

LABOUR MARKET REVIEW

The labour market review by experts from Eesti Pank covers developments in the supply, demand and prices of labour in Estonia. 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. Given the orientation of the euro area monetary policy towards price stability, and the openness of the Estonian economy, the economy can adjust to changes principally through the prices and volumes of production inputs. For this reason it is important 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.

This review compares developments in Estonia with those in other European countries. There are two sorts of graphics for international comparison. In the long-term view, countries are grouped by region and an unweighted average is taken. The exception is the EU15, which is a weighted average as published by Eurostat. Newer European Union member states among the southern European countries are Croatia, Romania, Bulgaria, Malta, Cyprus and Slovenia. The southern European countries Italy, Greece, Spain and Portugal are in the EU15. The CEE4 are Hungary, the Czech Republic, Poland and Slovakia. Figures covering one year colour the countries by the group they are a member of.

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THE ESTONIAN LABOUR MARKET IN THE SECOND HALF OF 2018

Even though the European and global economies cooled, the Estonian economy was doing well in the second half of 2018 as GDP growth accelerated and surpassed its long-term sustainable rate. High levels of economic activity increased demand from companies for labour and so kept the labour market running fast. This is indicated by the accelerating rise in wages, more frequent job churn, and indications from corporate surveys of growth in employment.

Strong demand for labour and the limited supply of it meant that growth in wages exceeded that in productivity by more in the second half of 2018 than previously. This means that the cost of producing one unit of value added in Estonia increased at a faster rate than before. The share of labour income in value added created increased and the share of capital income fell. However, the gap between wage growth and growth in productivity was narrower than it was in 2015–2016. Wage growth in manufacturing, which is the sector most exposed to foreign competition, was well aligned with the growth in productivity. At the same time, production in manufacturing increased in cost faster in other areas of Europe than it did in Estonia. This meant that the competitive position of manufacturing did not deteriorate in 2018.

Wage growth accelerated in the second half of 2018, especially in education and health in the public sector. Wage growth also accelerated though in construction and industry in the final quarter of the year. It is probable that wage growth would have been faster in 2018 without the income tax reform, which notably increased the net wage of workers who earn less than the median. Wage growth was also held back by workers hired from abroad in the private sector, as this meant that the shortage of local labour was less limiting for companies looking to hire.

The labour force survey of permanent residents in Estonia and estimates based on data from companies gave quite different information about the growth in employment. The labour force survey found that growth slowed in the second half of 2018 and the number of full-time employees fell. Corporate data show though that growth in employment accelerated. This difference indicates that growth in employment increased because of labour from abroad, as the employment rate was already so high for permanent residents and the unemployment rate so low that there is very limited space for any further increase.

Labour market flow data also indicate the market is running very well. Surveys of both companies and residents show that the rate of churn in the labour market is well above its historical average. Data from the labour force survey also showed that the probability of people moving out of inactivity into employment has increased, and the probability of being long-term unemployed has decreased.

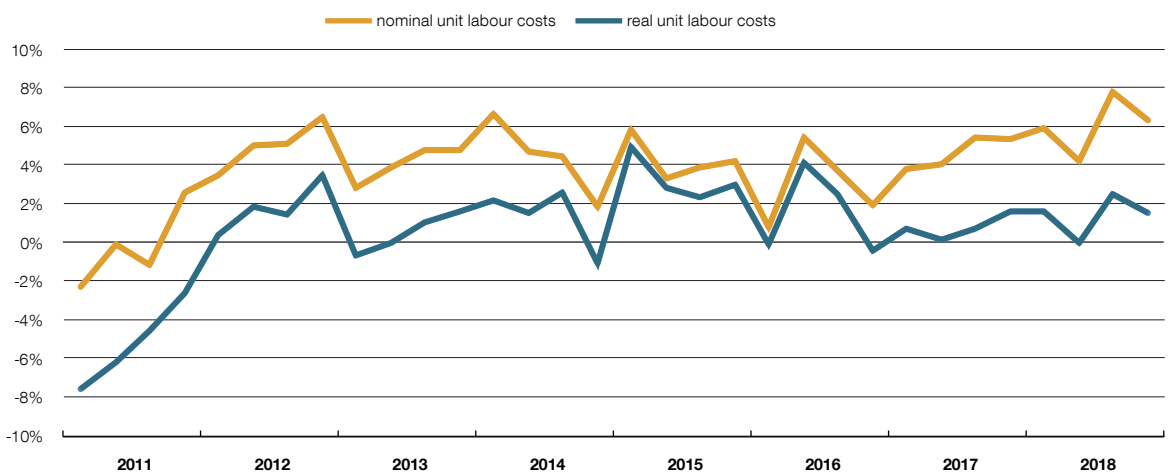
Looking forward it is probable that slowing growth in the economies in Europe and the world as a whole will start to have an increasing impact on the Estonian economy in future. Several indicators point to slower growth in demand for labour, as the number of vacancies stopped rising in the second half of 2018, expectations of companies for employment became more pessimistic, and the share of companies that consider labour shortages to be the main factor hindering expansion declined.

THE COST OF LABOUR AND PRODUCTIVITY

Unit labour costs

The Estonian economy grew faster than forecast in the second half of 2018 despite the slower growth in economic activity in the European Union. GDP increased by 4.1% over the half year on average and the growth was broadly based across sectors. Increased economic activity meant that demand for labour was also greater than forecast, and so the growth in unit labour costs increased (see Figure 1). The Eesti Pank forecast finds that it is probable that the accelerating growth at the end of 2018 was an exception, and in future growth will slow in the Estonian economy. The slowdown is forecast because of weaker foreign growth for the products exported by Estonian companies, and also because limits on labour will make it harder to increase production.

Figure 1. Yearly growth in unit labour costs

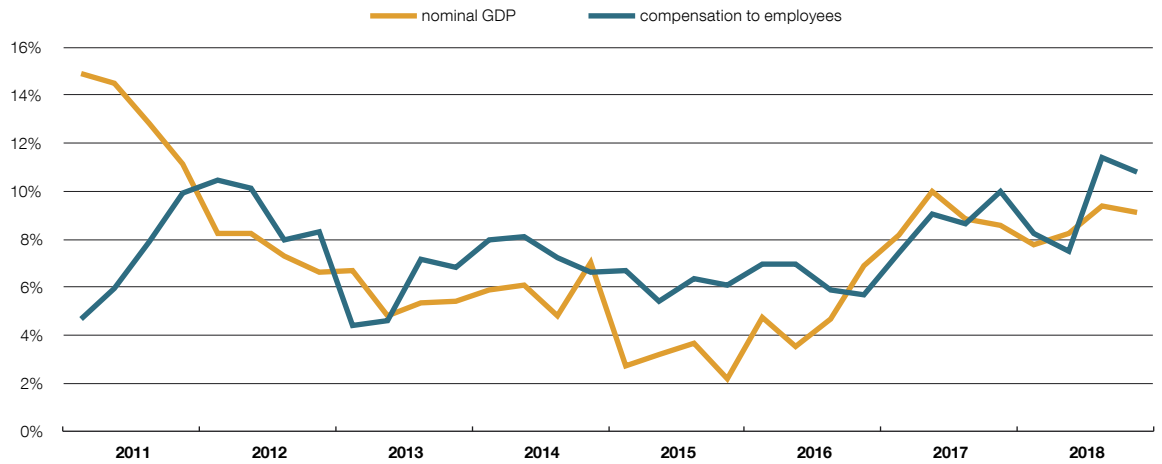


Source: Statistics Estonia

Real unit labour costs show the share of GDP that is paid in compensation to employees, or how much of the income earned in the economy goes to labour. The remainder of value added is the capital share, which is profit and depreciation of fixed assets. Growth in the labour share is approximately equal to the growth in real unit labour costs. Unit labour costs have steadily increased in Estonia since 2012, meaning that the capital share of value added created has declined. Unit labour costs increase when creating value added becomes less capital intensive, for example when the share of the service sector in the economy increases or if the capital stock per employee declines over time. If the capital stock does not decline, then higher unit labour costs mean that profitability will be below its average. The profitability rate may be reduced if investors consider Estonia to be a less risky destination, or by a favourable interest rate environment. Both of these would encourage business projects with lower expected return, which would probably not have earlier received investment.

Unit labour costs are affected not only by the investment environment, but also over the short term by limits on the supply of labour, as a shortage of available labour increases wage growth. The change in the components of unit labour costs over time shows that they rose faster in the second half of 2018 because of a sharp acceleration in the growth of the payroll (see Figure 2). It

Figure 2. Compensation to employees and nominal GDP growth

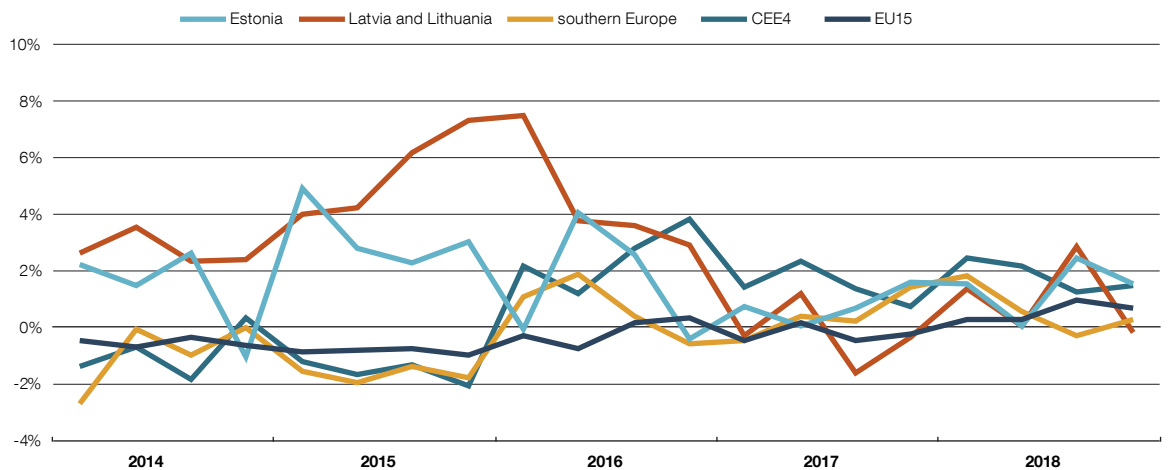


Source: Statistics Estonia

is probable that the faster growth in labour costs in 2018 was actually part of a smoother trend, as both the acceleration in the third quarter and the slower growth in the payroll in the second quarter can be partly attributed to the income tax reform. This led people to take their wages and their holiday pay more equally across months, to avoid their tax-free minimum threshold fluctuating too much. Less holiday pay was taken in the second quarter than in previous years, and wages paid out were consequently higher in the third quarter.

If real unit labour costs rise and the share of capital income in GDP falls by more than in other similar countries, it could threaten the relative attractiveness of the country as a destination for production. The growth in real unit labour costs was notably faster in the Baltic states in 2014–2015 than elsewhere in Europe, but since economic activity rebounded in Europe in the second half of 2016, the gap has been smaller. Unit labour costs rose at around the same rate in all three Baltic states as in other regions in 2018 (see Figure 3). Unit labour cost growth accelerated in the second half of the year in the 15 older members of the European Union, largely under the

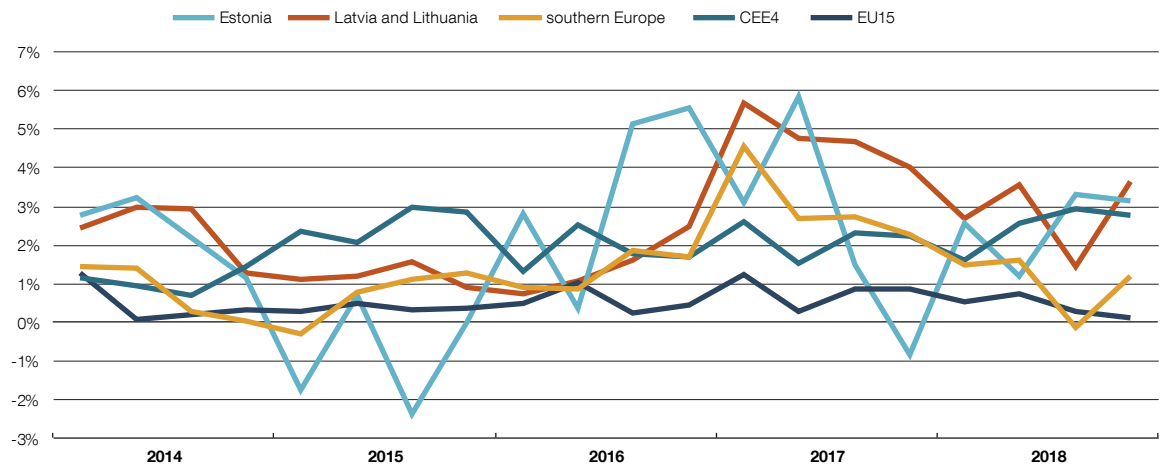
Figure 3. Yearly growth in real unit labour costs



Sources: Eurostat, Eesti Pank calculations

influence of Germany. The acceleration was cyclical in nature, as problems in car manufacturing slowed the growth in productivity (see Figure 4), while collective pay agreements meant that wage growth continued at the same rate.

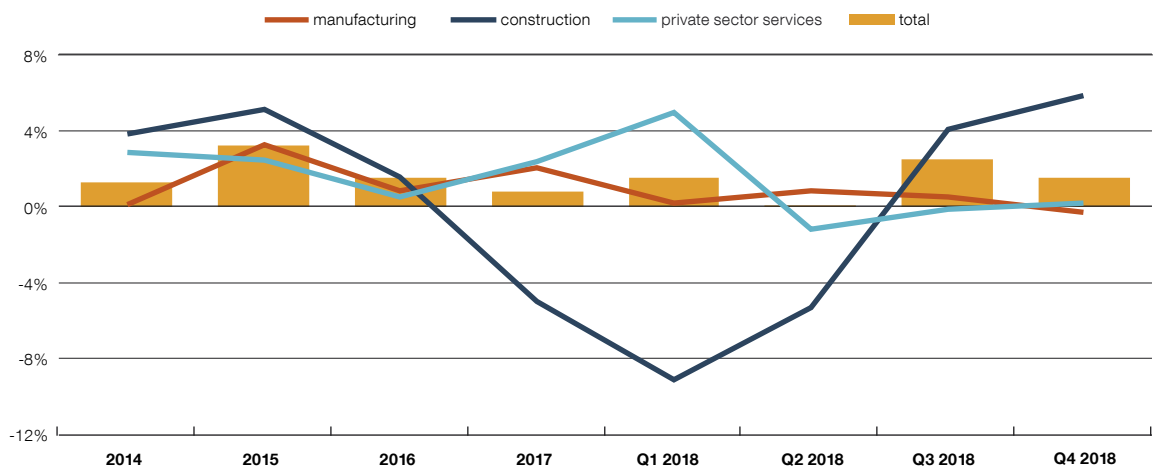
Figure 4. Yearly growth in real labour productivity



Sources: Eurostat, Eesti Pank calculations

Unit labour costs changed at different rates in Estonia in different sectors. The decline in unit labour costs in construction in the first half of 2018 was replaced by strong growth in the second half (see Figure 5). This was driven by faster growth in labour costs, which was caused by faster growth in both employment and wages. It is probable that wage pressures in construction were eased more than previously by the use of short-term labour from third countries. The introduction of rules for short-term labour governing the length of employment and wage levels may have changed the seasonal fluctuations of employment and wages within the year. This in turn may partly explain the faster growth in wages in the fourth quarter. Short-term workers are permitted to work for 12 months in Estonia within a 15-month period, which means

Figure 5. Growth in real unit labour costs in different sectors

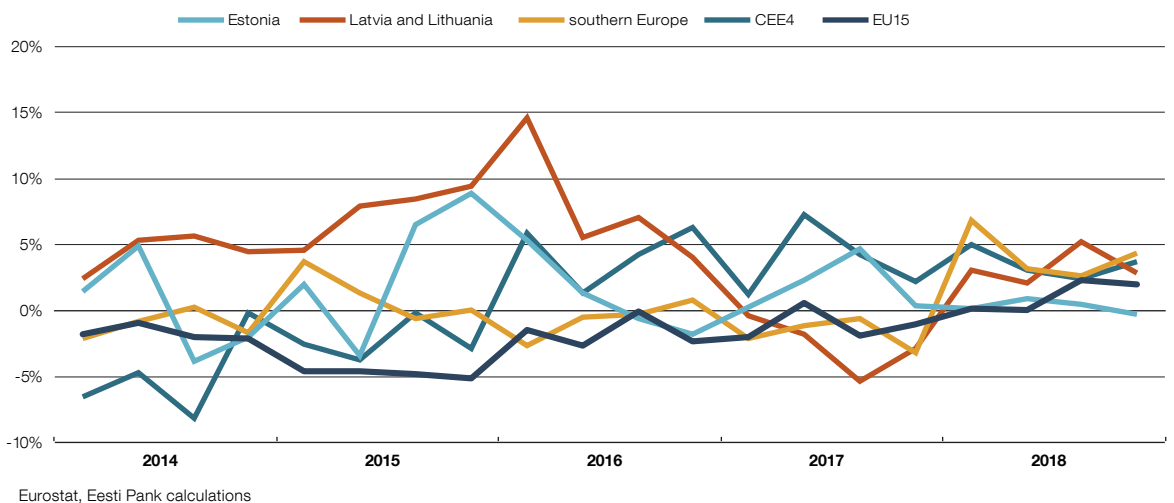


Sources: Statistics Estonia, Eesti Pank calculations

that they probably leave work during the low season. Growth in wages in construction is also affected at the same time by the requirement for short-term employees to be paid at least the average wage of the previous year. This requirement means that wage growth in the past feeds into current wages in sectors that hire short-term labour from abroad.

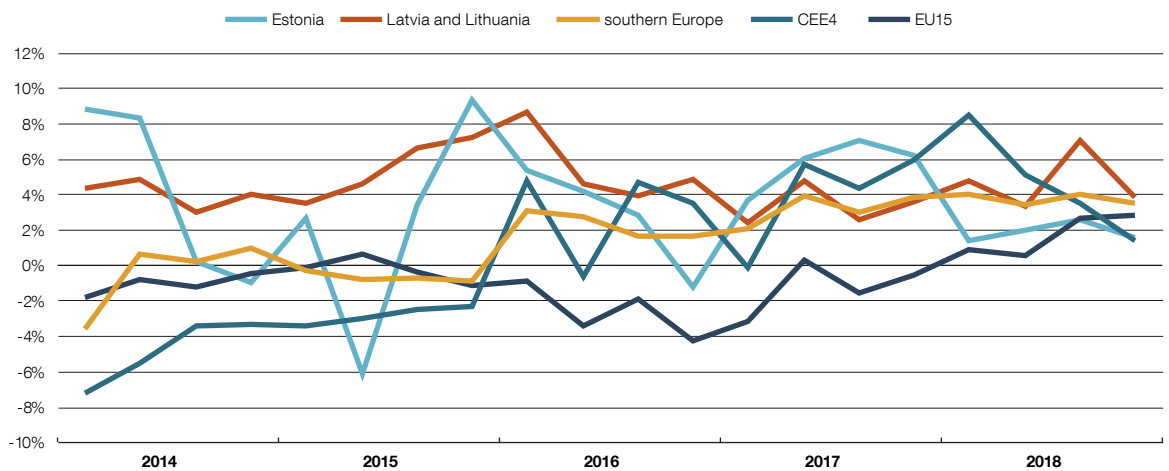
International competitiveness is important in the exporting sector above all. Unit labour costs have barely increased since 2017 as a share of value added in manufacturing, which is the sector with the largest share of exports. They grew by less in 2018 than the average for Latvia and Lithuania, and than the average for the older member states of the European Union (see Figure 6).

Figure 6. Yearly growth in real unit labour costs in manufacturing



The growth in nominal unit labour costs is often used as an indicator of international price competitiveness. It shows the increase in the cost of the labour that is needed to produce one unit of value added in the economy. As labour costs are generally a substantial part of production costs, a rise in them increases the pressure to raise production prices. If nominal unit labour costs rise faster in one country than in its competitors, the price competitiveness of that country is reduced. Nominal unit labour costs grew faster in Estonia in 2018, though mainly because of the service sector and in construction. Growth in nominal unit labour costs slowed however in manufacturing, where that indicator is particularly important because of the large share of exports. At the same time, price pressures have increased in most areas of Europe (see Figure 7). As the relative price level matters more for the competitiveness, the smaller difference between growth rates than in other parts of the European Union has been a beneficial change for the Estonian exporting sector.

Figure 7. Yearly growth in nominal unit labour costs measured in euros



Sources: Eurostat, Eesti Pank calculations

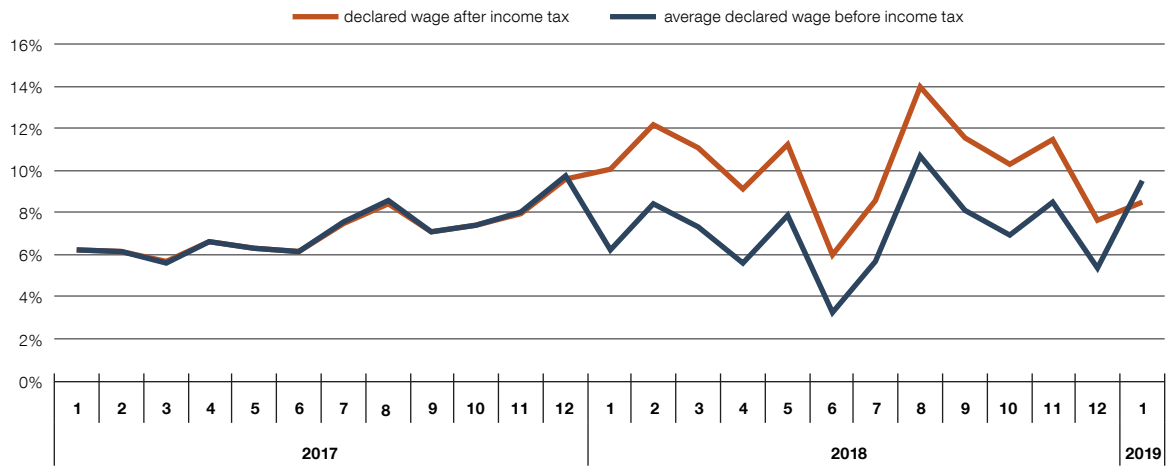
Average wages

The rate of wage growth increased from 7% in the first half of 2018 to 8.2% in the second half, as it was 7.9% in the third quarter and 8.9% in the fourth. Data from Statistics Estonia show that the basic wage without irregular bonuses and additional payments rose by 6.5%, and that flexible components of wages made a large contribution to the rise. Lower expectations for employment at companies, and slower growth in the economy could mean moving forwards that such rapid wage growth will remain temporary.

Wage growth in 2018 was affected by the income tax reform, which reduced the tax burden on workers earning up to the average wage, and so meant that their net wages grew faster than their gross wages. From 2018, Statistics Estonia stopped publishing the growth in net wages found from the wage survey, as it can no longer be calculated from corporate level data. If all wage earners used their monthly tax-free minimum allowance in full, then data from the Tax and Customs Board on the wage distribution indicate that the average net amount declared as wages increased faster than the gross amount by some 3.3 percentage points (see Figure 8). In this case, the rise in the tax-free threshold would have meant the growth in the net wage of those receiving the minimum wage increased by almost 15 percentage points. The tax reform probably allowed employers to hold back rises in the gross wage on the grounds that the wage paid out still increased in any case. This means that wage growth would probably have been even faster without the tax reform. On top of this, the tax reform affected the development of wages throughout the year by slowing wage growth in the second quarter and fuelling it in the third. As the tax free minimum threshold depended on wages paid out, wage earners were encouraged to take out their pay as smoothly as possible, and so the amount taken out in advance summer holiday pay and the number of such payments were lower than previously in the second quarter, and then they were higher again in the third quarter.

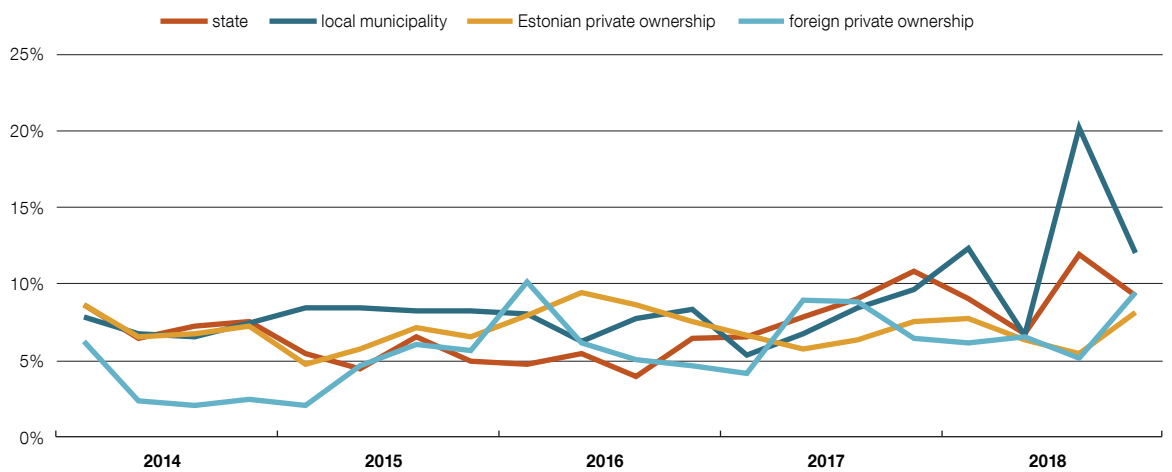
The main driver of faster wage growth in 2018 was the public sector (see Figure 9) as wage growth was strong in health and education. It is probable that wage growth accelerated in public administration even without any extraordinary factors, as wages rose in this sector in the second half of 2017 because of the reform of administration and bonuses paid out at the end of the Estonian presidency of the Council of the European Union. Wage growth also accelerated quite strongly in the private sector in the fourth quarter of the year.

Figure 8. Growth in the average gross wage and net declared wage



Sources: Tax and Customs Board, Eesti Pank calculations

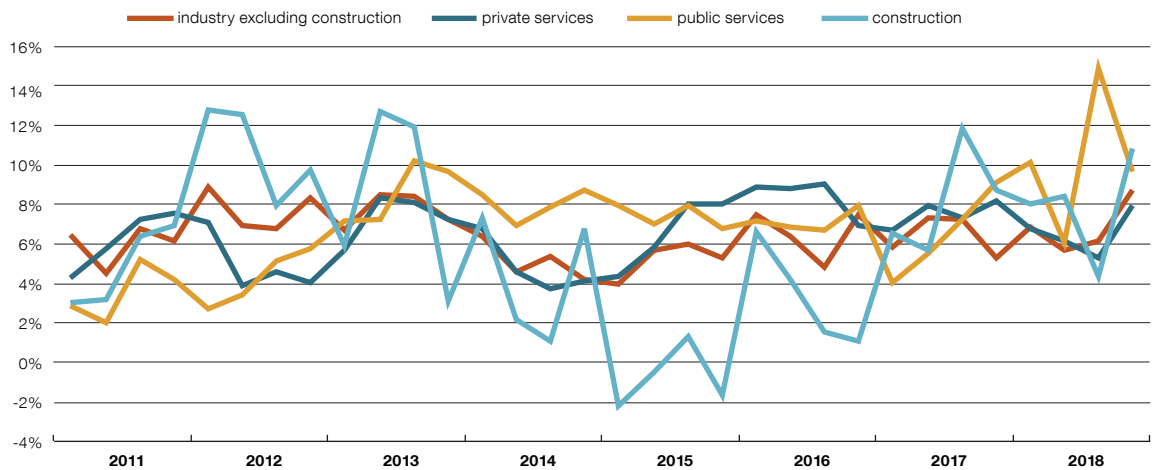
Figure 9. Growth in average gross monthly wages by type of ownership



Source: Statistics Estonia

The sector where wage growth has been increasing the most notably since 2017 is construction (see Figure 10), as a recovery in activity in construction has increased the need of companies in the sector for labour. Data from the Police and Border Guard Board show a substantial increase in the number of workers from third countries registered for short-term work in 2018 to almost 22,000. The distribution across sectors shows that one third of workers registered for short-term work came to the construction industry. This use of foreign labour eased labour shortages and so eased wage pressures in construction quite a lot. The growth in labour shortages was felt increasingly in construction during 2017 and in the first half of 2018, but it slowed in the second half of 2018 and started to decline in early 2019. At the same time employers became less optimistic about future growth in employment, which indicates weaker wage pressures in 2019.

Figure 10. Yearly growth in gross monthly wages by sector



Source: Statistics Estonia

Faster wage growth in industry in the second half of 2018 mainly reflects the wage growth in manufacturing, which picked up to 9% in the fourth quarter. Strong foreign demand meant that demand for labour increased in manufacturing in the second half of 2016, but despite the strong growth in vacancies and consequently in employment, wage growth in manufacturing remained below the average rate for the economy as a whole until the final quarter of 2018. Like in construction, wage pressures in manufacturing were eased by the employment of foreign labour. Although wage growth accelerated sharply, the growth in unit labour costs in manufacturing in the second half of 2018 was restrained, as labour productivity increased at the same time.

The highest average wages in 2018 were in information and communications, where the average wage was 166% of the national average at 2172 euros, and finance and insurance activities, where it was 164% of the national average at 2154 euros. The lowest average wage was in accommodation and catering, where it was 65% of the national average. These large differences between sectors are partly due to the different structure of jobs within them and the distribution of the education levels of employees. The relative wage increased by most in 2018 in education, where it rose from 88% of the national average to 93%. The salary analysis of the Ministry of Education shows that within the education sector, the monthly average wage of teachers in municipal general education schools was 106% of the Estonian average wage. Although the wage of employees with higher education is typically above the median in the Estonian labour market, some employees with higher education are not able to find a job that matches their qualifications. Box 1 analyses how widespread the mismatch is between employees with higher education and jobs available in Estonia.

Box 1. The under-use of the skills of employees with higher education in the labour market

The better the match between employees and jobs, the more efficiently a labour market can be said to function. One measure of this match is the share of employees whose level of education does not suit the actual demands of their work. This box describes more closely the mismatch between people with higher education and the jobs available in Estonia. Being overeducated is a greater problem for people with higher education, while being undereducated is relatively uncommon. Being overeducated

for a job is a problem, as overqualified employees generally earn a lower wage than someone with the same education who has a job that matches their skills. Overeducated employees may also be less dedicated to their work, less productive, and less satisfied with their job. The wage earned should not necessarily be directly linked to the level of education that is required for the job. It is quite natural that some employees with higher education decide to take a job that requires less education because it pays a higher wage. If a job that requires a lower level of formal education pays a higher wage, then employees with higher education may decide to take it, and their welfare would not suffer because of it. If there are a large number of educated employees in a country working in positions where they cannot make full use of their skills, and they are doing so for a wage that is below the average, then companies are not benefiting in full from the abilities of their employees. This is a drag on the economic development of the country.

It is hard to estimate the match or mismatch between the education of employees and the needs of jobs. The PIAAC survey of adult skills in 2011–2012 found the share of employees in Estonia whose level of education exceeded that required for their job was quite large compared to the shares in other OECD countries¹. Analysis by the International Labour Organization (ILO) shows over-education in Europe to be an increasing problem². Information on the match between education and work done in Estonia can also be found from the regular labour force survey, which asks respondents whether their main job and their level of education match, or whether the job requires a lower or higher level of education.

The labour force survey found that on average in 2017 and 2018, 10% of full-time wage earners with higher education were in jobs that they considered required a lower level of education. The largest share of employees with higher education working in jobs that required a lower level of education, accounting for some 6% of all employees with higher education, had jobs that paid less than the median wage in Estonia (see Table B1.1). The risk of earning below the median is clearly greater for those employees who are overeducated for their job. Some 62% of those who are overeducated for their job earn below the median, while 22% of those whose education level matches the requirements of their job earn below the median.

Table B1.1. Wages and the match between level of education and current job for full-time employees with higher education in 2017 and 2018

	current job fits educational level	current job requires a higher level of education	current job requires a lower level of education	total, by wage
wage is below or equal to the Estonian median wage	19.6%	0.2%	6.3%	26.0%
wage is higher than the Estonian median wage	69.7%	0.5%	3.9%	74.0%
total, by match between level of education and current job	89.2%	0.6%	10.1%	100.0%

Sources: Labour Force Survey, Statistics Estonia, Eesti Pank calculations

In the past couple of years, 19.6%, or around a fifth, of all employees with higher education were working in jobs that matched their level of education but were earning less than the median wage in Estonia. Almost one third of them were working in education, a tenth in manufacturing, and another tenth in public administration. The largest share of those employees with higher education who were overeducated for their work and earning below the median wage in Estonia were working in retail and manufacturing.

The share of people with higher education who are overeducated and earning a low wage has remained quite stable over the past decade. During this time there has been a small decline in women with higher education working in jobs that require a lower level of education, and an increase among men. In the past couple of years this underutilisation of the skills of employees

¹ Halapuu, V (2015). Oskuste ja hariduse mittevastavuse mõõtmine Eestis PIAACi andmete baasil: PIAAC uuringu temaatiline aruanne nr 7. (*Measurement of skills mismatch in Estonia based on PIAAC data: Thematic Report No 7 of the PIAAC Study*). Tartu: Ministry of Education and Research.

² International Labour Organization (2014). Skills mismatch in Europe. https://www.ilo.org/global/statistics-and-databases/WCMS_315623/lang--de/index.htm.

has been quite equal for men and women with higher education (see Table B1.2). The probability of someone having a job that is below their level of education and of earning less than the median wage is on average almost twice as large in Estonia for older employees with higher education and for employees of other nationalities, and also for employees with higher education living in the north-east and the west of Estonia. The probability of an employee with higher education being overeducated for their job and earning a wage below the median was estimated with a probit model, with the variable from Table B1.2 and retirement age as explanatory variables, and it emerged the biggest difference in the probability of being over-educated low-paid was between Estonians and non-Estonians, as the probability of being in this group was 10% higher for non-Estonians. Likewise, the likelihood of being overeducated for a job and earning below the median wage increases significantly in retirement age, as those of retirement age are 6.8% more likely than others to be overeducated and low-paid.

Table B1.2. The probability of a full-time employee with higher education earning a wage that is below or equal to the Estonian median wage and having a job which requires a lower level of education (2017–2018 average)

gender	male	5.9%
	female	6.5%
nationality	Estonian	4.3%
	other	11.9%
age	25–49	4.6%
	50–74	10.5%
region	northern Estonia	5.8%
	central Estonia	6.7%
	north-eastern Estonia	1.5%
	western Estonia	9.7%
	southern Estonia	4.6%

Sources: Labour Force Survey, Statistics Estonia, Eesti Pank calculations

Older employees with higher education usually studied decades ago, and the skills they learned at that time are not necessarily those that are needed today. Rapid technological development makes it probable that a technical higher education gained decades ago is more outdated today than other forms of higher education. A relatively large share of people with higher education in Estonia work in the public sector, where knowledge of the Estonian language is required. The language barrier may explain why it is harder for people of other nationalities with higher education to find a job that matches their level of education.

Rapid technological development and economic changes increase the risk that skills and knowledge gained at a young age will become outdated. The jobs for which young people trained in colleges decades ago may have changed or disappeared entirely. Given these changes, the best chance for people working in jobs requiring lower qualifications and paying lower wages to improve their position in the labour market is through additional education and retraining.

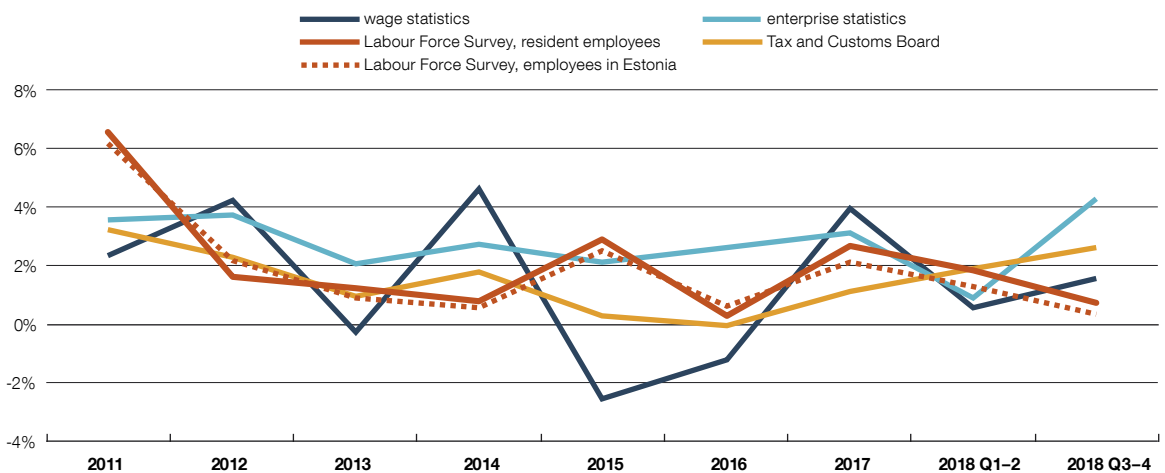
LABOUR DEMAND AND SUPPLY

The balance between the demand for labour and the supply of it was again tilted in favour of demand at the end of last year. This is indicated by rapidly rising wages, economic growth that exceeds its long-term sustainable rate, and the very low rate of unemployment. Labour shortages have been eased by the employment of labour from abroad, without which wage pressures in the economy would have been even stronger. The number of vacancies remained high, but it stopped growing. Together with the reduced expectations of companies for employment, this indicates that demand for labour will not increase in future at the same rate.

Employment

Growth in the economy did get faster, but data sources disagree about whether the numbers in employment increased at the same rate in the second half of the year. The labour force survey showed the growth in the number employed at companies in Estonia slowed substantially in the second half of 2018. It found that 0.7%, or 4850, more workers were employed at companies in Estonia in the second half of 2018 than a year earlier (see Figure 11). As in 2017, the growth in total employment, or the employment of Estonian residents, was a little slower in the second half of the year than it was at companies based in Estonia at 0.4%, or 2400 employees. The number of Estonian residents working abroad, especially at companies in Finland, has fallen and when they come to work in Estonia the number of Estonian residents in employment does not change though the number employed by companies in Estonia rises.

Figure 11. Change in the number of employees by different data sources



Sources: Statistics Estonia, Tax and Customs Board

The confidence bounds for the point estimates found by the labour force survey are quite broad compared to the registry data of the Tax and Customs Board and corporate surveys. This is because the labour force survey is a sample survey and it is based on interviews with around 4500 people in a quarter. The wide confidence bounds mean that estimates of growth in employment can fluctuate because of statistical errors, and so it is important to compare the estimates from the labour force survey with other data sources. On top of its statistical fluctuations, 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.

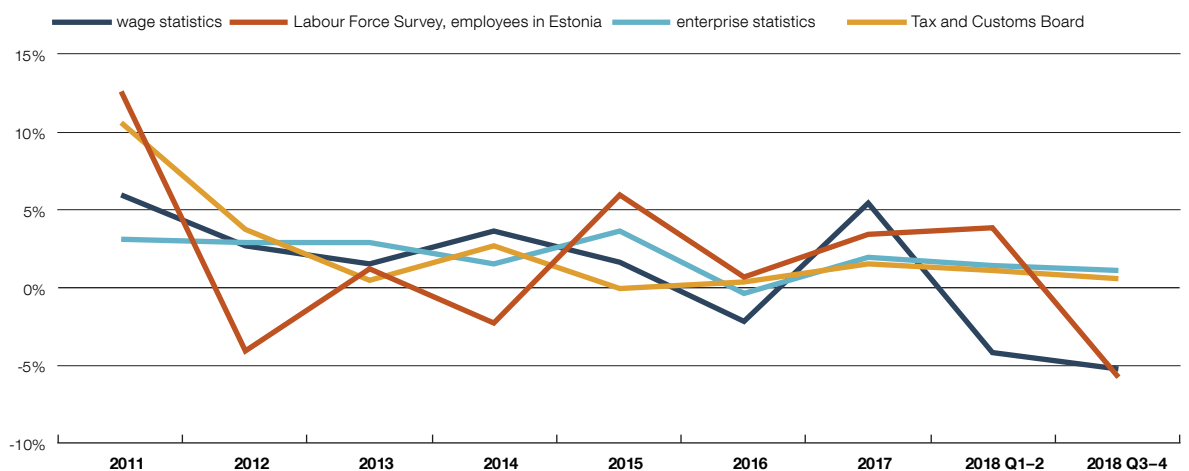
Other data sources, including the registry data of the Tax and Customs Board, indicate that the number in employment increased faster in the second half of the year, like growth in the economy did (see Figure 11). The different results for growth in employment may depend on how well the data sources cover foreign labour working in Estonia. The data from the Police and Border Guard Board show almost 22,000 short-term workers registered in Estonia in 2018, 93% of them from Ukraine, Russia, Belarus and Moldova. Over 13,000 more people were registered as foreign labour than in 2017, and this may have increased employment by up to 2%. In fact the effect was probably smaller, as people are added gradually throughout the year and they do not all necessarily work in Estonia for the whole year.

The data from the Tax and Customs Board are registry data, and they show people officially earning a wage in Estonia on which an employer pays taxes. They include foreign workers working temporarily in the country if they are taxed like Estonian residents. A tax resident is a person who spends at least six months of the year in Estonia, and short-term workers can be registered for up to 12 months in a 15-month period. This means that most short-term workers fall into the category of tax resident. Data from the Tax and Customs Board show that employment started to increase faster from 2017 onwards thanks to the private sector, which coincides with the increase in the registration of temporary workers. These data suggest that growth in employment reached 2.4% in the second half of 2018.

Enterprise statistics and the wage survey are based on a survey of companies that covers all the employees of the company. The main difference between the two sources of data is that the enterprise statistics cover companies in the private sector, while the wage survey covers all companies and institutions. The data from the Tax and Customs Board found that the growth in employment came from the private sector, and this explains the faster rate of growth in the enterprise statistics. The figure for employment in the wage survey is full-time equivalent, and so growth in part-time employment lowers the growth rate for employment in this survey.

The differences between the data sources also stand out if changes in employment across sectors are analysed. The labour force survey found that employment fell in manufacturing (see Figure 12) and this explains a large part of the slower growth in employment in the whole economy. The data from the Tax and Customs Board and the enterprise statistics showed

Figure 12. Change in the number of employees in manufacturing by different data sources

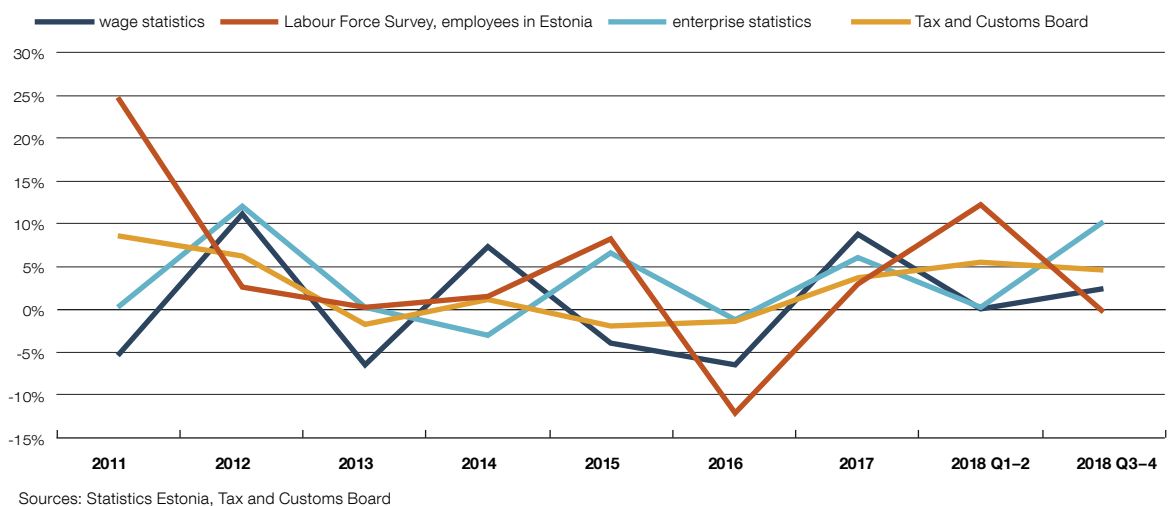


Sources: Statistics Estonia, Tax and Customs Board

small growth of 0.5-1.2% in employment in manufacturing, which may have been due to foreign labour working temporarily in Estonia. The wage survey found that full-time equivalent employment in manufacturing fell, which may indicate an increase in the share of employees working part-time.

Some 52,000 people work in construction, or less than 10% of all the employed, which makes the quarterly estimate of employment in the labour force survey quite changeable. This survey found that employment in construction fell in the second half of last year, but it grew strongly for the year as a whole by 5% (see Figure 13). Enterprise statistics show that employment in construction grew by 2-5%. A slowdown was indicated, except in the data from the Tax and Customs Board, which showed growth in employment was a little faster than in 2017.

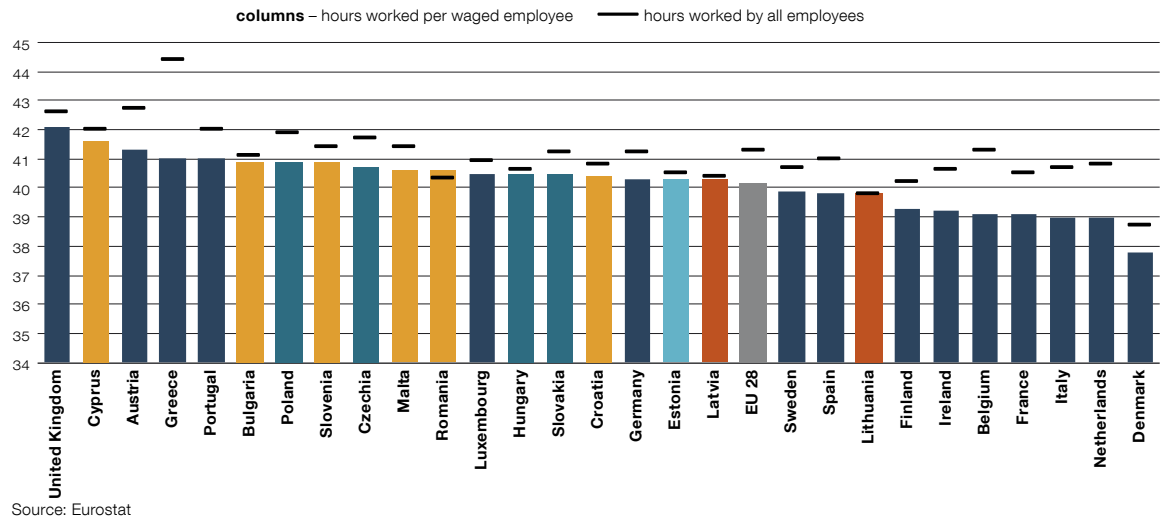
Figure 13. Change in the number of employees in construction by different data sources



As they did over the number in employment, different data sources disagree about employment measured by the number of hours worked. The labour force survey finds the number of hours worked was down 3.0% over the year. As the number of people in employment rose a little at the same time, the number of hours worked by each employee fell even more, by 3.6%. Data from employers show no fall in the number of hours worked per employee, as the wage survey found that workers worked on average the same number of hours as a year earlier, while the enterprise statistics even show a rise of 1.6% in the number of hours worked. It is very probable though that employers report the number of contracted hours rather than actual hours worked, especially if the employer pays wages monthly.

Data for 2017 show that full-time waged employees in Estonia worked on average 40.3 hours a week in their main jobs, which is a few minutes more than the average for full-time waged employees in the European Union and around half an hour more than the average for the euro area (see Figure 14). In general the working week of waged employees is a little longer in the newer member states of the European Union than it is in the older 15 members. Looking at the hours worked in a week of all those in employment, including those who work for themselves, gives a slightly different result though. Around one tenth of those in employment in Estonia are self-employed, which is a little below the average for the European Union, and the working week of the self-employed is only a couple of hours longer than that of waged workers. The working week of the self-employed working full-time is generally longer than that of waged employees, and in countries where the share of the self-employed within employment is larger,

Figure 14. Average weekly working hours per full-time employee (2017)

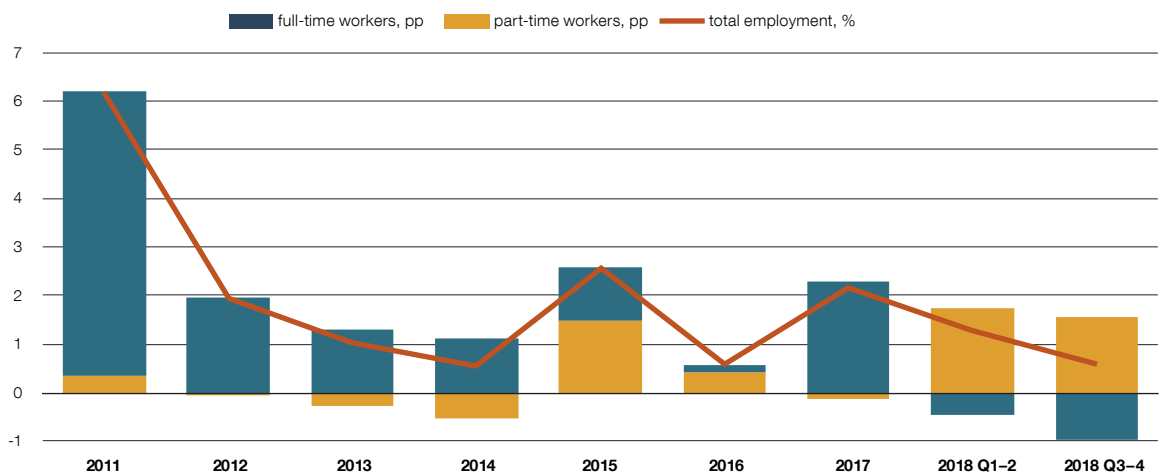


or where the difference in hours worked is particularly large, the number of hours worked in a week by all the employed is noticeably larger than the number worked by waged employees.

One reason why the labour force survey found there were fewer hours worked than in 2017 is that national holidays and shortened working days meant there were fewer working hours in the second half of 2018. National holidays and shortened working days falling within the usual working week explain around a third of the fall of 3.6% in hours worked per employee.

A partial explanation for why the number of hours worked fell in the labour force survey while the number in employment actually rose is that the number of people in employment working part-time increased by 14.4%. The number of people working full-time fell, as it had in the first half of the year (see Figure 15). Wage survey data also show an increase in part-time work. A large part of the increase in part-time work comes from growth in employment among younger people who are working reduced hours alongside their studies. The growth in the share of employees working part-time explains around one percentage point of the fall in hours worked per employee in 2018. The change in hours worked is covered in more detail in Box 2.

Figure 15. Change in the number of employees by full-time /part-time work



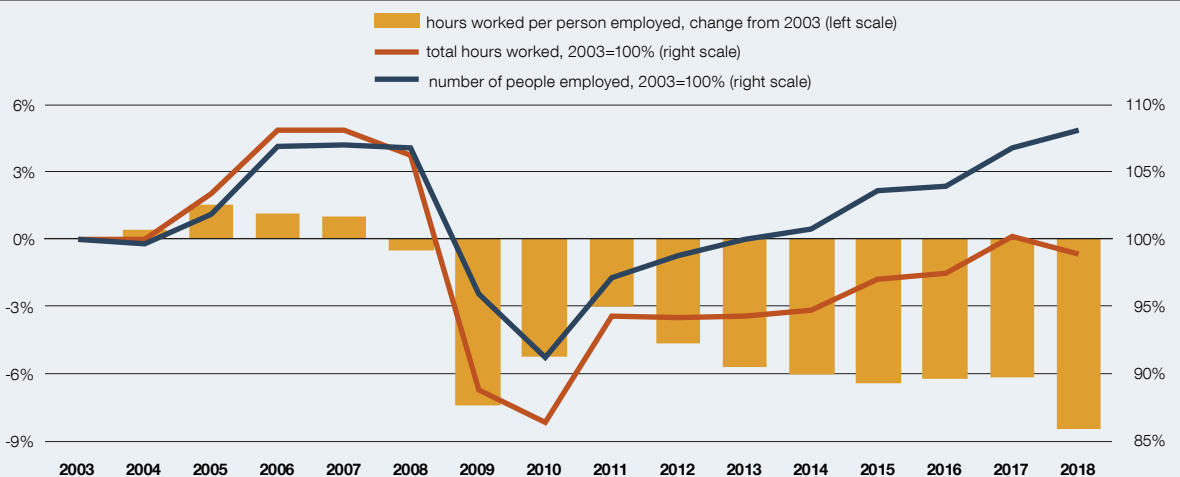
Sources: Statistics Estonia, Eesti Pank calculations

The growth in employment through the rise in the number working part-time can be taken to mean that the high rate of employment and shortage of labour have led the labour market to take in people who for whatever reason cannot or do not want to work full-time, such as students or the retired. The share of employees working part-time is markedly smaller in Estonia than in Western European countries, while Estonia also has the smallest number of people working part-time because they cannot find a full-time job. Part-time work may be encouraged by the higher tax-free income threshold than earlier, which can encourage participation in the labour market even for people who cannot or do not want to work full-time.

Box 2: Why are people in Estonia working less than before?

The number of people in employment in Estonia reached its highest level of the past 15 years in 2018, but at the same time the total number of hours worked was 1.3% lower than in 2003. This means that 48,400 people were added to those in employment over this time, but the average contribution of each worker fell by 168 working hours a year (see Figure B2.1). This box considers the factors that could help explain the fall in the number of hours worked per employee.

Figure B2.1. Hours worked and number in employment



Sources: Statistics Estonia, Eesti Pank calculations

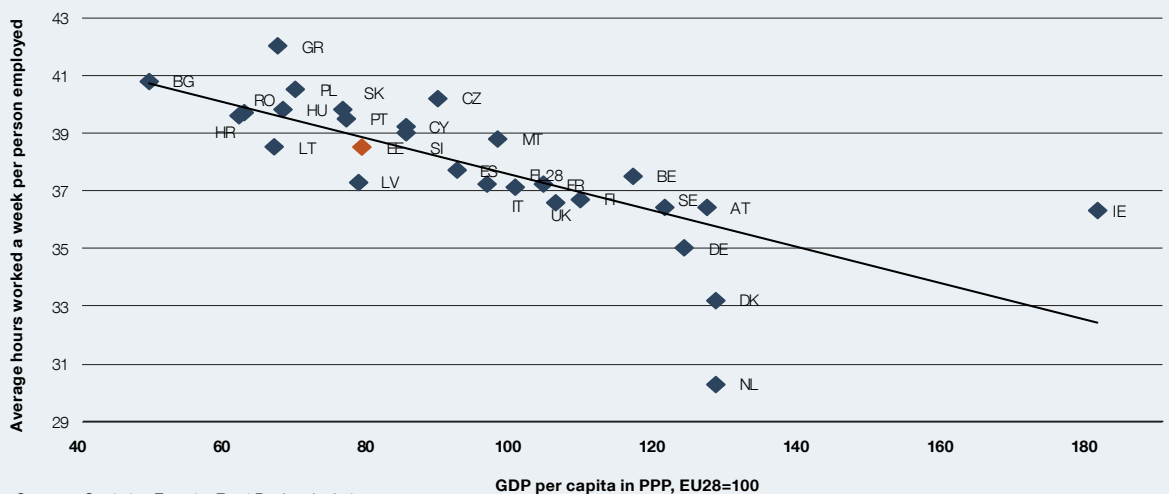
There are several possible reasons why the number of hours worked by each employee has fallen. The first is that the number of hours worked usually rises when the economy is doing well, and falls during difficult times. This was seen with the largest fall in the number of hours worked in Estonia in 2009, during the recession. Instead of cutting jobs, employers often cut working hours through either employer-mandated wage breaks or part-time work. However, the economic cycle should have had a positive effect on hours worked in 2018, and so it cannot explain the fall in working hours.

The number of hours worked per employee can also be affected by the age and gender of those employed. The average age of people in Estonia of working age, which is 15-74, has risen by around two years in the past 15 years, and the share of those in employment who are aged over 50 has increased by around an eighth from 34% in 2003 to 38% in 2018. The labour force survey shows that the average number of hours worked declines with age, but the structural changes explain only around 0.3 percentage point of the fall of 8.1 percentage points in the number of hours worked. This shows that working hours have primarily declined within age groups.

A third reason is that as wage levels rise, people may prefer to work shorter hours. A rise in the wage level affects the labour supply in two ways. One is that higher wages make working more worthwhile, and so people prefer to substitute their leisure time with working time. The second though is that higher wages mean higher total incomes, and richer people are more able to

afford themselves leisure time. This is known as the income effect. The preference of people to work less as their wealth grows is also reflected in the differences in average working hours between different countries. A survey by the Goethe University³ compared microdata from household surveys in 80 countries and found that the number of hours worked per employee was reduced by relatively higher wages than the average within the country, and by living in a country with a high wage level. The average number of hours worked per employee in Estonia reached 38 hours a week in 2017, which is well in line with the number of hours expected given living standards (see Figure B2.2).

Figure B2.2. Living standards and hours worked per person employed



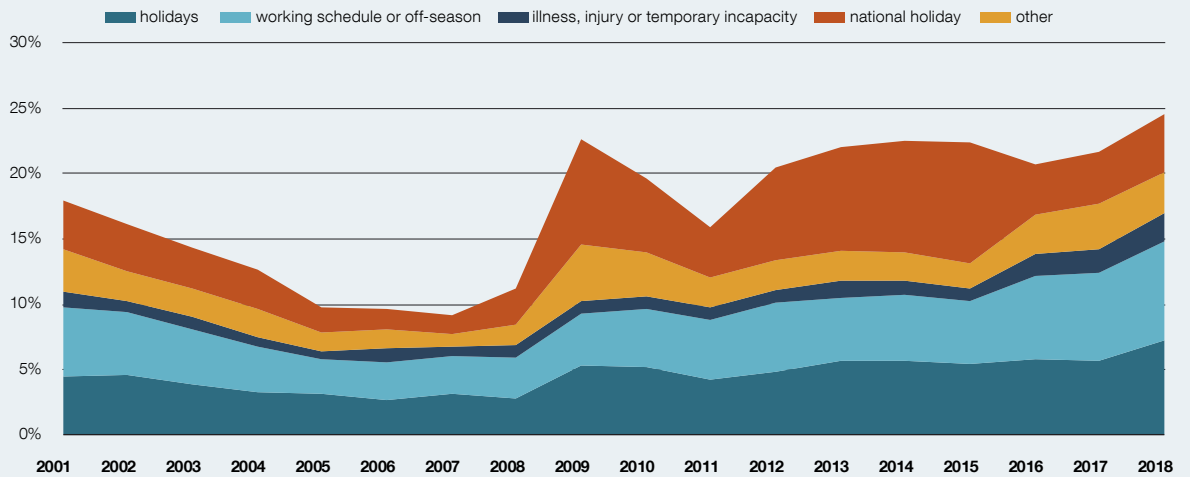
Sources: Statistics Estonia, Eesti Pank calculations

Average working hours are affected not only by personal preferences but also by institutional factors like laws on working and holiday time, the social benefits system, and the tax system. There was a major change in the regulations of working time and holiday time in Estonia in 2009 when the Employment Contracts Act came into force. Employees had earlier had the right to use the annual leave that they had earned over the previous four years, but from 2009 the right to holiday time expires after one year from the end of the calendar year in which it was earned. It is hard to separate the impact of the new rules from that of the economic crisis, but the data suggest that the number of hours worked per employee has not recovered since the crisis.

If working time is affected by institutional factors, or if people themselves choose to work fewer hours, then the effect may be seen in different ways. It is apparent from the labour force survey that the usual working week was 3.8% shorter than in 2003, meaning that it shrank by substantially less than actual hours worked. As many as 24.5% of the employed were off work or working less than usual during the survey week in 2018, while only 14% were in 2003. The main reasons they were off work or working less were holidays, national holidays, working schedules or the off-season, or illness or injury. Figure B2.3 shows that 3.4% of those in employment worked less in 2018 than in 2003 because of holidays and because of working schedules, while 1% worked less because of illness, national holidays or other reasons. The increase in part-time work may be the reason why people tend to work fewer hours because of working schedules. The biggest growth in 2018 from the preceding year was in the share who were on holiday, which increased by 1.6%, possibly because the summer was exceptionally warm.

³ Bick A., Fuchs-Schündeln N., and Lagakos D. (2018). *How Do Hours Worked Vary with Income? Cross-Country Evidence and Implications*, American Economic Review, Vol 108, no 1, pp 170–199.

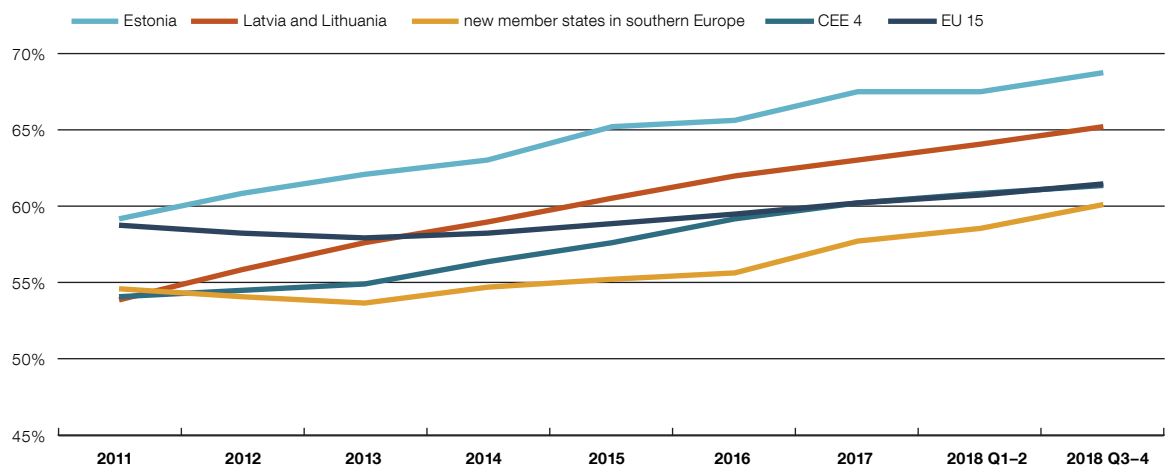
Figure B2.3. Those who were off work or worked less than usual in the survey week by reason as % of those in employment



Sources: Labour Force Survey, Eesti Pank calculations

The employment share, which is the rate of employment for those of working age, or 15–74, was only about 0.4 percentage point higher in the second half of 2018 than a year earlier at 68.7%. The employment rate for those aged 15–24 was lower than in the second half of 2017, and the fastest increase in the share in employment was among those aged 50–74. The employment rate in Estonia has been one of the highest in the European Union for several years now (see Figure 16), with only Sweden slightly ahead. This indicates that on average there is not much slack in the labour supply in Estonia. The employment rate has risen in Latvia and Lithuania about as fast as in Estonia, and in recent years it has also done so in the newer European Union member states in southern Europe. Meanwhile the share of the working age population in employment in the EU15 countries has changed fairly little.

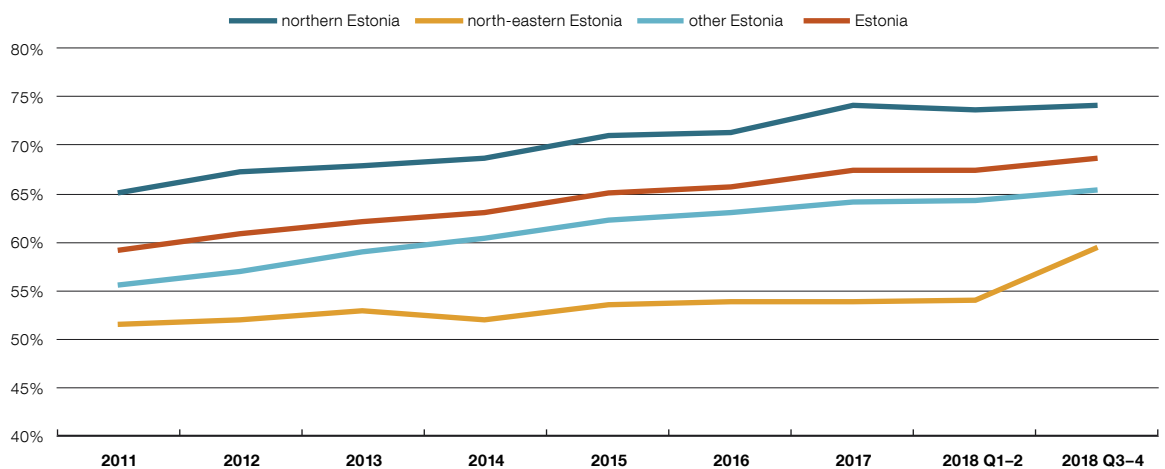
Figure 16. Employment rate



Sources: Eurostat, Statistics Estonia, Eesti Pank calculations

Though the employment rate is very high in Estonia on average, there are still differences between different regions (see Figure 17). Some three quarters of residents of working age are in employment in northern Estonia, where the employment rate is not notably different from what it was in the previous year. Elsewhere in Estonia the employment rate continued to rise though. The increase in the share of people in employment in north-east Estonia was particularly notable. Although the number in employment rose relatively little from a year earlier in north-east Estonia, the sharp drop in the number of people of working age meant that the share of people of working age in employment increased rapidly.

Figure 17. Employment rate in Estonia

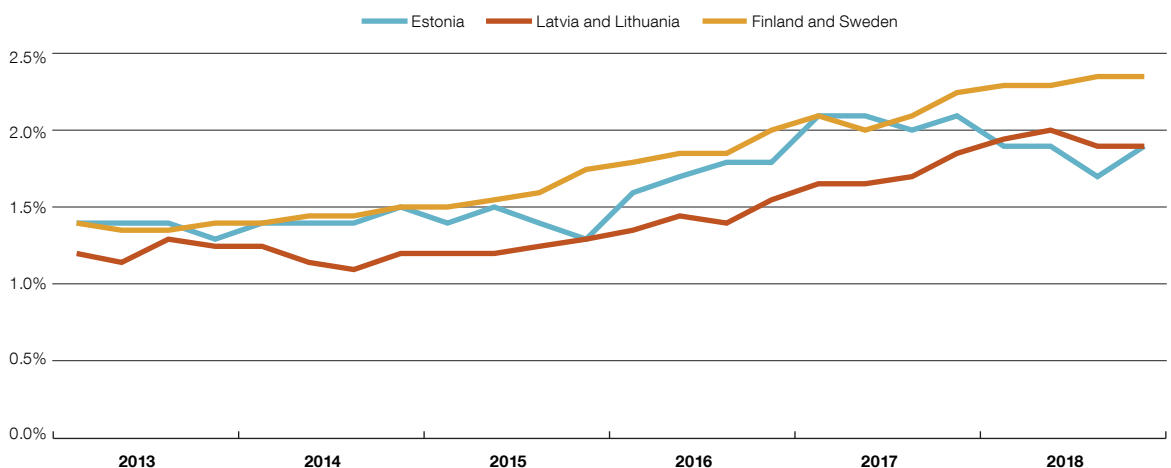


Sources: Statistics Estonia, Eesti Pank calculations

Vacancies and labour mobility

The labour mobility survey⁴ shows that there were slightly fewer vacancies in relation to the total number of job positions in the second half of 2018 than a year earlier. At the end of 2017 there were just over two posts unfilled out of every 100, but in the second half of last year this had fallen to a little under two (see Figure 18). The slight fall in the vacancy rate indicates that labour

Figure 18. Vacancy rate, seasonally adjusted



Sources: Eurostat, Eesti Pank calculations

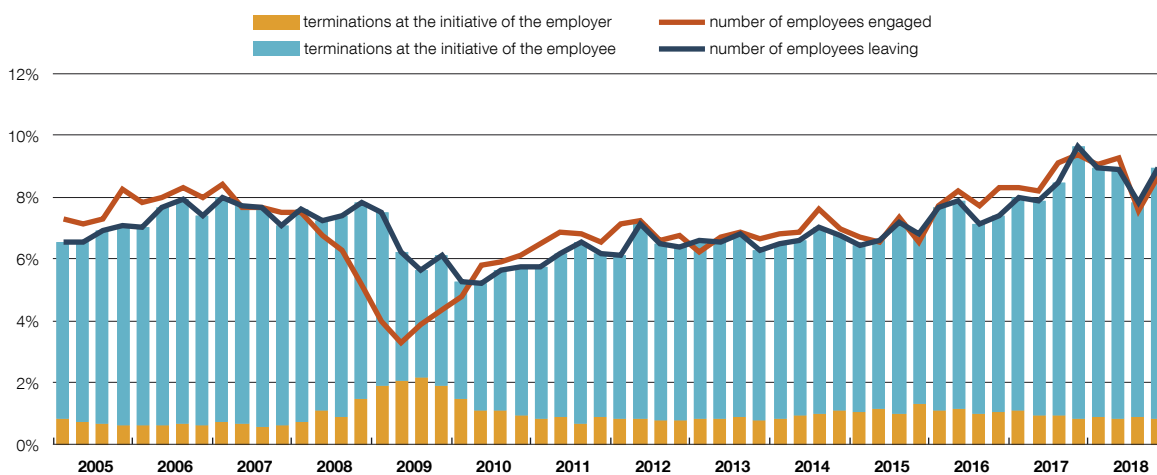
4 The methodology used for the labour mobility survey changed in 2018, meaning the data from 2018 are not perfectly comparable with those of earlier years. The change should not affect the vacancy rate.

shortages did not become any worse last year. The vacancy rate fell particularly in manufacturing, though it rose a little in construction and healthcare. The rate of positions unfilled peaked in 2017 in Estonia, but in Latvia, Lithuania, Finland and Sweden the vacancy rate continued to rise further in 2018 too.

Alongside the labour mobility survey, data from Töötukassa also show a slight fall in the number of positions unfilled. There were fewer positions offered through Töötukassa in the second half of 2018 for top specialists, service and sales staff, and unskilled workers than a year earlier. There was more demand than earlier though to hire equipment and machine operators.

A further indication that labour shortages may have peaked comes from data on the numbers moving into and out of jobs (see Figure 19). Although the churn of employees remains very large, there were fewer people moving into and out of work relative to the number in employment in the second half of 2018 than a year earlier. Information on labour market flows also comes from the labour force survey, which asks people about their labour market status a year previously. It appears that the share of those in employment in 2018 who were working in a different job a year earlier or were not employed at all was around 18%. Among these, 11% of those in employment had changed their job during the previous year, 2% were previously unemployed, and 7% were inactive. More information on labour market flows is given in Box 3.

Figure 19. Labour mobility, seasonally adjusted

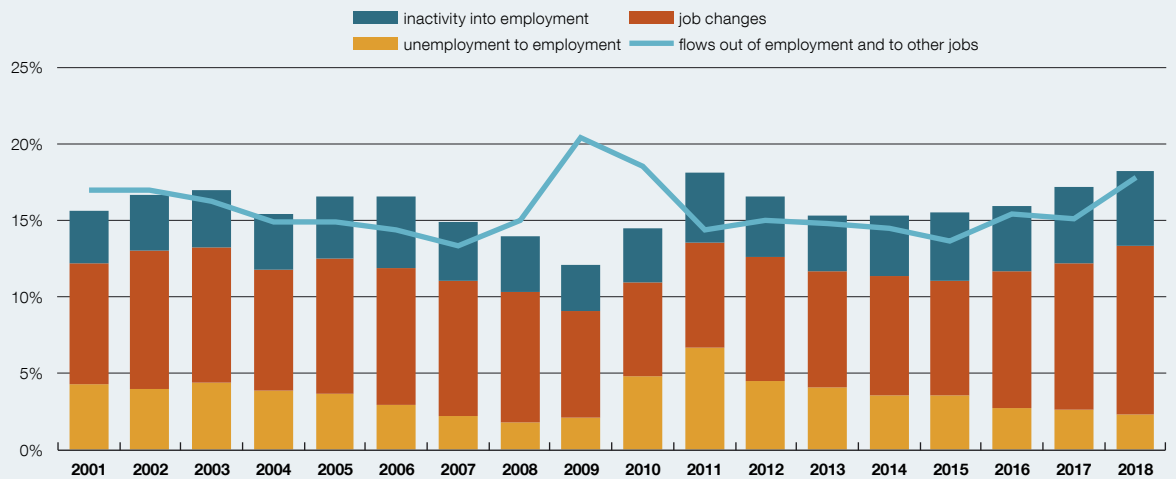


Sources: Statistics Estonia, Eesti Pank calculations

Box 3: Mobility in the Estonian labour market

The past decade has seen a fall in unemployment, an increase in labour force participation, and a rise in employment. This box describes the recent trends in flows between labour market statuses, which have affected the evolution of these three key indicators in the past couple of years. The box draws on microdata from the labour force survey. The survey asked people about their current labour market status, and also what their status was a year earlier. From this it is possible to calculate flow indicators between different labour market statuses, and find an estimated probability of movement from one status to another.

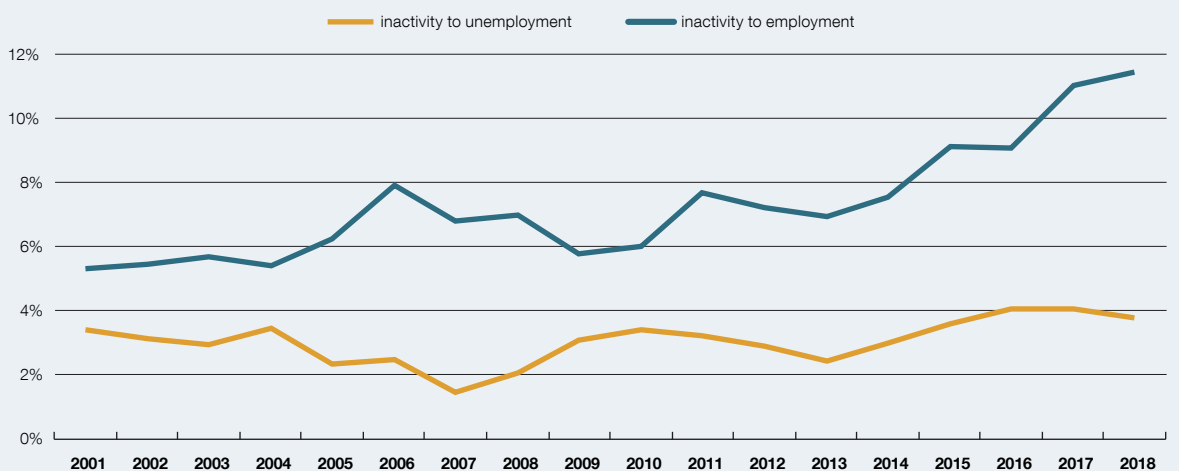
The labour force survey confirms the estimates of the labour mobility and vacancies survey that people have started to move more actively in recent years into and out of employment (see Figure B3.1). Labour force survey data show that this is primarily because of the increase in churn in the labour market since 2016. In 2018, 11% of all those in employment had changed job in

Figure B3.1. Flows into and out of employment, % of the number in employment in the previous year

Sources: Statistics Estonia, micro database of the Labour Force Survey, Eesti Pank calculations

the past year. On top of this, the flow into employment was boosted by the probability of movement from inactivity into employment, which has been rising for several years. As might be expected, there has been a decrease at the same time in movement from employment into unemployment, which was the main cause of the rise in unemployment during the economic crisis.

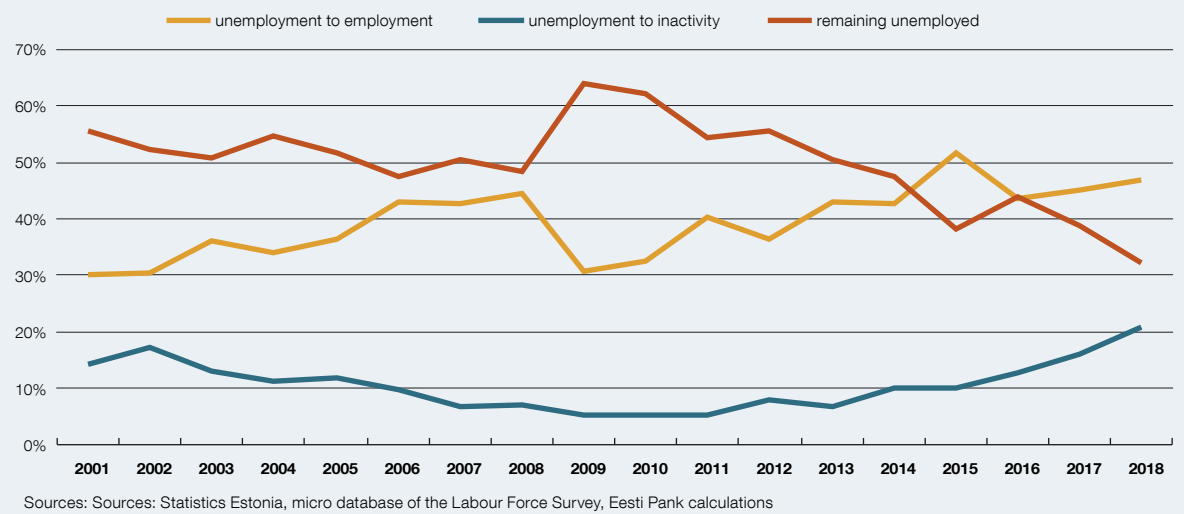
One of the most important changes in labour market institutions in recent years has been the Work Ability Reform, which was introduced in the second half of 2016. Although the reform required people with partial ability to work to participate actively in the labour market in order to receive their benefits in most cases, the reform has had less of an impact on the unemployment rate than was feared. The unemployment rate has fallen since 2016, and by the end of 2018 it was close to the level seen before the crisis, while labour force participation has increased at the same time. Labour market flow data suggest that the probability of moving from inactivity into employment has increased notably more in recent years than the probability of moving from inactivity into unemployment (see Figure B3.2). Whether the Work Ability Reform has led people returning to the labour market to pass over the unemployment stage and move directly into employment needs further analysis.

Figure B3.2. Flows from inactivity into employment and unemployment, % of the number inactive in the previous year

Sources: Statistics Estonia, micro database of the Labour Force Survey, Eesti Pank calculations

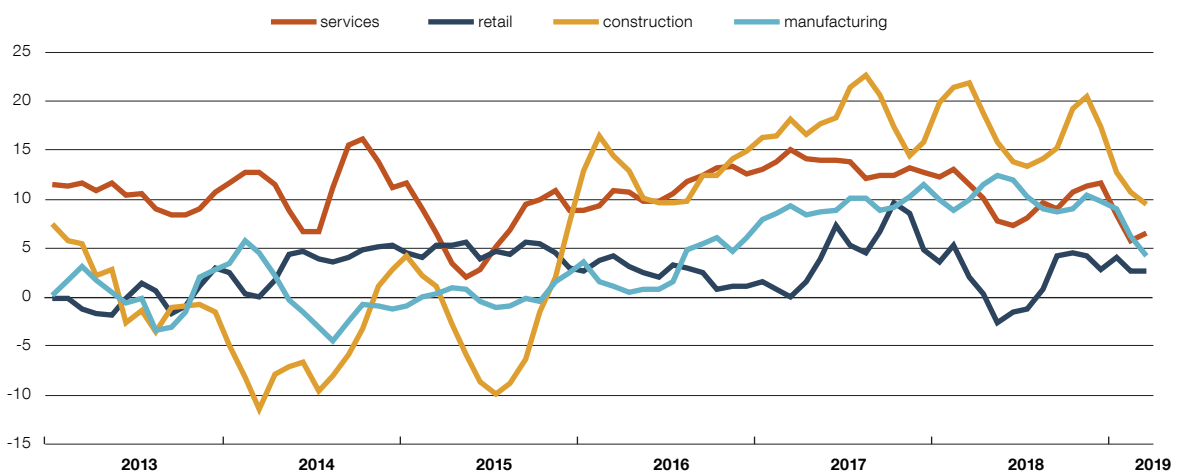
On top of the fall in unemployment, there has been a major decline in recent years in long-term unemployment, the level of which has now fallen even lower than before the crisis. The risk of people who were unemployed in 2017 being unemployed a year later was around 30% (see Figure B3.3). Over time the risk of being unemployed for more than a year has clearly fallen, because of the somewhat greater probability of moving into employment. However the probability of moving from unemployment into inactivity, or exiting the labour market, has also been increasing, which is probably because the unemployed are on average older.

Figure B3.3. Flows from unemployment to inactivity and employment, % of the number unemployed in the previous year



The employment expectations indexes in the survey by the Estonian Institute of Economic Research can help in assessing the future plans of companies to hire, which show future developments in demand for labour. There were slightly fewer vacancies at the end of last year than earlier, and expectations for growth in employment have fallen in line with this. The share of companies expecting at the start of 2019 that employment would grow was smaller than a year earlier in all sectors (see Figure 20). Although the number of construction companies expecting further growth in employment has fallen the most, survey data show that additional employees still need to be hired in construction.

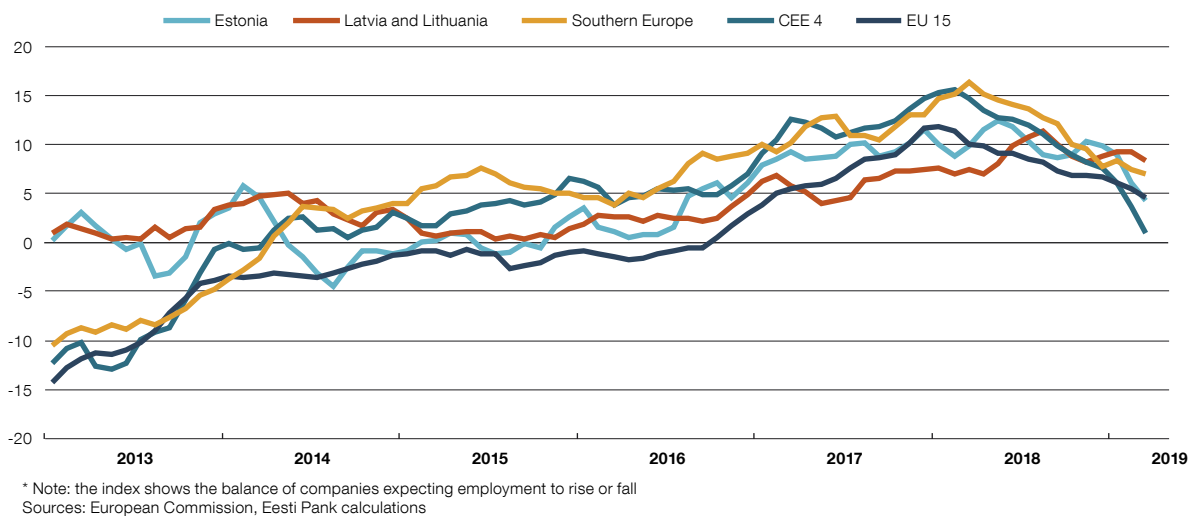
Figure 20. Employment expectations*, three-month moving average



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

At the end of the first quarter of 2019, the number of companies in manufacturing, which is the sector with the most value added, who expected employment in Estonia to grow was a little above the number of companies expecting employment to fall (see Figure 21). Expectations of growth in employment in manufacturing have fallen in the majority of other European Union countries, as they have in Estonia. Only in Latvia and Lithuania are there now more manufacturing companies expecting an increase in employment than there were a year earlier.

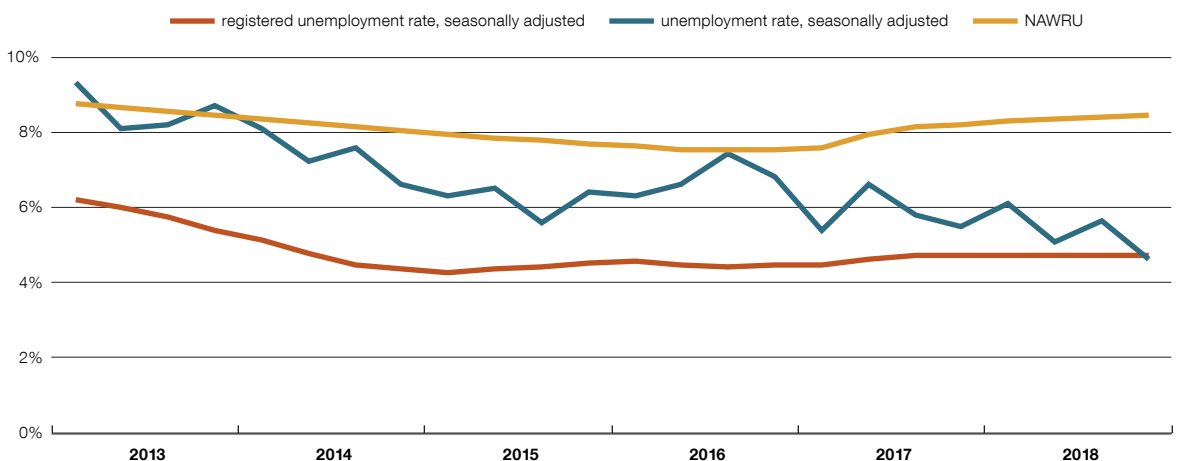
Figure 21. Employment expectations* in manufacturing, three-month moving average



Unemployment

The number in employment rose a little faster in the second half of 2018 than the number of residents participating in the labour market, and a natural consequence of this was that unemployment fell (see Figure 22). In the second half of 2018 there were on average 33,850 people unemployed, which is 3000 fewer than a year earlier. The labour force survey data show the unemployment rate fell from 5.3% in the second half of 2017 to 4.8% in the second half of 2018. The

Figure 22. Unemployment



Sources: Statistics Estonia, Töötukassa, Eesti Pank

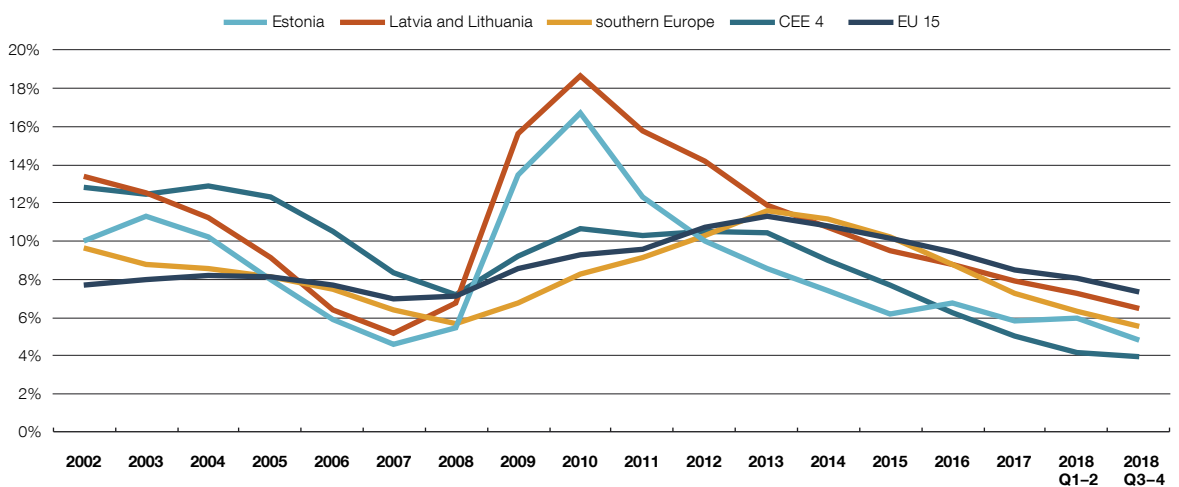
data show that unemployment fell substantially in north-eastern Estonia and western Estonia, though it rose in southern Estonia. The age groups where the unemployment rate has fallen are the 25–49 group and older groups, though it has risen among those aged 15–24.

Wages growing faster than productivity indicates that the unemployment rate was still lower in 2018 than the non-accelerating wage rate of unemployment, or NAWRU. The NAWRU is when labour shortages do not cause wage growth to accelerate in the economy. It is usually high if there are a lot of people unemployed in the labour market whose skills or place of residence do not suit the requirements or location of jobs that are being created. As wage growth has exceeded productivity growth for several years now, Eesti Pank estimates that equilibrium employment has been higher than the headline unemployment figure since 2014. The NAWRU was raised in 2017 and 2018 by the Work Ability Reform, which brought people into the labour market who were partially able to work, and who needed longer than usual to find a job. In recent years Eesti Pank has several times recalculated the NAWRU downwards following the impact of the Work Ability Reform, indicating that the reform has been successful.

In contrast to the estimate of the labour force survey, the number registered as unemployed with Töötukassa has risen gradually since 2016. The number registered as unemployed has increased throughout the past 18 months because of the Work Ability Reform, which requires those who are partly capable of work to participate actively in the labour market to receive their benefits. The number of registered unemployed who did not have reduced capacity for work fell throughout last year. At the end of February 2019, Töötukassa had 10,399 people with reduced capacity for work registered, and the rise in the numbers had slowed. The number registered as unemployed may rise in future because of redundancies, which have already been announced in the financial sector and in clothing production.

Unemployment has fallen at a very rapid rate in Estonia since its spike after the financial crisis in 2008 relative to changes in other European countries. The rapid recovery after the crisis was helped by the flexibility in the labour market, as nominal wages fell in Estonia, which is quite an unusual phenomenon. Unemployment stopped falling in Estonia in 2016–2017, partly because of the Work Ability Reform, and the unemployment rates in other European countries have closed with that of Estonia (see Figure 23).

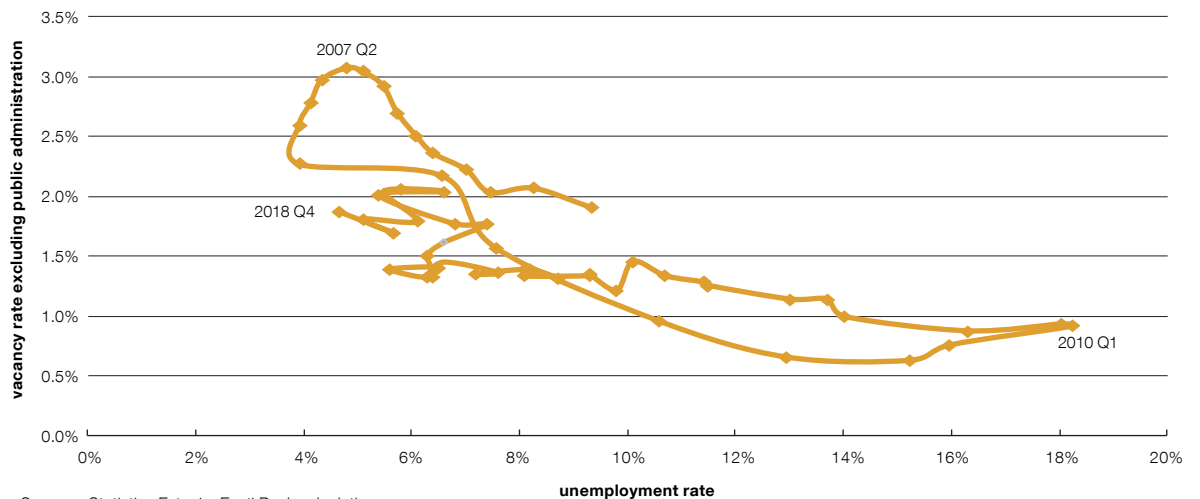
Figure 23. Unemployment rate for those aged 15–74



Sources: Eurostat, Eesti Pank calculations

The Beveridge curve illustrates the relationship between available labour and vacant jobs (see Figure 24). The relationship between vacancies and unemployment is usually inversely proportional, so that when the unemployment rate is high, vacant positions are scarce, and when unemployment is low, there are a lot of vacancies. The fewer vacancies there are for a given rate of unemployment and the fewer unemployed there are for a given vacancy rate, the better the match between labour and jobs in the labour market. In recent years the point estimates of the beverage curve have moved closer to the zero point on the axes than for similar rates of unemployment and vacancies at earlier times, which means that the match between labour and jobs has become more efficient.

Figure 24. The Beveridge curve, seasonally adjusted

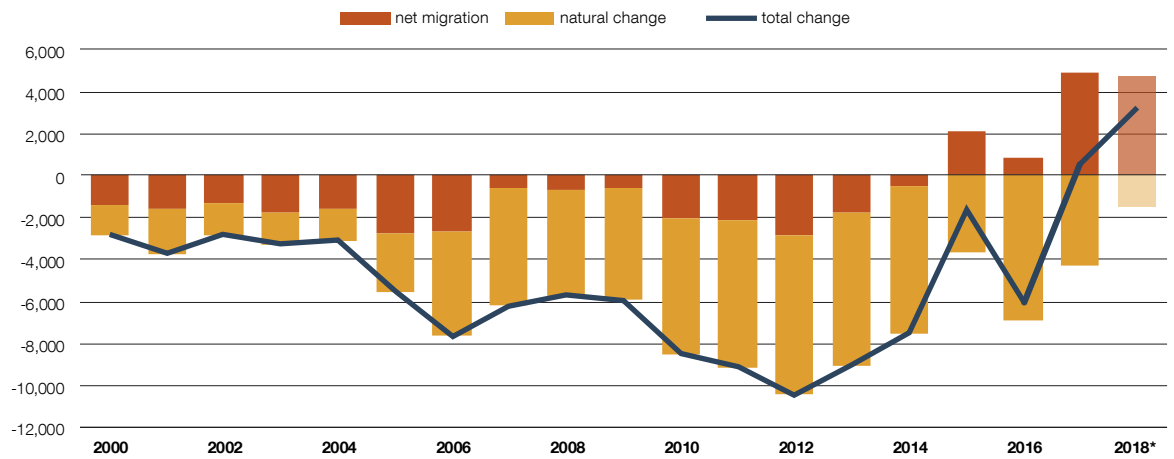


Participation in the labour force and the working age population

Labour shortages have been eased in several recent years by an increase in the supply of labour, but that increase ceased in the second half of last year. The labour supply depends partly on the size of the working age population, and partly on how actively that population participates in the labour market. The working age population has declined in the past two decades mainly because of natural demographic changes. It has also been reduced by migration, though that effect went into reverse in 2015. Immigration by people of working age exceeds emigration, and this positive migration balance offsets the natural decline in the working age population. The working age population increased by 568 people in 2017, but during 2018 forecasts based on migration show an increase of around 3208 people, or 0.3% (see Figure 25). This increase will only be reflected in the labour market indicators from 2019, because the labour force survey methodology extrapolates the estimates received from questionnaires during the year on the working age population as at 1 January of that year. In consequence there may be a small shift in the estimated labour market indicators, as unemployment might be underestimated with a growing working age population, or it might be overestimated if the population is shrinking.

In several previous years the labour force in the economy has grown because of the increase in active participation in the labour force, but in the second half of 2018 this did not happen. The labour force, which is residents aged 15–74 who are either working or looking for work,

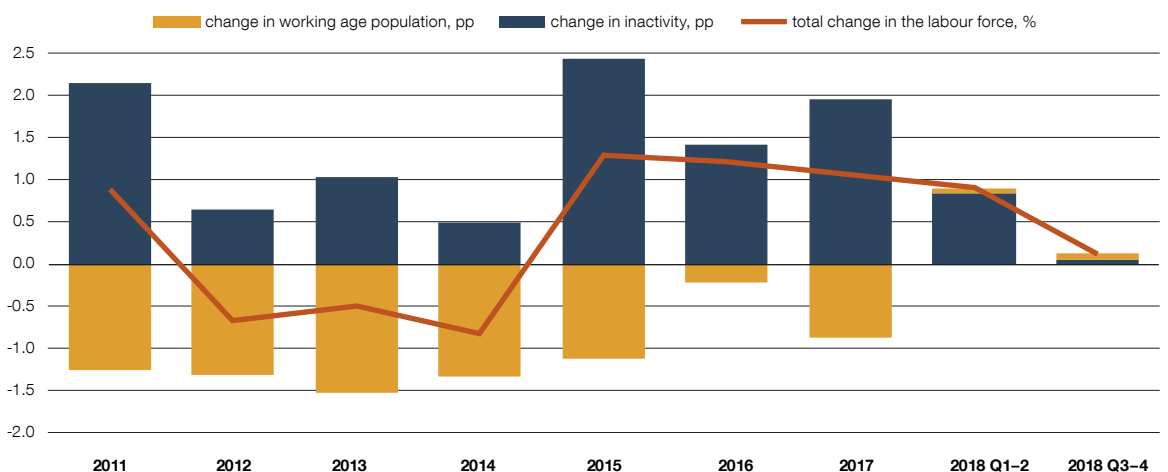
Figure 25. Change in the working age population aged 15–74



* forecast
Sources: Statistics Estonia, Eesti Pank calculations

consisted of 704,750 people in Estonia in the second half of 2018 according to the labour force survey, which is about the same as a year earlier. The labour force participation rate was 72.2%, which was also close to what it was in the second half of the previous year (see Figure 26).

Figure 26. Yearly change in the labour force

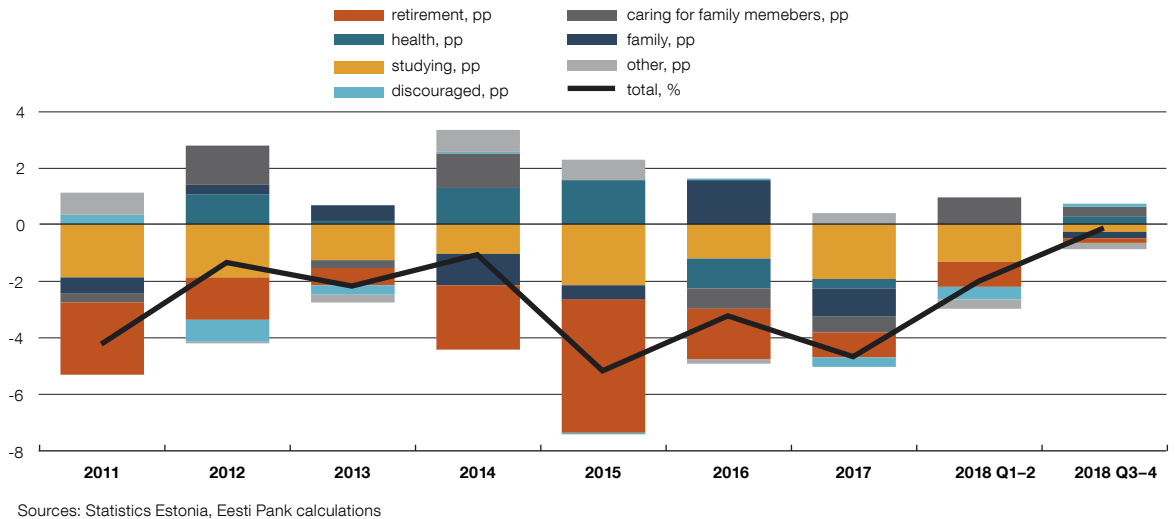


Sources: Statistics Estonia, Eesti Pank calculations

The number of people inactive in Estonia was also about the same as a year earlier in the second half of 2018. The labour force survey found that the main reason the number of non-active residents stopped falling in the second half of the year was that the number of people who were out of the labour market because of studying or retirement did not fall any further (see Figure 27).

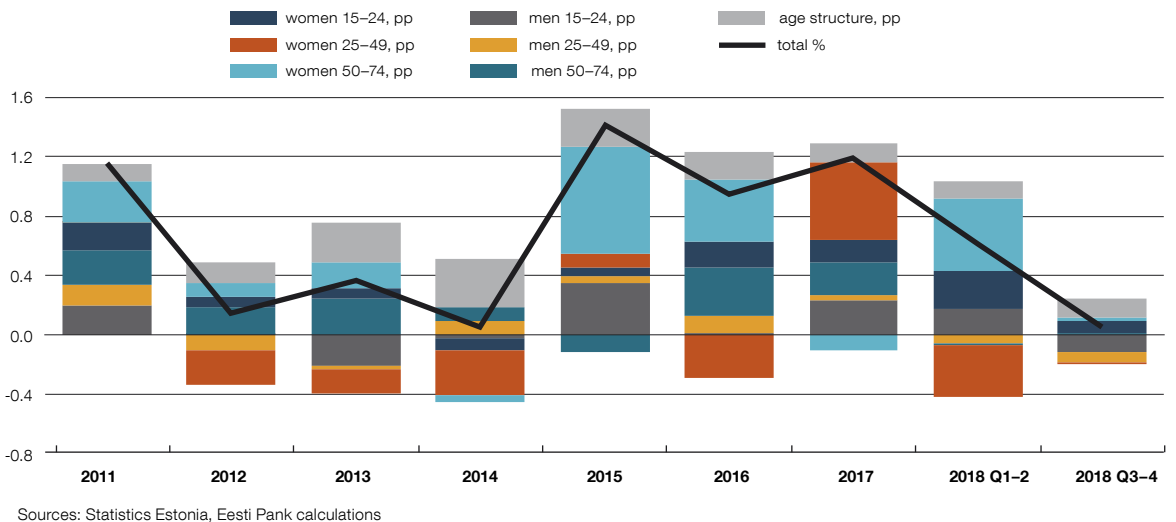
The growth in the labour force participation rate in earlier years was driven strongly by women aged 50–74, and also by men of the same age. Their labour market behaviour is probably affected partly by a rise in the retirement age and by the Work Ability Reform, and partly by the

Figure 27. Reasons for the change in the number inactive over the year



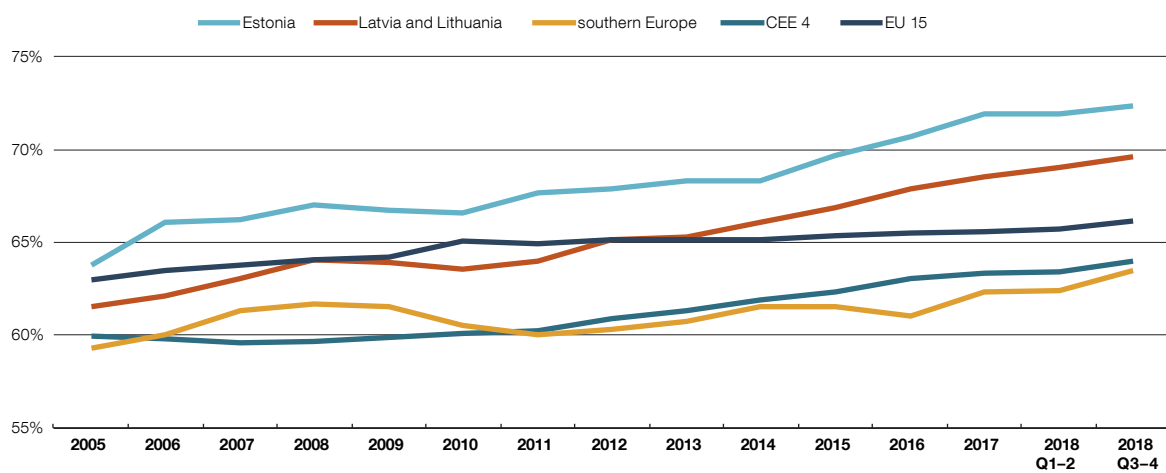
increased opportunity offered by labour shortages to remain in work or to find a new job. The strong demand for labour meant there was also an increase in activity in the labour market by young people in 2017 and 2018, which is in line with the increase in part-time work (see Figure 28).

Figure 28. Contributions to the yearly change in participation rate by age and gender



The labour force participation rate, which was 72.2% in the second half of 2018, is one of the highest in the European Union (see Figure 29), and is exceeded only by that in Sweden. For this reason a slower rise in labour force participation is largely to be expected, and it may be assumed that the number of residents of working age moving from inactivity to activity will rise more slowly in future than it did in 2015–2017. Labour force participation has also risen sharply in Latvia and Lithuania, as it has in Estonia.

Figure 29. Labour force participation rate, ages 15–74



Sources: Eurostat, Eesti Pank calculations