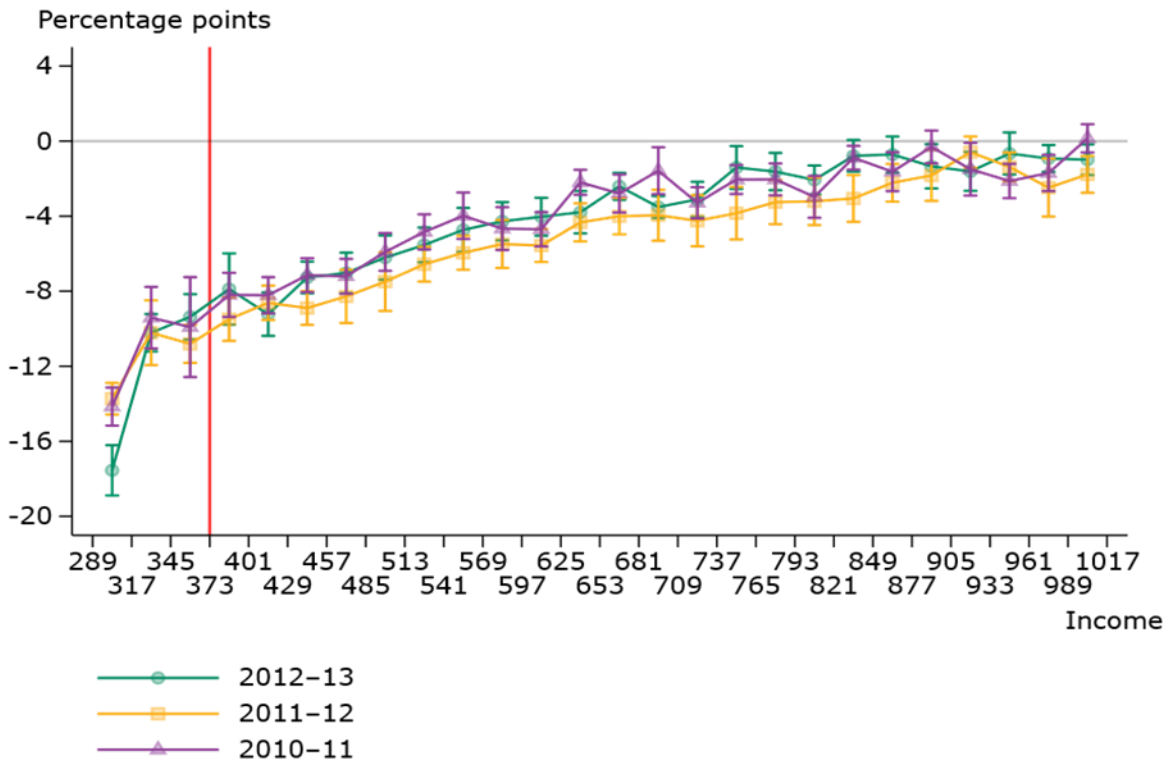
In Chart B, we report our main estimates of the impact of the MMW increase on income growth. The figure plots one-year income growth for individuals employed in December against their initial income bin, separately for the 2010-11, 2011-12 and 2012-13 periods. The evidence indicates that individuals in the bottom-tail of the income distribution experienced higher income growth compared to individuals further up in the distribution, even before the increase in the MMW was enacted. Importantly, Chart B indicates that a 17.7% increase in the MMW in January 2013 had a significant impact on affected workers: for workers whose baseline income was below the new MMW (€373) income growth between 2012 and 2013 was substantially higher relative to 2010-11, when the MMW was not changed, but also considerably more relative to 2011-12, when there was a milder increase in the MMW (6%). This impact is not observed in those workers whose income is above €1,000.

Chart C. MMW increase and income growth: relative changes



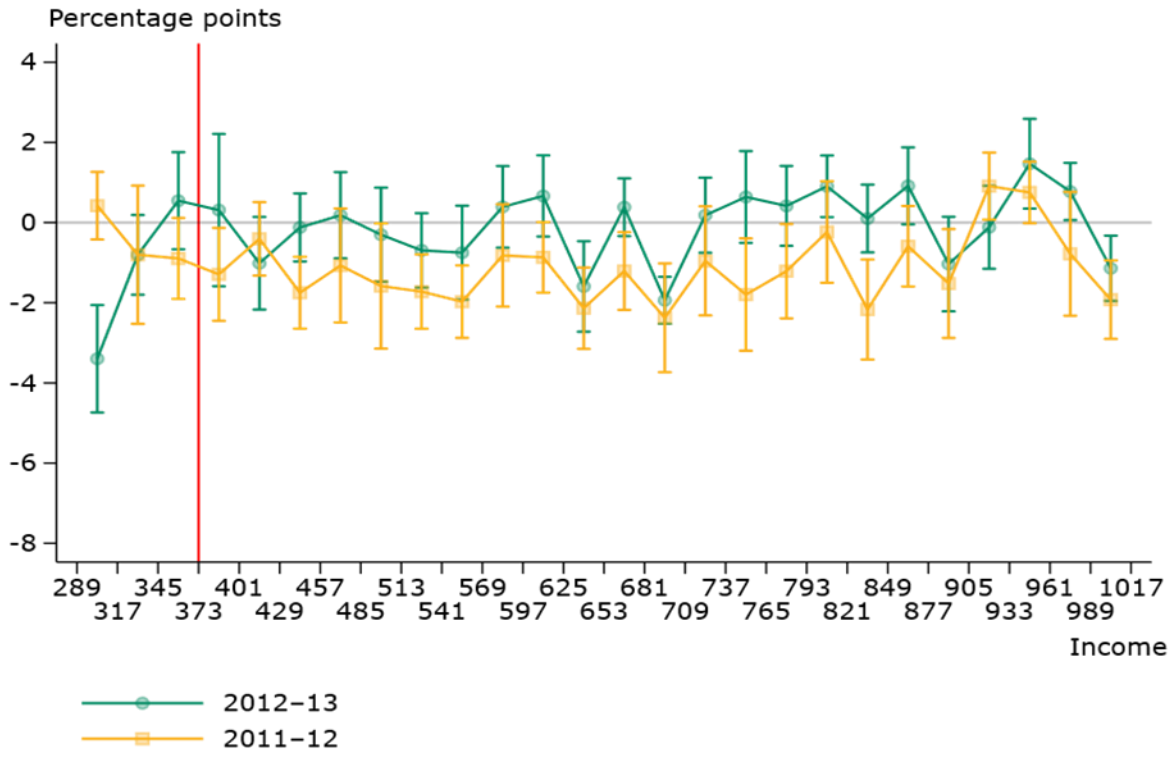
The MMW increase did causally boost income of workers directly affected by the policy, and this positive impact extended to workers located above the new MMW. In Chart C, we report excess income growth separately for 2011-12 and 2012-13 periods relative to 2010-11. Consistently with Chart A, our findings indicate that income growth in 2012-13 substantially exceeded that of 2010-11 for workers located below the MMW of €373 introduced in January 2013. The excess growth amounts to about 10% for workers with a MMW or slightly above, i.e. €317, and about 20% for workers with the lowest incomes, who are likely to be mostly part-time workers. Interestingly, we find spillover effects of the MMW increase of 4%, on average, for workers earning up to about €569, corresponding to the median of the pre-policy income distribution. Of primary interest for our causal interpretation, we find that in 2011-12, when the MMW was raised from €299 to €317, income growth exceeded that of 2010-11 for workers in the lowest income group, i.e. those directly affected by this milder increase, and, if anything, one income bin above. Therefore, our findings suggest that the MMW increase did causally boost income of workers directly affected by the policy, and this positive impact extended to workers located above the new MMW up to a median of distribution.

Chart D. MMW increase and employment growth: baseline changes



We now analyse how this increase affected the probability that the affected workers would remain employed. In Chart D, we report estimates in which we compare employment retention probabilities along the income distribution of individuals employed in December in three different periods: 2010-11, 2011-12, and 2012-13. Consistent with the fact that job matches are more fragile among low-wage workers, the figure highlights that individuals at the bottom tail of the distribution are between 10 and 15 percentage points less likely to be employed one year later compared to workers in the upper tail of the income distribution, i.e. those whose income is above €1,017. It should be noted that this result holds regardless of any changes in the MMW, as suggested by the comparison between periods.

Chart E. MMW increase and employment growth: relative changes



In Chart E, we plot employment retention probabilities between 2011-12 and 2012-13 relative to pre-policy changes (2010-11 period). The results indicate that the January 2013 MMW increase did not affect employment prospects of Lithuanian workers, regardless of their exposure to the MMW increase. The only exception seemed to be individuals in the lowest income category, who show a probability of employment retention that is almost 3 percentage points lower. Since workers in this income category earn less than the old MMW, they are most likely part-time workers. Taken together, the evidence uncovered that the sharp increase in the MMW enacted in January 2013 significantly boosted the earnings of low-wage workers without critically harming their employment prospects.

The elasticities of employment with respect to the minimum wage (MWE) and the own-wage (OWE) imply that wage gains grossly dominated employment losses of affected workers. To make the finding more relevant for policy makers, we calculate the MWE and the OWE, two key parameters in economic research and policy analysis crucially influencing the effectiveness of policy reforms. The MWE, defined as the percentage change in employment divided by percentage change in MMW, is found to be statistically insignificant and equal to 0.021. It means that a 1% increase in the MMW is associated with a 0.021% decrease in employment of those directly affected by the policy change. We also calculate the employment elasticity with respect to the own-wage, defined as the ratio of the estimated employment response of the affected workers to the estimated average wage response for that group of workers. Our calculation yields an estimate equal to -0.033, implying that a 1% increase in the average wage yields a 0.033% decrease in employment. Taken together, the results imply that wage gains grossly dominated employment losses of affected workers.

These findings must be interpreted within a specific context which may explain the lack of negative effects on employment. On the one hand, the fact that the MMW increase was agreed upon by the Government, labour unions and employer associations suggest that there was a broad understanding among the social partners that such an increase would not harm the economy in the

prevailing macroeconomic environment. It should be pointed out that firms have different mechanisms for adjusting to an increase in the MMW that do not necessarily imply the dismissal of workers. In this regard, in the face of the January 2013 MMW increase, survey evidence from a representative sample of Lithuanian firms pointed to cutting non-labour costs and investing in productivity-enhancing technologies as the most likely channels of adjustments that companies plan to undertake. Likewise, if firms are primarily concerned with demand rather than costs, the labour cost shock could have been absorbed directly, or at least partially, by price growth in the booming economy. On the other hand, lack of compliance with the legislation and envelope wages were prevalent in Lithuania during the period under analysis. Therefore, if low-wage workers were employed mainly by firms that pay envelope wages, our results could be explained by these firms reducing the size of the envelope without affecting employment levels.

Whether the results of the evaluation of the 2012 MMW increase can be extended to the 2022 episode depends on how the economic environment has evolved over the past 10 years. While it is likely that firms will continue to use other channels of adjustment in response to the MMW hike (non-labour cost cutting, price increases, etc.), the economy has undergone some important changes that may affect the external validity of the 2012 results. First, the Tripartite Council has been less successful in reaching agreements in recent years. Second, the prevalence of envelope wages, which could have cushioned the negative employment effects, has declined considerably over time. Third, the introduction of the new Labour Code in July 2017 has profoundly affected the regulation of labour relations. This is especially relevant since then the MMW can only be paid to unskilled labour, thus affecting in a non-negligible way the proportion of workers who are directly and indirectly affected by any change in the MMW.

References

- Garcia-Louzao, J. and Tarasonis, L. (2022). "Wage and Employment Impact of Minimum Wage: Evidence from Lithuania", Bank of Lithuania, Working Paper Series, No 103/2022. Online source here.

Abbreviations

APP	asset purchase programme
ECB	European Central Bank
EU	European Union
Eurostat	Statistical Office of the European Union
Eurosystem	European Central Bank and euro area central banks
GDP	gross domestic product
HICP	Harmonised Index of Consumer Prices
IMF	International Monetary Fund
MFI	monetary financial institution
MMW	minimum monthly wage
OECD	Organisation for Economic Cooperation and Development
PEPP	Pandemic emergency purchase programme
PPI	Producer price index
RE	real estate
UK	United Kingdom
US	United States of America
VAT	value-added tax

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