



EUROSÜSTEEM

LABOUR MARKET REVIEW

1/2022

The labour market review by experts from Eesti Pank covers developments in the supply and demand of labour in Estonia, and the cost of it in wages. The central bank observes the labour market for two reasons. Firstly, labour is an important production input, as a change in the supply or activity of labour can directly affect potential growth. Secondly, events in the labour market can have a major impact on inflation. As the euro area monetary policy targets price stability, and the Estonian economy is very open, the economy adjusts to changes principally through the prices and volumes of production inputs. For this reason it is necessary for the labour market to be flexible and for wage rises to correspond to productivity growth, as otherwise the increase in production costs could lead to excessive inflation.

CONTENTS

SUMMARY	4
DEMAND FOR LABOUR.....	5
Employment.....	5
Vacancies	10
Unemployment.....	13
LABOUR SUPPLY.....	17
Box 1: Who has a greater probability of being inactive in the labour market now than before the pandemic?...19	
Box 2: Refugees from Ukraine in the Estonian labour market.....	20
AVERAGE WAGES.....	22
Box 3: The minimum wage in Estonia and other countries.....	26
Box 4. The contribution of structural changes in the Estonian economy to the growth in productivity.....	27

SUMMARY

This report was written and published during turbulent and very uncertain times. The invasion of Ukraine by Russia at the end of February is likely to have a wide-ranging and long-lasting impact on the Estonian economy and the labour market. The scale of this impact has not yet been felt and nor has it shown up in other data that were used in preparing this report. This report aims in consequence to map the position of the Estonian labour market before the war and to discuss how the war will affect the future trends in the labour market.

The recovery of the labour market from the Covid-19 pandemic picked up pace in the second half of 2021. The majority of the restrictions introduced to stop the spread of the virus were removed or eased during the summer and this led employment in the private sector to grow rapidly and broadly in the third quarter. New restrictions that started to apply in the autumn, including the requirement for proof of vaccination, did not deliver a major blow to the labour market. The labour force survey showed that employment in the fourth quarter was 1.5% lower than the average in the year before the pandemic, but the data from the Tax and Customs Board show the number receiving income from work to be the same as before the crisis hit.

There were notably fewer jobs in accommodation and food service than before the crisis, with the number down by around a fifth. The incomplete recovery of employment in this sector can be explained by the much lower number of foreign tourists visiting Estonia than in earlier years. At the same time there were several sectors, such as information and communications, public administration, and healthcare, where the number employed was clearly more than before the pandemic. Even though the labour force survey shows that the employment rate in Estonia was lower than before the crisis, it remains one of the highest in the European Union.

The strong recovery in the Estonian economy and the improved chances of finding paid work in Estonia caused the number of residents of Estonia working abroad to fall in the second half of 2021. Businesses also hired additional workers from outside Estonia to work alongside local residents. The number of current short-term registrations for work in Estonia returned to where it was before the pandemic, with the number working in manufacturing even higher than it was then.

Unemployment fell in the second half of 2021 in the labour force survey data and in registrations at Töötukassa, partly because of the recovery in employment and partly because the labour force participation rate fell. Unemployment fell particularly in Ida-Virumaa, but by less than the average among the young and among people with a background in the service sector. Although the number unemployed fell, it remained higher than before the pandemic, and this, together with labour shortages returning to where they were at the peak of earlier economic booms, indicates that the match between vacant jobs and available labour in the labour market has deteriorated.

The decline in the amount of available labour, the large proportion of companies wanting to hire additional staff, and the apparent shortage of suitable candidates for the jobs being created all put upward pressure on wages in the second half of 2021. Wages rose fastest in the private sector, especially in areas where wage growth had been slowed most sharply by the crisis in 2020, and where the rebound had been particularly strong in 2021. An exception was information and communications, where the setback caused by Covid-19 was very brief and employment has been increasing rapidly in recent years. Wages also rose fast in healthcare.

The payroll in the economy grew more slowly in the second half of 2021 than GDP did, and it was a smaller share of GDP than for several years before the pandemic. Wages grew more slowly than productivity. To some extent this is usual in the recovery from a crisis, as companies rebuild their shrunken profits. It also occurred partly because high inflation at the end of the year had not passed through into wages.

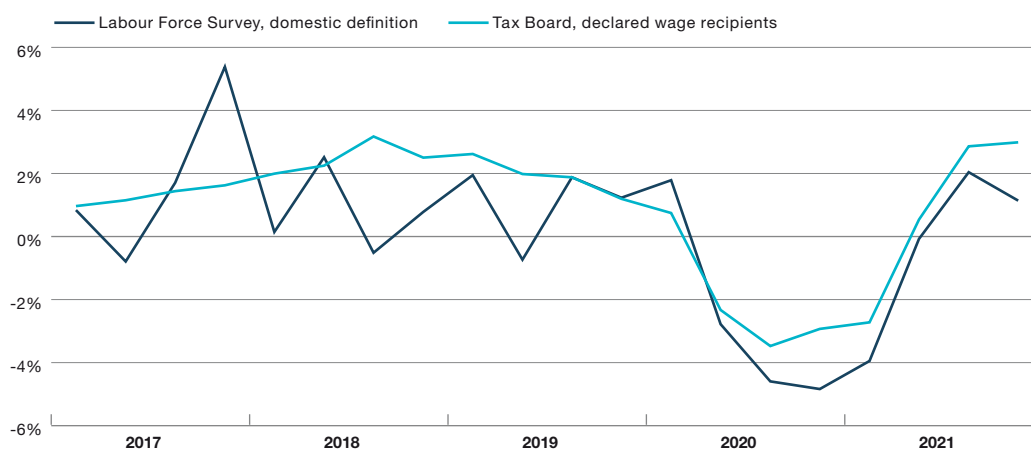
DEMAND FOR LABOUR

EMPLOYMENT

The labour market started to recover from the Covid-19 pandemic in the middle of 2021. The employment of Estonian residents increased, unemployment fell, and the number of short-term workers from third countries rose to its pre-pandemic level. Neither the rise in energy prices nor the tensions in the external environment had affected the labour market significantly by the end of the year.

The number of people employed started to rise again from the middle of 2021, having fallen for more than a year. The Tax and Customs Board reports that the number of people receiving a wage in the third and fourth quarters was around 3% higher than a year earlier, meaning some 16,100 people more on average during the two quarters than in the second quarter of 2020 (see Figure 1). The labour force survey also showed employment increasing at Estonian companies and institutions, though at a slower rate of 1.6%.

Figure 1. Change in employment in different data sources



Sources: Statistics Estonia, Tax and Customs Board, Eesti Pank calculations

Different sources give different information about how employment recovered after the crisis. The data from the Tax and Customs Board do not show any setback to employment from the restrictions in the first half of 2021, and the number receiving a declared wage in the fourth quarter was the same as in the fourth quarter of 2019 before the pandemic (see Figure 2). The labour force survey indicates though that the number employed at the end of 2021 was some 1.5% lower than the average number for 2019.

Figur 2. Level of employment, 2019 = 100%



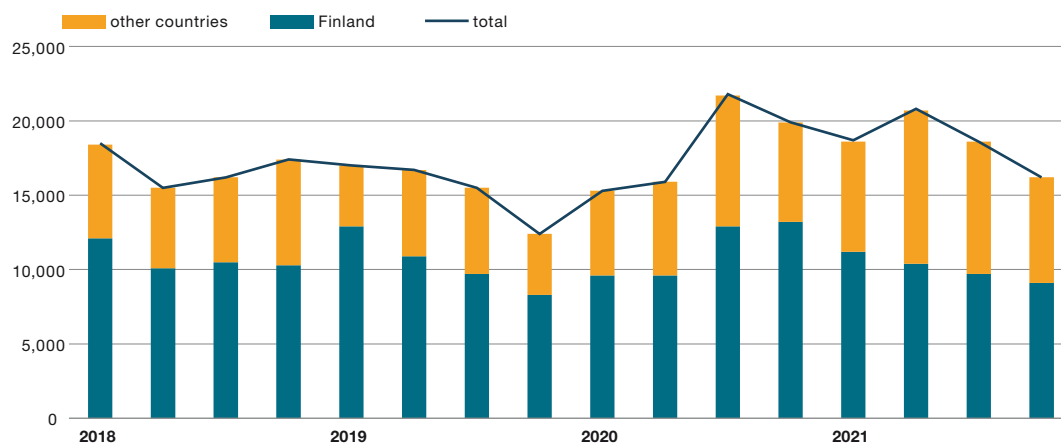
Sources: Statistics Estonia, Tax and Customs Board, Eesti Pank calculations

There are several possible reasons for the discrepancy, including differences in methodologies. The confidence bounds for the point estimates found by the labour force survey are quite wide, and its estimate of the recovery of employment is affected by the extraordinarily high level of employment in the second half of 2019, which was higher than that found in other data sources. Equally, the estimate of employment in the labour force survey does not take account of workers who are not permanent residents of Estonia in the census, meaning they spend or plan to spend less than 12 months in the country.

The labour force survey, which is based on a sample survey, finds that growth in the number of non-waged workers, who are people working as a private company, contributed substantially to the growth in employment in the second half of 2021, so the recovery in the number of waged workers in Estonian businesses was less than that in total employment. The number earning a wage at Estonian companies in the data from the labour force survey was only on average 8900 higher in the second half of last year than a year earlier, and the survey found there were still around 22,000 fewer waged employees at Estonian companies in the fourth quarter than there were in the fourth quarter of 2019, before the pandemic.

The number of permanent residents of Estonia working abroad leapt up in the second half of 2020. The Estonian economy started to recover very rapidly in the second half of 2021 from the economic crisis that accompanied the Covid-19 pandemic, and the number of permanent residents of Estonia working abroad fell at the same time (see Figure 3). However, the number of Estonian residents working abroad was still higher than it was before the pandemic. If an Estonian resident working abroad returns to Estonia to work, the number of Estonian residents in employment does not change though the number employed by companies in Estonia rises. Total employment of residents of Estonia rose in consequence more slowly in the second half of 2021 than employment at companies in Estonia, as it was only about 5500 waged employees higher in the half year than at the same time in the previous year.

Figure 3. Number of Estonian residents working abroad, thousands

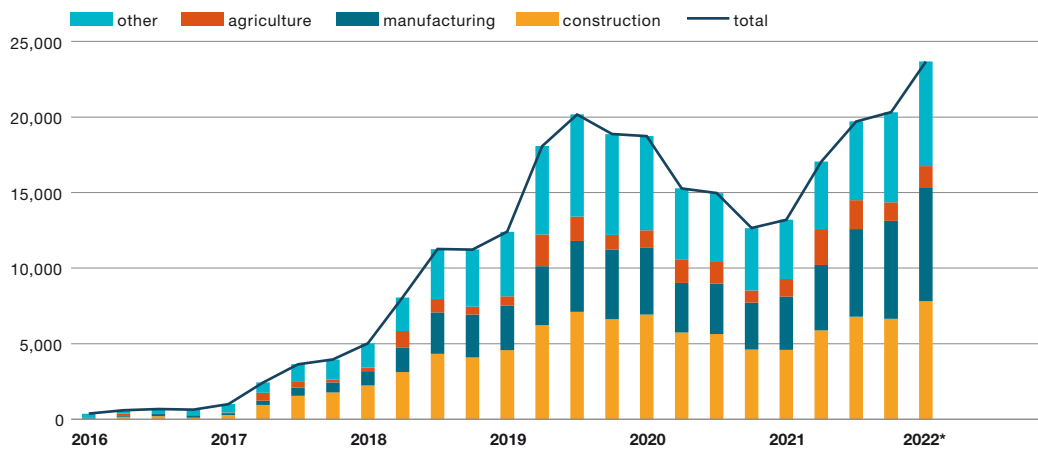


Source: Statistics Estonia

The rapid rise in the number of people employed in the data from the Tax and Customs Board can be explained by the sharp rise in 2021 in the number of short-term employees from third countries from its low point at the end of 2020 (see Figure 4). Demand for foreign workers increased as the economy recovered. There were on average 6200 current short-term registrations for work in the second half of 2021, which was 45% more than at the same time a year earlier. The number of short-term workers has risen in many sectors, with the fastest rise in manufacturing, where the number of short-term workers hired from outside the European Union rose by 90% in the second half of 2021. Strong demand for labour in manufacturing is also indicated by data from employer surveys and by the rise in the number of vacancies in the sector.

Moving forward it is probable that the number of short-term workers in Estonia will fall, as some of those who are from Ukraine head home to defend their country, while male residents are banned from leaving Ukraine. Coming from Russia and Belarus to Estonia to work has also become harder. A current registration for short-term work does not necessarily mean that the holder necessarily spent the whole duration of the registration working in Estonia, and the data do not reflect the holder's departure from the country.

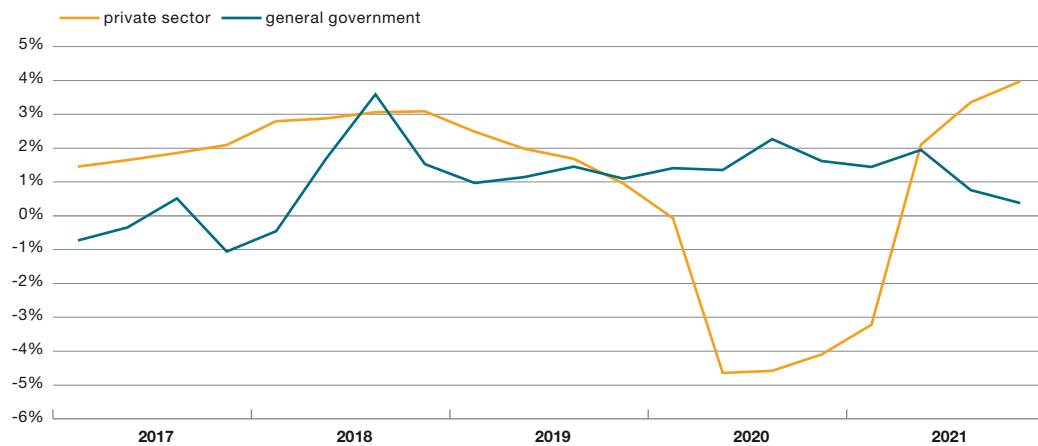
Figure 4. Number of Estonian residents working abroad, thousands



* Q1 2022 is as at 4 March
Sources: Police and Border Guard Board, Eesti Pank calculations

Both the sharp fall in employment during the Covid-19 crisis and the increase in employment in the second half of 2021 as the economy recovered came entirely from the private sector (see Figure 5). The Tax and Customs Board put the growth in the number earning a wage at private companies at 4.0% in the fourth quarter and the number was only 0.3% below what it was before the pandemic. The labour force survey does not find that employment fell in public sector areas like education, healthcare and public administration during the pandemic crisis either, and finds it is now higher than before the pandemic.

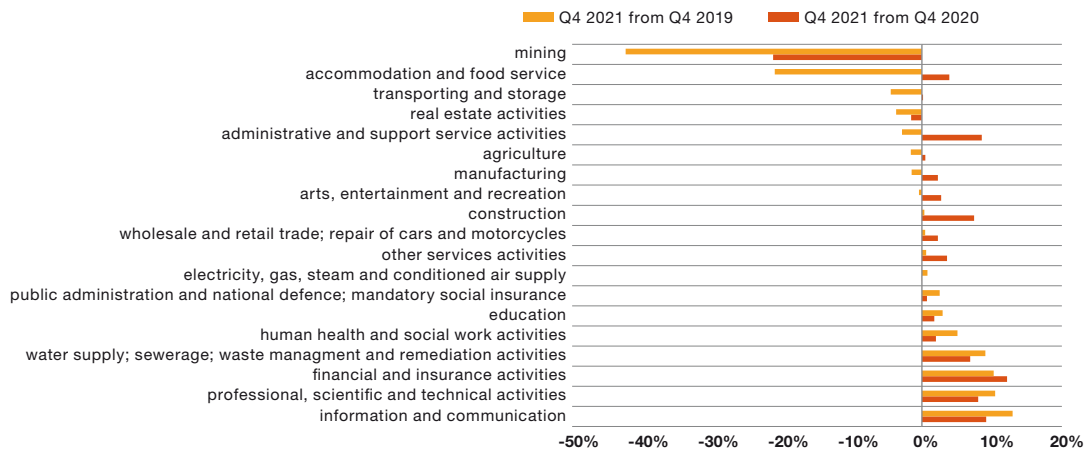
Figure 5. Change in the number of public and private sector employees from tax declarations



Sources: Tax and Customs Board, Eesti Pank calculations

The two years or so of the coronavirus pandemic and the restrictions it brought have changed the structure of some parts of the labour market in quite considerable ways. The need for services that are mainly provided by the public sector, such as healthcare, social care and education, has increased since the fourth quarter of 2019. This has meant that the number of people employed in those areas and in the general government as a whole has increased in consequence (see Figure 6). Employment in accommodation and food service fell by almost a third during the pandemic, and it has not yet recovered from the pandemic restrictions but remains some 20%, or 6100 employees, below where it was before the pandemic. As the restrictions to stop the spread of the virus are reduced and removed in Estonia and abroad, and as refugees from the war in Ukraine were initially housed in hotels in Estonia, it may be expected that employment in the sector will continue to increase.

Figure 6. Change in the number of declared wage recipients in the fourth quarter of 2021



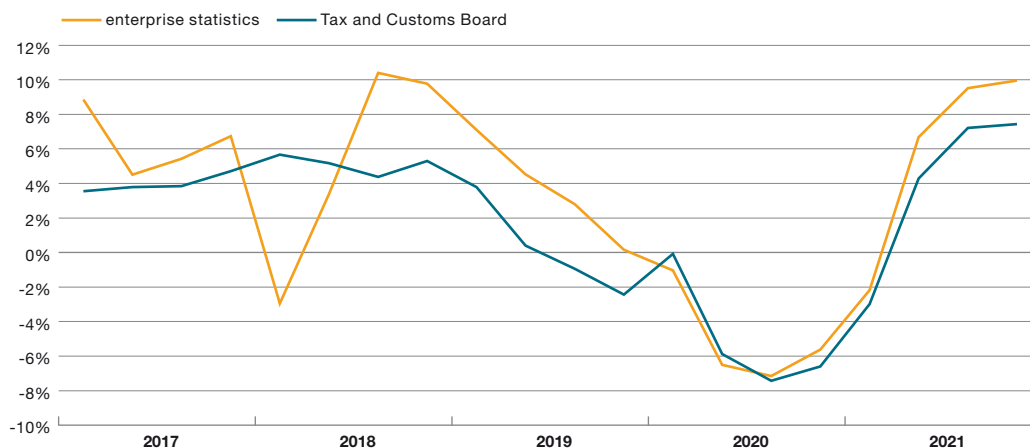
Source: Statistics Estonia

Mining and the energy sector have been hurt by energy production from oil shale becoming less competitive, though employment in the sector has also declined partly because companies have changed their core activity. The steep rise in the price of electricity in late 2021 should help keep the sector competitive in future, and employment is not expected to fall any further. Changes in supply chains mean that some 1600 fewer workers are employed in transportation and storage than two years earlier.

Information and communications from private sector services is becoming one of the most important sectors in the economy. Two years ago there were around 5500 more workers in transportation and storage than there were in information and communications, but employment in information and communications has by now overtaken not only transportation and storage, but also sectors like education. Employment has increased not only in information and communications, but also in sectors like professional and scientific activities or financial and insurance activities, where average salaries are higher.

Demand for labour in construction and manufacturing had already stopped growing in mid-2019 as the external environment cooled and competitiveness problems arose in the oil shale sector, and the deepening uncertainty in the economic climate caused unemployment to drop sharply in both sectors in 2020. Employment started to recover very quickly in construction from the second quarter of 2021 (see Figure 7), and data from the Tax and Customs Board show that more people were employed in construction by the end of 2021 than at the end of 2019. Data from the Estonian Institute of Economic Research also show that construction companies overwhelmingly considered the main factor limiting production in the final quarter of 2021 to be the shortage of workers. Labour shortages in construction were last such a major problem at the end of 2018.

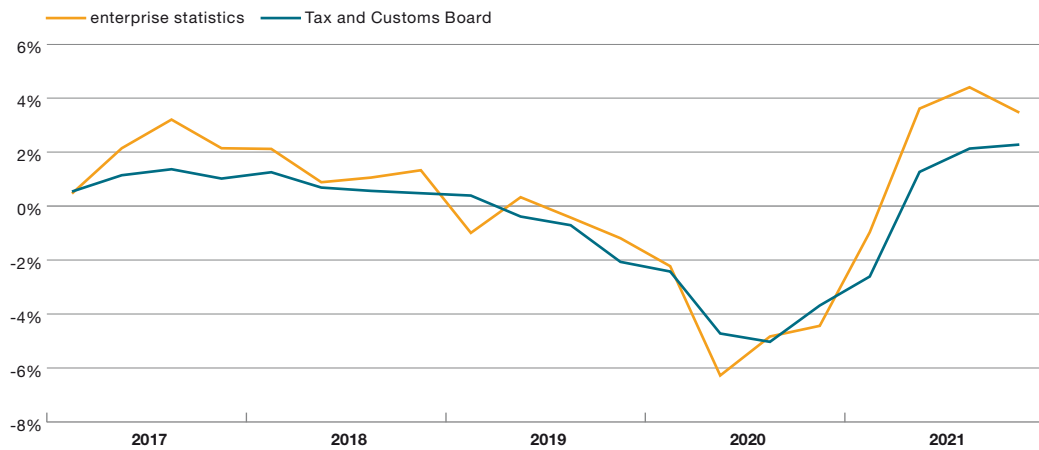
Figure 7. Change in the number of employees in construction in different data sources



Sources: Statistics Estonia, Tax and Customs Board, Eesti Pank calculations

Employment in manufacturing increased from the second quarter of 2021 too, though the increase was still a little less than the fall in 2020. Data from the Tax and Customs Board show there were on average 2800 fewer workers in manufacturing in the final quarter of 2021 than there were at the end of 2018, before employment in manufacturing started to decline (see Figure 8). Enterprise statistics also show a similar fall in employment in manufacturing of 2444 jobs. The branches of manufacturing that lost the most jobs were production of clothing followed by furniture and textile production. Employment increased at the same time in the production of vehicles and in the production of chemicals, which was given a boost by increased demand during the pandemic for cleaning and disinfecting products.

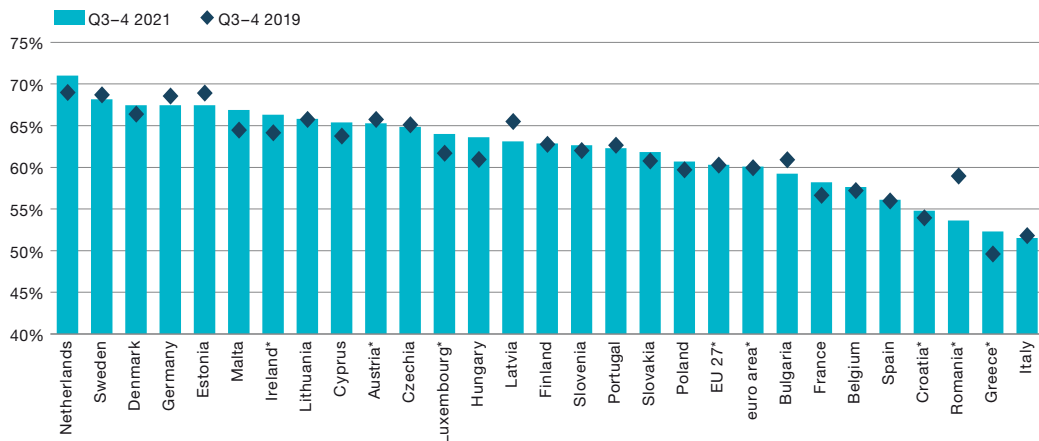
Figure 8. Change in the number of employees in manufacturing in different data sources



Sources: Statistics Estonia, Tax and Customs Board, Eesti Pank calculations

The employment rate, which is the share of the working-age population aged 15-74 in employment, was 67.6% in the fourth quarter of 2021. This is almost a percentage point higher than at the end of 2020, but still lower than it was at the end of 2019 (see Figure 9). The recovery in employment rates has been quite mixed across the countries of the European Union. In half of the countries, including those with large tourism sectors like Greece, Malta and Cyprus, the employment rate is already higher than it was before the pandemic. Like that in Estonia, the employment rates in several other Central and Eastern European countries like Romania, Bulgaria and Latvia are lower than they were a couple of years ago, as are those in Sweden and Germany.

Figure 9. Employment rate for people aged 15–74 in the European Union



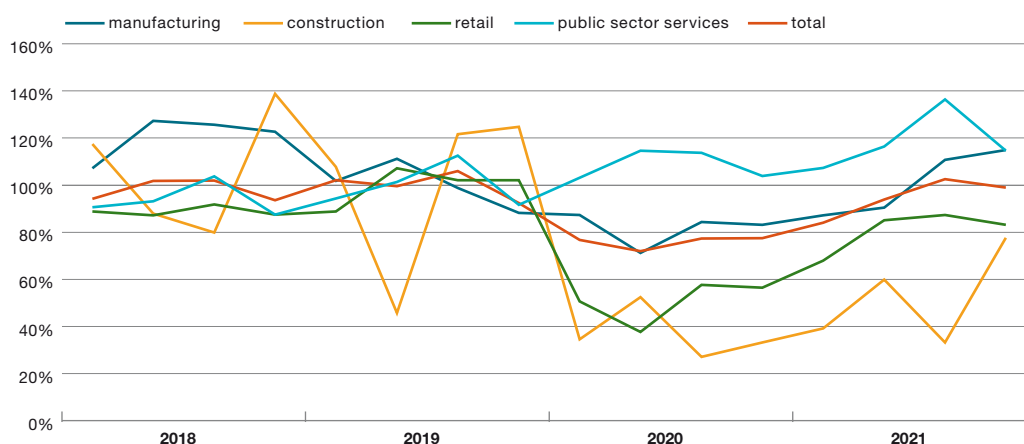
* 2021 is only Q3
Sources: Eurostat, Eesti Pank calculations

The region of Estonia where the employment rate was hit most by the pandemic was Northern Estonia, and although the labour force survey shows that the number of people in employment there has recovered to where it was before the pandemic, the large increase in the number of residents of working age means the employment rate in that region is still some three percentage points lower than it was at the end of 2019. The age group that saw the sharpest fall in employment because of the pandemic was the younger group aged 15-24, and although economic activity picked up rapidly throughout 2021, the employment rate among the young continued to fall throughout the year in the data from the labour force survey.

VACANCIES

The outbreak of the coronavirus pandemic caused the number of vacancies to drop sharply, before it recovered well in early 2021. There were about as many vacancies in the economy by the end of 2021 as there were in 2019, but the position was quite uneven across branches of the economy. There were a fifth more vacancies in manufacturing and branches serving the public sector than before the pandemic for example, but a fifth fewer in construction and retail (see Figure 10). The vacancy rate, which is the number of vacancies as a ratio to the total number of filled and unfilled jobs, rose throughout 2021 and by the second half of the year it was close to where it was before the pandemic.

Figure 10. Number of vacancies as a ratio to the average in 2019



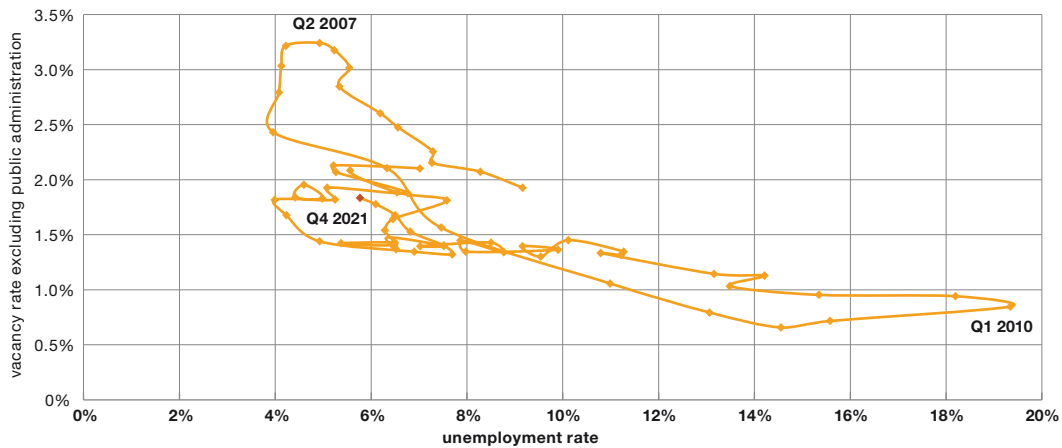
Sources: Statistics Estonia, Eesti Pank calculations

The relationship between available labour and vacant jobs can be estimated using the Beveridge curve (see Figure 11). A higher vacancy rate for a given rate of output indicates that there is a greater mismatch between the skills of jobseekers and the requirements of employers. The unemployment rate in an economy that is doing well is usually low, and the vacancy rate high, while in bad times this is reversed. When the economy is recovering, the vacancy rate rises first and then unemployment falls, as it takes a little time for workers to find new jobs. This causes the Beveridge curve to make a small anticlockwise turn. It is also to be expected that when a shock hits a certain part of the economy, in the way that the Covid-19 crisis hit accommodation and food service, the match between demand and skills in the labour market will worsen for a time as many people who worked in the sector that suffered are looking for jobs, but the vacancies are being created in other parts of the economy.

The share of vacant positions in the third and fourth quarters was largest at local governments and foreign-owned private companies (see Figure 12). The vacancy rate in the public sector rose strongly in healthcare and education, while in the private sector, the vacancy rate in information and communications was at its highest level since 2008. Although the vacancy rate also rose in accommodation and food service, it was still well below its level from before the pandemic.

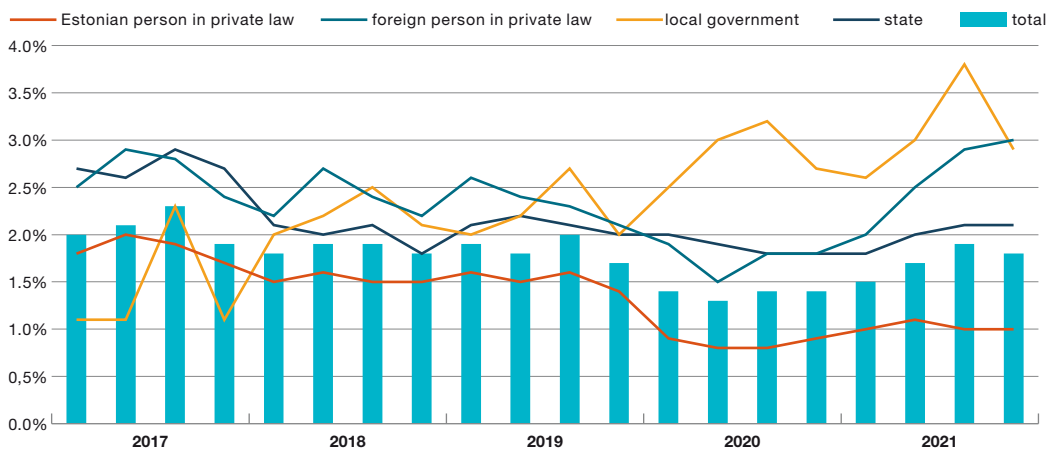
The Töötukassa database had on average some 6800 vacancies in the second half of 2021, or about 60% of the total number of vacancies estimated in the labour mobility and vacancies survey. Employers are

Figure 11. The Beveridge curve, seasonally adjusted



Sources: Statistics Estonia, Eesti Pank

Figure 12. Vacancy rate by type of employer (%)



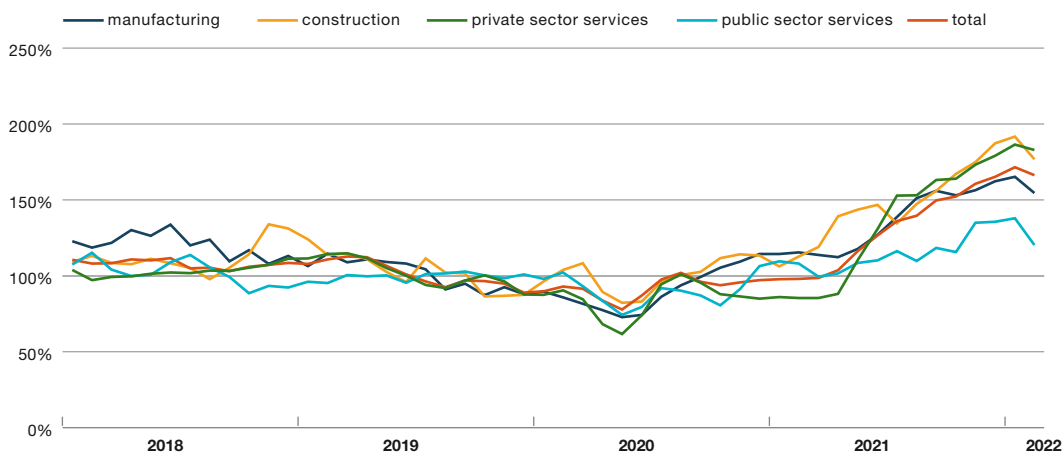
Source: Statistics Estonia

most likely to search through Töötukassa for employees in sectors like construction, administration and support activities, accommodation and food service, and manufacturing. By contrast, Töötukassa had only a tenth as many job advertisements for jobs that are likely to demand higher education, such as those in information and communications, as the vacancy survey did.

Töötukassa received around 6700 job advertisements each month, which is about as many as were open at the end of the month, meaning that job advertisements are either filled or taken down within about a month on average. The number of job advertisements received fell for a while during the pandemic, but recovered quite quickly to where it was before. It rose in the second half of 2021 though, to be substantially higher and more broadly based than before the pandemic (see Figure 13). The number of announcements of vacancies received in the services sector rose particularly rapidly, as did that in construction. Like the number of job offers received during a month, the number of offers that were open at the end of the month was around 50% more than before the pandemic. The number of current offers has held stable since the third quarter of 2021, and has even fallen a little in manufacturing and the public sector.

The number of vacancies intermediated through Töötukassa was higher in the second half of 2021 and early 2022 than before the pandemic in all regions, but especially in Harjumaa, where there were a lot more vacancies in retail, administration and support activities, and accommodation and food service than there were before.

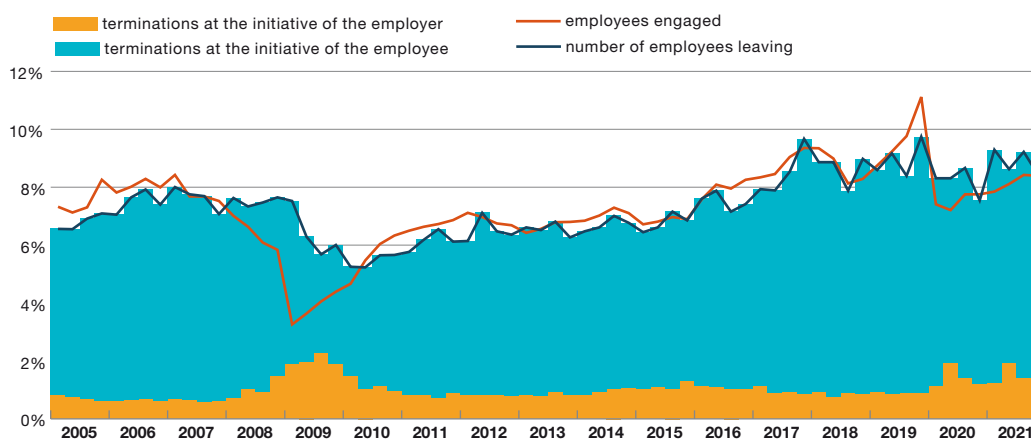
Figure 13. The number of new vacancies mediated by Töötukassa, three-month moving average seasonally adjusted as a ratio to the average for 2019



Sources: Töötukassa, Eesti Pank calculations

Data on labour mobility and job change show that the hiring rate, which fell sharply at the outbreak of the coronavirus pandemic, was rising in 2021, though it was still lower than before the pandemic (see Figure 14). The termination rate has by contrast remained relatively stable throughout, though terminations at the initiative of the employer have become a little more frequent than before. Flows in the labour market, both for hiring and for terminations at the initiative of the employee, were very large immediately before the pandemic, which is quite natural in a labour market experiencing good times. Those who feel secure and confident find it easier to risk changing job.

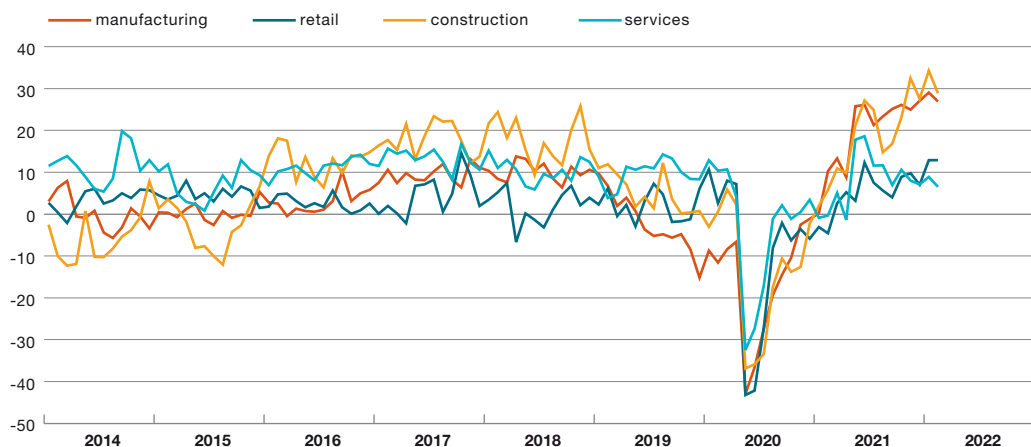
Figure 14. Labour mobility, seasonally adjusted



Sources: Statistics Estonia, Eesti Pank calculations

Corporate expectations of employment were optimistic in the second half of 2021 and early 2022 immediately before Russia invaded Ukraine. The share of companies, especially in manufacturing and construction, that were expecting employment to increase in the coming three months was historically large (see Figure 15). Employers expecting employment to increase in services and retail were also in the majority, to an extent similar to that before the pandemic.

Figure 15. Employment expectations*



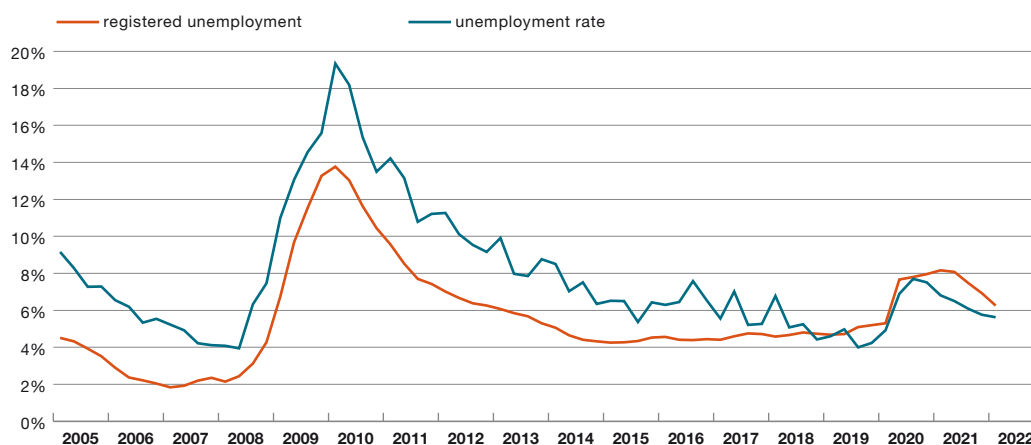
* The index shows the net balance of companies expecting employment to rise or to fall
Sources: European Commission, Eesti Pank calculations

UNEMPLOYMENT

The unemployment¹ rate fell markedly in the second half of 2021, to 5.7% in the third quarter and 5.2% in the fourth quarter. The unemployment rate peaked at 7.6% during the pandemic, and it was 4.2% before the pandemic, meaning that most of the rise in it during the pandemic has been recovered. However part of the fall in the unemployment rate has come from the labour force participation rate being lower than before the pandemic. If it were now as high as it was before Covid-19 and the number of people employed in the second half of 2021 were the same, the unemployment rate would have been 7% in the second half of the year rather than 5.5%.

Like ILO defined unemployment, registered unemployment² also fell fast in the second half of 2021. It peaked at 57,400 people in March 2021, and a year later there were 45,211 registered as unemployed, or some 12,000 fewer than at the peak of the pandemic but still 9000 more than before it. Seasonally adjusted registered unemployment fell from 8.2% at the peak of the crisis to 6.3% by the first quarter of 2022 (see Figure 16).

Figure 16. Unemployment, seasonally adjusted



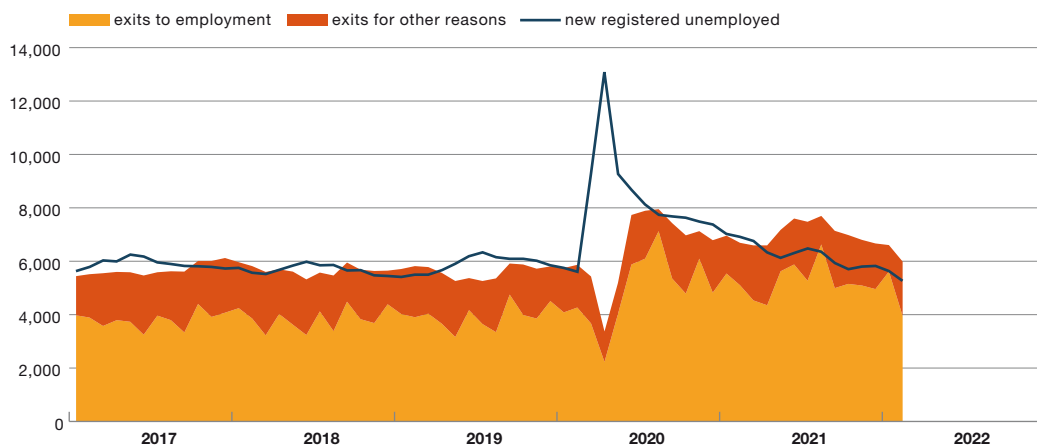
Sources: Statistics Estonia, Töötukassa, Eesti Pank calculations

1 The labour force survey definition is that an unemployed person is someone of working age who is not in work but is actively looking for work and is ready to start within two weeks. This review uses a broader definition of working age covering everybody aged 15-74. This definition is based on that of the International Labour Organisation (ILO) and so is comparable internationally.

2 The registered unemployed are those aged from 16 to retirement age who have registered with Töötukassa. Not all those who meet the ILO definition of unemployed register though, as they may believe that they can find a new job on their own, or they may have no right to unemployment benefits.

Registered unemployment has largely fallen because fewer and fewer newly registered unemployed people are added each month (see Figure 17). There were fewer registering as unemployed because of redundancy in the second half of 2021 and early 2022 than before the pandemic, and there were also fewer left without work because of contracts being ended under the law of obligations. Inflows of the registered unemployed were notably smaller than before the pandemic in Ida-Virumaa, while they remain a little higher overall and in Harjumaa. More people than before the pandemic are ending their registration as unemployed each month, and the majority of them are moving to employment. Other reasons for ending the registration include going to study. That the total number registered as unemployed fell throughout 2021 means the probability of finding work has increased.

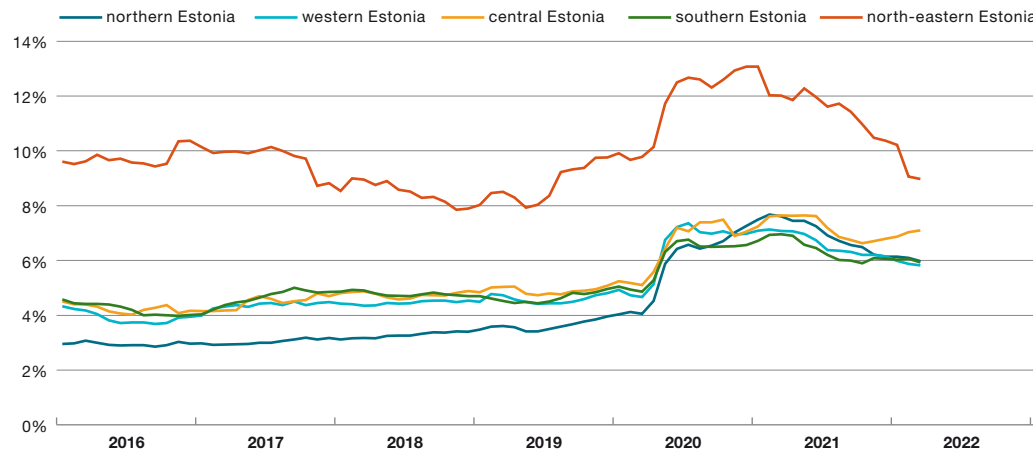
Figure 17. Registered unemployment flows, seasonally adjusted



Sources: Töötukassa, Eesti Pank calculations

Regional data from the labour force survey and from Töötukassa show that unemployment fell sharply in Ida-Virumaa. The ILO unemployment rate fell there from 13.5% in the first half of 2021 to 9.3% in the second half, and the seasonally adjusted registered unemployment rate fell from 12% in January 2021 to 9% in February 2022 (see Figure 18). Unemployment also fell in the other regions of Estonia from May 2021 once the Covid-19 restrictions started to be eased. An exception is the labour market in central Estonia, where the unemployment rate stopped falling in late 2021 and rose a little instead.

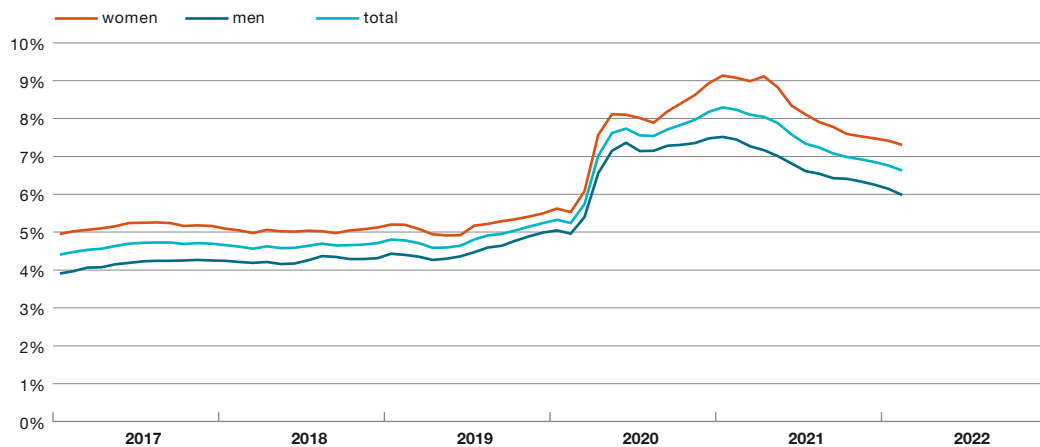
Figure 18. Registered unemployment rate by region, seasonally adjusted



Sources: Töötukassa, Statistics Estonia, Eesti Pank calculations

The labour force survey shows that the unemployment rate for women fell a little faster than that for men, reaching 4.8% while male unemployment was 6.2%. In contrast to the labour force survey data, the registered unemployment rate for women is higher, which can be explained by the greater proclivity of women to register as unemployed. Registered unemployment fell in the second half of 2021 for both men and women, but it remained higher than before the pandemic for both of them (see Figure 19).

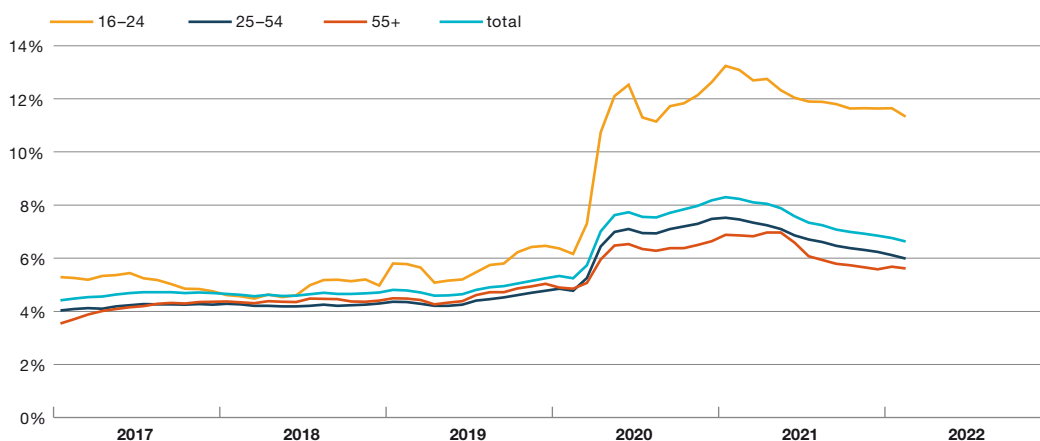
Figure 19. Registered unemployment rate by gender, seasonally adjusted



Sources: Töötukassa, Statistics Estonia, Eesti Pank calculations

The age group that saw unemployment rise the most during the pandemic was the young. The unemployment rate is usually higher for the young than for people of middle working age, as many young people are only entering the labour market and are looking for their first job. The registered unemployment rate for the young fell in the second half of 2021 but only by very little, and in early 2022 seasonally adjusted registered unemployment for the young was above 11% (see Figure 20). This is probably because accommodation and catering and branches of the economy serving foreign tourists had not fully recovered from the crisis, and this is where a large share of young people work.

Figure 20. Registered unemployment rate by age group, seasonally adjusted

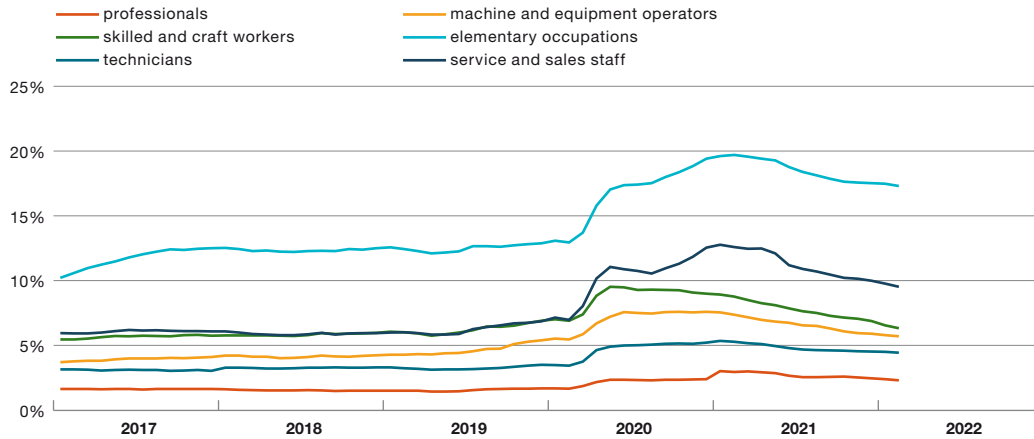


Sources: Töötukassa, Statistics Estonia, Eesti Pank calculations

The pandemic hit companies in the customer service sector hardest, and as expected there were a lot of service and sales staff among those who lost their jobs. Unemployment by professions can provisionally be observed by comparing the number registered as unemployed who previously worked in a particular occupation with the total number of people working in that occupation. This is only a very rough indicator as the number employed in each occupation can only be found from the labour force survey at yearly intervals,

and some of those who have lost their job in one occupation may in any case not necessarily search for a new one in the same occupation. Registered unemployment fell in most occupations in the second half of 2021, but it remained higher than before the pandemic for service and sales staff and unskilled workers (see Figure 21).

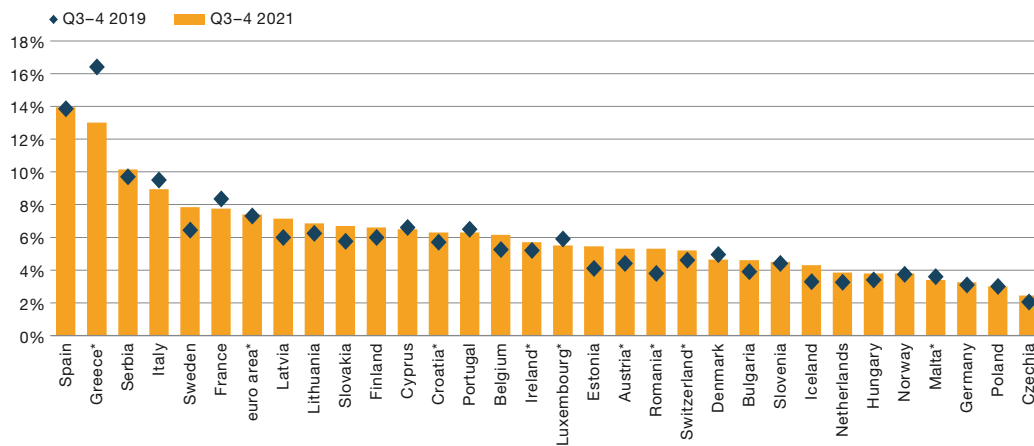
Figure 21. Registered unemployment rate by job type, seasonally adjusted



Sources: Töötukassa, Statistics Estonia, Eesti Pank calculations

Unemployment also fell in other countries in Europe in the second half of 2021, and it is very close to where it was before the pandemic in most countries, or even below that level. The level of unemployment in Estonia was below the median for other countries and around two percentage points below the average for the euro area (see Figure 22), and the unemployment rate in Estonia has fallen faster than the average for the euro area. The employment statistics in some countries may still be being affected by the assistance measures passed during the pandemic.

Figure 22. Unemployment rates in Europe for ages 15-74 in Q3-4 2019 and Q3-4 2021

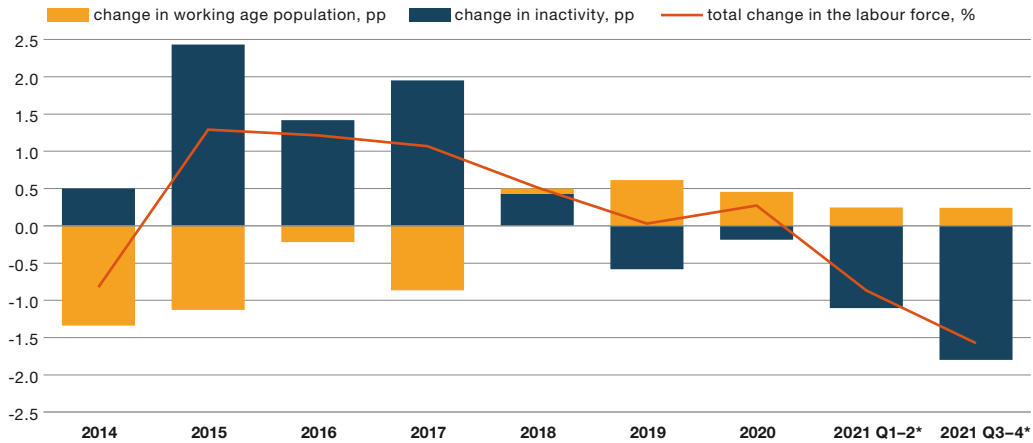


* Third quarter
Source: Eurostat

LABOUR SUPPLY

The labour supply is defined partly by the number of residents of Estonia of working age, and partly by how ready and willing those people are to work, which is shown in the labour force participation rate. Despite the very fast recovery in the economy in 2021, the labour supply in Estonia shrank as the readiness of Estonian residents of working age, which is 15-74, to participate in the labour market fell for the third year in a row (see Figure 23).

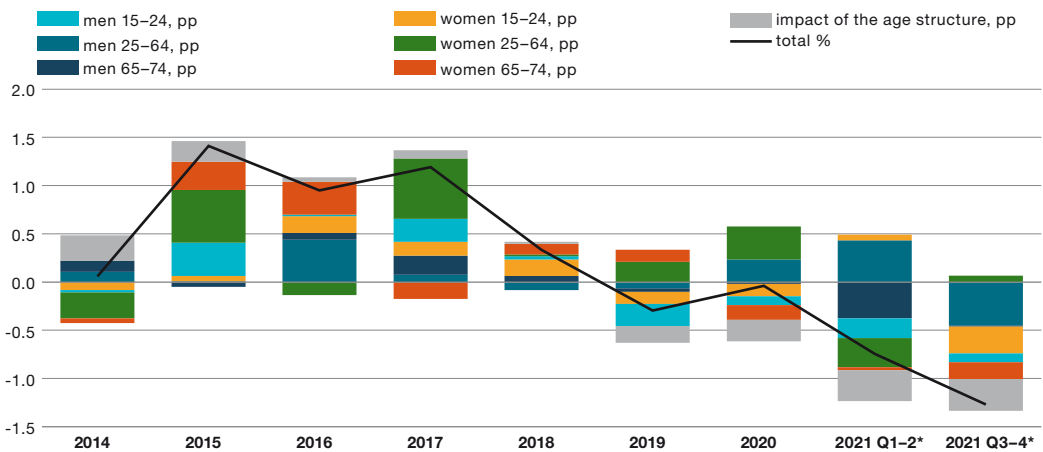
Figure 23. Yearly change in the labour force



* Using a changed methodology
Sources: Statistics Estonia, Eesti Pank calculations

The coronavirus pandemic caused a sharp fall in the labour participation rate in the second quarter of 2020. Data from the labour force survey for the second half of 2020 show some recovery in labour market participation, but the labour force participation rate fell further in 2021 (see Figure 24). The labour force participation rate for those aged 15-74 was 1.6 percentage points lower in the fourth quarter than a year earlier at 71.3%, and the average rate for 2021 was 71.1%. The readiness of the working age population to participate in the labour market was last so low in 2016. The willingness of those of retirement age to participate in the labour market has fallen most in relative terms from before the pandemic. There was also a substantial fall in the labour market participation of those aged 15-24. The reasons for the fall in the labour force participation rate are discussed in more detail in Box 1.

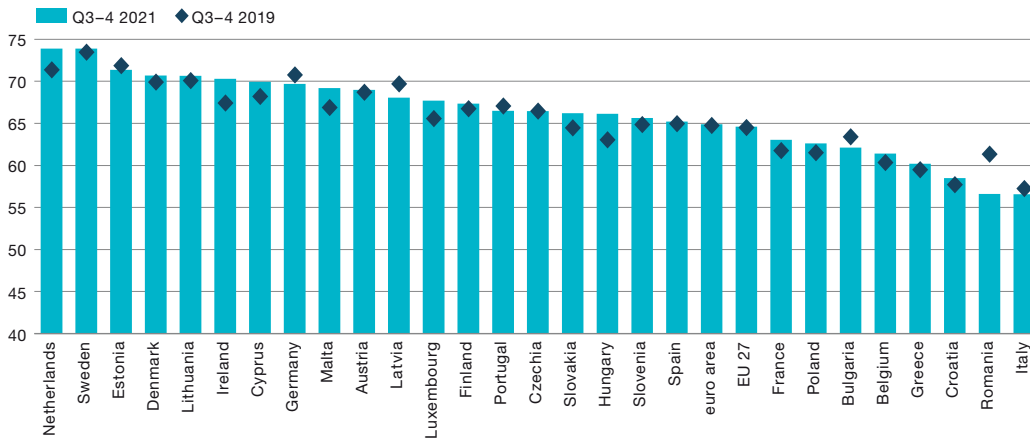
Figure 24. Yearly change in the participation rate by age group



* Using a changed methodology
Sources: Statistics Estonia, Eesti Pank calculations

Although the labour force participation rate in Estonia is lower than it was two years earlier, the participation of working age residents of Estonia in the labour market remains among the highest in the European Union (see Figure 25). Labour force participation in the European Union has on average returned to where it was before the pandemic, but like with the recovery in the employment rate there are quite large differences between countries. The participation rate is still notably lower than it was before in Latvia among Estonia's neighbours, and activity in the labour market has declined relatively more for women there, perhaps because the burden of care meant that Covid-19 affected them more.

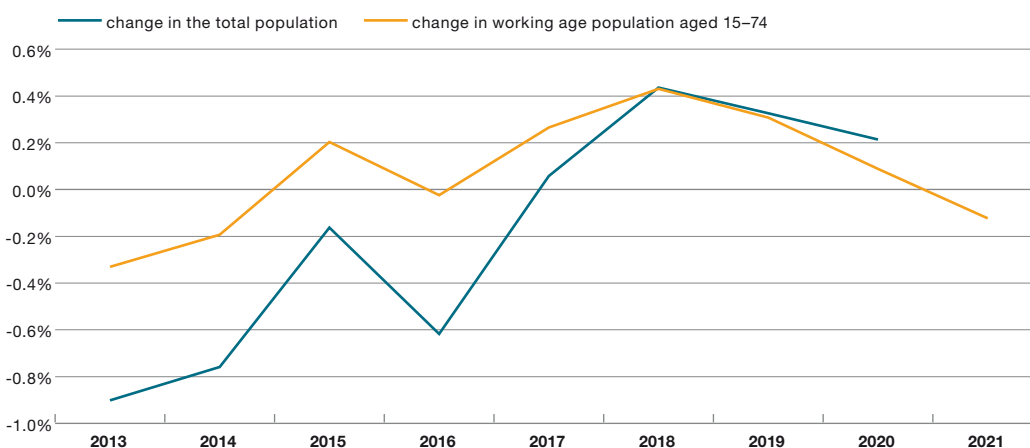
Figure 25. Labour force participation rate at ages 15–74 in Europe



Sources: Eurostat, Eesti Pank calculations

The number of residents of Estonia of working age rose in 2017-2020, as the negative natural demographic change was offset by a positive migration balance. Preliminary estimates show that the population started to shrink in 2021 so that in early 2022 there were 1626 fewer residents of Estonia than there were a year earlier (see Figure 26). Data from Statistics Estonia show that mortality was higher in 2021 than in earlier years, which increased the natural demographic shrinkage. The Covid-19 pandemic did not have a major impact on mortality in 2020, but data from the National Institute for Health Development show that mortality in 2021 was higher by 2700 people, or 17%. Statistics are not yet available for mortality by age group, but it may be assumed that such a sharp rise in mortality will have had some impact on the mortality of people of working age. The migration balance was the same as in 2020, but there was less immigration than in the years preceding the pandemic.

Figure 26. Change in the population and the working age population aged 15–74



Sources: Statistics Estonia, Eesti Pank calculations

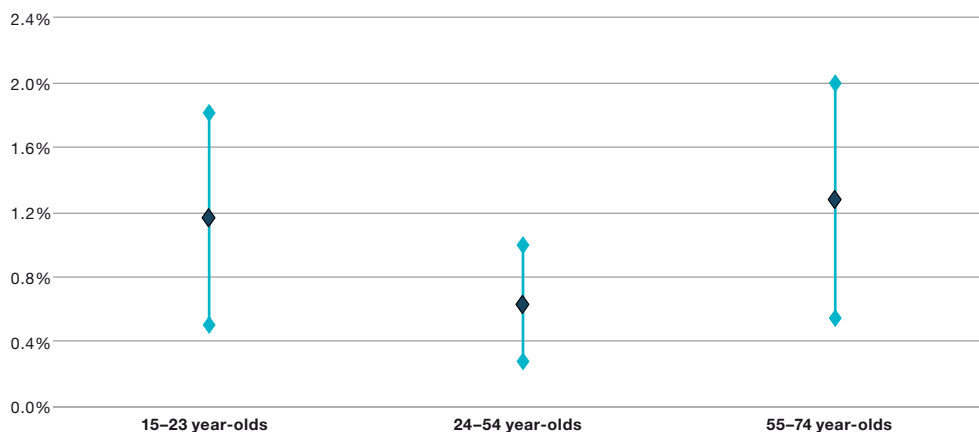
Box 1: Who has a greater probability of being inactive in the labour market now than before the pandemic?

The labour force participation rate in Estonia in 2021 was one percentage point lower than it was in 2019, before the pandemic. This box uses micro-data from the labour force survey to research which groups in society the participation rate has changed for. It analyses whether there are particular characteristics that can distinguish those who are more likely to be inactive than they were before the pandemic, and how great a role the change in the structure of the working age population has played in the decline of the participation rate.

The general data from Statistics Estonia show that inactivity has increased from before the pandemic for the younger and older age groups. As labour force participation may be affected by changes in the structure of society, such as changes in the age structure, the change in the probability of inactivity is analysed using a probit model and the Oaxaca-Blinder decomposition method. To give a larger sample, the comparison is of inactive residents of Estonia in 2020-2021 and in 2018-2019. Other characteristics are analysed alongside age, such as gender, nationality, region of residence, level of education, and current studies.

The total fall in the labour force participation rate from 2018-2019 to 2020-2021 was less than one percentage point. Decomposing that change with the Oaxaca-Blinder method reveals that changes in the structure of society by age, gender, nationality, region, education and studies barely explain the fall in activity at all. The decline in labour force participation was almost entirely down to the reduced participation within the groups defined by their characteristics. The probit analysis shows that once all the other characteristics are controlled for, the largest differences in the change in inactivity within characteristic groups are found in age groups (see Figure B1.1). It still cannot be argued though from the age groups that the probability of younger or older people being inactive in the labour market has increased statistically significantly more than it has for those aged 24-54.

Figure B1.1. Conditional effect on the probability of being inactive in 2020–2021 and in 2018–2019; average effect and 90% confidence intervals



Source: Eesti Pank calculations based on microdata from the labour force survey

Controlling for all the other characteristics like age, gender, nationality and education shows that inactivity has increased very evenly across the regions of Estonia, with no region standing out for a notably larger increase. Neither is there any evident difference between nationalities in the increase in inactivity.

Other characteristics indicate a slightly larger increase in inactivity among those with only basic education than among those with higher education. As there have been fewer jobs that can be done alongside studies, such as jobs in food service or customer service, some young people may have

stopped working while studying, and this is confirmed by the probit analysis. When all the other characteristics like age and gender remain the same, the probability of those studying being inactive has increased by more than that for those who are not studying, with a rise of 1.26% against 0.91%.

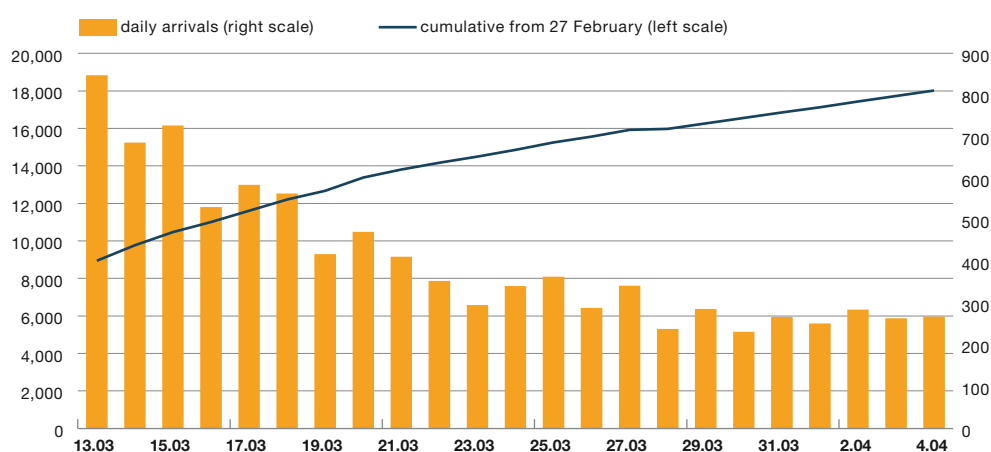
Overall the micro-data from the labour force survey indicate that the current decline in labour force participation cannot be put down to structural changes in the working-age population. This means that inactivity has not increased because of, say, an increase in the share of people in society aged 15-19 or of retirement age whose participation rate is in any case lower than the average. Inactivity has almost entirely increased within groups of people sharing characteristics, and has done so quite evenly across most of those groups. Some variation in the increase in inactivity can be observed across age groups sharing characteristics.

Box 2: Refugees from Ukraine in the Estonian labour market

More than 4 million people had left Ukraine as refugees by 5 April 2022, following Russia's invasion on 24 February³. The European Council voted unanimously on 4 March 2022 to give temporary protection, initially for up to a year, to refugees from Ukraine who enter the territory of the European Union from 24 February⁴. The temporary protection is intended to give the refugees rapid and equal protection throughout the European Union and it includes the right to access local labour markets on the same basis as long-term residents of each country. This box considers the current position of the additional labour that has entered the Estonian labour market.

By the first week of April, Estonia had received some 27,000 refugees from the war, of whom 65% were adults, over 90% of them women. A little over 300 adults a day have arrived in Estonia in recent weeks (see Figure B2.1). A large proportion of the Ukrainians are probably staying with relations living in Estonia, as there were at the end of March around 6500 people of the 25,000 who had come to Estonia who were using the accommodation provided by the state.

Figure B2.1. Number of adult refugees from Ukraine in 2022 arriving in Estonia and planning to stay



Sources: Police and Border Guard Board, Eesti Pank calculations

Data from Töötukassa show that 2305 of those receiving international protection had registered as unemployed as at 4 April. The temporary protection needed for people to register with Töötukassa or to accept a job had been issued as at 4 April to 16,691 people, which includes children. The probable

³ <https://data2.unhcr.org/en/situations/ukraine>

⁴ <https://www.consilium.europa.eu/et/press/press-releases/2022/03/04/ukraine-council-introduces-temporary-protection-for-persons-fleeing-the-war/>

main reason why a relatively small share of the people under temporary protection had registered with Töötukassa is the need to adjust to living in Estonia, while some are probably looking for work independently. Töötukassa had helped 100 people find work by the first week of April.

Of the 2305 Ukrainians who had registered with Töötukassa, 93% were women, a little over three quarters were aged 25-55, and 60.6% had higher education. This means that those who had registered as unemployed were on average younger than those otherwise registered in Estonia, while only 28.4% of the local registered unemployed have higher education. At 40%, there were also more former managers, senior specialists and mid-level specialists among those receiving temporary protection who had registered as unemployed than the 28% among the local registered unemployed. That a large proportion of those who have registered as unemployed have higher education probably reflects the greater likelihood of those people registering with Töötukassa rather than suggesting that a large share of those who have come to Estonia have high qualifications.

There has been a lot of research into how earlier refugees to the European Union have fared, and it shows that those arriving in a country as refugees are generally in a worse position in the labour market than local people are, as there are employment and wage gaps to the local population, especially for women. The experience of Germany has shown that refugees fare better in the labour market when they settle in regions with low unemployment and where the attitude of locals towards refugees is more favourable. There are also differences in the Estonian labour market by nationality and citizenship, but some of this can be explained by the regional distribution of nationalities, as the unemployment rate is high in Ida-Virumaa, where non-Estonians are a large part of the population.

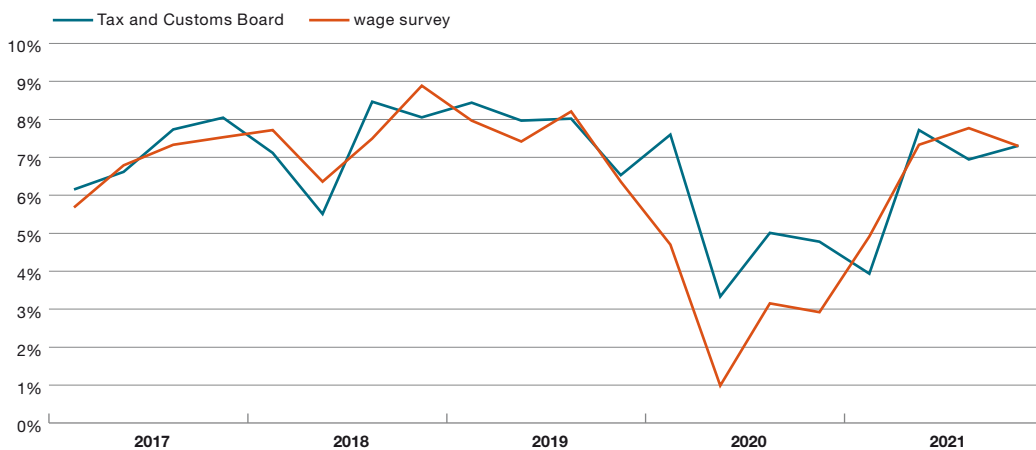
Labour market gaps can arise because of a language barrier that stops professional skills being used to their full in a new environment, and that drives refugees to take jobs that require lower qualifications. Among the 2300 who have registered with Töötukassa, only 13% have English language skills of at least level B1. At the same time, knowing Russian would also make integrating into the labour market easier.

In the short run, the influx of numerous refugees will inevitably lead to a higher unemployment rate. Competition for jobs will increase in areas that are easily accessed without speaking the local language and without having studied in Estonia, and so the pressure for wage increases will diminish. In the long run, the increase in the population will have a positive effect on internal demand and the increase in the labour supply will eventually allow firms to create more jobs. In order to avoid labour market gaps widening, it is important for the refugees, who have very diverse professional backgrounds, to be supported through active labour market policy in accessing jobs that match their qualifications as much as possible.

AVERAGE WAGES

Wages were shown to be rising fast in the second half of 2021 in the data from the wage survey and from the Tax and Customs Board. The yearly growth rate was of 7-8% in both yearly and quarterly terms (see Figure 27). Wages mainly recovered because of the strong recovery in demand for labour, as a large share of companies wanted to hire new workers and they increasingly frequently encountered shortages of appropriate candidates for jobs. Wages rose fast despite the disappearance of several factors that had contributed to wage growth in the years before the pandemic. The minimum wage was not raised in 2021 for example, while wage rises in public administration and education were modest.

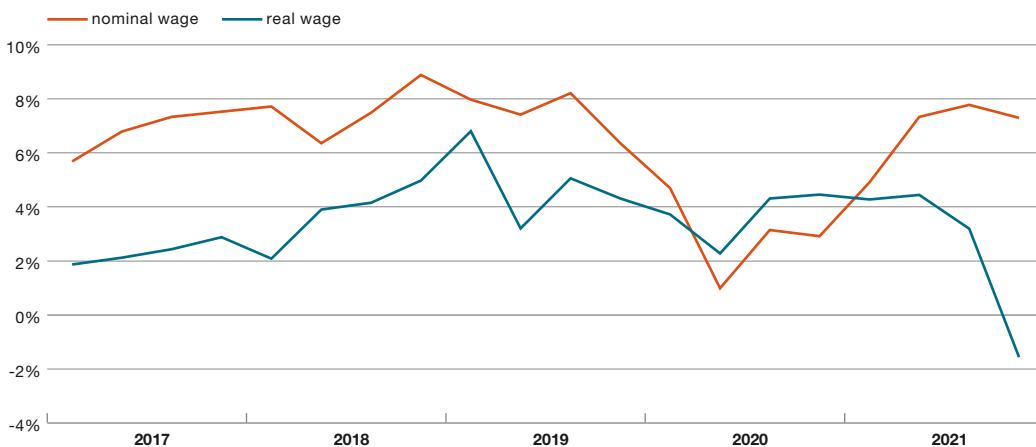
Figure 27. Yearly change in the average wage



Sources: Statistics Estonia, Tax and Customs Board, Eesti Pank calculations

One-off bonuses and overtime pay helped drive the growth in wages upwards throughout 2021, having declined the previous year. The growth rate for overtime pay slowed during the year, but the growth in bonuses was particularly fast in the second half of the year. The growth in the purchasing power of the average wage slowed sharply in late 2021 as higher prices for energy pushed consumer prices up rapidly. Real wages, which take account of the purchasing power of money in response to consumer price inflation, fell by 1.6% in the fourth quarter of 2021 (see Figure 28). Real wages last fell in 2009-2011 under the impact of the global financial crisis.

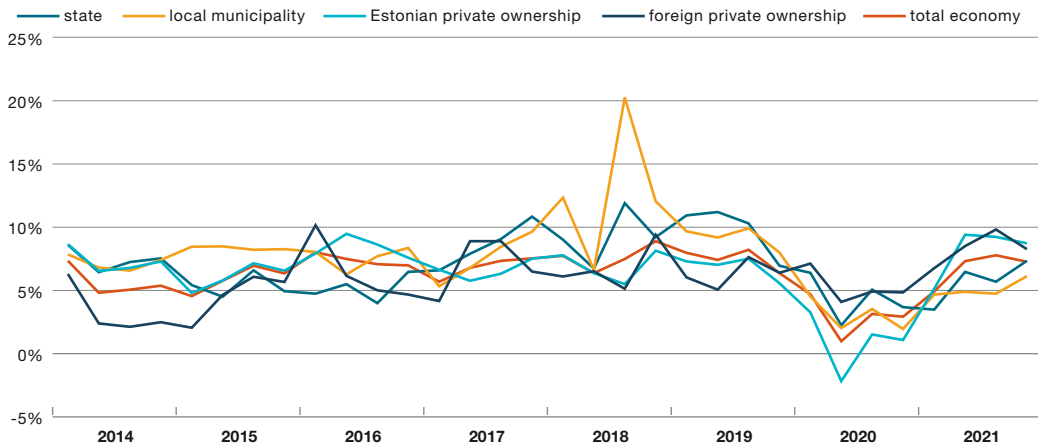
Figure 28. Yearly change in the average nominal and real wage



Sources: Statistics Estonia, Eesti Pank calculations

Wages rose faster at employers in the private sector than they did in the public sector in the second half of 2021. This is partly because the impact of Covid-19 in 2020 was larger at private sector companies, and their recovery from the pandemic was also faster (see Figure 29), and partly because wage growth in public administration and education in the public sector was slower because of the political decision to slow the growth in state spending and restrain the growth in the budget deficit. The average wage grew fastest at foreign-owned private companies in 2022, as many of them operate in sectors where wages were rising fast.

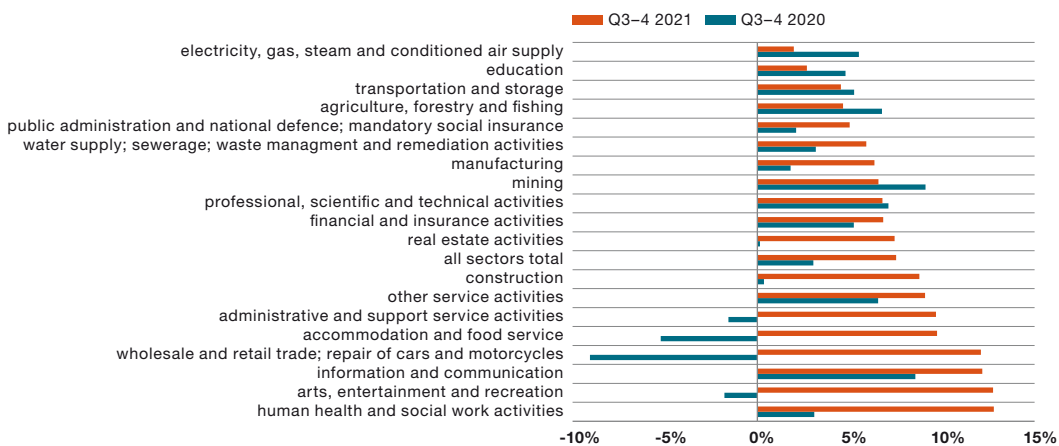
Figure 29. Change in the average gross monthly wage by type of ownership



Sources: Statistics Estonia, Eesti Pank calculations

Sectors where wage growth was particularly slow because of the crisis in 2020 saw wages grow faster than the average in 2021. These sectors include accommodation and catering, art, entertainment and leisure, and administration and support activities. The fastest growth in the average wage in the second half of 2021 was in healthcare, where collective agreements raised the lowest rates of pay while funding for healthcare services increased because of the pandemic. Information and communication stands out as a sector with rapid wage growth both during the year of the coronavirus and in the second half of 2021. Demand did not fall in the ICT sector, as it did in many other branches of the economy, and the number employed in the sector has expanded rapidly in recent years.

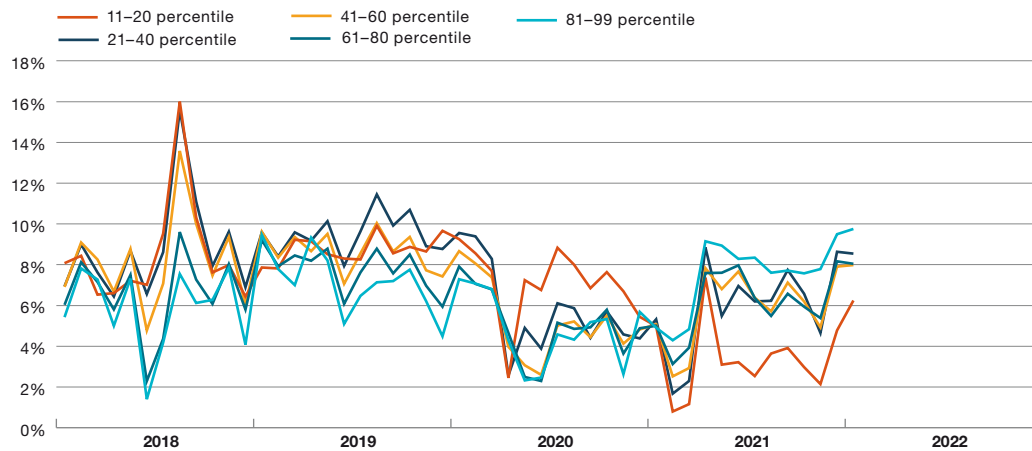
Figure 30. Yearly growth in the average gross wage



Sources: Statistics Estonia, Eesti Pank calculations

Declarations submitted to the Tax and Customs Board show that wage inequality widened in 2021. The highest fifth of wages rose the fastest (see Figure 31) and the lowest part of the distribution grew more

Figure 31. Yearly change in the average declared wage across the wage distribution

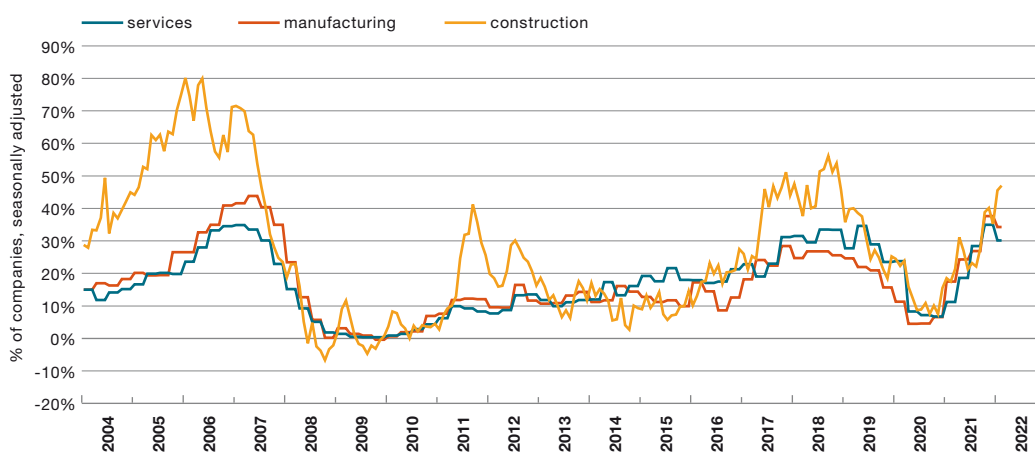


Sources: Statistics Estonia, Eesti Pank calculations

slowly than in previous years because the minimum wage remained the same. Higher growth in wages in the highest part of the distribution reflects the relatively good performance of high-paying branches of the economy such as information and communications, healthcare and finance. A sharp increase in growth is expected in the future in wage percentiles 11-20, as the minimum wage lies there and will rise by 12%.

The substantial fall in unemployment and the desire of companies to hire new staff increased throughout 2021 the share of employers who consider labour shortages to be the biggest obstacle to expanding production. Surveys from the Estonian Institute of Economic Research show labour shortages deepening in all the branches of the economy surveyed (see Figure 32). The surveys showed the share of manufacturing companies facing labour shortages to be higher than before the pandemic and found that it was approaching the peak reached by the indicator during the economic boom in 2007, as was the share of companies in customer service. The share of such companies in construction was also close to its pre-pandemic level. The signs of labour shortages increased even though there were some 10,000 more people registered as unemployed at the end of 2021 and in early 2022 before the pandemic. Like the Beveridge curve, this points to a deterioration in the match between available labour and vacant jobs. Another factor in this may be that productivity and wage levels in some sectors recovered rapidly after the coronavirus shock, and the wages on offer at companies that were hit most by the crisis may fall short of the expectations of those looking for work.

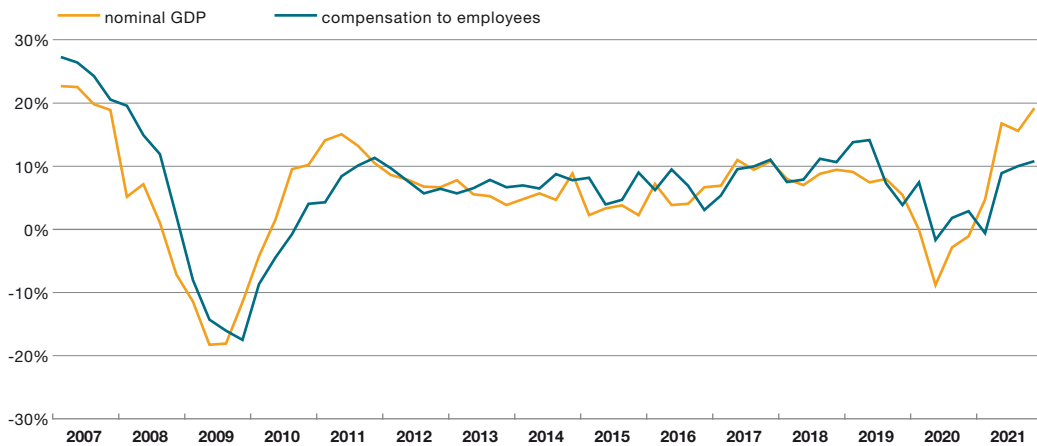
Figure 32. Labour shortages as the main factor limiting production, seasonally adjusted



Source: European Commission

It is usual in economic crises that the fall in demand reduces the profitability of companies first, and that reducing labour costs takes longer. It is usually hard to predict when a crisis starts whether the decline will be short-term or long-lasting, and making workers redundant only to rehire them later is expensive, so taking such decisions needs time. When the coronavirus crisis started in the second quarter of 2020, the value added in the economy fell by more than the payroll did (see Figure 33). Value added then increased faster than labour costs during the subsequent exit from the crisis in 2021, meaning that profitability recovered.

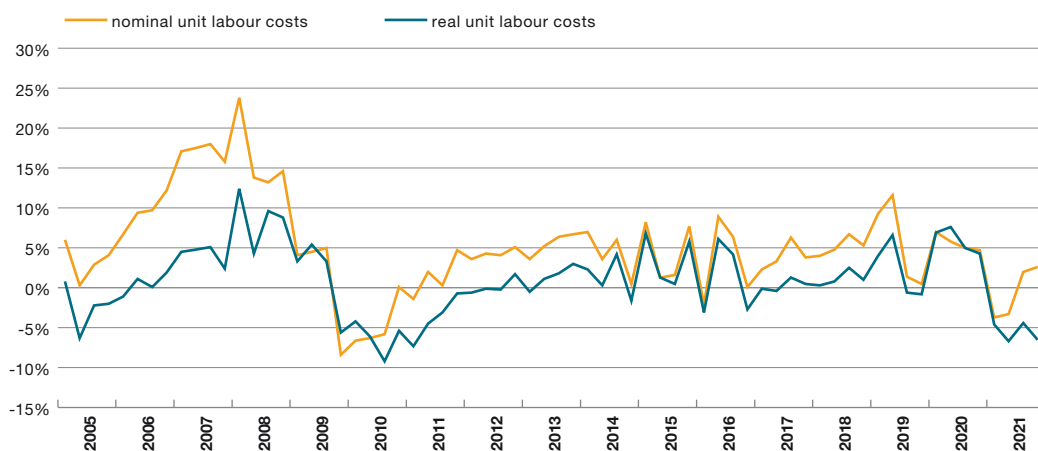
Figure 33. Compensation to employees and nominal GDP growth



Source: Statistics Estonia

Labour costs fell as a share of nominal GDP in the second half of 2021 (see Figure 34), meaning that the growth in labour productivity exceeded that in wages. Labour costs had declined as a share of the economy to 45.7% by the end of 2021, which was the lowest level since 2015. This can partly be explained by an extraordinary export transaction, which increased GDP at the end of 2021. Equally, inflation picked up at the end of the year, increasing the nominal size of the economy but not yet increasing wage growth. In total this meant that unit labour costs fell to below what they were before the pandemic, and so the Estonian economy has become more competitive.

Figure 34. Growth in unit labour costs



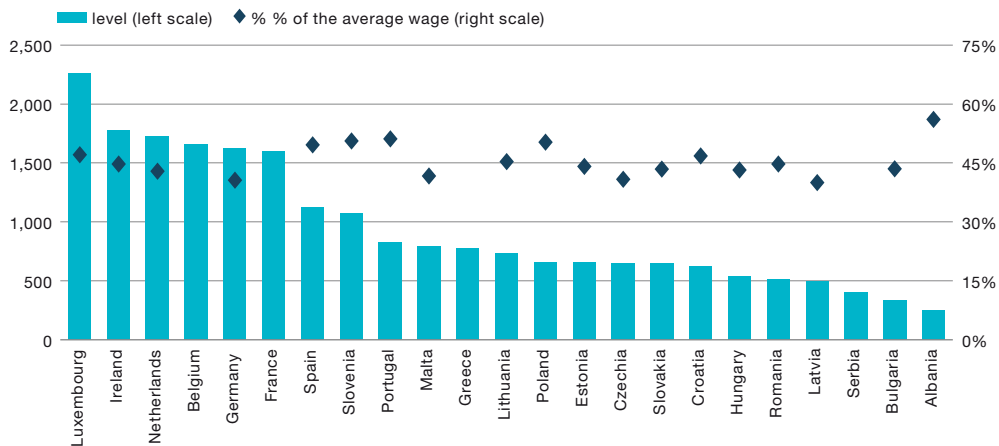
Source: Statistics Estonia

Box 3: The minimum wage in Estonia and other countries

A national minimum wage is a very common labour market regulation in countries of the European Union, and in general in advanced industrial economies. The minimum wage is very different across countries and generally reflects the price level and standard of living, and also political choices. The goal of the minimum wage is to protect wage earners against unfairly low wages. It poses an obstacle to hiring workers with low productivity who are not able to create enough value added to make hiring them at the minimum wage profitable. This box reviews the level of the minimum wage in Estonia in comparison to those in other European countries from the perspective of the employee and of the costs to the employer.

The majority of the countries in the European Union have a general minimum wage that is set nationally, but some countries, like the Scandinavian countries and Finland, set it through collective negotiations. The highest minimum gross wage in Europe in 2022 is in Luxembourg at 2257 euros, and in many countries in Western Europe it is 1500-1700 euros. In countries for which data are available, the minimum wage in 2020 was between 40% of the average wage in Latvia, and 56% of it in Albania. In Estonia it was at 44%, which was a little below the average for the European Union countries of 45.6% (see Figure B3.1).

Figure B3.1. Gross minimum wage in 2022 and the minimum wage as a ratio to the average wage in 2020



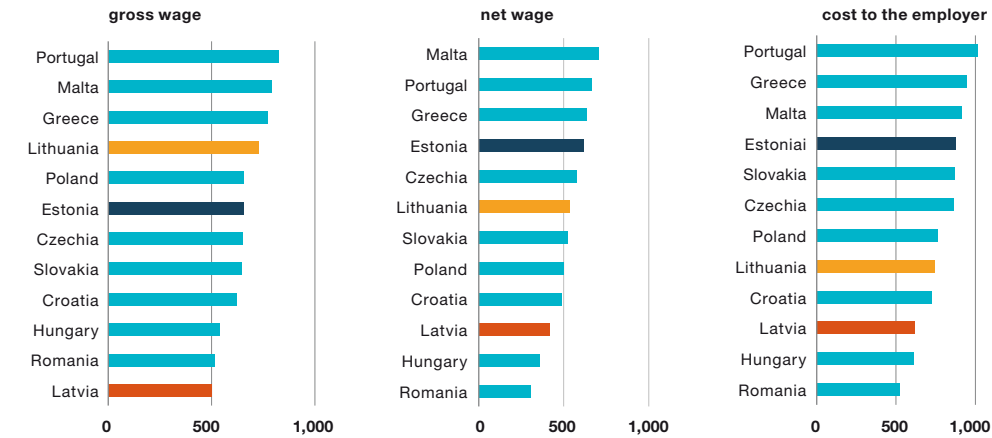
Source: Eurofound

Differences in tax systems and tax rates mean that the take-home wage cannot easily be seen from the rate of the minimum gross wage, or what the total cost to the employer is of employing someone at the minimum wage. The net wage of someone earning the minimum wage, which is how much they actually take home assuming they live alone, depends mainly on personal income tax and on social taxes and contributions that the employee must pay. So while the minimum gross wage in Lithuania is notably higher than that in Estonia for example, the take-home pay is lower at 534 euros to 615 euros, because the employee must pay the whole social tax liability (see Figure B3.2).

The difference between the total cost to the employer and the amount received by the employee is the labour tax wedge. The higher the tax-free minimum threshold and the more progressive income tax is, the smaller the tax burden is at the minimum wage relative to that for higher wages. The tax wedge is largest in Poland at 51%, and smallest in Malta at 28%. For the current minimum wage in Estonia it is 28%, and in 2020 on average it was 37%. Estonia is slightly above the average for countries in southern, central and eastern Europe for the total cost to the employer.

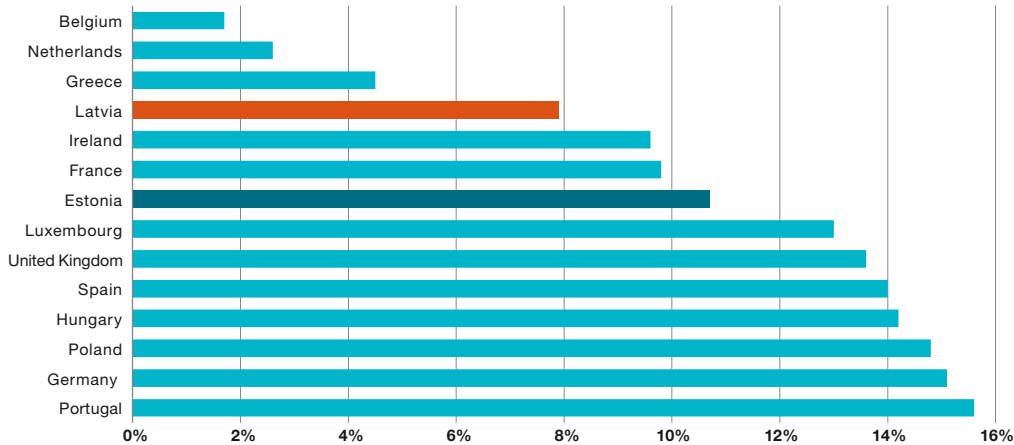
The share of people earning the minimum wage among those in employment shows the role that the minimum wage plays in the real labour market. Data on this are available for only relatively few countries, but a survey in 2018 found that Estonia at 10.9% was at the average level for the countries surveyed (see Figure B3.3). The share of those receiving the minimum wage in Portugal meanwhile, which was the country surveyed with the highest minimum wage, was around 16%.

Figure B3.2. Minimum wage in 2022 in selected European countries



Exchange rate movements may cause minor inaccuracies for non-euro area countries
 Source: Eesti Pank calculations from public data

Figure B3.3. Share of those in employment aged 18–65 earning up to 105% of the minimum wage



Source: Economic and Social Research Institute (2021) *A Comparative Assessment of Minimum Wage in Europe Research*, Series Number 123

Box 4. The contribution of structural changes in the Estonian economy to the growth in productivity

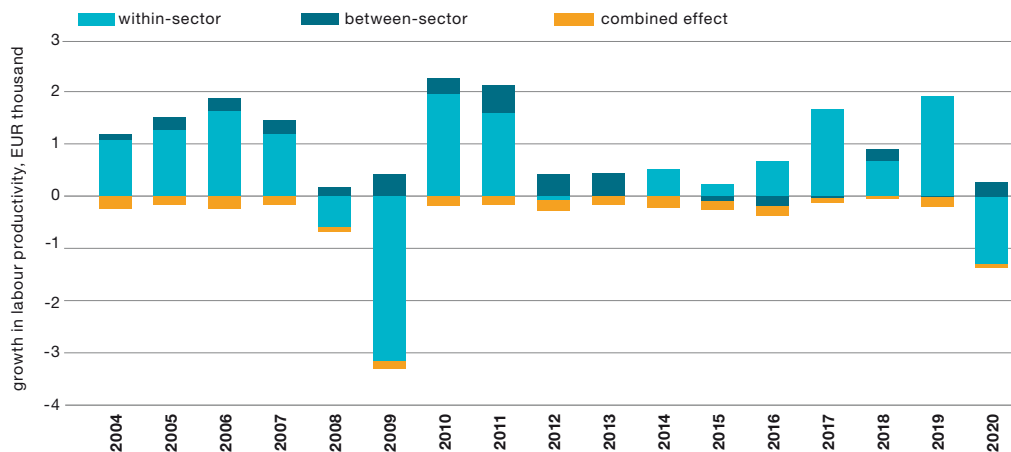
There is constant reallocation of resources in an economy between companies, both within sectors and between them. An average of 8% of the workers in Estonia change jobs each year⁵, 7% of companies increase the number of people they employ, 5% of companies reduce the number, 6% of companies are new entrants into the market, and 3% of companies terminate their activities⁶. This degree of work mobility and business dynamics puts Estonia below the OECD average, as labour mobility and corporate dynamics are even more intensive in several countries, such as the USA (Foster et al., 2016). This constant movement of workers and companies can be important for an economy, and its total benefit for the economy is worth measuring. One way of doing so is to find how the change in the structure of the economy contributes to growth in productivity.

⁵ Eesti Pank calculations from data in the labour force survey.
⁶ Eesti Pank calculations from the business register.

This box aims to give a quantitative estimate of how changes in the structure of employment and productivity developments within sectors affect the productivity of labour in the Estonian economy. Data from the national accounts⁷ are used, covering 57 private-sector areas in Estonia in the years 2004-2020, and excluding financial intermediation. Labour productivity is measured as value added per employee and decomposed⁸ into three parts. These are the within-sector effect, which shows how much productivity would have increased because of developments within the sector if the structure of the economy had not changed; the between-sector effect, which shows how much productivity would have increased because of structural changes if the productivity of the sector had remained unchanged; and the combined effect, which shows how much of the increase in productivity arises because productivity grew faster in the sectors that are expanding the most.

Figure B4.1 shows the results of the decomposition. The developments in productivity move with the business cycle, as productivity increases as the economy grows, and declines as the economy shrinks. The majority of the change in productivity comes from developments and trends within sectors, as has been found by previous research (see Kuusk et al., 2017). The contribution of the within-sector component is cyclical like total productivity, increasing as the economy grows and declining as the economy shrinks, and this dynamic comes mainly from production capacity utilisation by companies (see Basu & Fernald, 2000; Bloom et al., 2020).

Figure B4.1. Decomposition of the growth in labour productivity, 2004–2020



Source: Eurostat time series NAMA_10_A64

The between-sector component, or the contribution of structural change, is smaller, but mainly positive. The positive contribution of structural change to productivity increased during the economic difficulties in the financial crisis in 2009 and at the start of the Covid-19 pandemic in 2020. During both of these economic crises, the share in the economy of sectors with low productivity declined first, with construction and low value-added manufacturing like textiles and clothing, and wood processing shrinking during the financial crisis; and low productivity services such as accommodation and food service, art and entertainment, transport, and retail losing out during the Covid-19 crisis.

The negative impact of the Covid-19 crisis was largely felt in sectors where limits on face-to-face contact had most impact, and that impact was felt very similarly across different countries (Garnadt et al., 2021; Lopez-Garcia & Szörfi, 2021). As it happens, the sectors affected have relatively low productivity, and so a reduction in their relative weight in total employment made a positive contribution to total productivity through structural change. If the share of those sectors in the total economy recovers after the Covid-19 pandemic, a negative structural contribution to productivity may be expected.

⁷ Eurostat time series NAMA_10_A64.

⁸ The formula for the decomposition can be found for example from Equation (4) in Kuusk et al., (2017), unlike which the decomposition here measures the change in productivity in euros, not as a ratio.

An important part of the structural changes during this period came from programming and information-based activities, where productivity is high and employment increased over 4.5 times. This sector alone accounts for more than a third of the effect of structural change. The structure of the economy has also shifted towards more productive sectors through services with higher productivity such as legal services, accountancy, and head office activities, while low productivity sectors such as agriculture, and textile and clothing production have seen employment drop considerably. In total the two sectors where productivity is high and growing fastest have created 25,000 new jobs, while the two sectors where productivity is low and the falls in it were biggest have lost the same number of jobs.

The last component, the combined effect, is the smallest and has a negative impact on productivity, showing that employment tends to decline in sectors with rapidly growing productivity. This may be an automatic response, as investments in new equipment replace labour with capital, increasing productivity per employee. For the period as a whole, the within-sector development and the combined effect together explain 70% of the growth in productivity in Estonia in 2004-2020, and structural change explains 30%. Structural change has played a very important role in productivity, as productivity would today be 8.5% lower without the structural changes in the economy over the past 16 years⁹.

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⁹ Labour productivity increased by 8800 euros in this sample from 22,700 euros to 31,500 euros in 2004-2020. Structural change explains 30% of the growth in productivity, or 2700 euros, and without that structural change labour productivity would have been 28,800 euros in 2020, or 8.5% less.