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In-Depth Review 2025

Estonia

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European Commission
Directorate-General for Economic and Financial Affairs

In-Depth Review 2025

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EUROPEAN ECONOMY

Institutional Paper 308

This in-depth review presents the main findings of the Commission's staff assessment of macroeconomic vulnerabilities for Estonia for the purposes of Regulation (EU) No 1176/2011 on the prevention and correction of macroeconomic imbalances. It provides technical input to the Commission for the Communication "European Semester – 2025 Spring Package" that will set out the Commission's assessment as to the existence of imbalances or excessive imbalances in Estonia. That Communication will be published in June 2025.

European Commission

Estonia

In-Depth Review 2025

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1. INTRODUCTION

This in-depth review (IDR) analyses the evolution of Estonia's vulnerabilities related to cost competitiveness, external accounts and house prices. Estonia had been subject to an IDR in spring 2023, but no imbalances were found at that time: vulnerabilities relating to competitiveness, external balances and house prices were already present but were found to be limited and were expected to narrow quickly. Subsequent developments and prospects have not been sufficiently reassuring as those issues have not abated as expected. This year's IDR, which follows the 2025 Alert Mechanism Report (AMR) published in December 2024, assesses the persistence or unwinding of vulnerabilities identified in the previous IDR as well as potential emerging risks, and relevant policy progress and policy options that could be considered for the future[(1)].

The vulnerabilities in Estonia are analysed in the context of a marked recession and muted recovery prospects going forward. Following a 3% contraction in 2023, the Estonian economy remained in recession in 2024, declining by 0.3%. While GDP grew substantially in nominal terms in 2024, in real terms GDP it stood at around 2019 levels. The recession in Estonia has been broad based, ranging from a contraction of private consumption and investment to exports of goods and services. The economic outlook remains muted going forward. In 2025, several tax rates will increase in order to balance the public finances. They will negatively affect private consumption, to a degree undoing gains of purchasing power achieved through higher wages and lower household debt servicing costs. Exports are expected to recover, but only slowly, as growth in the main trading partners is expected to remain subdued. Capacity has been underutilised in Estonian companies over recent years, and along with an expected weak expansion from the domestic and external sides, as well as a tense geopolitical situation, investment is set to remain modest. Overall, real GDP is projected to grow only mildly, by 1.1% in 2025, before increasing to 2.6% in 2026[(2)]. HICP inflation decelerated in 2024 compared to the previous years but is still one of the highest in the euro area. Prices increased by 3.7% in 2024 after 9.1% in 2023. Furthermore, price dynamics have not abated. At the beginning of 2025, headline inflation accelerated to 5.1% with services inflation nearing 9%, among the highest rates in the euro area. Inflation is projected to remain above the ECB target, and above the euro area average, in 2025, at 3.6%, mostly due to new or higher taxes introduced as from the beginning of 2025 and continued wage growth[(3)]. There is also a risk that if inflation becomes entrenched at an elevated level, cost competitiveness could come under further pressure, undermining Estonia's ability to recoup lost export markets and affecting future growth.

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(1) European Commission (2024), Alert Mechanism Report 2025, Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee, COM(2024) 702 final; and European Commission (2024), Alert Mechanism Report 2025, Staff Working Document, SWD(2024) 700 final.

(2) All forecast data used in the IDR come from the Commission Autumn 2024 Forecast (European Economy, Institutional Paper 296), unless stated otherwise, in order to ensure the coherence of the various figures and calculations. The cut-off date for the data for the preparation of this IDR was 24 March 2025. Actual outturn data that have become available after the Autumn Forecast, and before the cut-off date for the IDR, are mentioned.

(3) Input-output analysis indicates that over the period 2020-2024, foreign demand contributed 1.1 pps. to Estonia's cumulated GDP growth of 0.7%; conversely, due to its limited size, the Estonian domestic demand had little impact on the EU growth. Over that same period, imported value-added inflation accounted for 0.8 pps. of the 40.1% cumulated inflation. See European Commission Institutional Paper 2025 (forthcoming) – "Economic spillovers and financial linkages in the EU".

2. ASSESSMENT OF MACROECONOMIC IMBALANCES

In 2023 and 2024, Estonia faced a current account deficit, high inflation, loss of cost competitiveness and markedly rising house prices. The economy contracted for two years in a row, in a broad-based manner, ranging from private consumption and investment to exports. At the same time, while inflation has decelerated, it is still recording one of the steepest price increases in the euro area, lately driven by rising services prices. The economic outlook remains muted going forward with several tax increases in 2025 negatively affecting private consumption and adding to inflation. Estonia's current account is in mild deficit, and due to the need for defence-related imports, likely to remain so. Despite the recession, house prices have increased at record pace, compounding risks of house price overvaluation. Household borrowing moderated but remained significant even though borrowing costs are the second highest in the euro area.

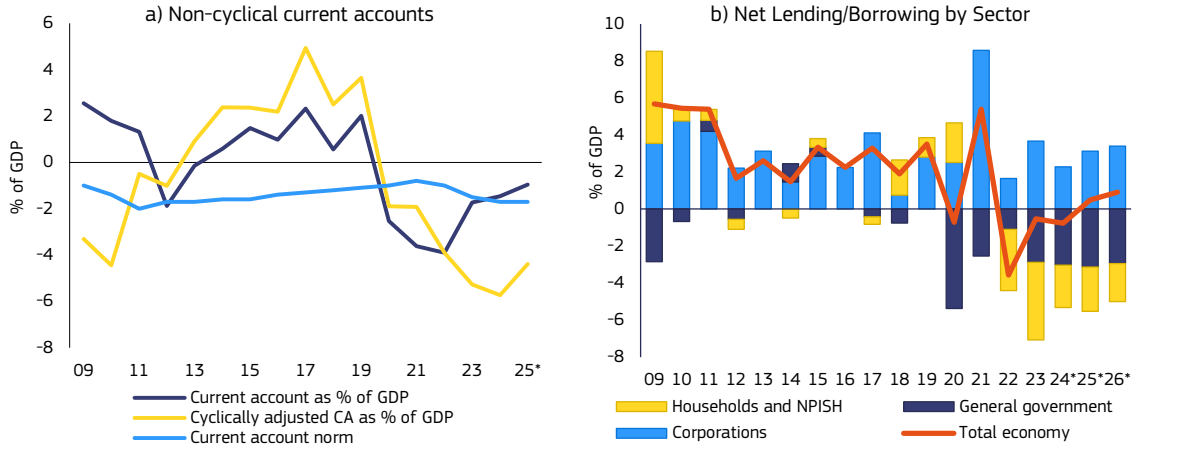
2.1. EXTERNAL SECTOR AND COMPETITIVENESS

Assessment of gravity, evolution and prospects of vulnerabilities

External sector and export performance

Estonia's current account deficit improved in recent years and in 2024 was estimated to be within the norm, but the adjustment was entirely driven by the low economic growth and recession. Estonia's current account changed from surpluses in the second half of the 2010s to deficits since 2020. The deficit widened to 3.6% of GDP in 2021 and to 3.9% in 2022. It narrowed substantially thereafter, to 1.7% in 2023 and, 1.2% in the third quarter of 2024, better than the deficit of 1.7% of GDP justified by fundamentals (Table 2.1). However, adjusted for the cyclical position, notably the recession over the last two years, the current account deficit is estimated to be in excess of 5% of GDP. The current account is likely to widen further due to higher imports related to an intended increase in defence spending to 5% of GDP (Graph 2.1.a).

Graph 2.1: **Current account balance and net lending/borrowing**



(1) * indicates forecast value.
Source: European Commission forecasts and calculations.

The current account deficit reflects net borrowing by the government and households, which is partly offset by net savings by corporations. The government balance has been negative since 2020 and deficits of 2.8% and 3.1% of GDP were recorded in 2023 and forecast for 2024 (Graph 2.1.b). Contrary to past practices, Estonia has taken an expansionary stance in order to support the economy. Household spending has been fuelled by the policy to release the second pillar pension funds in 2021, lowering the savings of households considerably in 2021 and 2022. Going forward, both households' and the government's net positions are expected to remain in negative territory.

Despite consecutive current account deficits, the Estonian net international investment position (NIIP) is gradually strengthening, although still mildly negative. At -21.1% of GDP in 2023, broadly in line with its benchmark value of -17.2%, the NIIP strengthened considerably compared to pre-pandemic levels. It is estimated to strengthen further in 2024. The NIIP excluding non-defaultable instruments (NENDI), such as foreign direct investment, was positive and stood at 30.5% of GDP in 2023. Both indicators imply limited risk to external sustainability for Estonia.

Estonia's competitiveness has been tested in the past few years. Russia's war against Ukraine has changed the geopolitical landscape and Estonia has cut its remaining economic ties with Russia. Meanwhile, Estonia's major trade partners – Finland, Sweden and Germany – have suffered low growth. Strong price increases have made Estonia's ability to compete on foreign markets a challenge and, although it increased its world market share between 2019-2021, that share has since stagnated; at a more disaggregate level, however, some of its primary export products do seem to have maintained competitiveness up to the most recent period (see below). Still, Estonia's performance compares unfavourably to the other two Baltic countries, particularly Lithuania, which have kept increasing their shares of global trade (although data on market share must be interpreted with caution as, due to the very small size of the Estonian economy, a few large transactions may lead to substantial changes in exports or imports[(4)]).

Estonian exports contracted in 2023 and 2024 as its main trade partners experienced protracted economic weaknesses. Estonian exports fell by 9% in 2023, 13.4% for goods and 0.7% for services, followed by a 1.1% contraction in 2024, of which exports of goods fell by 2.9% and services increased by 1.6%. Estonia is a small, very open economy, hence the fall in exports played a significant role in the country's economic recession in 2023. Estonia's main trade partners are traditionally Finland, Germany, Latvia, Sweden and Lithuania. Growth in the first three was negative in 2024, while in Sweden and Lithuania growth was mild: 1% and 2.7% respectively. This reduced demand for Estonian products and services.

Estonia's export performance in goods consists predominantly of products decreasing in importance in global trade, while the composition of goods exports has remained relatively stable except for mineral fuels and related materials. Machinery and equipment, and other manufactured goods dominated Estonia's exports in 2024 (34% and 30% shares respectively). Most product groups' shares of total Estonian exports have remained stable over time (Graph 2.2.a). The exception is mineral fuels and related materials, which substantially increased their share of total exports in 2021-2022 before falling back thereafter, reflecting both a significant share of re-exports in that category of goods and changes in trade flows following the sanctions imposed on Russia. At a more granular level and disregarding the mineral sector, graph 2.3 shows that Estonia has been able to secure a growing share of a shrinking global market until

(4) For instance, over 2021-2023 an unexpected drop in exports to countries accounting for relatively small shares of Estonian exports (the US and the Netherlands) occurred, which accounted for a significant loss of Estonia's export share in world market., see IMF Article IV report, June 2024.

recently in some products, notably vehicles, photographic equipment and wood products, reflecting well on their competitiveness, but losing share in electrical machinery, fertilisers and furniture.

Exports of services held up better than exports of goods, particularly given that one of principal service sectors – transport – faced extreme adversity. Services exports shrank by 0.7% in 2023, but then grew by 1.6% in 2024. Over the longer term, services exports underwent significant changes in composition. Transport accounted for the largest share of services' exports (around 28%) in 2019, but much of this trade was lost due to the cutting of ties with Russia (seen in the decrease in transport share to 22% in 2023) and is not expected to be regained any time soon. In contrast, exports of telecoms, computer and IT services, a flagship Estonian sector, grew very robustly over the past few years and overtook transport. Exports of travel services declined sharply when the pandemic restrictions hit but regained some ground thereafter.

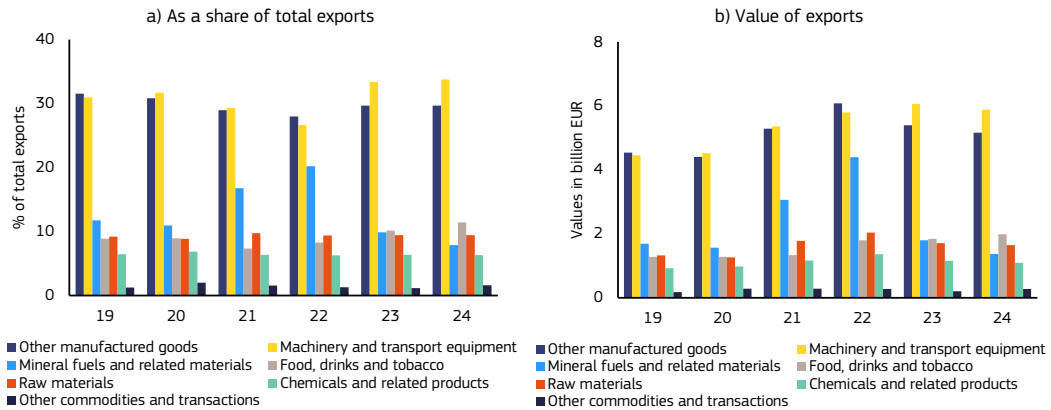
Estonia faced a hike in energy prices after Russia invaded Ukraine but also due to lower energy production domestically. Measured by producer prices in industry, energy costs increased by 42% in 2021, 85% in 2022, followed by a decrease of 22% in 2023 and 9% in 2024. This was primarily linked to the cut of Russian supply following its invasion of Ukraine. In addition, Estonia was reducing energy production locally from shale oil as environmental regulations tightened. Despite some moderation in 2024, energy prices in Estonia are almost double compared to their levels of 2020. Energy being an input to most production processes, this increased the cost of exported goods and services and made their transportation more expensive.

Estonia also experienced a strong increase in the price of raw materials needed for production in its main exporting industries. This is particularly the case for wood and metals, a main input in construction and furniture production, where Estonian companies were large exporters to the Scandinavian markets. These inputs, previously sourced from Russia and Belarus, were replaced by more expensive local inputs or more expensive imports from other countries.

Estonia has experienced substantial labour cost increases. Labour productivity per hour dropped by 2.9% in 2022 and 6.3% in 2023, reversing the productivity gains experienced previously. In conjunction with rising labour costs (see next section), unit labour costs (ULC) per hour increased by double digits in 2022 and 2023 and kept rising in 2024.

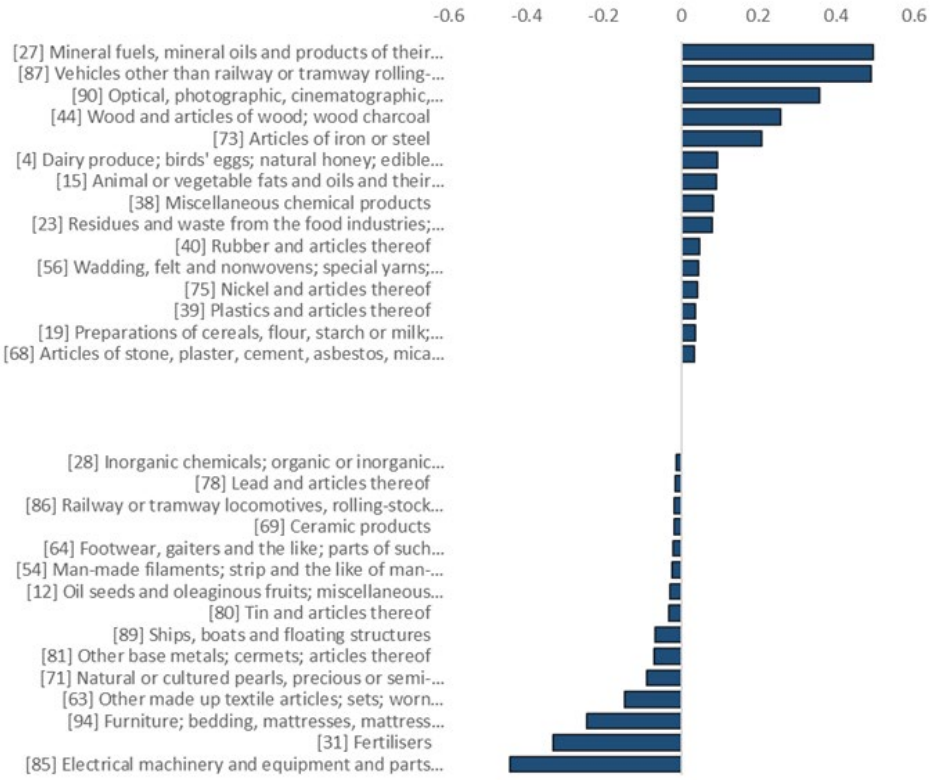
The cost of financing has increased in line with the ECB policy rate. The prevalence of loans issued with flexible interest rates means that a higher monetary policy rate tends to pass through quickly and fully into the loan costs for Estonian companies. The interest rate on new loans to businesses reached the peak of 5.9% in 2023, before declining to 4.5% by the end of 2024.

Graph 2.2: **Composition and value of good exports by main product category**



Source: Eurostat.

Graph 2.3:**The sectoral evolution of Estonia's global market shares, 2019-2023, average yearly growth (%)**



Source: Source: UN COMTRADE database, own calculations.

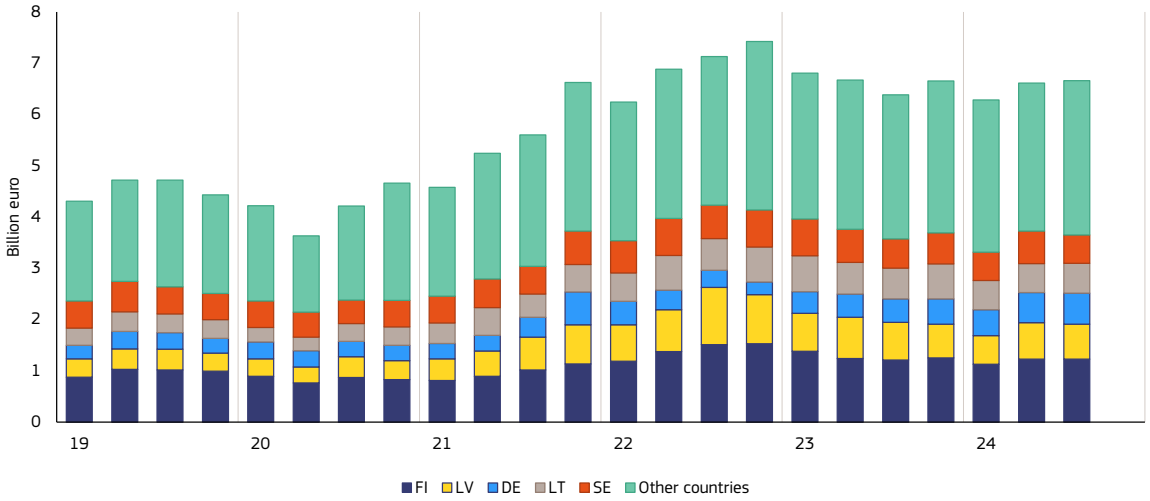
In summary, Estonia's competitiveness is undermined by a particularly sharp increases in input, capital and labour costs in recent years as well as weak innovation that holds back the country's ability to climb in value added products. The IMF[(5)] estimates that total factor productivity (TFP) contributed negatively to GDP growth in Estonia in 2020 to mid-2023 and is weighing on its potential growth. The paper highlights that the innovation component in TFP growth was the weakest in Estonia out of the three Baltic countries in the two decades up to 2020, while the contribution of allocative efficiency of labour and capital was the least negative.

The outlook for Estonian traditional goods and services exports remains negative. Traditional Estonian exporting industries, notably construction and furniture, still face weak demand in Sweden and Finland. Tourism is recovering, but the scope for further growth may be limited by the loss of the Russian market and fewer Finnish visitors as Estonia has become relatively expensive. The ICT sector, a strong performer in recent years, may continue growing but the moderation in startups activity suggests that the sector is likely entering a lower-growth phase.

Some recent developments could help Estonian exports. The 2022-2023 depreciation of the Swedish and Norwegian currencies has broadly stabilised since 2024 or even mildly reversed, partly mitigating real appreciation. The lower ECB policy rate means Estonian companies, which are directly exposed to its fluctuations, can get cheaper financing.

(5) IMF, WP/25/18 Competitiveness and Productivity in the Baltics: Common Shocks, Different Implications, January 2025

Graph 2.4: **Exports to main Estonian export partners and other countries 2019-2024Q3**



Source: Eurostat.

Price and Cost Competitiveness

Over the past five years, Estonia has experienced more severe inflation than the euro area and peers. In 2024, consumer prices, as measured by the private consumption deflator, exceeded their 2019 levels by 36%[6]. The GDP deflator, which combines domestic wage and profit inflation, increased by 38% since 2019. These increases are roughly double the euro area's increases, similar to those in Lithuania but surpassing Latvia's. However, unlike in peer countries and particularly compared to its own experience since at least 2000, Estonia has experienced no productivity gains in the 2019-2024 period (Graph 2.5.a). As a result, Estonia's price and cost competitiveness has markedly deteriorated in the past four years. Even in 2024 and early 2025 headline and core inflation have been among the highest in the euro area despite the recession at home. This differential is expected to persist for the next two years. An unwinding of pressures on price and cost competitiveness is thus unlikely in the near future.

Strong demand in Estonia, global supply bottlenecks and the energy price shock triggered the surge in inflation. Pent-up demand following the suspension of COVID-19-related restrictions caused widespread supply disruptions and accelerated inflation around the EU from late 2021. In Estonia, consumer spending in 2022 was almost a third above its 2019 level. To finance this, households greatly reduced their saving rates, which was spurred by the changes to the pension system of September 2021, allowing households to withdraw a large amount of money from their pension accounts, further fuelling demand[7]. Consumer prices surged by 17.5% in 2022, following a sizeable increase of over 4% in 2021[8]. Around half of the inflation in private consumption is estimated to be directly related to imported goods and services (Graph 2.5.b). Unlike in other euro area countries experiencing high inflation, the direct impact of higher prices of energy imports from outside the EU is estimated to have been relatively limited in Estonia (see Annex 2). Despite this, domestic energy prices increased considerably. Domestic sources of inflation – wages and profits – responded strongly. In particular, the increase in profits is estimated to have added

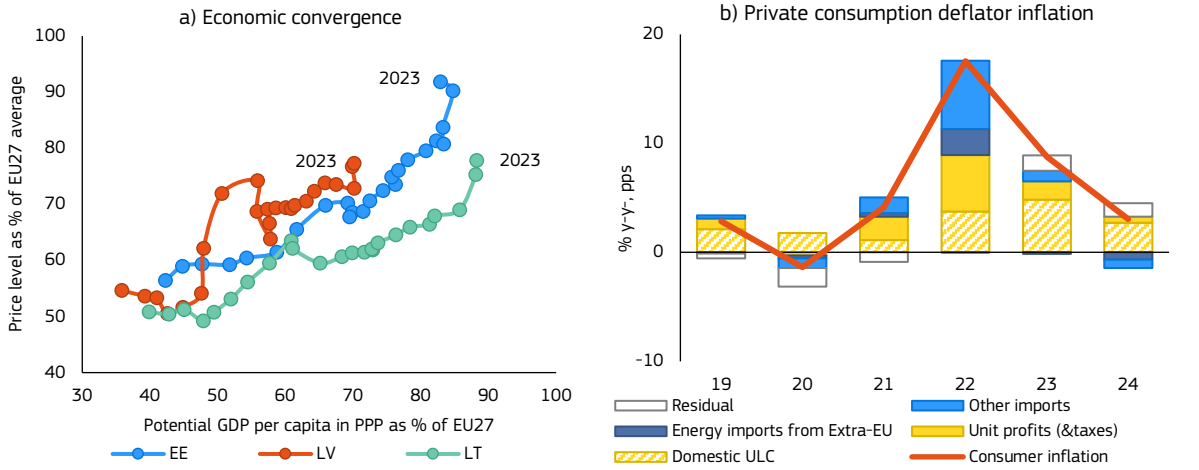
(6) The HICP increased by 40% in the same period.

(7) Initially, around EUR 1.5 bln were withdrawn.

(8) Measured by the private consumption deflator.

around 8 percentage points (pps) to cumulative inflation in 2021 and 2022. The domestic energy sector has likely contributed strongly, as higher gas prices have led electricity producers across the board to increase their prices accordingly. The wage contribution also increased noticeably, adding around 5 pps[9].

Graph 2.5: **Economic convergence and inflation**



(1) Note: For further methodological details on the inflation decomposition, see European Commission Institutional Paper (2025) – "Economic spillovers and financial linkages in the EU".
Source: Eurostat, European Commission.

Wage growth has been the main driver of inflation in 2023 and 2024. Nominal wages continued to grow swiftly in 2023 and 2024 and became the key driver of inflation, estimated to account for around two-thirds of total inflation, while it only accounted for one quarter of inflation in 2021 and 2022 (Graph 2.5.b). Profits, on the other hand, added a lot in 2021 and 2022, but contributed very little in 2023 and 2024. As a result, consumer price inflation remained high, while gradually easing, over these two years. Overall, the inflationary impact of wage developments over the past five years has been among the highest in the euro area (see Annex 2 for more details).

Strong wage growth is partly related to significant skills shortages and policy action. Both working age population and employment have increased since 2019, mainly due to the influx of Ukrainian refugees. Still, around 75% of businesses have identified the lack of skilled staff as a barrier to investment [10]. As a result, in a situation of market-based wage setting, skills shortages have led to rapid wage growth in certain sectors due to a higher wage premium on skills[11]. In addition, wage growth in 2023-2024 was affected by several discretionary measures. First, the minimum wage was increased to maintain purchasing power, but also to compensate the zero increase in 2021. This led to above average minimum wage increases in both years. Second, the public sector increased its wage bill strongly. By 2023, it accounted for more than half of the net employment increase in compared to 2019. Employment in the sector decreased slightly in 2024. The average wage in the public sector increased by 50%, well above the increase for the whole economy, which moderated in 2024 (see also Annex 3).

[9] See Annex 2 and European Commission Institutional Paper (forthcoming) – "Economic spillovers and financial linkages in the EU" for a comprehensive overview of inflation drivers in all EU countries.

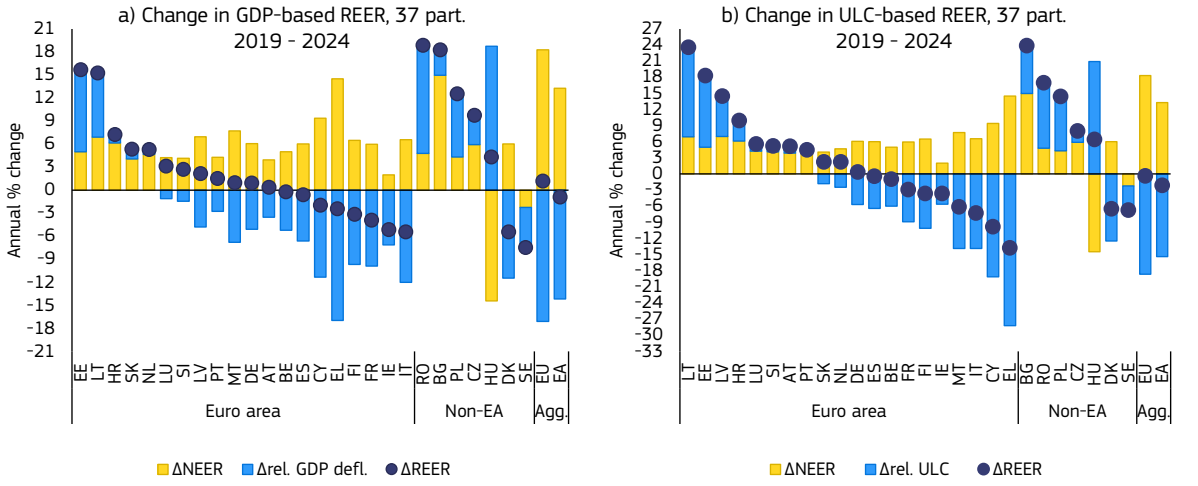
[10] EIB Investment Survey 2024 Country Overview: Estonia.

[11] Survey data suggest that labour hoarding has likely strongly affected these outcomes, as companies sought to retain skilled workers when the labour market remained tight (see also Annex 2 and 3).

The public sector has expanded noticeably in the past five years. The share of total public expenditure in nominal GDP increased by over 4 pps between 2019 and 2023, particularly in 2022 and 2023, while still remaining below the EU average, likely impeding the disinflation process. Gross fixed capital formation represents a large part of the increase, around 1.4 pps. The wage bill, fuelled by strong increases in wages and employment, as well as subsidies and social transfers also increased at a rate above nominal GDP growth. To curb the fiscal deficits, the government has raised its tax intake, including excise duties and VAT.

Overall, the recent strong price and cost increases in Estonia have dented the country's competitiveness on foreign markets. The real exchange rate has substantially appreciated since 2020, outpacing regional peers, and is estimated to be overvalued (Graph 2.6)[(12)]. With no nominal exchange rate adjustment possible for a euro area country, relative price adjustments are needed to correct the overvaluation, but this may take time due to downward price rigidities. Moreover, continued positive inflation differentials against the euro area expected in the near term are set to contribute to further real appreciation in 2025 and 2026.

Graph 2.6: **Real Effective Exchange Rates**



Source: Eurostat, ECB, European Commission.

Assessment of MIP relevant policies

Several recent policy measures have weakened Estonia's external competitiveness. The government decision to release second pillar pension funds in 2021 seems to have fuelled household spending and inflation, hence reducing competitiveness. In addition, the increase in public sector wages in 2023 and in the minimum wage as of 2022, have contributed to higher wages in general. Furthermore, increases in employment in public administration, defence and healthcare have contributed to labour scarcity and possibly pushed up the skills premium in the whole economy, resulting in high nominal wage increases not in line with labour productivity.

Permanently higher input costs call for policies to enable Estonia moving up the value-added ladder to remain competitive. One priority is to develop a comprehensive energy

(12) The IMF's EBA-lite current account method implies an overvaluation of 3.9%, while the REER model implies an overvaluation of more than 20%, see IMF Country Report No. 24/177. According to the Commission's model, Estonia's real exchange rate is overvalued by 7%, see Coutinho et al (2021), Methodologies for the Assessment of Real Effective Exchange Rates, European Economy discussion paper No. 149.

strategy to lower production costs and ensure a larger, more stable energy supply, needed also to support the growing ICT sector and manufacturing. Estonia is in the process of developing such a strategy, which sets the ambition for renewables to fully cover gross final consumption of electricity by 2030. Policies could also support economic diversification, recognising that some previous business models are no longer viable due to geopolitical shifts and higher costs. Some measures funded by the RRF go in that direction, with key investments and reforms focusing on digitalisation and greening of companies and on improving the skills. Fostering innovation further by complementing policies with training of the low-skilled, improving policies that attract talent from abroad, and increasing labour-market relevance of vocational and tertiary education would raise Estonia's attractiveness for high-value foreign investment.

The government has recently announced some measures that might be conducive to lowering inflationary pressures and alleviate some of the wage and labour pressures. On 10 March, the government announced several new policy actions for 2026, affecting corporate and personal income taxation and public sector employment. Firstly, the coalition aims to reduce costs and personnel in the public administration by 20%; these personnel could become available on the private market. Secondly, in 2026, the planned 2% corporate income tax increase will not be introduced, nor will the planned 2% personal income tax increase from the first euro earned start, but rather a non-taxable minimum of €700 per month will be put in place. Lower corporate income taxes could lower the costs incurred by companies, allowing them to invest more. Although these measures can be conducive to lowering inflationary pressures and alleviating some of the wage and labour pressures, they will put pressure on public finances. Thirdly, the new government announced its intention to move forward with the skilled labour bill, which had been stalled in the previous coalition. The bill entails a substantial increase in the skilled labour migration quota in addition to the general migration quota, taking better account of Estonia's labour needs. Part of the additional quota would vary based on the economic conditions and include employees within a firmly fixed skill area.

2.2. HOUSING MARKETS

Assessment of gravity, evolution and prospects of vulnerabilities

House prices in Estonia have risen markedly. They were 58% higher in 2023 than in 2019 (19% in real terms). In both 2023 and 2024, nominal house prices increased by 6%. Explanations for this are partially in common with other European countries, such as a massive shift to remote work that required extra space for in-house office spaces and Covid-times-induced preference for better housing, which lifted the housing prices in most of Europe. However, in Estonia it was larger and persisted in a recessionary environment, suggesting some country specificities.

There were one-off liquidity boosts in 2020-2022 in Estonia. COVID-19 restrictions led to an accumulation of substantial savings in 2020. In 2021, the government decided to allow workers to withdraw savings from the second pillar pension funds, releasing EUR 1.5 billion into the economy over next two years. Reportedly, about one third of this release was directed into housing. Several Estonian start-ups underwent Initial Public Offerings (IPOs) or buyouts in 2021-2022, bringing an estimated EUR 1 billion, part of which was, according to the Finance Ministry, for property acquisitions in a small market[13].

[13] While there is no hard data on what share of these funds was invested into real estate, consumer surveys since mid-2021 to end-2022 showed a sharp increase in household plans to invest in housing.

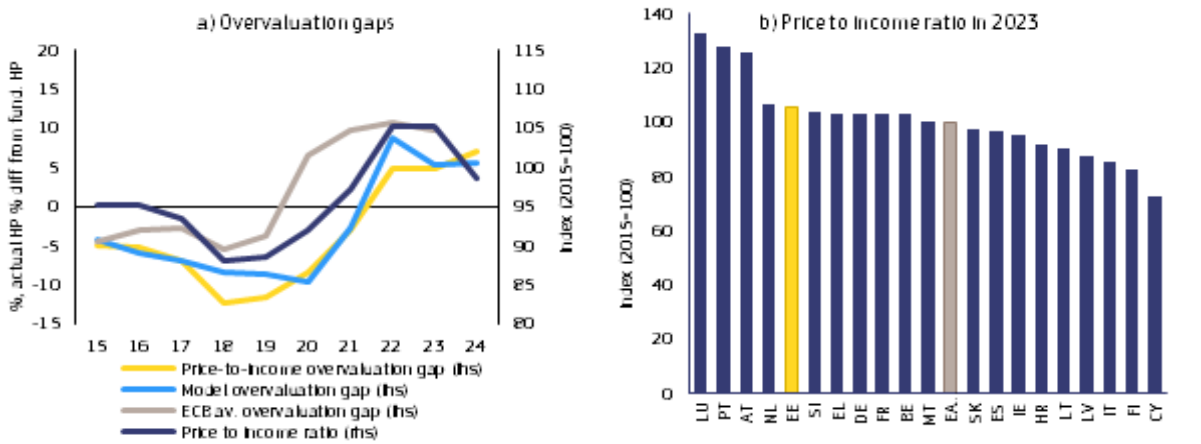
More recently, the rising wages kept on encouraging people to acquire housing. Nominal wages increased by over 40% from 2019 to 2023, across the board. In 2024, nominal wages continued to rise and are estimated to have increased by 4.8%. For some professions (such as those in the financial and insurance activities and ICT sector), the increase was even higher, up to 88% during the 2019-2023 period. This has stimulated people to continue purchasing houses, even though the house price increase was even stronger than the nominal wage increase.

Housing has served as an investment due to high returns, limited investment alternatives, and wealth preservation against high inflation. Rampant HICP inflation has enticed households to buy housing to protect savings from depreciation, especially with house prices being on a general upward trend. This has been supported by nominal interest rates on mortgages being 3-6%, implying low or negative real interest rates. In addition, rents have been increasing quite substantially, by 22% since 2019 (for existing rental contracts), compared to an increase of only 7% in the euro area in the same period, stimulating house ownership over tenancy and making buy to let attractive. Alternative investments are perceived as less accessible for a large part of the Estonian population. Government bond issuance is rare, the local stock market small. Financial intermediaries charge high fees and active investment strategies require substantial financial literacy.

The supply of new housing has been expanding but at much higher cost and still below demand. Construction costs increased sharply in 2021-2022, following COVID-19-related supply bottlenecks and a loss of cheap Russian inputs. New construction fell 7% by volume, especially in 2024, preventing house price moderation. Long delays obtaining construction permits, stricter environmental and urban requirements also hamper supply and increase prices of new dwellings.

Housing affordability has worsened since 2019 but stabilised since 2022. The price-to-income ratio increased substantially in 2020-2022, stabilised in 2023. Another indicator reflecting affordability is the number of years of income necessary to buy a 100m2 dwelling. It increased from 9.3 years in 2019 to 11.1 years in 2022 and 2023. House prices in Estonia were estimated to be overvalued by around 5-10% in 2023 and 2024.

Graph 2.7: **Price to income ratio and housing overvaluation gaps**



Source: ECB, Eurostat, European Commission services.

Net credit flows for housing acquisition moderated in 2023 but remained significant in spite of the high borrowing cost. New mortgage credit flows dropped from 8.1% of GDP in 2022 to 7.2% in 2023, while increasing to 11.3% in 2024. The cost of borrowing for new housing loans increased from around 2.5% during 2019-2022 to 5.9% in 2023, and after dropping to 4.5%

in 2024. As a result of the very high proportion of flexible rate mortgage rate loans, the interest rate rise fed through very strongly to household debt service payments and Estonia was the country that saw the strongest increase in net interest payments in the euro area. The flexible rate implies fluctuations on both sides and the easing in ECB monetary policy has already started to translate into lower mortgage payments – the rate has come down to 4.5% by the end of 2024.

The number of vacant properties has increased in recent years, both in the countryside and in major cities. According to the 2021 Population and Housing Census[(14)], 24% of all dwellings in Estonia were classified as vacant, significantly up from a decade earlier (16% in 2011). Although many of these properties are in sparsely populated regions, regions where the demand for housing is high (such as Tallinn and its suburbs) also see a high percentage of vacant rooms in apartment buildings (above 25% in the Tallin city centre according to Statistics Estonia).

Even though the financial situation of households has been under pressure in recent years, the risk to financial stability associated with mortgage lending remains low. Real disposable income dropped in 2022 and 2023, putting pressure on households' gross savings rate. Real disposable income rebounded in 2024 but is expected to reach its pre-2022 level only by 2026. The savings rate also showed a gradual recovery in 2024. However, at around 5% of gross household disposable income, it remains below the levels observed over the last decade, pointing at the persistent fragility of the household sector. Regardless, non-performing housing loans were at 0.2% of the total housing loan portfolio in 2024. The ratio of non-performing loans in Estonia was also among the lowest in the euro area. From the banking perspective, banks earned record profits in 2023. In 2024, net interest income started to decline in line with lower interest rates, but banks remained highly profitable. Household debt to GDP ratio stood at 38% in 2024, compared to euro area average of 52%. The debt ratio is set to increase over the medium term (see Box 2.1).

Assessment of MIP relevant policies

In the past, some policy measures contributed to housing appreciation. The government decision to release second pillar pension funds in 2021 is one policy that has fuelled household spending, inflation and housing appreciation, thus reducing housing affordability, particularly for households without such funds, such as first-time buyers.

Estonia could improve housing affordability with policies that enhance housing supply. Reducing certain unnecessary regulatory barriers in construction, improving urban planning and making the permitting processes more efficient may help to expand housing supply faster and more cheaply.

Discouraging vacant property could alleviate housing market pressures. Estonia taxes land, not property. While incentivising construction, this is not conducive to making any particular use of the land once it has been constructed on. Estonia could study the experience of countries that tax unoccupied residential properties and evaluate whether phasing in a property tax on empty properties could provide an incentive for real-estate owners to put their properties[(15)] and incentivise the supply of existing property in the Estonian housing market, both for rent and sale. Evaluating this policy option is particularly relevant in the context of a shortage of new housing developments – a scenario that will likely lead to increased competition for existing properties, driving up prices as demand continues to exceed supply.

(14) Population census 2021 | Statistikaamet.

(15) Leodolter, Alexander, Savina Princen, and Aleksander Rutkowski. "III. Taxation of residential property in the euro area with a view to growth, equality and environmental sustainability."

Making it easier to refinance loans could bring down home buyers' costs by increasing competition between mortgage providers. The refinancing of loan agreements is associated with various fees, which include fees for early repayment of the loan, the requirement to assess the value of the collateral, fees for concluding a refinancing agreement, a notarial transaction fee to change the mortgage and a fee for changing an entry in the land registry. Reducing or even eliminating the charging of some of these fees would bring down the costs of mortgage refinancings.

Table A.1: **Main policies increasing or reducing risks of imbalances considered in this IDR**

Vulnerability	Policies	Implementation status
Price competitiveness	Affordable and secure energy. Estonia aims to become a climate-neutral country by 2050 according to Estonia's 2035 strategy. To this end, new energy savings and renewable energy targets entered into force in 2022, mandating that annual renewable electricity production should be 100 % of annual electricity consumption by 2030.	Estonia disconnected from the Brell electricity system of Russia and Belarus and connected to The Continental Europe Synchronous Area in February 2025, significantly increasing energy security. In August 2024, Estonian renewable energy company Sunly secured €300 million in debt financing to accelerate the construction of 1.3 gigawatts of solar, wind, and storage capacity across the Baltics and Poland. By the end of 2024, Estonia's installed wind power capacity reached approximately 694 MW, with all operational wind farms located on land. New offshore wind farms are planned.
	Improving the supply of skills needed in labour market	Three policy streams are envisaged: 1/ focusing training offers on low-skilled workers especially in the lagging regions. Over 80% of low-skilled do not participate in training and other lifelong-learning initiatives. Whilst Estonia has invested in training, re-skilling and up-skilling measures and has, on average, more adults participating in training than the EU average, the policy outreach to those with low skills has been rather poor. 2/ improving policies that attract talent from abroad. Estonia's migration quota (0.1% of the population) was established decades ago and does not fully reflect current labour market needs. Exceptions exist for start-ups, ICT specialists, and other categories, but many sectors struggle to attract skilled workers earning below 1.5 times the average salary. The government has indicated plans to reform the quota for foreign workers, without much detail available yet. 3/ increasing labour-market relevance of vocational and tertiary education. The ongoing VET reform aims to better integrate vocational education with other educational levels by bridging formal and non-formal learning and strengthening links between general, vocational and applied higher education. The reform is in its initial phases and could be complemented with measures making "OSKA", the skills forecasting model, more forward-looking and strategic.

Note: This table lists the main measures that may increase or reduce the risks of macroeconomic imbalances. The measures are described more at length and reviewed in the text of this IDR.

CONCLUSIONS

Estonia has experienced deteriorating price and cost competitiveness in recent years amid a protracted recession while the current account remains in deficit. The current account deficit has shrunk recently, owing to a recession at home. The net international investment position is moderately negative. Current risks to external sustainability therefore appear limited. In contrast, price and cost competitiveness deteriorations are a considerable challenge. Price increases in the last five years have been broad-based and sharply appreciated real exchange rates. Contributing to this were the loss of cheap energy and other inputs following Russia's war of aggression against Ukraine, but most inflationary pressure seems domestic. Initially, strong domestic demand amid emerging inflationary pressures coming from abroad resulted in high inflation and falling real wages, due to nominal rigidity. A tight labour market allowed nominal wages to react strongly to this shock without accompanying productivity gains. Some policy actions also contributed. Inflation peaked in 2022, but remains well above the euro area average, causing further real appreciation which is expected to persist. Estonian exports had been gaining market shares, but this trend reversed in the past two years. Estonia's goods exports are dominated by products decreasing in importance in global trade, and, while the services sector is doing better, innovation lags behind its Baltic peers. Rapid moderation in price and wage developments is therefore paramount. So too is innovation and production of higher value-added goods and services. House prices have grown considerably in recent years and are estimated to be overvalued, fuelled by a set of one-off liquidity boosts and rising wages. The lack of alternative investment opportunities amid limited housing supply added to house price appreciation. However, Estonia's ratio of non-performing loans is one of the lowest in the euro area, so risks to macroeconomic stability seem limited.

Policy progress has been limited. Recent policy actions might have contributed to the reduction in competitiveness. The release of the second pillar pension funds increased domestic demand, boosting prices, including house prices. Since 2022, the increase in public salaries and increase in minimum wages have coincided with the recession and led to higher overall wages, increasing costs for companies and decreasing labour productivity. On the other hand, Estonia has developed a strategy to ensure a more stable and guaranteed energy supply, which should lower energy prices. Measures to improve labour productivity and the business environment remain limited. There seems to be scope to boost skills development for specific sectors and groups of workers. The government recently announced its intention to move forward with the skilled labour bill. The development of strategies to move into higher added value production, inside and beyond the RRP, could improve Estonia's competitiveness. The government recently announced several tax- and expenditure-reducing policy actions for 2026 which could lower inflationary pressures and alleviate some wage and labour pressures. Estonia is not taxing vacant property and the supply of new (or renovated) houses is limited. Making it easier to refinance loans could bring down costs for home buyers, improving affordability.

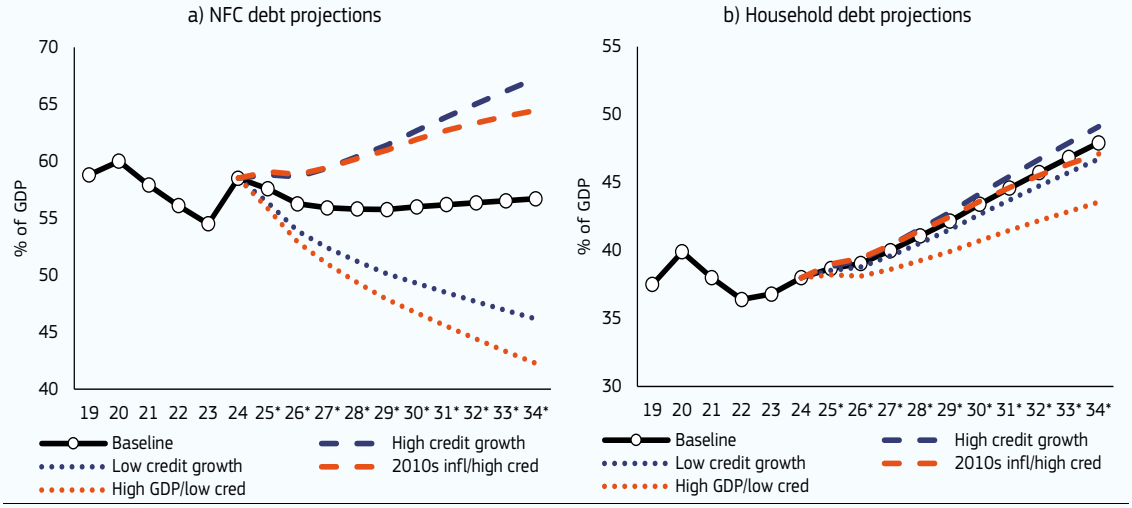
Box 2.1: **Medium-term household and non-financial corporate debt projections**

This Box summarises household and non-financial corporate debt-to-GDP projections for Estonia over the next decade, based on scenario analysis to take into account different underlying assumptions.

The corporate debt-to-GDP ratio is projected to decline slightly before rising back to its current level by 2034. The baseline scenario takes the 2024 nowcast as a starting point and foresees an average real GDP growth of 0.9% per year, average annual inflation rate of 3%, and annual corporate credit flows of 2% of GDP. This is only sligthly below the debt-stabilising[1] NFC credit-to-GDP ratio of 2.1% that would keep the debt stock constant at its current level. In the baseline scenario, the NFC debt-to-GDP ratio is projected to fall slightly over the next 2-3 years before increasing again, reaching 57% by 2034, close to its 2024 value of 58.5% (Graph 2 b). However, if credit flows remain solid and inflation continues to ease, the debt-to-GDP ratio may continue to rise in the short and medium term. Under an adverse scenario of high corporate credit flows over the entire projection horizon, the debt-to-GDP ratio would increase by around 9 pps to 67% of GDP.

The household debt-to-GDP ratio is projected to continue its upward trajectory and to reach 48% GDP in 2034. The baseline scenario takes the 2024 nowcast of 38% as a starting point and foresees an average real GDP growth rate of 0.9%, an average inflation rate of 3% and credit flows of 2.6% of GDP (solidly above the debt-stabilising credit-to-GDP ratio of 1.4%) for years 2025 until year 2034. As a result, the household debt-to-GDP ratio would increase by about 10 pps by 2034 (Graph 2 b). Under an adverse scenario of credit flows being higher for the entire period under consideration, the household debt-to-GDP ratio would increase by 11 pps and reach 49% GDP by 2034.

Graph 1: **Private debt projections based on scenario analysis for Estonia**



Both for the NFC and HH debt projections, the baseline refers to the country-specific median annual credit flow to GDP ratio over 2015-24. The high/low credit scenario assumes a higher/lower credit flow to GDP ratio, with the difference to the baseline calculated as half the intertercile range of the annual credit flow to GDP ratios over 2015-24. The high GDP growth scenario reflects a permanent 1 pp increase in GDP growth relative to the baseline scenario. The low inflation scenario reflects an inflation rate that is set to the country-specific average inflation rate observed over the 2010s.
Source:

[1] The debt stabilising credit-to-GDP ratio refers to the credit ratio between 2025 and 2034 that would stabilise the debt-to-GDP ratio at its 2024 level.

Table 2.1: **Key economic and financial indicators, Estonia**

	average	average			forecast	
	2017-2019	*2020-2022*	*2023*	*2024* [+]	*2025*	*2026*
Output and Prices						
Real GDP (1 year % change)	4.3	1.4	-3.0	-0.3	1.1	2.6
Real GDP per capita (1 year % change)	4.1	1.2	-5.4	-0.9	1.1	2.6
GDP deflator (1 year % change)	4.1	7.2	8.1	3.7	4.0	3.3
Harmonised index of consumer prices (1 year % change)	3.1	7.4	9.1	3.7	3.6	2.4
Core inflation (HICP excluding energy, food, alcohol and tobacco) (1 year % change)	2.0	4.3	8.7	5.1	4.5	3.0
External position						
Current account balance, balance of payments (% GDP, 3y average)	**1.3**	**-1.6**	**-3.1**	**-2.4**	**-1.4**	**-1.0**
Current account balance, balance of payments (% of GDP)	1.4	-3.3	-1.7	-1.5	-1.0	-0.7
of which: trade balance (% GDP)	3.1	-1.2	0.9			
of which: income balance (% GDP)	-1.7	-2.1	-2.6			
Current account norm (% of GDP) (1)	-1.2	-1.0	-1.5	-1.7	-1.7	-1.5
Current account req. to reach fund. NIIP (% of GDP) (2)	-2.6	-1.5	-0.7	-0.6		
Net international investment position (% of GDP)	**-28.1**	**-18.8**	**-21.1**	**-12.2**	**-12.7**	**-12.7**
NENDI - NIIP excluding non-defaultable instruments (% of GDP)	24.4	36.5	30.5			
Net lending-borrowing (% of GDP)	2.8	0.4	-0.5			
Competitiveness						
Nominal unit labour cost index per hour worked (3y % change)	**14.8**	**16.7**	**32.5**	**37.6**	**25.8**	**11.6**
Nominal unit labour cost index per hour worked (1 year % change)	5.3	6.4	15.0	6.1	3.0	2.0
Real effective exchange rate - 42 trad. part., HICP defl. (3y % ch.)	**5.6**	**5.2**	**15.7**	**16.0**	**5.6**	**2.5**
Real effective exchange rate - 42 trading partners, HICP deflator (1 year % change)	1.9	2.8	7.1	1.6	0.9	0.4
Export performance against advanced economies (3y % change)	**3.0**	**15.5**	**7.7**	**-6.8**	**-7.5**	**-0.1**
Export performance against advanced economies (1 year % change)	1.8	5.7	-4.2	-1.1	0.3	0.7
Core inflation differential vis-à-vis the euro area (pps.)	1.0	2.3	3.8	2.3	2.0	0.9
Corporations						
Non-financial corporate (NFCs) debt, consolidated (% of GDP) (3)	**61.9**	**58.0**	**54.5**	**58.5**		
NFCs debt fundamental benchmark (% of GDP) (4)	57.9	62.0	61.4	61.7		
NFC (excl. FDI) credit flow, cons. (% debt stock t-1, excl. FDI)	1.1	6.0	3.1	10.9		
Households and housing market						
Household debt, consolidated (% of GDP) (3)	**37.9**	**38.1**	**36.8**	**38.3**		
Household debt fundamental benchmark (% of GDP) (4)	34.9	38.8	39.2	39.9		
Household debt, consolidated (% of Households' GDI)	58.1	57.1	54.9	55.5		
Household credit flow, consolidated (% debt stock t-1)	**7.3**	**7.6**	**6.3**	**7.5**		
Household gross saving rate (&)	9.7	8.1	3.1			
House price index, nominal (1 year % change)	**6.1**	**14.2**	**5.9**	**6.1**		
House prices over/undervaluation gap (5)	-10.1	0.3	8.1	11.5		
Standardized price-to-income ratio	90.0	98.1	105.3			
Building permits (m2 per 1000 inh)	515.2	551.3	402.7			
Government						
General government gross debt (% of GDP)	**8.4**	**18.9**	**20.2**	**23.2**	**24.2**	**25.5**
General government balance (% of GDP)	-0.4	-3.0	-3.1	-1.7	-3.0	-3.0
Banking sector						
Return on equity of banks (%)	9.1	9.3	18.5			
Tier-1 capital ratio banking sector (% risk-weighted assets)	28.8	24.0	21.4			
Gross non-performing loans, domestic and foreign entities (% gross loans)	1.6	1.2	1.1	1.2		
Cost of borrowing for households for house purchase (%)	2.5	2.5	5.6	5.5		
Cost of borrowing for NFCs (%)	2.8	3.0	6.3	6.6		
Labour market						
Unemployment rate (% labour force Y15-74)	**5.2**	**6.2**	**6.4**	**7.6**	**7.8**	**7.3**
Labour force participation rate - % pop. aged 15-64 (3y change in pp)	**2.3**	**0.7**	**2.0**	**3.1**	**1.0**	**0.7**

+ If actual data were unavailable at the cut-off date, forecast or nowcast data are presented instead; * Denotes values above prudential thresholds;

(1) Current accounts in line with fundamentals (current account norms): derived from reduced form regressions capturing the main determinant of the saving-investment balance, including fundamental determinants, policy factors and global financial conditions. See Coutinho, Turrini and Zeugner (2018), "Methodologies for the Assessment of Current Account Benchmarks", European Economy, Discussion Paper 86, DG ECFIN, European Commission.

(2) Current account required to reach the prudential level of the NIIP over 10 years: calculations make use of Commission's T+10 projections. See Coutinho, Turrini and Zeugner (2018), "Methodologies for the Assessment of Current Account Benchmarks", European Economy, Discussion Paper 86, DG ECFIN, European Commission.

(3) Prudential threshold for non-financial corporate and household debt-to-GDP ratio: corresponds to the level above which banking crises become more likely. It is derived from regressions minimising the probability of missed crises and that of false alerts. See Bricongne et al. (2020), "Is Private Debt Excessive?", Open Economies Review, 31:471-512.

(4) Fundamentals-based benchmarks for non-financial corporate and household debt-to-GDP ratios: assesses private debt from regressions capturing the main determinants of credit growth and taking into account a given initial stock of debt. See Bricongne et al. (2020), "Is Private Debt Excessive?", Open Economies Review, 31:471-512.

(5) House prices over/undervaluation gap: is the simple average of the price-to-income, price-to-rent and model valuation gaps. The model valuation gap is estimated in a cointegration framework using a system of five fundamental variables: total population, real housing stock, real disposable income per capita, real long-term interest rate and price deflator of final consumption expenditure. Based on Philiponnet, N., Turrini, A. (2017), "Assessing House Price Developments in the EU", European Economy - Discussion Papers 2015 - 048, DG ECFIN, European Commission.

Source: Eurostat and ECB; European Commission for forecast figures (Autumn forecast 2024).

This chapter aims to shed light on the performance of Estonian exports relative to its competitors by analysing developments in export market shares. Two complementary approaches are used. The first relies on a granular dataset at the product level to quantify gains and losses in export market shares in merchandise trade. A relatively short lag and the richness of the dataset are major advantages of this approach. An important caveat is that the trade in services is not covered. Further, gross trade flows incorporate foreign value added embedded in exports and therefore may fail to properly capture developments in domestic production. To overcome these shortcomings, the second approach relies on input-output tables to disentangle domestic from foreign value added, covering both goods and services. Growth is characterised in terms of cross-border flows of value added and the relative growth of Estonia's value added absorbed abroad is compared to that of other countries. Input-output tables are, however, a less timely source of data.

Constant Market Shares decomposition in Gross Export terms

This section presents the findings from a constant market share (CMS) decomposition based on gross exports. Working with gross exports is motivated by the data being relatively timely, currently available up to 2023 [(16)]. Trade flows are reported at a very detailed level of product disaggregation, i.e. for about 5000 products per year [(17)]. The main caveat of the gross export data is that we cannot disentangle the contribution of domestic value added from that of foreign value added also embedded in Estonia's exports. Further, the UN COMTRADE dataset covers trade in goods, so developments associated with trade in services are not covered.

The focus is on the evolution of Estonia's market share in global trade (S_t^i). Year-on-year growth in Estonia's market share (g_t^i) can be written as the sum of a product structure effect (PSE) and a market share effect (MSE)[(18)]. The first term captures how changes in the product structure of global trade – namely year-on-year growth rates in the weight of each product *k* in global trade (g_{kt}^{-i}) – affect the evolution of Estonia's market share, as a function of Estonia's initial specialisation [(19)]. The second term captures the extent to which Estonia's market share growth exceeds the growth in the global weight of the product, thereby capturing a competitiveness effect (market penetration effect).

$$g_t^i = \frac{S_t^i - S_{t-1}^i}{S_{t-1}^i} = \sum_k \left(g_{kt}^{-i}\right) \frac{S_{k,t-1}^i}{S_{t-1}^i} + \sum_k \left(\frac{S_{kt}^i}{S_{t-1}^i} - \frac{S_{k,t-1}^i}{S_{t-1}^i} \left(1 + g_{kt}^{-i}\right) \right)$$

(16) The data extracted was carried out from the UN COMTRADE database in February 2025. Information on bilateral trade flows in 2024 is expected to become available in the second quarter of 2025.

(17) The UN COMTRADE dataset covers global bilateral trade in goods in the HS 2007 classification between 2007 and 2023. We use information on imports as imports tend to be more accurately reported. One must keep in mind that imports include insurance and transportation costs. The decomposition is carried out in value terms. A complementary decomposition in price and volume effects could be envisaged. Trade in services would require a separate complementary investigation.

(18) The algebraic decomposition is only feasible for product flows observed in each pair of consecutive years. To minimise the amount of excluded trade, i.e. the extensive margin, the decomposition is carried out while pooling all destinations. In further work, the robustness of the results to instead working at the product-destination level will be checked.

(19) The notation "i" for Estonia and "-i" for all countries other than Estonia captures the set of countries for which the growth rates are computed. All market shares are computed as the ratio of a given flow to total global trade, i.e. the denominator is always the sum of all bilateral trade flows (X_t). As the exercise is carried out on the intensive margin, total trade is computed only across product categories in which Estonia has a positive flow in each pair of consecutive years. See Cheptea, A., Fontagne, L., and S. Zignago. (2014). "European Export Performance", *Review of World Economics*, 150 (1).

Total growth in Estonia's market share g^i is computed as the product of the year-on-year growth rates: $g^i = \prod_t \left(1 + g_t^i\right) - 1 = (PSE^i) * (MSE^i) - 1$

with the first term: $PSE^i = \prod_t \left[1 + \sum_k \left(g_{kt}^{-i}\right) \frac{S_{k,t-1}^i}{S_{t-1}^i}\right]$

and the second term: $MSE^i = \prod_t \left[1 + \sum_k \left(\frac{S_{kt}^i}{S_{t-1}^i} - \frac{S_{k,t-1}^i}{S_{t-1}^i}\left(1 + g_{kt}^{-i}\right)\right)\right] * \vartheta_i$. [20]

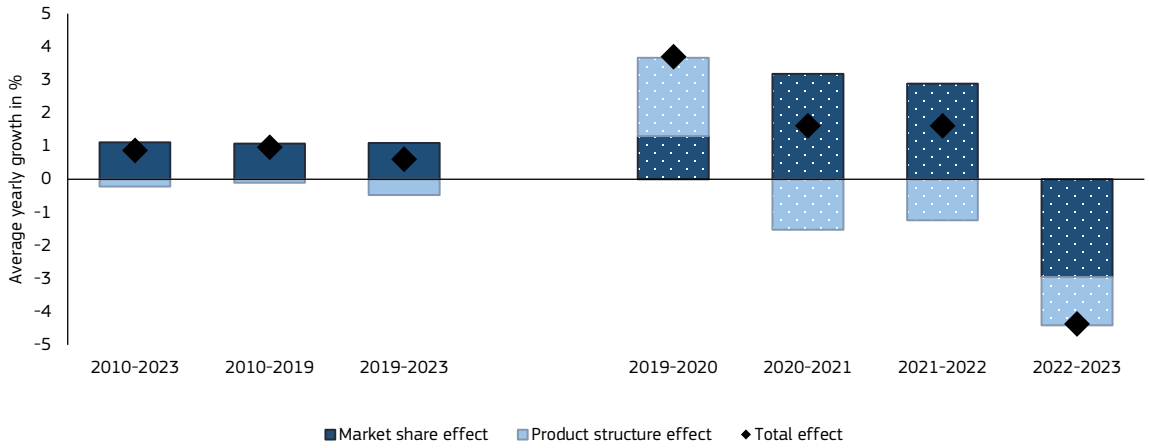
Focusing on total trade reported at the HS 6-digit level, Estonia's global market share is found to have increased by 11.3% over 2010-2023 [21]. The composition (product structure) effect contributed negatively to this overall growth (-2.8%) while the exporter performance (market share) effect contributed positively (+15.4%). Graph A1.1 plots the average yearly growth in Estonia's global market share over the full period (2010-2023), as well as by subperiod (2010-2019, 2019-2023). The average yearly growth rates in the pre- and post-COVID-19 period have been relatively similar. In both periods, the exporter performance (MSE) contribution has been dominant and positive. Further, when we zoom in on the year-on-year changes in the most recent period, Estonia's export performance appears to have initially suffered from a negative composition effect, i.e. less dynamic growth in global demand for products Estonia is specialised in, rather than a negative own performance effect. It is only in the most recent year of the sample that both components contribute negatively to the evolution of the market share[22].

[20] The exporter performance term MSE^i is adjusted for a residual. Results are not qualitatively affected by this adjustment.

[21] This finding is sensitive to the choice of 2010 as a starting point. If one computes the total growth of Estonia's market share over 2007-2023, it is equal to 4.6%. The 2007-2010 subperiod is associated to a significant reduction in Estonia's market share, with a recovery from 2010 on.

[22] These year-on-year results are obtained while including sector 27 (Mineral fuels, mineral oils, and products of their destination) in the analysis. This sector is an outlier in terms of its positive contribution to Estonia's global market share developments in 2021-2022 through the MSE component, and subsequently an outlier in terms of its negative contribution to Estonia's global market share developments through the MSE component in 2022-2023. Excluding this sector from the analysis flips the direction of the year-on-year developments, with Estonia's global market share decreasing by 3.3% in 2021-2022 (negative MSE contribution), and subsequently increasing by 0.7% in 2022-2023 (positive MSE contribution). The average yearly change in Estonia's global market share over 2019-2023 amounts to a 0.8% increase when sector 27 is excluded from the analysis while it is equal to a 0.6% increase when the sector is included in the analysis.

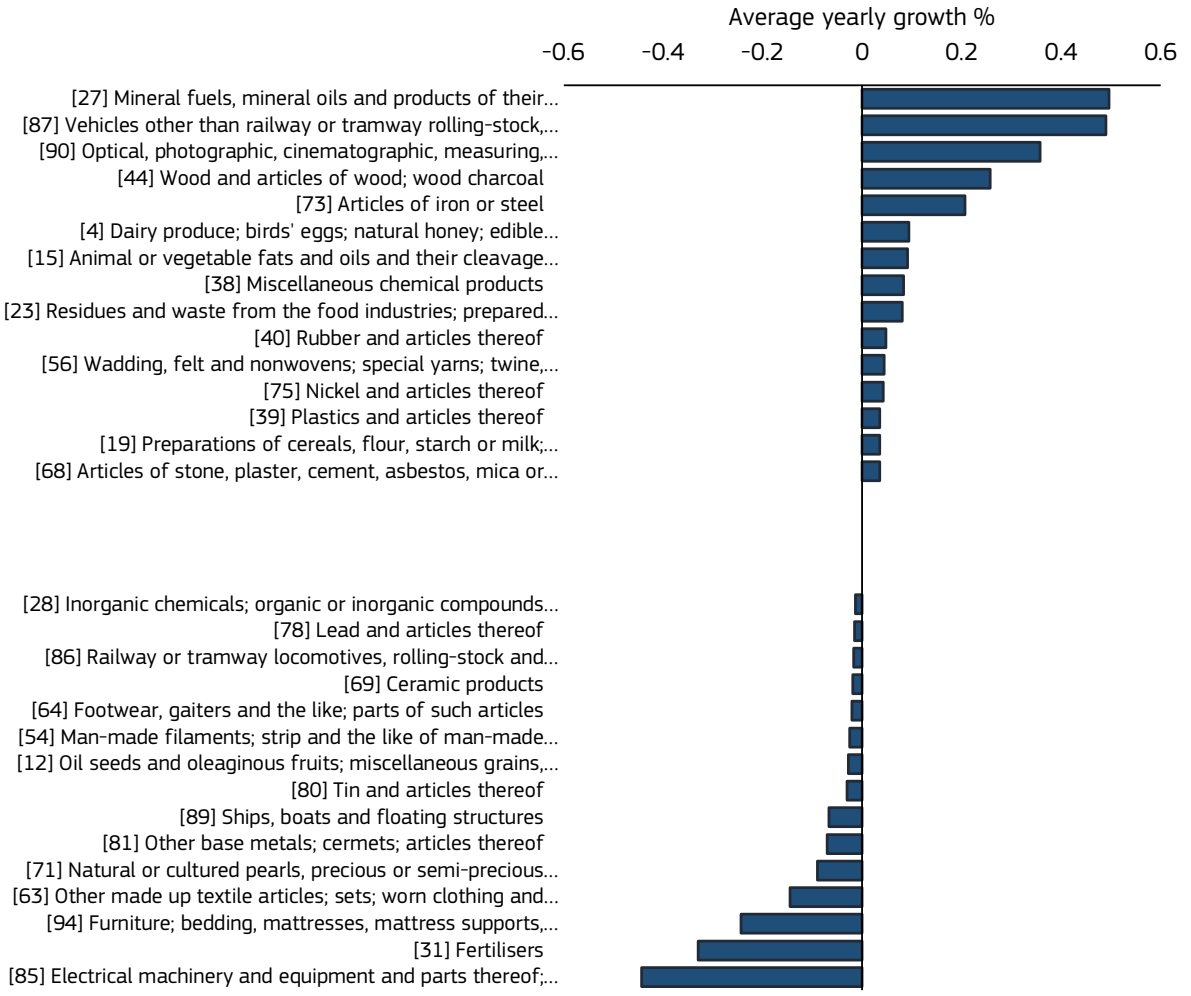
Graph A1.1: **Market share growth in gross exports over 2010-2023: decomposition of TE into MSE and PSE components**



The decomposition is carried out at the HS 6-digit level (subheadings), while pooling together all destinations to which Estonia exports. This approach is chosen to maximise the share of Estonia's exports that is included in the calculation. Estonia's market share in the world is calculated on the basis of products in which Estonia has a positive flow in each pair of consecutive years.
Source: UN COMTRADE database and European Commission own calculations.

Graph A1.2 underpins which product categories (defined at the HS 2-digit level) provided the most important positive and negative contributions to the MSE component ("own performance") over 2019-2023. The industries in which Estonia appears to have been able to increase market penetration include some products in which Estonia traditionally specialises (e.g. "wood and articles of wood") as well as products subject to substantial volatility (e.g. "mineral fuels, mineral oils"). These findings suggest that it would be useful to split the observed evolution of Estonia's exports into the underlying volume and price effects. Such an investigation would provide further insights in the role that recent price developments have played in determining Estonia's export performance in the global market.

Graph A1.2: **Split of the product contributions in the MSE component, 2019-2023, top and bottom 15 products.**



The CMS decomposition is carried out at the HS 6-digit level (subheadings), year-on-year, while pooling together all destinations to which Estonia exports. The contribution of all 6-digit level products is combined to calculate the contribution at the HS 2-digit level reported in the figure. The total contribution of each HS 2-digit category over 2019-2023 is annualised.

Source: UN COMTRADE database, and European Commission own calculations.

Constant Market Shares decomposition in value added terms

This section presents the findings from a constant market share (CMS) decomposition based on trade in value added. This approach recognises the importance of the global fragmentation of production, which calls for an analysis of market shares in value added terms rather than gross trade. The analysis adapts the traditional CMS decomposition based on gross trade in Pandiella (OECD, 2015) by decomposing changes in the *domestic value added absorbed* in foreign final demand (rather than changes in exports per se) [(23)].

Decomposing in value added terms focusses more directly on how Estonia's domestic production factors contribute to satisfying foreign demand. Moreover, the input-output tables (FIGARO 2024 edition) that form the basis of this analysis provide a complete picture of the

[(23)] González Pandiella, A. (2015), "A Constant Market Share Analysis of Spanish Goods Exports", *OECD Economics Department Working Papers*, No. 1186, OECD Publishing, Paris, https://doi.org/10.1787/5js69lb4b5mt-en.

economy by including services in addition to (manufacturing) goods. However, as data on global input-output tables are published with a lag (2022 is the most recent available year in the 2024 FIGARO edition), the analysis in value added terms cannot give as timely a picture as an analysis of gross export market shares. In other words, the CMS decomposition in value added developed in this section should be seen as a complement to the CMS decomposition in terms of gross exports in Section 1.

In brief terms (see Pandiella, 2015, for more details on the CMS methodology), the constant market share (CMS) analysis allows the change in a country's share of global markets to be decomposed into competitiveness and structural effects (namely the impact of specialisation in product or destination terms). The traditional CMS analysis starts from the difference between a country's exports growth (g^i) and all other countries' exports growth (g^W) over a certain period. In our case, we compute these growth rates as the change in *domestic value added* absorbed in foreign final demand. To obtain a country's total change in domestic value added that satisfies foreign demand, the sum is taken over all producing industries (k) and over all foreign destinations (j)[(24)]. We then compute the difference between this growth rate for Estonia and that of the world. This difference, usually referred to as the Total Effect (TE), is thus computed as:

$$TE = g^i - g^W = \sum_k \sum_j \theta^i_{kj}\, g^i_{kj} - \sum_k \sum_j \theta^W_{kj} g^W_{kj}$$

where g^i_{kj} is the percentage change of Estonian value added from industry k generated to satisfy final demand by country j from one period to the next, and θ_{kj} is the share of Estonian value added from industry k generated to satisfy final demand by country j in total Estonian value added to satisfy total foreign demand.

The Total Effect can be decomposed into a Combined Structure Effect (CSE) and a Market Share Effect (MSE). The CSE is a structural component that reflects the impact of specialisation by product and destination, while the MSE captures other factors that reflect changes in individual market shares. The latter effect is usually considered to be an indicator of a country's competitiveness. It measures to what extent the country increased its penetration of global markets (measured as the value added it produces that ends up abroad) compared with the rest of the world, holding its export product structure (captured by θ) fixed. Essentially, it measures the part of the total effect (TE) that is not explained by the combined structure effect (CSE), which captures if a country specialised its exports (relative to the world) in products and destinations for which world exports increased more than total world exports (of all products to all destinations).

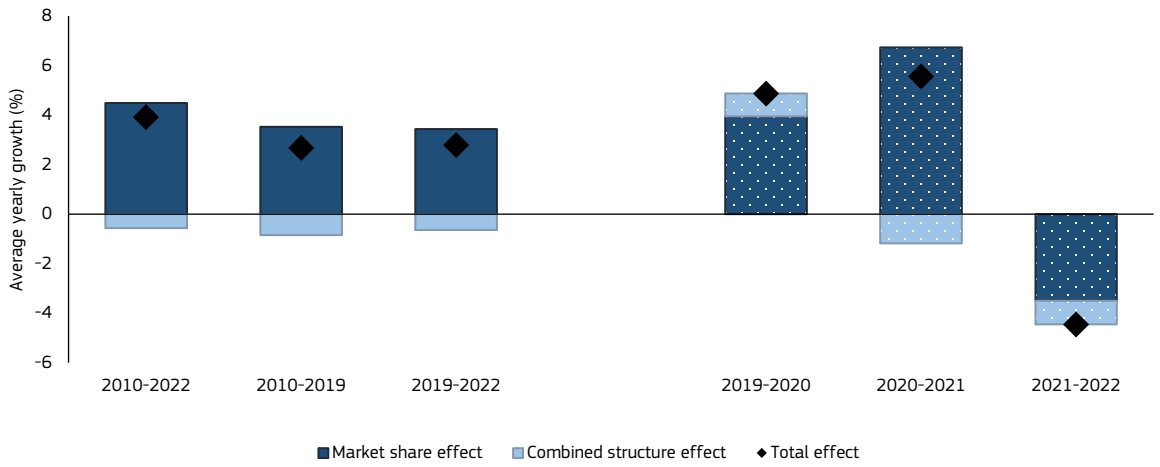
$$TE = CSE + MSE = \sum_k \sum_j \left(\theta^i_{kj} - \theta^W_{kj}\right)\left(g^W_{kj} - g^W\right) - \sum_k \sum_j \theta^i_{kj}\left(g^i_{kj} - g^W_{kj}\right)$$

Over the period 2010-2022, Estonia's value added generated to satisfy foreign final demand grew relatively more than the world's, driven by a strong Market Share Effect (competitiveness effect) (Graph A1.3). These changes are more volatile on a yearly basis, however, as can be seen for the individual years of the last subperiod (2019-2022). While the first

(24) The set of products corresponds to 64 industries in the NACE rev.2 classification. The set of destinations includes the 27 EU MS, 18 non-EU countries, and a "Rest of the World" aggregate.

two years of that subperiod are characterised by a positive Total Effect, we observe a strongly negative Total Effect of ca. -4.5% for 2021-2022. This suggests that growth in world value added absorbed in foreign demand was around 4.5 p.p. higher than that of Estonia. This negative Total Effect is explained by a strong negative Market Share Effect, suggesting that, on average across all producing industries and destinations, Estonian value added absorbed in foreign demand grew less than the world's. This could be a first indication of a worsening competitive performance of Estonia since the start of the energy crisis[25].

Graph A1.3: **Difference between growth in Estonian and world value added absorbed in foreign final demand (Total Effect), decomposed into Market Share and Combined Structure Effect**

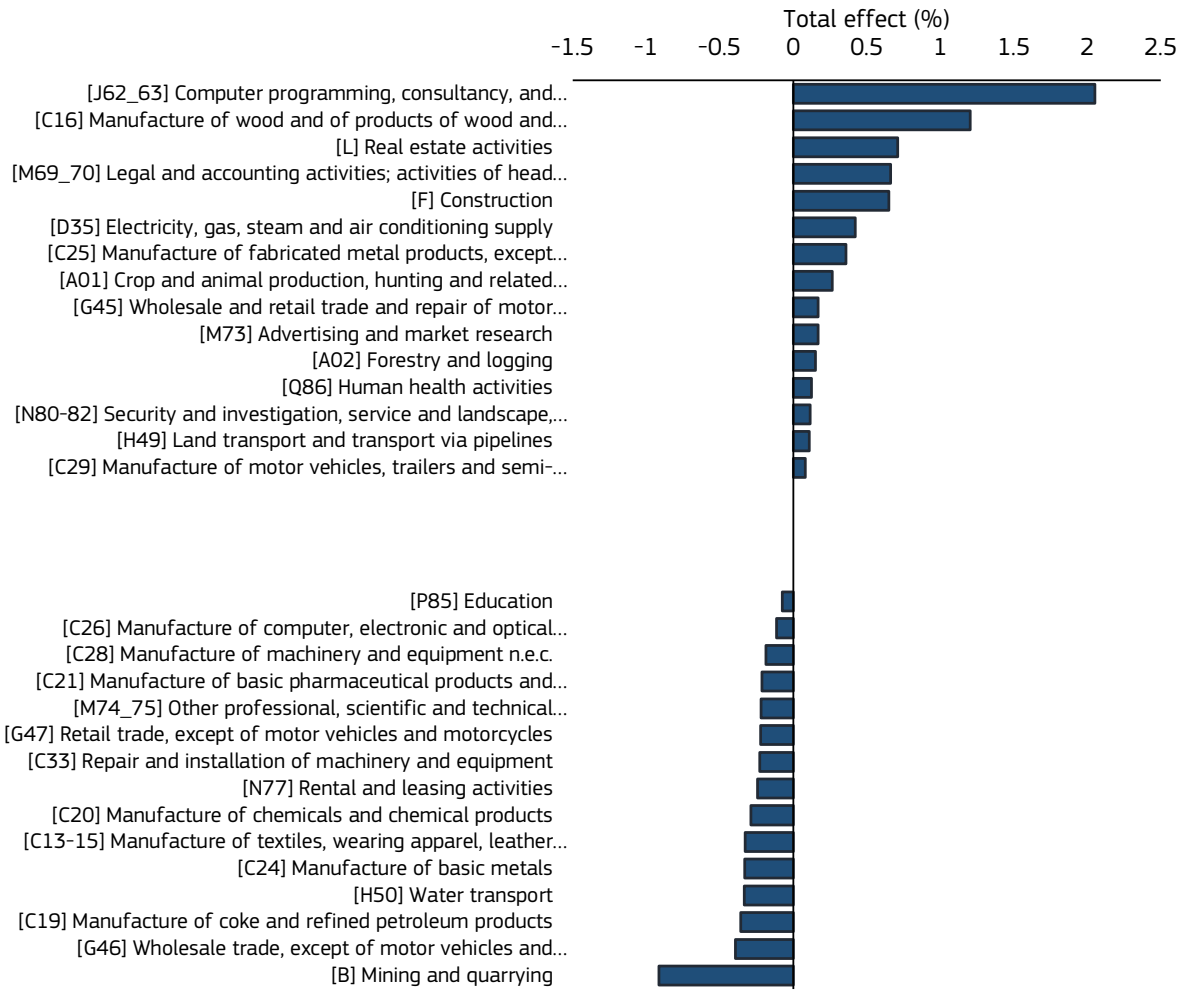


Source: European Commission own calculations on Eurostat FIGARO (2024 edition)

We can decompose the Total Effect for 2019-2022 in two ways. We can analyse (i) which producing industries and (ii) which foreign destinations contribute to Estonia's relative growth in value added absorbed in foreign demand compared with that of the world. We first consider contributions of individual industries in Graph A1.4. Positive contributions come, in the first place, from ICT services (J62_63) and manufacturing of wood (C16). These are important (export) industries for Estonia, for which it increased its value-added production destined for foreign demand (in all destinations) relatively more than the rest of the world. Mining (B) is the industry with the strongest negative contribution.

[25] The key takeaways of the analysis carried out in gross exports and value-added terms are aligned, as both pick up a positive contribution of the exporter performance (MSE) channel for Estonia over 2010-2022, as well as over 2019-2022. Yet, there is a discrepancy in the year-on-year developments in 2021-2022. The likely reason for this discrepancy is the greater sensitivity of market share developments in terms of gross exports to price fluctuations in sectors where Estonia's domestic value added may be relatively small. Specifically, as discussed in footnote [22] , growth in market share picked up in 2021-2022 in terms of gross exports hinges on the inclusion of sector 27 (mineral fuels) in the analysis. Yet, in value added terms, this industry plays a minor role (see Graph A1.4).

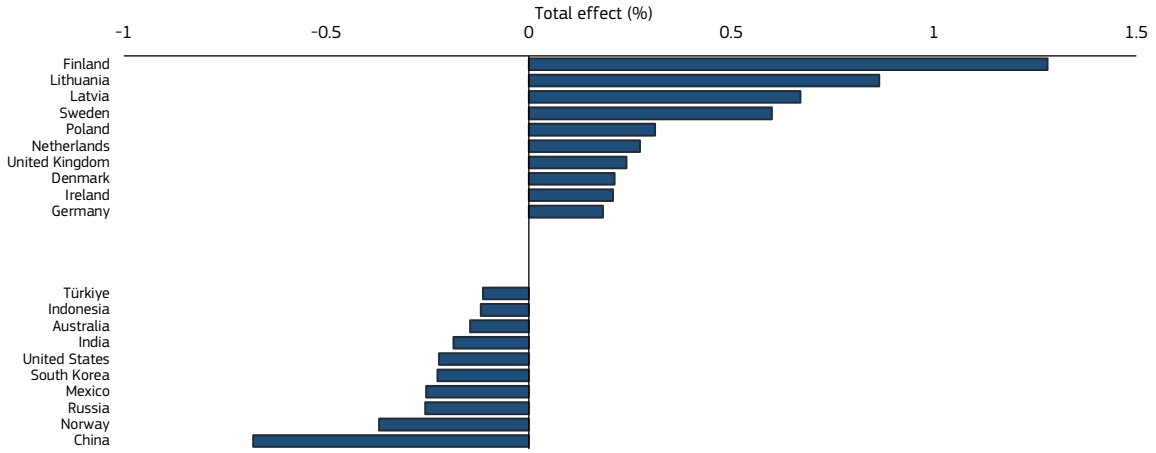
Graph A1.4: **Difference between growth in Estonian and world value added absorbed in foreign final demand for 2019-2022, top and bottom 15 industries**



Source: European Commission own calculations on Eurostat FIGARO (2024 edition)

Turning to individual destinations, we find that European destination markets, and particularly Estonia's neighbouring countries, contribute positively to Estonia's value-added market share growth (Graph A1.5). These are important export destinations for Estonia, to which it increased its value-added exports (across all producing industries) relatively more than the rest of the world. Negative contributions mainly come from non-European destinations (with the exception of Norway).

Graph A1.5: **Difference between growth in Estonian and world value added absorbed in foreign final demand for 2019-2022, top and bottom 10 destinations**

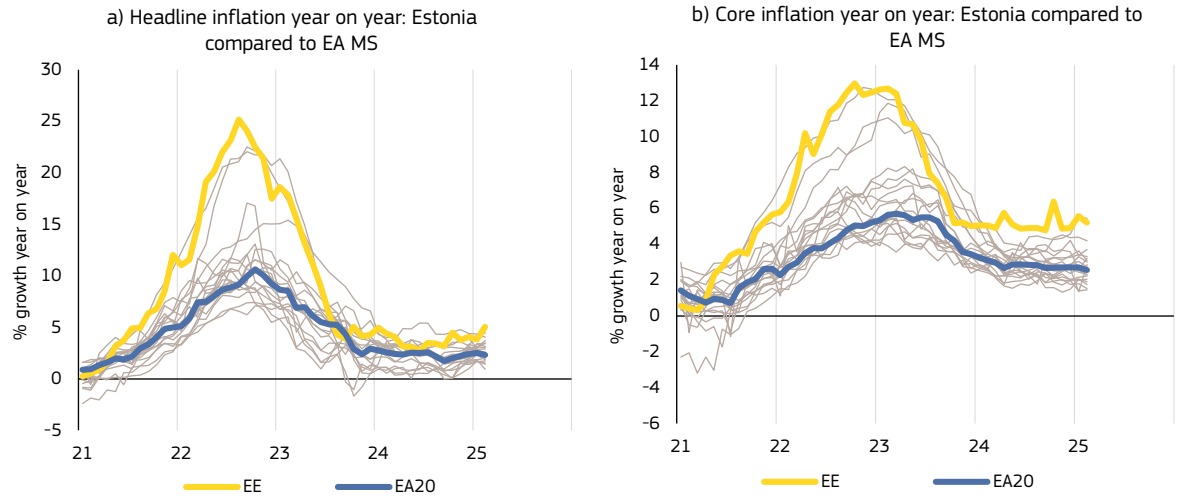


Source: European Commission own calculations on Eurostat FIGARO (2024 edition)

Inflationary pressures in Estonia have been strong and persistent in the past five years. The easing of COVID-19 restrictions in mid-2021 marked the beginning of significant inflationary pressures. From the onset, consumer price inflation in Estonia exceeded inflation in most euro area countries. The situation was further exacerbated by the surge in energy commodity prices triggered by Russia's aggression against Ukraine. Headline inflation in Estonia decelerated throughout 2023, but core inflation remained elevated. Consumer prices measured by the HICP increased by over 40% between 2019 and 2024. Cumulative core inflation was slightly more subdued, reaching approximately 30%. In the same period, the private consumption deflator rose by 35% (Graph A2.1).

At the beginning of 2025, Estonia continued to record positive inflation differentials against the euro area. In February, headline HICP inflation posted 5% in Estonia while it was 2.5% in the euro area. More importantly, core inflation in Estonia, at over 5% in February 2025, remained markedly above the euro area core inflation of 2.6% (Graph A2.1). The Commission's Autumn forecast expects inflation to slow but to remain slightly above the euro area, particularly core inflation, in 2025 and 2026 [26].

Graph A2.1: **Inflation evolution**

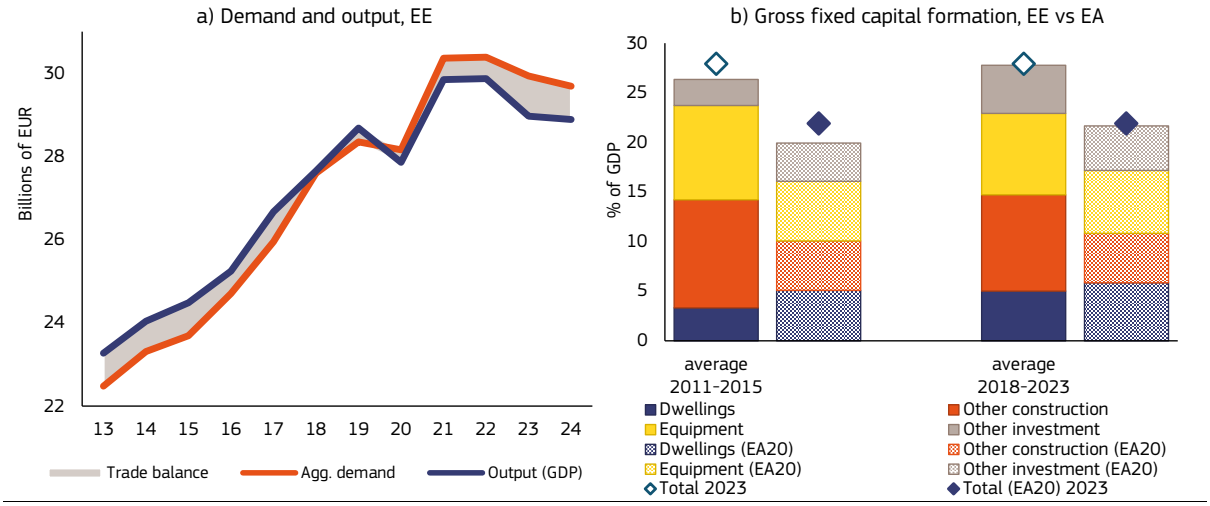


Source: Eurostat

Strong spending appetite among consumers contributed to a high-inflation environment. Although the inflation surge around the EU was largely associated with external factors, namely supply bottlenecks and energy price shocks, domestic demand likely strongly incited inflation in Estonia even though the level of real GDP in 2024 did not increase from its level in 2019 (Graph A2.2). In real terms, private consumption in 2024 was more than 7% above its 2019 level, albeit declining since 2022. Consumer spending greatly benefitted from the 2021 changes to the pension system, which allowed individuals to withdraw a large amount of funds from their pension accounts. Initially, the amount was in the ballpark of EUR 1.5 bln. Some 300 million were withdrawn in 2023 and 200 million in 2024. To finance their spending in a high inflation environment, households greatly reduced their saving rate compared to pre-2020 standards from an average over 9% of disposable income in the period 2012-2021 to 3% in 2022-2023. Gross fixed capital formation also increased substantially, by 10.5% in 2024 compared to 2019. Construction investment accounted for around half of the total investment (Graph A2.2).

[26] Commission Autumn 2024 Forecast (European Economy, Institutional Paper 296).

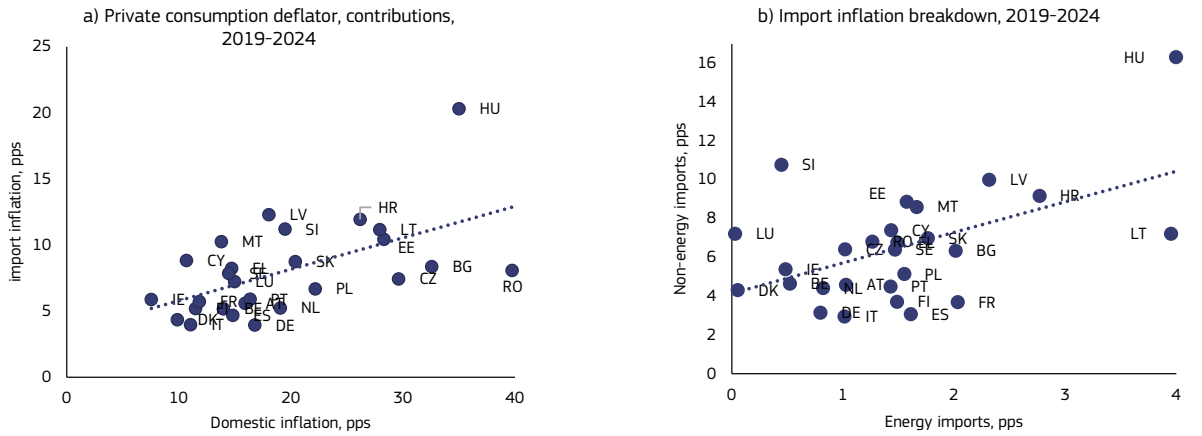
Graph A2.2: **Evolution of demand, output and investment composition**



Source: Eurostat.

External factors have contributed strongly, but domestic sources of inflation dominate. Non-energy imported inflation, which started to accelerate with the emergence of widespread supply bottlenecks in 2021, is estimated to have been a substantial factor driving consumption inflation in Estonia, accounting for nearly 9 pps of the total increase in the private consumption deflator between 2019 and 2024. The direct impact of imported energy inflation is estimated to have contributed relatively little, about 1.5 pps (Graph A2.3.b). Most of the inflation has a domestic origin, including through the increase in domestic energy prices which have led to strong profits in the energy production sector. The estimated contribution from domestic sources of inflation of over 25 pps, is the highest among euro area countries (Graph A2.3.a).

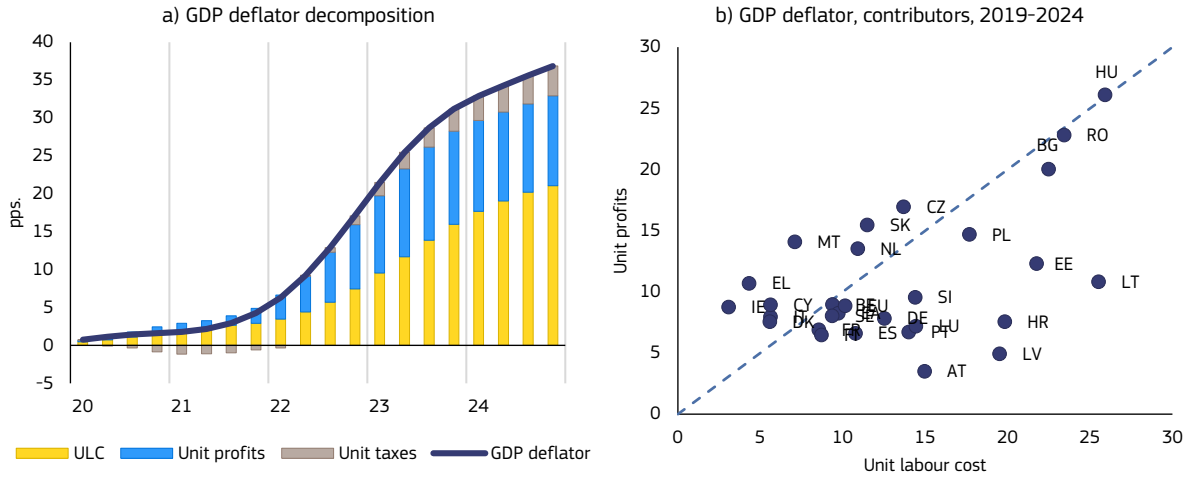
Graph A2.3: **Inflation breakdown**



(1) Note: Input-output tables are used to break down consumer inflation into contributions from several components: direct energy goods imports from outside the EU, non-energy goods imports, domestic labour cost, and domestic profits. In a first step, inflation shocks in all the components are constructed as actual inflation observed in value added, services and goods imports. In a second step, the Ghosh inverse allows to estimate the impact of these shocks on gross output. In a final step, the Leontief inverse is used to map the gross output changes onto final demand components, such as the private consumption deflator, which is presented in the charts. For further methodological details, see European Commission Institutional Paper (2025) – "Economic spillovers and financial linkages in the EU".
Source: Eurostat, European Commission.

Labour cost increases dominated among the domestic sources of inflation after 2022. The pass-through of the two major exogenous shocks of 2021 and 2022, namely the pandemic and energy price shocks, into wages and profits was fast and strong. The GDP deflator increased substantially. In 2024, it stood 38% above its 2019 level[27], with unit labour cost (ULC) contributing 21 pps, unit profits contributing almost 12 pps and the remaining part was due to tax impacts (Graph A2.4). Hence, labour cost growth was the major driver of domestic inflation. The strong increase in unit labour costs compared to unit profits is in a sharp contrast to the euro area where the two increased at about the same rate. Regional peers, namely Latvia and Lithuania, experienced similar developments as Estonia, however (Graph A2.4).

Graph A2.4: **Domestic inflation**



Source: Eurostat, European Commission.

Nominal wage growth has been considerable amid strong demand for labour throughout the period. Despite very weak economic activity in the past five years, demand for labour remained relatively strong and the labour market tight, evidenced by reported skill shortages. Some corrections may be in the pipeline, as employment typically reacts to changes in economic activity with a lag. A slight increase in the unemployment rate in 2024 points in that direction. Nevertheless, total employment in 2024 was more than 5% above its 2019 level. In the same period, nominal wages per employee increased by almost 39% (see Annex 3 for more details).

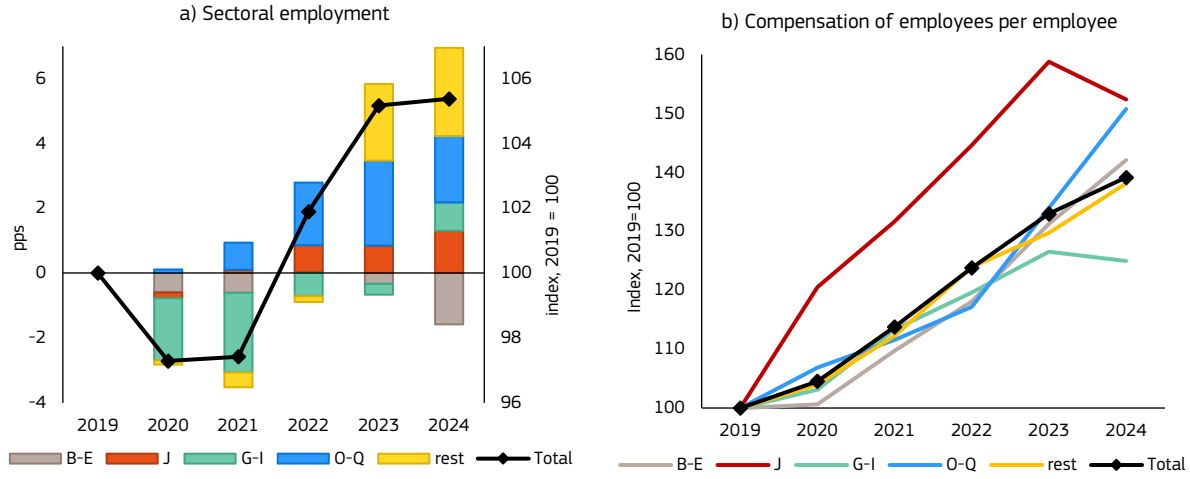
The two major sectors have adjusted their employment disproportionately less than their output losses while markedly increasing wages. Despite a hefty 20% drop in real output in 2024 compared to 2019, employment in industry (excluding construction) shrank by around 7.5%. Wholesale and retail increased its employment by over 3.5%, while its value added declined by nearly 8% in the same period. The average nominal wage increased substantially in both industries. It increased by 42% in industry and by 25% in wholesale and retail, which greatly increased the strain on their profitability given the sharp drops in output per employee. Survey data suggest that labour hoarding motives, likely related to skill shortages on a relatively tight Estonian labour market, may have contributed[28]. The indicator of labour hoarding has been elevated since the beginning of 2022 compared to earlier years across the major sectors. Other sectors fared very well; the information and communication sector in particular, with strong employment and output

[27] A four-quarter average of the deflator ending in 2024-Q3 compared to four quarters ending in 2019-Q3.

[28] The indicator is based on the question "How do you expect your firm's total employment to change over the next 3 months?" of European Commission's Business and Consumer Surveys.

gains, and steeply rising wages. In 2023, the sector of professional, scientific and technical activities also posted strong employment growth (Graph A2.5 a).

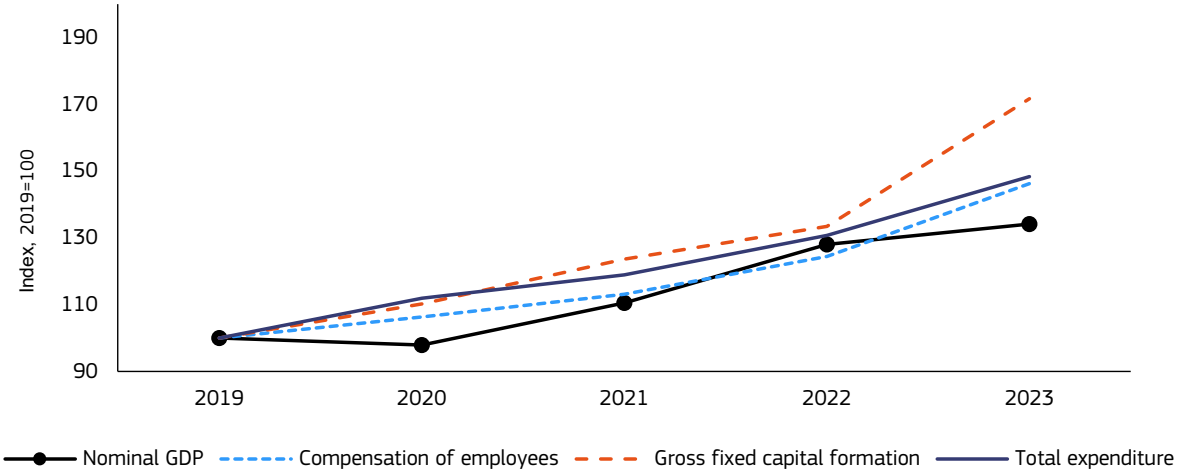
Graph A2.5: **Labour market developments**



(1) B-E: industry (except construction), G-I: wholesale and retail, J: information and communication, O-Q: public administration.
Source: Eurostat.

Throughout the high-inflation period, the public sector has taken several actions with an inflationary effect. A large inflation stimulus came with the changes to the pension system in late 2021 and in 2022 (see above). Also, the public sector has been by far the most significant actor on the labour market, particularly in 2023 and 2024. In 2023, the public sector created more than half of the net total increase in jobs compared to 2019 (Graph A2.5 a). By the end of 2024, total employment in the sector decreased somewhat, but its footprint in the labour market remained sizeable. At the same time, the average wage in the sector increased strongly. In 2024, the average wage was over 50% above its 2019 level (Graph A2.5 b). In addition, minimum wage growth exceeded the average wage growth in the past five years. The fiscal expansion was particularly strong in 2023 and likely in 2024 too, as all major components, namely compensation of employees, final consumption and gross fixed capital formation, increased at a rate sizeably above the nominal growth rate. Several tax hikes, mainly in VAT and excise duties, throughout the period, slowed the disinflation process.

Graph A2.6: **General government expenditure components and nominal GDP**

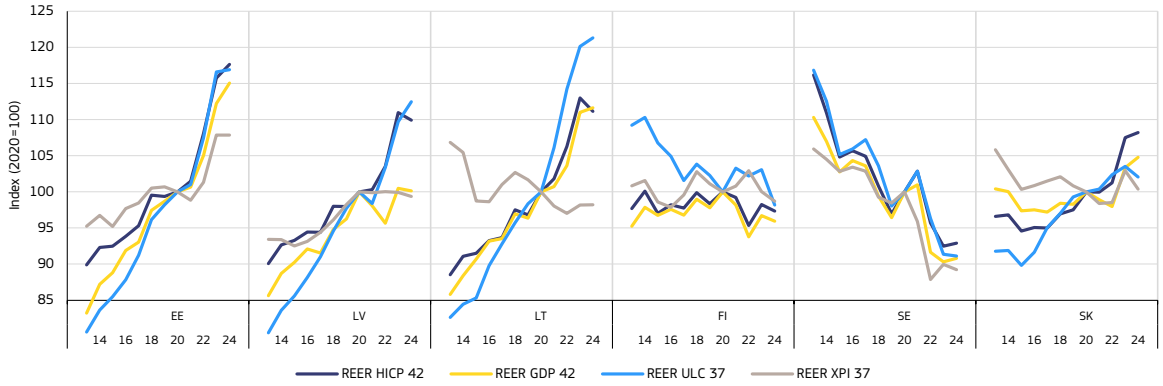


Source: Eurostat.

Overall, strong price and cost increases undermine the ability of the Estonian economy to compete on foreign markets. Real exchange rates (REER) have substantially appreciated since 2020 and outpaced appreciation rates in many economies in the region (Graph A2.7). Although real exchange rates, and particularly ULC-based ones, had been appreciating even before 2020, the past five years have witnessed a deteriorating economic performance, including export performance, compared to the last decade. The real exchange rate is estimated to be overvalued in various methodologies. According to the Commission's model, Estonia's real exchange rate is overvalued by 7%. The IMF's EBA-lite current account method implies an overvaluation of 3.9%, while the REER model implies an overvaluation of more than 20%[29]. In the absence of a nominal exchange rate channel for euro area countries, relative price adjustments need to undo the real appreciation. With inherent downward price rigidities, REER overvaluation may take time to resolve, particularly in an economy with a tight labour market. At the beginning of 2025, positive inflation differentials against the euro area persist and are set to contribute to further real appreciations. The flexibility of the labour market may act as a mitigating factor (see Annex 3). This could contribute to a gradual dilution of the accumulated price and cost competitiveness losses in case of moderate developments in the labour market and the absence of inflationary policies.

[29] See IMF Country Report No. 24/177 and Coutinho et al (2021), Methodologies for the Assessment of Real Effective Exchange Rates, European Economy discussion paper No. 149

Graph A2.7: **Real exchange rates**



(1) REER HICP 42 - HICP-deflated exchange rates based on 42 trade partners, REER GDP 42 - GDP-deflated exchange rates based on 42 trade partners, REER ULC 37 - ULC-deflated exchange rates based on 37 trade partners, REER XPI 37 - REER based on 37 trade partners deflated by export prices.
Source: European Commission, Eurostat.

ANNEX 3 - LABOUR MARKET AND WAGE-SETTING DEVELOPMENTS

The Estonian labour market is characterised by a high degree of institutional flexibility, which facilitates adjustment to economic shocks. There is a wide spectrum of institutional tools available in Estonia that, in principle, should facilitate labour market-based adjustment through wages and labour (see Box A3.1). This chapter examines broad trends in Estonia's labour market, focusing on the market's capacity to adjust to economic shocks.

Box A3.1: **Key institutional features of Estonia's labour market contributing to smoother adjustment**

Ease of hiring and firing: In 2009, Estonia's employment protection was reformed to increase labour market flexibility and reduce dismissal costs for employers. Key changes included easier dismissal procedures by reducing the term of advance notice for terminating an employment contract; a reduced financial burden of lay-off compensations on employers by providing for a shared financial burden between the employer and the Estonian Unemployment Insurance Fund for employment relationship of 5 years or longer; and increased use of flexible contracts, notably with respect to reduced working time[(1)]. This flexibility has promoted dynamic labour demand and has been complemented by measures for improving the social security provisions (increased unemployment insurance premiums and more generous benefits) and increased financing for active labour market policies using EU funds. Recently, duration of the unemployment insurance benefit was extended depending on the labour market situation, and the extension of coverage to include part-time workers and the self-employed is to be proposed in 2025, facilitating economic adjustment.

Tax policy conducive to employment: While Estonia's tax wedge for the average single worker is slightly above the OECD average (39.4% vs. 34.8%)[(2)], the net average tax rate is lower (18.9% vs. 24.9% for the OECD average in 2023). This results in higher take-home pay for Estonian workers. The net average tax rate for married workers with two children is among the lowest in the OECD, further enhancing take-home pay.

Flexible wage determination: Estonia has one of the lowest union density rates in the EU, at 6% in 2019, and the estimated share of employees with the right to bargain at 19.1% in 2021[(3)]. In theory, decentralised wage bargaining and liberal employment protection should result in strong competition among both workers and employers, ideally leading to macroeconomically stable outcomes in terms of wages and unemployment.[(7)]

Comprehensive and targeted support to jobseekers, workers and employers: Since the early 2000s, Estonia has relied on active labour market policies to smoothen labour market transitions that come with flexibility. According to OECD[(8)], the Public Employment Service provides effective measures addressing the individual needs of the clients and cooperates pro-actively with a wide range of stakeholders. In 2023, labour market policy interventions accounted for over 1.1% of GDP[(9)].

Regular minimum wage increases: Negotiated by social partners and established by government regulation, minimum wages are adjusted regularly to maintain purchasing power. A goodwill agreement between social partners in 2023 set targets for minimum wage increases until 2027, aiming for the minimum wage to reach 50% of the average wage. This would still be among the lowest in the EU in purchasing power per month, and in the lower half of the EU minimum wages expressed both in euro and as a share of median gross earnings[(10)]. In accordance with the agreement, the minimum wage increased by 13% in 2024, and by 8% in 2025.

(1) See Levasseur, S. (2011) Labour market adjustments in Estonia during the global crisis. OFCE Document de travail, 2011-25.
(2) OECD "Taxing Wages 2024" https://www.oecd.org/tax/taxing-wages/
(3) See OECD/AIAS database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts (580070-collective-bargaining-database-Estonia.pdf) and Collective bargaining coverage (methodological note).
(7) See Lubenets, N. and M. Maivali (2007), "Managed vs free wage-setting in Finland and Estonia: optimising outcomes", ECFIN Country Focus, Vol. IV, Issue 10, Country Focus wage setting in FI and EE
(8) "Connecting people with jobs: Improving the provision of active labour market policies in Estonia", Improving the Provision of Active Labour Market Policies in Estonia | OECD
(9) Statistics | Employment, Social Affairs & Inclusion | European Commission
(10) See the full available Eurostat data set on minimum wages: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Minimum_wage_statistics

The labour market helped the economy adjust to and recover from the global financial crisis of 2008-2010[30]. During these years, the minimum monthly wage was frozen, and some cuts were implemented to public sector wages, steering the correction in nominal unit labour costs economy-wide[31]. In 2010, the unemployment rate spiked to almost 17% due to lay-offs, while changes in hours worked due to part-time working or unpaid holidays protected employment, especially earlier in the crisis. Adjustment through hours worked also ensured that the demand for labour was quickly met as the economic situation improved[32] (see Table A3.1).

Developments over the post-crisis years have shown that Estonia had strong labour market fundamentals. All labour market indicators showed the labour market's responsiveness to GDP growth. Notably, in 2019 after several years of strong GDP growth, the unemployment rate reached a historical low of 4.5%, while both the labour force and the participation rate increased.

Table A3.1: **Labour market headline indicators**

	2010	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*	*2020*	*2021*	*2022*	*2023*
Labour force participation rate (Y15-64), %	74.6	75.2	75.6	75.8	75.9	77.0	77.9	79.2	79.3	79.2	79.6	79.1	81.2	81.6
Employment rate (Y15-64), %	61.2	65.3	67.1	68.5	69.6	71.4	71.8	73.7	74.4	74.8	73.2	74.0	76.4	76.2
Unemployment rate (Y15-74), %	16.6	12.3	9.9	8.6	7.3	6.4	6.8	5.8	5.4	4.5	6.9	6.2	5.6	6.4
Annual hours worked per employed person (% share of EA20)	117	120	119	118	118	118	118	118	114	113	117	112	109	109
Share of part-time workers over total employment (Y20-64), %	9.5	9.1	8.9	8.6	8.1	9.0	9.3	9.2	10.4	10.8	11.7	11.8	12.6	13.0
Share of employees in total employment based on persons, %	91.4	91.2	90.9	90.8	90.7	90.6	90.3	89.8	89.3	89.4	89.2	89.3	89.1	88.5

Source: Eurostat.

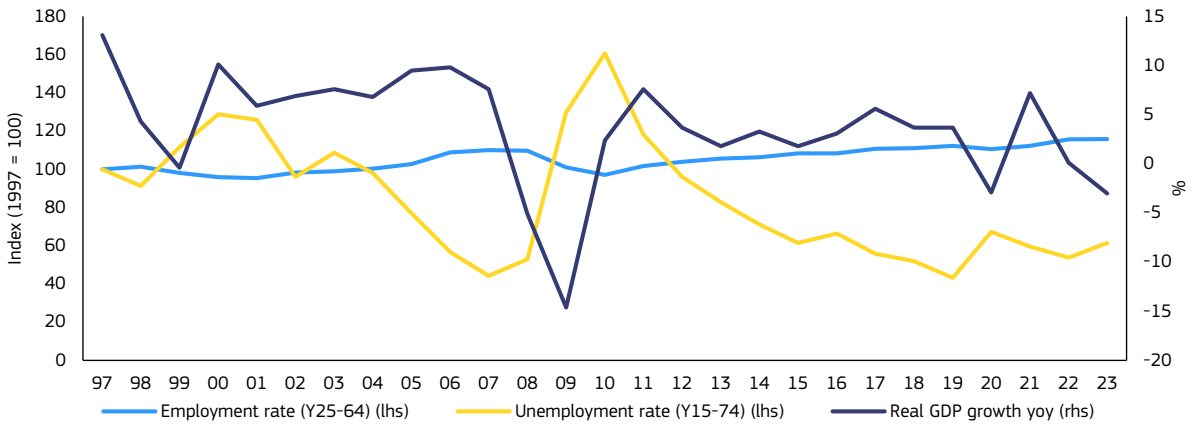
Estonia's labour market response to the recent economic downturn (since 2022) has differed markedly from its dynamic adjustment a decade earlier. Labour market participation and employment reached historic highs in 2023, partly due to the influx of Ukrainian refugees, which expanded the working-age population and boosted employment. This contrasts sharply with the financial crisis period, when employment losses nearly matched the GDP contraction. While the unemployment rate rose to 7.6% in 2024—above the EU average—it remained relatively low given the prolonged recession, especially compared to the 2010 peak (see Graph A3.1). Similarly, average hours worked per employee have remained broadly stable during the recent downturn, exceeding the euro area average. Against this background, the nominal wage increase of 40% over 2019-2023 has resulted in rising labour costs for companies, putting a strain on their ability to absorb shocks and compete on foreign markets (see Chapter 2).

[30] See, for instance, Malk, L (2015), "Labour Cost Adjustment in Estonia During and After the Crisis", Bank of Estonia Occasional Paper Series, 1/2015.

[31] Levasseur, S (2011) "Labour market adjustments in Estonia during the global crisis", OFCE Documents de Travail, 2011-25.

[32] Dabusinskas, A. and T. Rõõm (2011), "Survey evidence on wage and price setting in Estonia", Bank of Estonia Working Paper 6/2011.

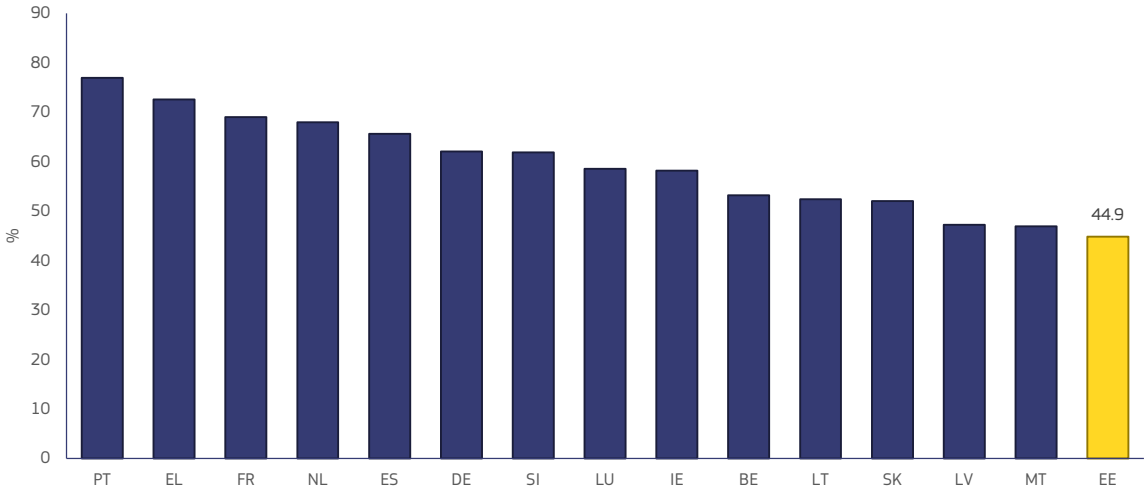
Graph A3.1: **Labour market developments against real GDP growth**



Source: Eurostat.

Estonia's statutory minimum wage increased by 25% since 2022, possibly contributing to wage increases for low-wage earners. In 2023, a goodwill agreement concluded between social partners set targets for the minimum wage, increasing its share of the average wage until 2027, when it should reach the indicative value of 50% of the average wage referenced in the EU directive[33] (Graph A3.2). This means that the minimum wage would increase roughly by 5 percentage points on top of any increase in average wage in both 2026 and 2027. Still, social partners continue meeting annually in autumn to discuss the minimum wage on the basis of the economic outlook and unemployment indicators for the following year. According to the Tax and Customs Board, less than 8% of full-time employees earned the minimum wage or a wage up to 10% above the minimum wage in 2024[34].

Graph A3.2: **Minimum wages as a proportion of median earnings, 2022**



Source: Eurostat (earn_mw_cur, earn_ses_monthly).

(33) Directive (EU) 2022/2041 of the European Parliament and of the Council of 19 October 2022 on adequate minimum wages in the European Union.

(34) https://news.err.ee/1609555987/estonia-s-monthly-minimum-wage-increasing-to-886-in-2025.

Changes in the minimum wage are transparent and easy to take into account in economic decisions. The minimum wages are known by the time when many contracts are negotiated (January and the following months), making them an important institutional measure affecting wages and employment in the absence of collective bargaining. Moreover, minimum wage is a reference for a number of social benefits (e.g. unemployment allowance, shared parental benefit), and for many fees and prices that are indexed to the minimum wage such as kindergarten fees and traffic fines. In this way, changes in the minimum wage become very visible and in some way may affect the spending and wage expectations, especially of the low-wage earners[35].

Skills shortages and mismatch hinder Estonia's labour market. Although Estonia has a well-educated population[36] and a high employment rate, the labour market has been marked by a structural skills mismatch and labour shortages. Almost 40% of workers are over- or underqualified, and a lack of skilled staff has been a long-standing obstacle to investment[37]. The development of new industries such as green and digital technologies and digital services has increased demand for workers with specialised, management and organisational skills, while shortages of skilled workers also remain present in many traditional sectors, most notably in education and healthcare.

Estonia's flexible labour market and persistent skills shortages may have led to continuous upward pressure on wages in several sectors. When specific skills are in high demand but short supply, employers must compete to attract qualified workers. In a flexible labour market where wages are more responsive to market forces, this competition translates directly into upward pressure on wages. Employers are willing to offer higher salaries and benefits to secure the limited pool of talent, driving up the overall wage level for those in-demand skills. Workers (for instance, in the ICT sector[38]) may be less inclined to invest in acquiring new skills if they perceive that their current skills are in high demand and can command a premium wage. This dynamic can create a cycle where the skills shortages become a drag on competitiveness. The data for wage growth in 2024 shows that there may be problems with the matching between the supply and demand for skilled labour, leading to increased wage premium on skills[39].

Despite demonstrating resilience and dynamism in certain sectors, Estonia faces significant challenges in closing the labour productivity gap with the euro area. Analysis of gross value added per hour worked and per employee reveals that Estonia lags behind the euro area, highlighting the need for broad-based productivity improvements (see Graph A3.3). Some activities (professional and scientific services; administrative and support services, and to a lesser extent, information and communication and financial services) show labour productivity levels close to the euro area average. Still, most sectors, especially manufacturing, energy, public administration and defence, and education, have labour productivity substantially below the euro area average. Furthermore, between 2019 and 2023, only five sectors out of 18 (see Graph A3.4) had seen a labour productivity increase, while half of the sectors had widened the labour productivity gap with the euro area average, particularly so agriculture, forestry and fishing, water supply, and financial services.

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(35) For comprehensive discussion, see Ferraro, S., J. Meriküll and K. Staehr (2018) Minimum wages and the wage distribution in Estonia. Applied Economics, 2018, Vol. 50, No. 49, 5253–5268.

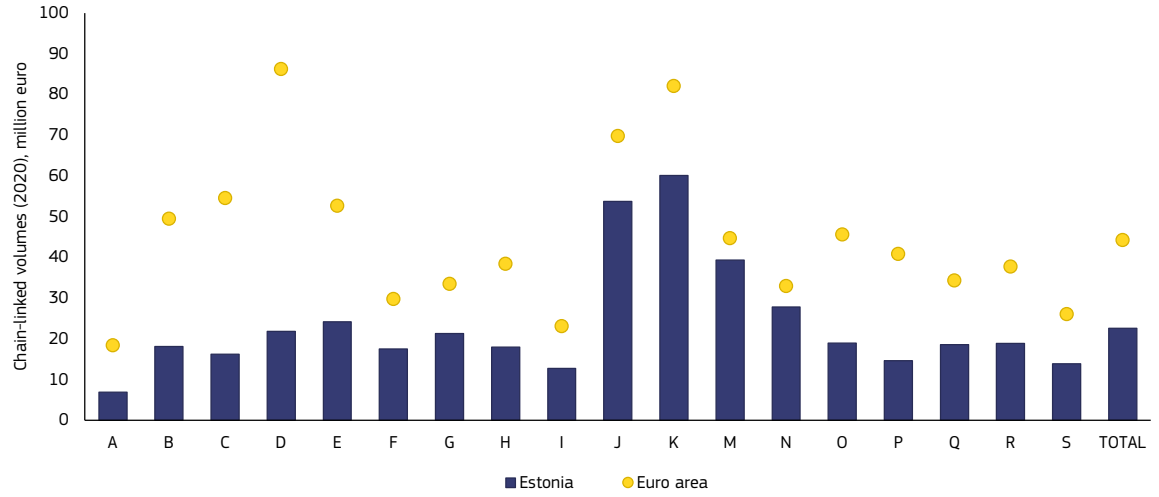
(36) According to Eurostat data, in Estonia, proportion of the working-age population holding tertiary education degrees was 40.8% in 2023, compared to 33.3% in the euro area.

(37) See the 2024 European Semester Country report (2024 European Semester: Country Reports - European Commission) and in the OECD Economic Survey of Estonia (OECD Economic Surveys: Estonia 2024 | OECD) .

(38) See, Pedaste, M et al. (2017) What Happens to IT Educations? The Case in Estonia with Some Recommendations for International Discussion. International Journal of Information and Education Technology, Vol. 7, No. 3, March 2017

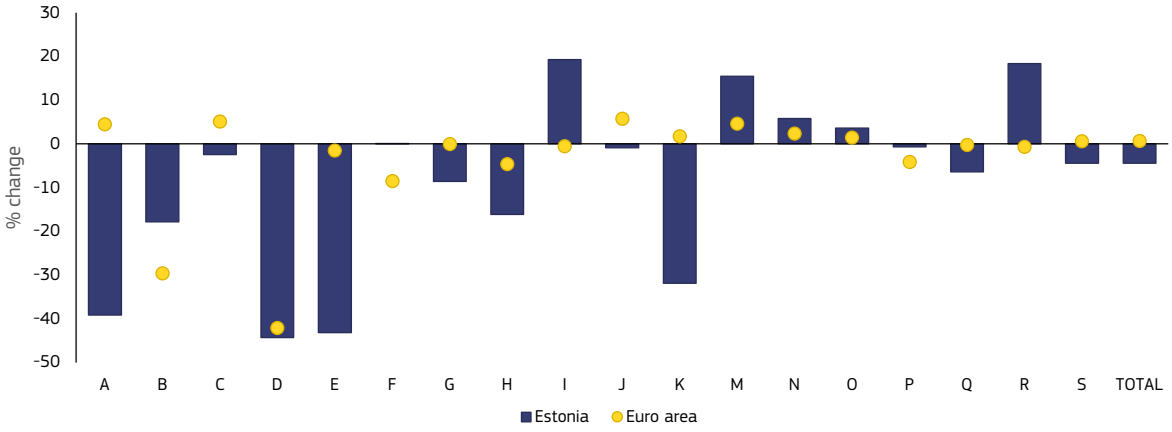
(39) Wages rose faster but demand for labour remains weak | Press releases | Eesti Pank.

Graph A3.3: **Gross value added per employee in 2023, NACE activities**



(1) (1) Real estate activities (L), Activities of households as employers (T), Activities of extraterritorial organisations are excluded (U).
(2) Sector codes: A Agriculture; B Mining; C Manufacturing; D Energy; E Water supply; F Construction; G Wholesale and retail trade; H Transport; I Accommodation and food services; J Information and communication; K Financial services; M Professional and scientific services; N Administrative and support services; O Public administration and defence; P Education; Q Health services; R Arts and entertainment; S Other services.
Source: Eurostat, NAMA_10_A64, NAMA_10_A64_E.

Graph A3.4: **Growth in productivity in NACE activities, 2019-2023**

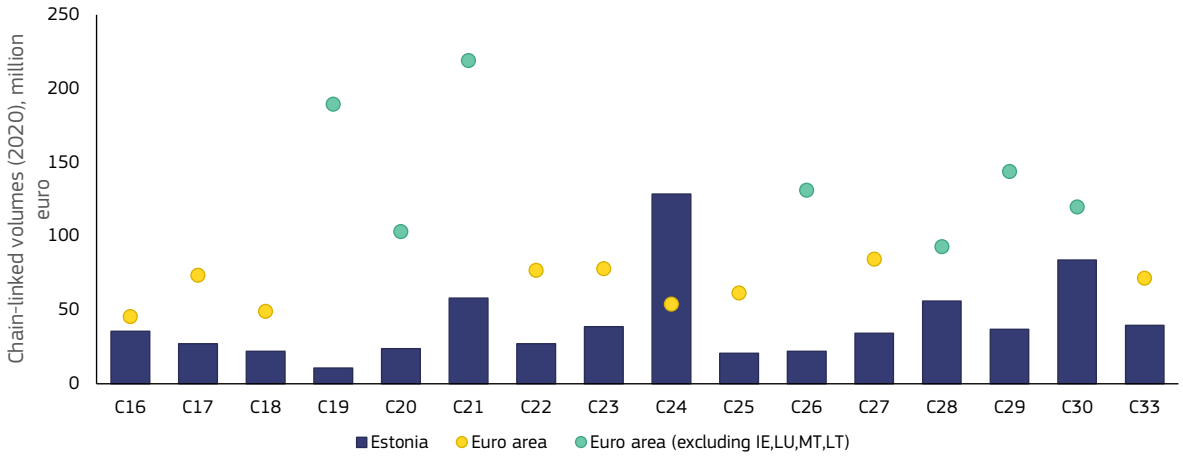


(1) (1) Real estate activities (L), Activities of households as employers (T), Activities of extraterritorial organisations are excluded (U).
(2) Sector codes: A Agriculture; B Mining; C Manufacturing; D Energy; E Water supply; F Construction; G Wholesale and retail trade; H Transport; I Accommodation and food services; J Information and communication; K Financial services; M Professional and scientific services; N Administrative and support services; O Public administration and defence; P Education; Q Health services; R Arts and entertainment; S Other services.
Source: Eurostat, NAMA_10_A64, NAMA_10_A64_E.

Looking more closely into the manufacturing industries, some stand out as being more productive than in the euro area on average. Most notably, labour productivity in basic metals industry was higher than in the euro area on average in 2022, and it was close to the euro area average in wood manufacturing. Combining this with data on labour productivity growth in 2019-2022, three industries stand out in Estonia compared to the euro area averages in terms of robust growth: basic pharmaceutical products, other transport equipment, and electrical equipment (see Graphs A3.5 and A3.6).

This analysis can be refined considering industry's shares in total production. Wood and wood products was the largest manufacturing industry in 2023 with a share of 18% in total manufacturing gross value added and 2.5% of gross value added for the whole economy. While this industry's share in gross value-added volume decreased in 2019-2023, it's share in manufacturing increased slightly over the same period. The next largest manufacturing industries are fabricated metal products (10% share in 2023) and repair of machinery (9%). Basic pharmaceutical products and other transport equipment, whose shares of value added in manufacturing are 1% and 2%, respectively, are industries with high growth potential, as labour productivity in those industries expanded the most compared to the euro area average (2019-2022). As discussed in Annex 1, Estonia's share in global export markets for manufactured goods declined somewhat between 2022 and 2023. However, Estonia appears to have retained its competitive position in its most important export industry (wood and wood products): for these products, it increased its global market penetration over 2022-2023.

Graph A3.5: **Gross value added per employee in 2022, manufacturing activities**



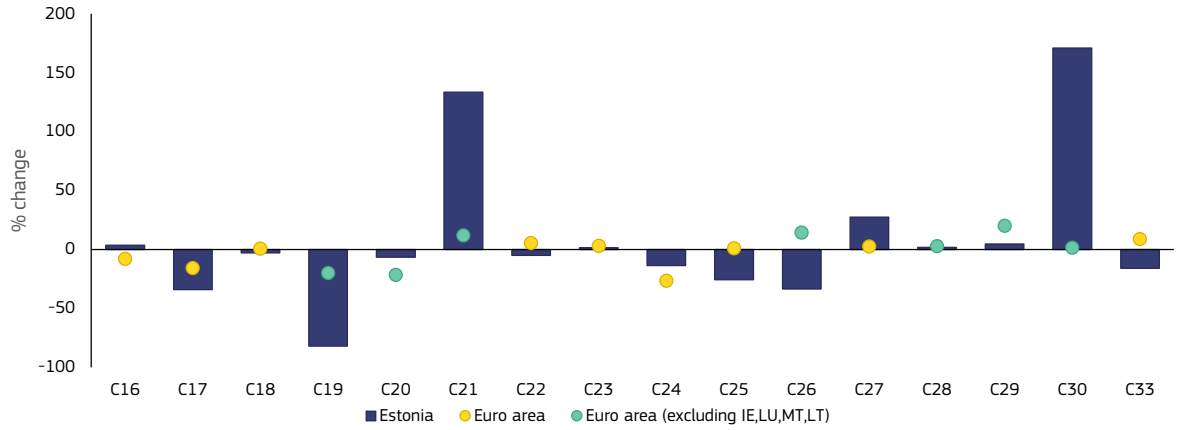
(1) Euro area average per industry (excluding IE, LU, MT, LT) is calculated as a simple arithmetical average across all countries.
(2) Sector codes: C16 Wood; C17 Paper; C18 Printing; C19 Refined petroleum; C20 Chemicals; C21 Pharmaceuticals; C22 Rubber and plastic; C23 Mineral products; C24 Basic metals; C25 Fabricated metal products; C26 Computers, electronics; C27 Electrical equipment; C28 Machinery; C29 Motor vehicles; C30 Other transport equipment; C33 Repair of machinery.
Source: Eurostat, European Commission staff calculations.

Recent data show that the labour market is adjusting in response to the economic recession. As reported by Statistics Estonia[40], numbers of persons employed and unemployed increased in 2024, reflecting a rise in the population at working age and in the activity rate. Still, the unemployment rate increased markedly in early 2024, by 1.2 percentage points year-on-year to 7.6%, while stabilising in the second half of the year. At the same time, the employment rate was slightly (0.3 percentage points) below its level in 2023, at 68.9% (for the age group 15 to 74). Still, in absolute terms, employment increased, especially among women in the age group of 65+, while it dropped among men. According to the Bank of Estonia's Labour market review[41], the number of part-time workers who would like to work more increased recently; their share in part-time employment doubled in 2024 compared to 2023, reaching 10%.

(40) The numbers of unemployed and employed persons both increased last year | Statistikaamet.

(41) Labour Market Review 2/2024 | Publications | Eesti Pank.

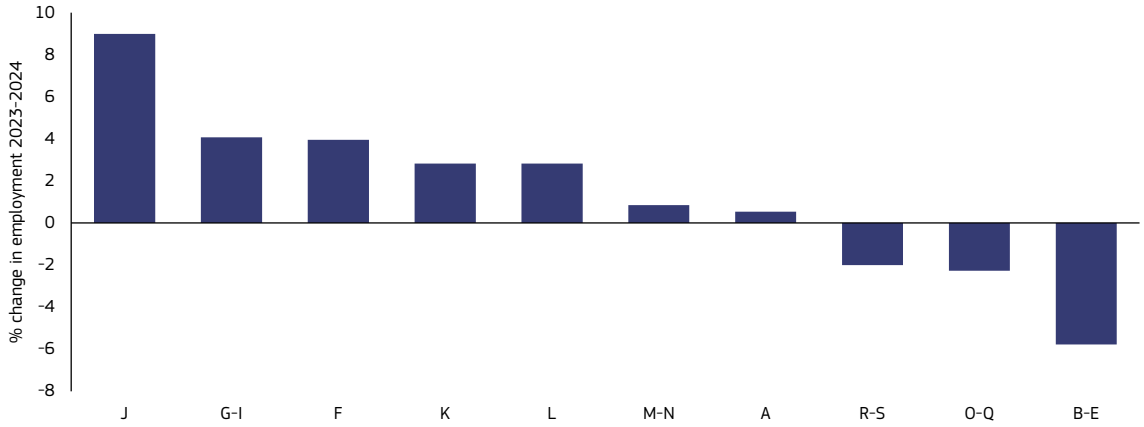
Graph A3.6: **Growth in productivity in manufacturing, 2019-2022, in Estonia and in the euro area**



(1) Euro area average per industry (excluding IE, LU, MT, LT) is calculated as a simple arithmetical average across all countries.
(2) Sector codes: C16 Wood; C17 Paper; C18 Printing; C19 Refined petroleum; C20 Chemicals; C21 Pharmaceuticals; C22 Rubber and plastic; C23 Mineral products; C24 Basic metals; C25 Fabricated metal products; C26 Computers, electronics; C27 Electrical equipment; C28 Machinery; C29 Motor vehicles; C30 Other transport equipment; C33 Repair of machinery.
Source: Eurostat, European Commission staff calculations.

Sectoral data support the perception that the labour market is adjusting, albeit with a lag. In 2024, employment increased in agriculture, accommodation and food service, utilities, and information and communication, but declined in public administration. Employment dropped in manufacturing, coinciding with approximately a 20% decline in manufacturing production (see Graph A3.7). The number of employees dropped significantly in key industries in which production fell, such as wood processing, metal and non-metal mineral production, textiles, and lately, also in computer, electronics, and optic device production. Employment was up in the manufacture of food products and manufacture of electrical equipment.

Graph A3.7: **Change in sectoral employment in % (based on persons) from 2023 to 2024**



(1) A Agriculture; B-E Industry (except construction); G-I Wholesale and retail; J Information and communication; K Financial activities; L Real estate activities; M-N Professional and administrative activities; O-Q Public administration; R-S Arts and other activities.
Source: Statistics Estonia.

In 2024, nominal wage growth moderated somewhat compared to 2023. According to Statistics Estonia[42], in 2024, the average monthly gross wages and salaries stood at €1,981, and the median was €1,628. This means that wage growth has moderated since 2023, from over 11% to 8% year-on-year. While in 2023 the high wage growth was mainly driven by the public sector, where wages of teachers, medical personnel, and internal security and defence staff increased, in 2024, those categories of employees had much smaller wage increases. Instead, wages at the lower end of the distribution caught up, not least due to the increased minimum wage[43]. In absolute terms, wages increased the most in human health and social work activities (11.9%) and in other service activities (9.8%).

Wage growth had picked up in the fourth quarter of 2024. Wage growth may have picked up due to anticipation of an income tax increase, which happened in January 2025. Some of the wages, bonuses and holiday pay that would otherwise have been paid in January may have been shifted to the end of December. Moreover, the Bank of Estonia relates the wage increase to the fact that economic growth seems to have picked up in the last quarter (by 1.2%), probably leading to higher demand for labour and higher wage premia[44]. Notably, in line with the signs of recovery, wages grew in manufacturing.

Overall, Estonia's labour market appears to have maintained sound fundamentals, which, in theory, should support economic adjustment and recovery. Both participation and employment have remained high, and there are signs of labour reallocation in response to changing demand, notably in manufacturing industries. Nominal wage growth has moderated, but has remained quite high. The combination of strong cumulated wage growth and faltering productivity between 2019 and 2024 presents a challenge to Estonia's cost competitiveness, creating difficulties for many sectors.

(42) Average wages and salaries rose by 8.1% last year | Statistikaamet.

(43) This would be in line with the effect suggested in literature. See, for instance, Autor, D., Manning, A., & Smith, C. L. (2016). The contribution of the minimum wage to the US wage structure. Journal of Labor Economics, 34(3), 747-792., and Burauel, P., et al. (2020). The German minimum wage: A complex evaluation. Journal of Economic Inequality, 18, 1-26.

(44) Wages rose faster but demand for labour remains weak | Press releases | Eesti Pank.

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