

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.

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THE ESTONIAN LABOUR MARKET IN 2017 IN INTERNATIONAL COMPARISON

There was a significant change in direction in the labour market in 2017, as labour productivity increased faster than labour costs for the first time for several years and so the decline in profits that had affected the business sector for some years reversed. It became apparent in the second half of the year that some of the fall in unit labour costs in the first half was a consequence of the labour market responding to increased economic activity with a lag. Increased demand could no longer be met with the current amount of labour employed and over the year demand for labour increased and wage growth picked up. In contrast to other countries in the European Union, the Baltic states stand out for the rapid increase in unit labour costs in the years following the financial crisis. The rise in unit labour costs has slowed in those countries in recent years, at the same time that labour markets in other large countries in Central and Eastern Europe, notably Hungary and the Czech Republic, have come under more strain. This has also led unit labour costs to rise faster.

Wage growth accelerated most in the second half of the year in the public sector, especially public administration, probably because of the end of the Estonian presidency of the Council of the European Union and the reform of administration. Tax and Customs Board data for the first two months of 2018 indicate though that wage growth has continued to accelerate in the public sector. Growth in wages was also given a substantial push by a sharp increase in investment activity in the revived construction industry. It should be remembered though that the relative wage level of construction had fallen in the previous years when the level of activity in construction was low. Although nominal wage growth became faster in the second half of the year, growth in real wages was more restrained than in the preceding years. The situation was similar in many European countries in 2017 as growth in wages sped up even as growth in prices sped up by more. The largest exceptions to this were Hungary and the Czech Republic, where the growth in real wages increased substantially.

The faster growth in the economy in the first half of the year was based largely on improved labour productivity, but in the second half of the year the growth was built on increased employment despite the shortages of reserves of labour. The number in employment increased in most branches of both the industrial sector and the service sector, as did the number of hours worked per employee. The number of vacancies increased together with the number of positions filled according to statistics from Töötukassa and the labour mobility and vacancies surveys by Statistics Estonia. The vacancy survey also shows employment relations being terminated more frequently at the initiative of the employee, which indicates that the cause is more often a change of job.

Even though a larger share of people of working age participate in the labour market in Estonia than in other countries in Europe, activity increased further in the second half of 2017. The unemployment rate was lower than it was in the previous year even though the Work Ability Reform had brought people into the labour market for whom it is hard to find work. The labour market gap in Estonia is the largest in Europe.

Overall the data show demand for labour increasing. Favourable conditions in the labour market and reform of social insurance encouraged the supply of labour to increase last year by more than had been forecast. Although labour force participation will probably increase further in the future, it cannot do so much because the activity rate in Estonia is very high

in comparison to those in other European countries. This means there is a danger of wages continuing to rise ever faster and the recovery in profits being slowed.

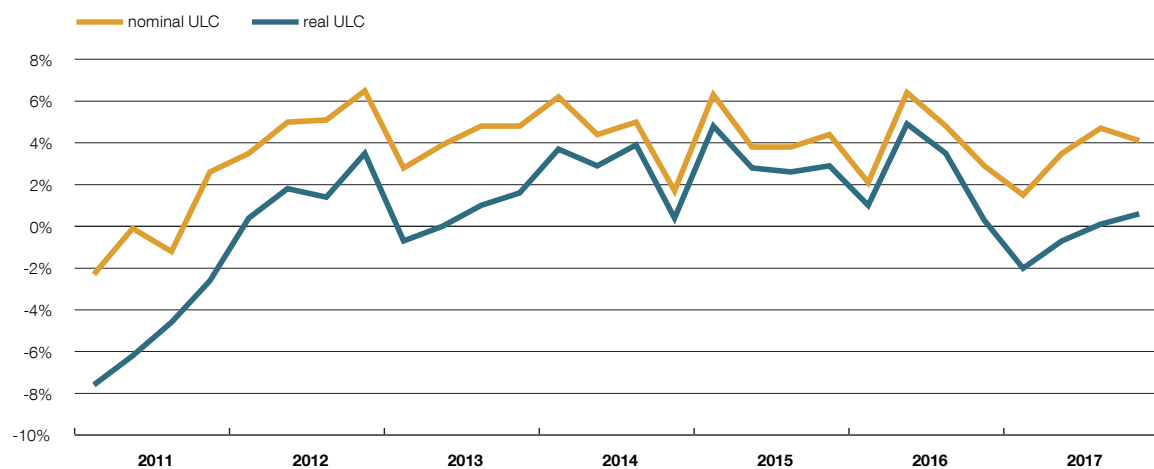
This review compares developments in Estonia with those in other European countries. It uses two types of Figure for international comparison, dividing countries into regional groupings for a long-term view and using unweighted averages. The South Europe group contains newer member states of the European Union: Croatia, Romania, Bulgaria, Malta, Cyprus and Slovenia. Older European Union members in southern Europe, such as Italy, Greece, Spain and Portugal, are in the EU-15 group. The Central and Eastern European countries in the CEE4 are Hungary, the Czech Republic, Poland and Slovakia. In Figures showing a single year, countries are shown in the colour representing the group that they are in. For those countries where yearly data have not been published for 2017, quarterly averages were used. If the data from the fourth quarter were not available, growth rates for the year have been calculated using data from the fourth quarter of 2016 to the third quarter of 2017.

THE COST OF LABOUR AND PRODUCTIVITY

Unit labour costs

The labour costs needed to make one unit of value added increased substantially in 2013–2016 in Estonia relative to the years before the financial crisis and to other countries in the European Union. In consequence the ability of Estonian production to compete on the basis of price in foreign markets deteriorated. A sharp rise in economic activity in the first half of 2017 stopped the growth in unit labour costs though, as for a time companies were able to satisfy increased demand for output with the labour resources they already had. This was possible because the number of employees had not fallen during the earlier years of weak growth, as a recovery in demand was expected. Companies may still have been surprised by the sharp rise in demand though, and as hiring employees takes time, employment rises with something of a lag. Labour buffers within companies were used up by the second half of 2017, and the rapid wage growth caused by increased demand for labour, and slowing growth in productivity led real unit labour costs to rise again (see Figure 1). The growth in productivity and wages throughout 2017 was better aligned than in earlier years, and for the year as a whole labour costs shrank as a share of GDP.

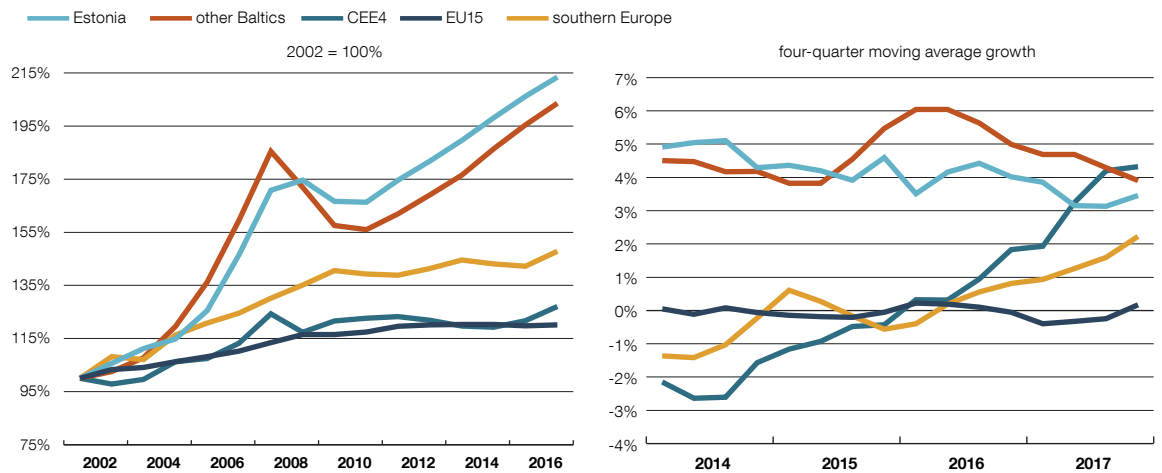
Figure 1. Growth in unit labour costs



Source: Statistics Estonia

Nominal unit labour costs measure the cost of the labour needed to produce one unit of value added in the economy. This is by nature a price index and one that is often used as an indicator of competitiveness. If labour costs rise, companies will sooner or later have to raise their product prices, and this will then hit their ability to take on their competitors. The years after the financial crisis saw modest growth in unit labour costs in most countries in the European Union, as higher unemployment and low inflation meant that wage pressures were weak even as productivity recovered after the crisis. The Baltic states stood out as an exception for the high rate of growth in unit labour costs, as did Bulgaria among the South European countries with low price levels (see Figure 2). The link between exporting capacity and nominal unit labour costs is not very strong or takes time to establish, because despite the deterioration in the price competitiveness indicator, the Baltic states have not lost market share for their exports. The link may be weak because the level of production costs remains low in those countries and at the same time the improvement in the quality of production may

Figure 2. Nominal unit labour costs in euros

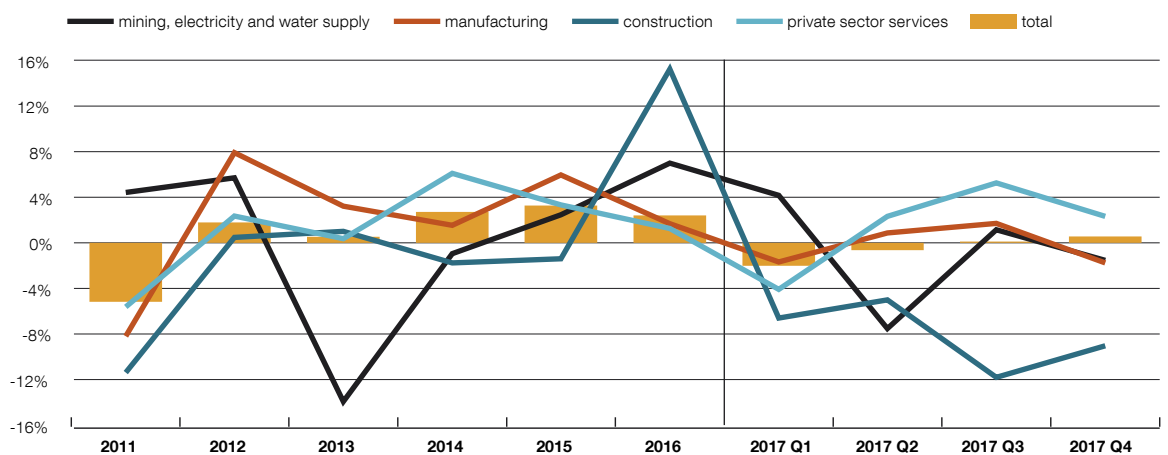


Sources: Eurostat, Eesti Pank calculations

be underestimated and may only be partly reflected in the increase in productivity. Although the growth in unit labour costs slowed in Estonia throughout 2016–2017, it has accelerated in most other transition countries except Poland and Slovenia.

Real unit labour costs, which are calculated in a similar way to nominal unit labour costs, show the approximate change in the payroll as a share of the economy, assuming no significant change in waged employees as a share of all the employed. As GDP can be divided between labour income and capital income, so real unit labour costs equally show the change in profit as a share of GDP. If real unit labour costs rise and so the share of capital income falls further than in competing countries where production is located, it could threaten the attractiveness of the country and make it more likely that companies will move production to countries with lower unit labour costs. Real unit labour costs fell in most sectors in Estonia in the first half of 2017, but growth picked up in the second half of the year, especially in the service sector (see Figure 3).

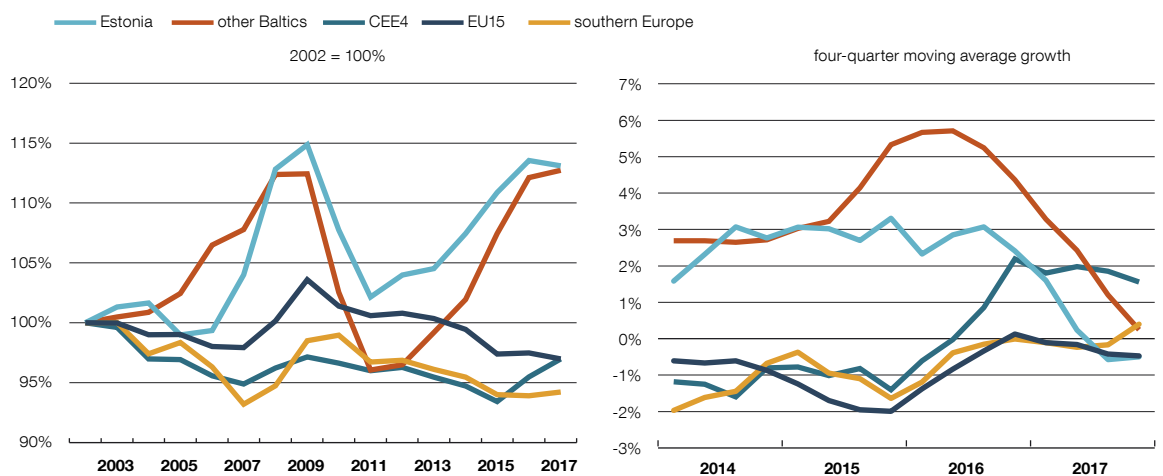
Figure 3. Real unit labour cost growth by sector of activity



Sources: Statistics Estonia, Eesti Pank calculations

Looking back across the business cycle over a long period, the European countries that have had the most volatile real unit labour costs have been the small and economically open Baltic states. Faster growth in unit labour costs in Latvia and Lithuania in 2016 meant that on average real unit labour costs in those two countries and Estonia had increased by roughly the same amount, some 13% over 15 years. After the rise in recent years, which was notably faster than in other European Union countries, unit labour costs increased more slowly in 2017 in all three Baltic states. At the same time the rate of growth picked up in large countries in Central and Eastern Europe (see Figure 4).

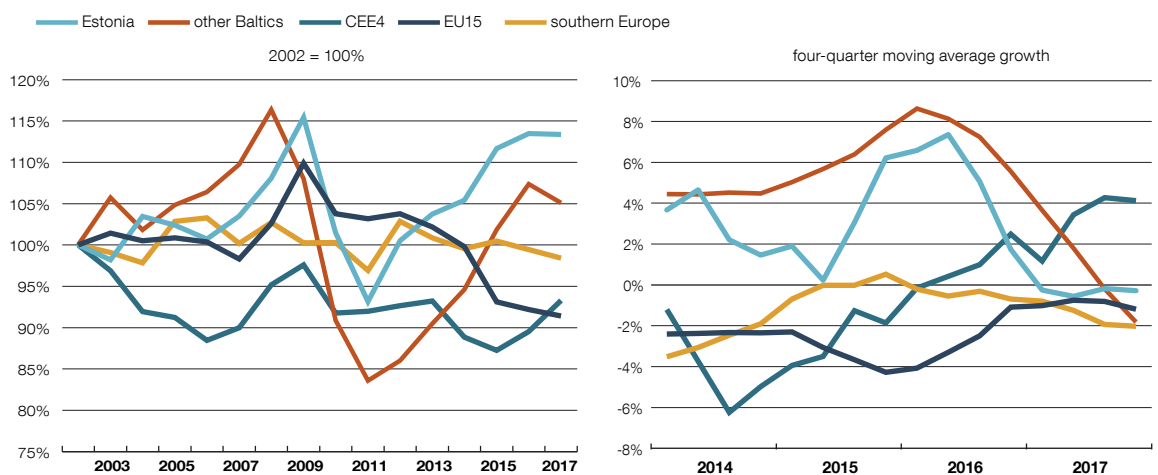
Figure 4. Real unit labour costs



Sources: Eurostat, Eesti Pank calculations

From the point of view of competitiveness, the change in unit labour costs for the exporting sector over time is more important than the figure for the whole economy. Manufacturing is often used as a proxy for the exporting sector as it is the sector with the largest share of exports. Real unit labour costs in the whole economy and in manufacturing have risen faster in Central and Eastern Europe than in Western Europe, with Estonia, Latvia and Lithuania leading the charge among the countries of Central and Eastern Europe (see Figure 5).

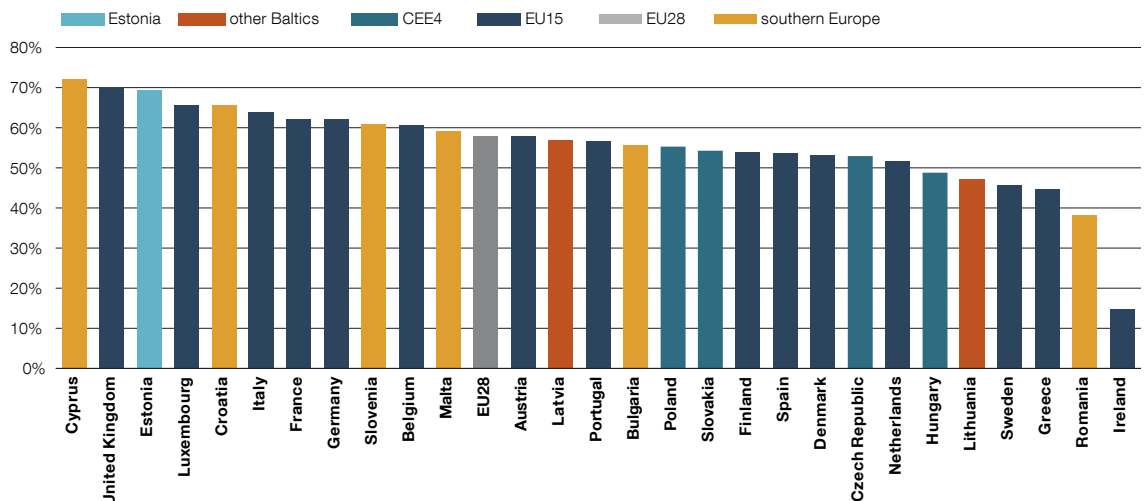
Figure 5. Real unit labour costs in manufacturing



Sources: Eurostat, Eesti Pank calculations

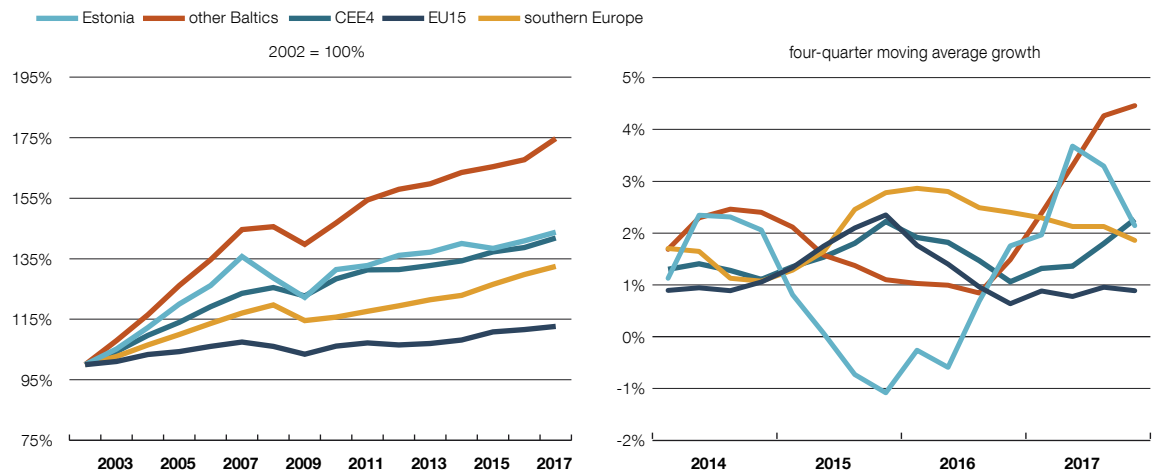
The level of real unit labour costs expresses the labour costs of each employee as a ratio to productivity per employee. In international comparison it makes sense to use the figure for manufacturing rather than that for the whole economy to avoid differences arising from the relative shares of the service and manufacturing sectors. Even in manufacturing taken more narrowly, a part of the difference in levels of unit labour costs can be explained by the structure of sub-branches of manufacturing, as they differ in their use of production technology and their capital intensity. Unit labour costs fell a long way in Ireland in 2015 for example as several international companies decided to move their head offices to Ireland. As the profit of a company is counted in the GDP of the country where its head office is based even if the profit does not stay in that country, unit labour costs fell as a ratio to GDP. It is still the case though that the rapid rise in unit labour costs in Estonia after the financial crisis is not due to the low level relative to other countries (see Figure 6).

Figure 6. Real unit labour costs in manufacturing, 2017



Sources: Eurostat, Eesti Pank calculations

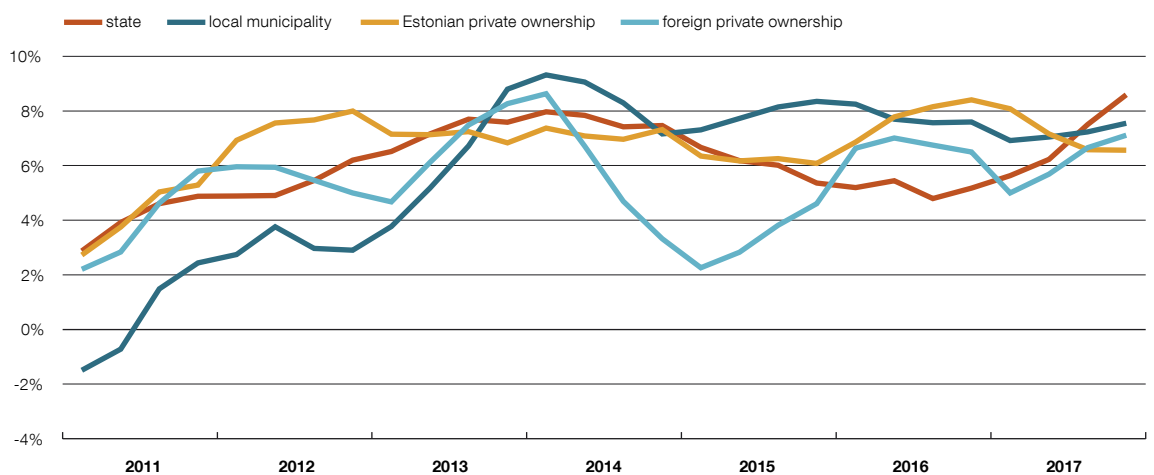
Examining the components of the rise in unit labour costs reveals that the faster rise in those in the Baltic states has mainly been caused by higher wage growth, the causes of which will be discussed later in this review. Labour productivity has though on average increased more in the Baltic states over a long period than in most other countries in Central and Eastern Europe (see Figure 7). Productivity growth accelerated more in the Baltic states in 2017 than it did on average in other countries. The growth slowed in Estonia in the second half of the year, but not in Latvia and Lithuania.

Figure 7. Labour productivity

Sources: Eurostat, Eesti Pank calculations

Average wages

The rate of wage growth increased from 6.2% in the first half of 2017 to 7.5% in the second half. There were various reasons for this such as the faster growth in labour productivity than in previous years, higher inflation, increased demand for labour from companies, and low unemployment. On top of this, wages in the public sector may have been raised faster by the compensation paid out as part of the reform of administration and bonuses paid at the end of the Estonian presidency of the Council of the European Union. Wages rose by most in the state sector in the second half of the year (see Figure 8).

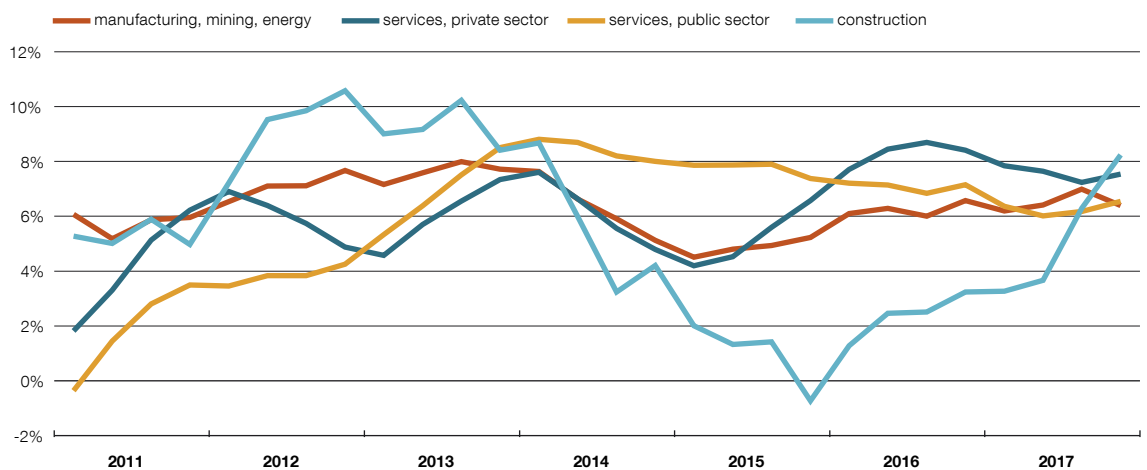
Figure 8. Wage by type of ownership, four-quarter moving average growth

Sources: Statistics Estonia, Eesti Pank calculations

The sharp recovery in activity in construction increased the need for labour at companies in that sector. There was a notable increase in perceived labour shortages in construction during 2017 and the vacancy rate also climbed. Given that unemployment has fallen to a

low level in Estonia, it is to be expected that wages started to rise faster in construction (see Figure 9). Given the cyclical nature of the construction industry though it should be remembered that wages in the sector grew notably slower than the average in 2014–2016 as there were fewer orders from the state, and so the relative wage in construction fell. Indicators for labour shortages are still markedly below their peaks of 2006, when 70% of employers surveyed considered labour shortages to be the main factor hampering output, as only 47% of employers thought so in 2017. There were 47,000 waged employees at Estonian resident construction companies in 2017, which is almost 40% fewer than in 2007. It is not the case that a large part of the permanent labour force has left the industry, as in 2005 there were 48,000 people working in construction, or about the same number as currently. The real estate boom and the rapid rise in the relative wage brought many people into the sector during the next two years who were previously inactive or working in some other sector, and so employment increased by around a quarter for two years in a row.

Figure 9. Wages by sector, four-quarter moving average growth

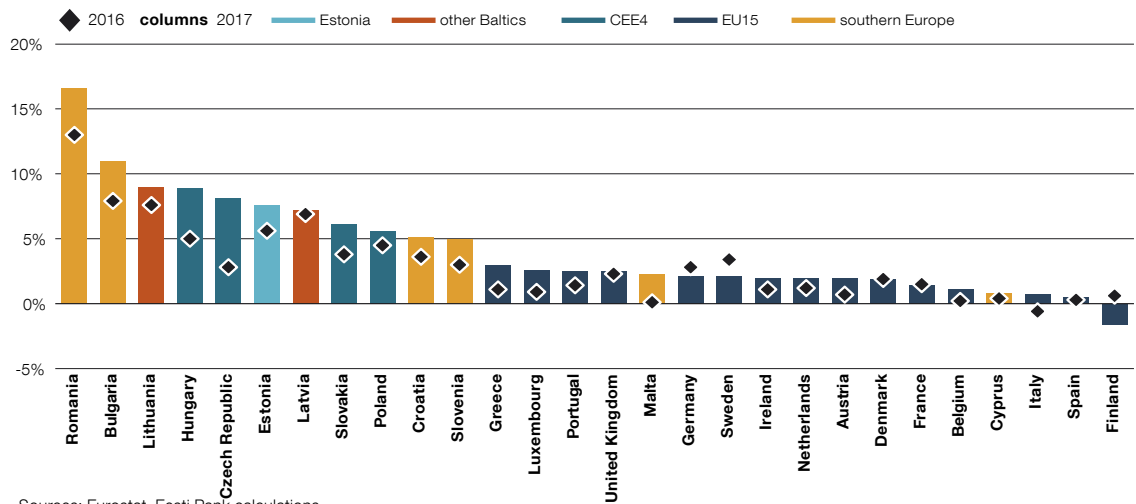


Source: Statistics Estonia

The recovery in external demand also helped increase economic activity in manufacturing. Expanding production required companies to take on additional labour, and the productivity of labour grew at a slightly faster rate. The average wage in manufacturing rose by 6% in 2017, which is a little below the average in the economy and slightly slower than in 2016. At the same time the hourly wage in manufacturing rose at a clearly faster rate. Labour demand pressures have increased in manufacturing since the second half of 2016 in both vacancies and in employer expectations of employment.

Wages are rising faster in Estonia and other newer member states of the European Union than they are in older member states. Over a long period, nominal wages have risen by about the same amount as prices and labour productivity together. As productivity and price levels are substantially lower in the new member states than in the older ones and have risen faster, faster wage growth is to be expected. The growth in hourly labour costs accelerated in 2017 in all the countries of central, eastern and southern Europe, while it halved in the older member states (see Figure 10). Wage growth accelerated particularly sharply in Hungary and the Czech Republic. The causes were the same as in Estonia as growth recovered in prices and productivity at the same time that labour shortages increased.

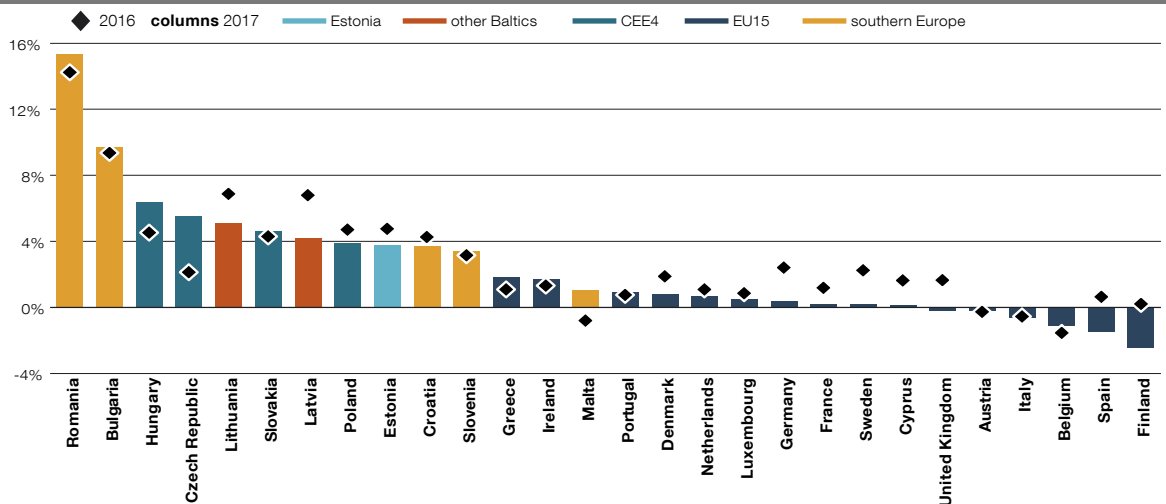
Figure 10. Growth of the labour cost index 2016–2017



Sources: Eurostat, Eesti Pank calculations

The rate of wage growth rose by less than inflation did in most countries, meaning that the growth in real wages slowed. Exceptions were Hungary, the Czech Republic and Malta, where the growth in real wages increased (see Figure 11). An important role is played in wage setting in most of the older members of the European Union by collective wage negotiations. Trade unions calculate their wage demands in negotiations by considering rises in the cost of living, and in some countries collectively negotiated wages are indexed to inflation. This means inflation may affect wages with a lag.

Figure 11. Real growth of the labour cost index 2016–2017

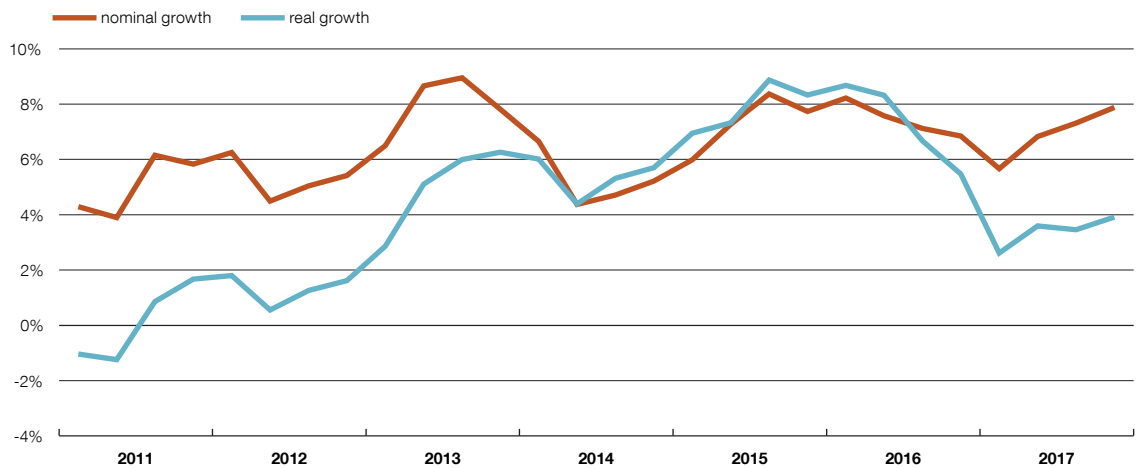


Sources: Eurostat, Eesti Pank calculations

Wage growth in Estonia will be affected in future by smaller rises in the minimum wage than in earlier years, collective wage agreements, and government decisions on public sector wages, and by the new rules for calculating income tax that came in from 2018. Although

labour force survey data for 2015 show that only around 4-6% of employees working full-time earned the minimum wage, the rise in it also affected those earning more than the minimum wage. The income tax reform raises the tax-free minimum threshold to 500 euros for those earning up to 1200 euros, which in the short term may allow employers to raise gross wages by less than they would otherwise have. The growth in the purchasing power of waged employees is shown best by the rise in real net wages, which was brought down noticeably in 2017 by faster inflation from 7.3% in 2016 to 3.4% (see Figure 12). If employees have certain expectations about the rate that nominal wages will rise at, the return of inflation offers support to companies in growing out of the increase in labour costs.

Figure 12. Growth in the average real and nominal net wage

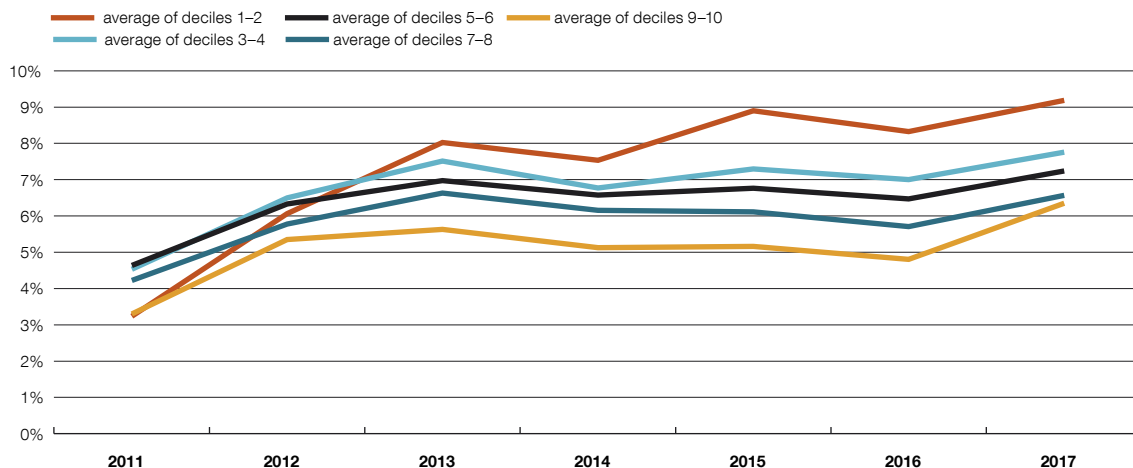


Sources: Statistics Estonia, Eesti Pank calculations

The wage level and wage distribution

The statistics from the Tax and Customs Board on the distribution of wages paid out show the declared wage has been increasing faster for some years in the lower part of the wage distribution, and this was also the case in 2017. Ordering declared wages by level shows that the average in the bottom fifth was 9% higher than the average for the same group a year earlier, while the rise in the top fifth was 6%, though this excludes the very highest 1% where there were very large one-off payments (see Figure 12). At the end of 2017 the wages paid out to the top fifth of the wage distribution increased at a faster rate, which is in keeping with developments in the financial sector and public administration.

Figure 13. Growth rate of declared wages by decile



Sources: Tax and Customs Board, Eesti Pank calculations

Box 1. The skill premium: the roles of trade, capital and demographics

This box is based on Eesti Pank Working Paper I/2018¹.

The skill premium is the difference between the wages for skilled and unskilled labour. The skill premium and the factors that affect it have become a subject of great interest in economic research in recent years because of their implications for income equality. Although researchers have not reached any unanimous consensus on the factors that drive the skill premium, several likely candidates have been identified, such as technological development, which increases the skill premium because skilled labour can be used to great advantage; increased trade, which benefits sectors that use a particular type of labour; and the relative amounts of skilled and unskilled labour.

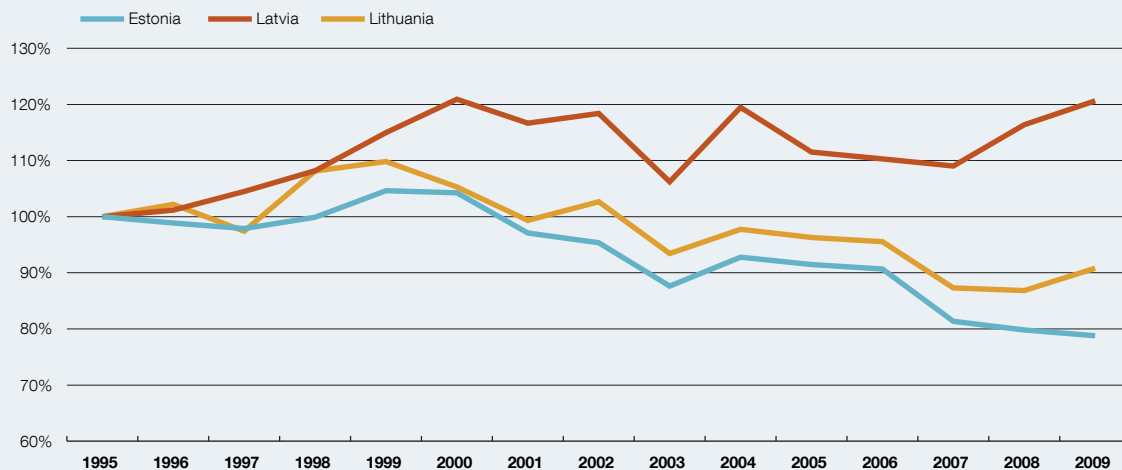
Sang-Wook (Stanley) Cho and Julian P. Diaz propose in their paper a static general equilibrium model that considers all these three factors and their impact on the skill premium simultaneously, unlike most other research. They test on the example of Estonia, Latvia and Lithuania whether trade, capital accumulation and the supply of skilled labour can explain the skill premium. They find the skill premium has changed over time in different ways in these three countries with relatively similar economies, as it was 16% higher in 2008 in Latvia than in 1995, while it was 13% lower in Lithuania and 20% lower in Estonia (see Figure B1.1).

At the same time the amount of capital in all three countries increased many times over for machinery and equipment and for buildings and facilities. The terms of trade, which measure export prices as a ratio to import prices, improved during these years in Estonia and Lithuania for goods and services, while in Latvia the terms of trade for services improved but those for goods worsened. The population shrank in all three countries, and in 2008 it was 7% smaller in Estonia than in 1995, and 12% smaller in Latvia and Lithuania. The working age population changed little in Estonia at that time, while that in Latvia and Lithuania shrank by 5%. The number of people with higher education increased in all three countries during these years, while the number without higher education fell. The largest jump in the number of people with higher education was in Lithuania, followed by Estonia and then Latvia, which had the smallest change.

To see whether these changes made a difference to the skill premium in Estonia, Latvia and Lithuania, the authors calibrated their static general equilibrium model so that it matched the economic structure of all three countries in 1995. They did this using macroeconomic data for those countries, and they took parameters that were not available in the data from earlier

¹ See [Sang-Wook \(Stanley\) Cho and Julian P. Diaz, Skill Premium Divergence: The Roles of Trade, Capital and Demographics](#).

Figure B1.1. Real unit labour costs, four-quarter average yearly growth, euros



Sources: World Input-Output Database, Eesti Pank calculations

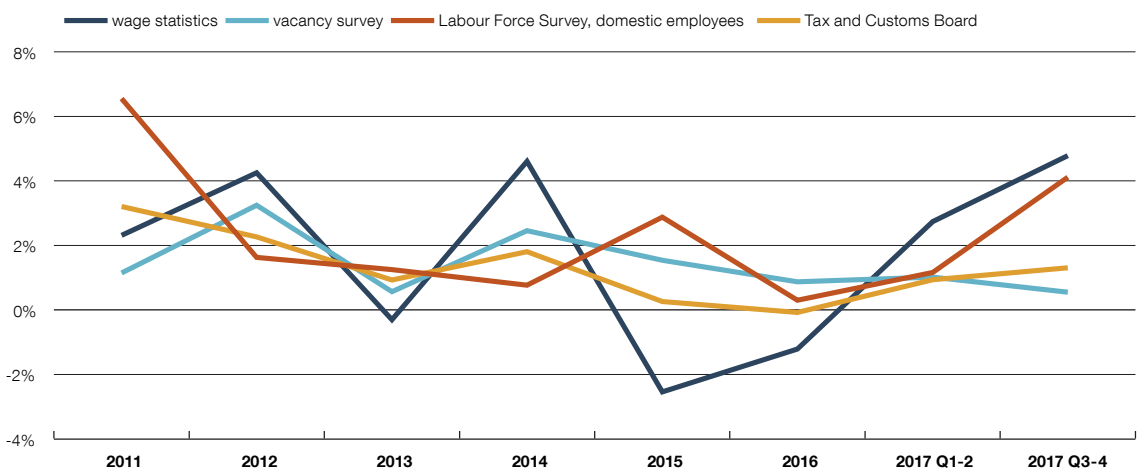
research work. In the numeric experiments they changed the three inputs of terms of trade, capital stock and distribution of skills by the same amount as they changed in the period in Estonia, Latvia and Lithuania. The simultaneous change in all three of the inputs in the model gave results for the skill premium that were very close to what happened in reality, with the skill premium falling by 22% in Estonia and 35% in Lithuania, and increasing by 10% in Latvia. An increase in the supply of skilled labour reduced the skill premium, as did increased foreign trade, while capital deepening increased the skill premium as expected.

DEMAND AND SUPPLY FOR LABOUR

Employment

As the economy grew faster in 2017, so demand increased for labour. The labour force survey showed that 4.1%, or 25,700, more workers were employed at companies in Estonia in the second half of 2017 than a year earlier (see Figure 14). Total employment, or the employment of residents of Estonia, increased by slightly less over the year in the second half of the year, rising by 21,300 people, or 3.3%, as the number of Estonian residents working for companies abroad, especially in Finland, was lower than a year previously. The labour force survey is a voluntary survey and the figure it gives for employment in each quarter is based on a sample of around 4500, so the confidence bounds for the employment growth rates in it are quite wide. For this reason it is important to look at other data sources giving information on numbers of employees too.

Figure 14. Change in the number of employees in different data sources

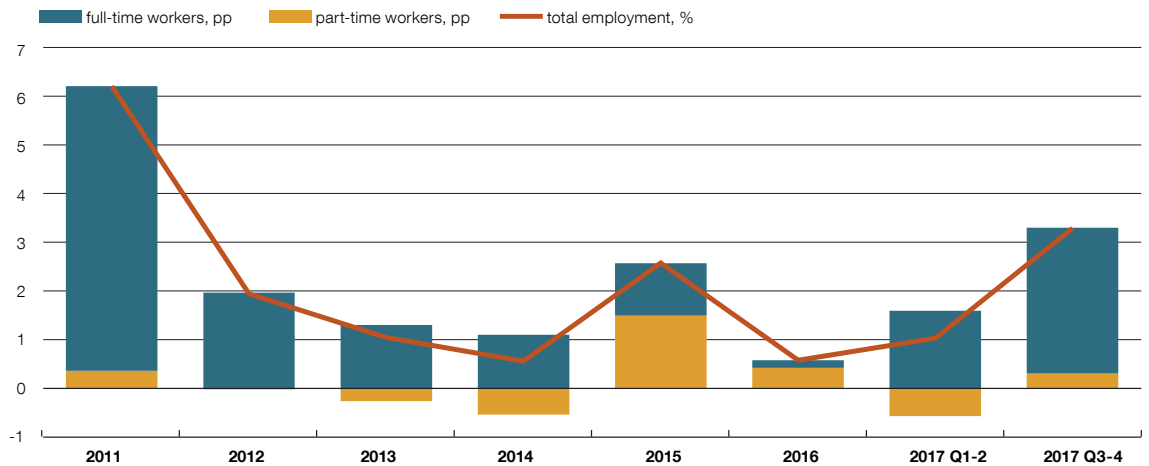


Sources: Statistics Estonia, Tax and Customs Board, Eesti Pank calculations

The wage survey and data from the Tax and Customs Board on wages paid out also indicate a faster rise in the number of people employed in the second half of the year. The wage survey gives the number of employees as full-time equivalent and showed the increase in employment in the second half of the year to be more or less the same as that found by the labour force survey. This is in line with the data from the labour force survey on full-time and part-time working, which show that employment of Estonian residents increased in the second half of the year mainly thanks to a rise in the number of full-time employees (see Figure 15). The labour force survey shows that the number of hours worked grew more slowly than total employment in the second half of the year though, which may in contrast indicate growth in part-time working. Given however that the number of national holidays meant there were fewer working days in the second half of the year in 2017 than in 2016, the number of hours worked increased faster than employment. This indicates that the labour already employed was working more intensively.

The economies also grew faster in 2017 in the other Baltic states and other countries in Eastern Europe, but there was no similar acceleration in the growth in employment to that seen in Estonia. Latvia and Lithuania stand out particularly for having managed to increase

Figure 15. Yearly change in the number of full-time and part-time employees

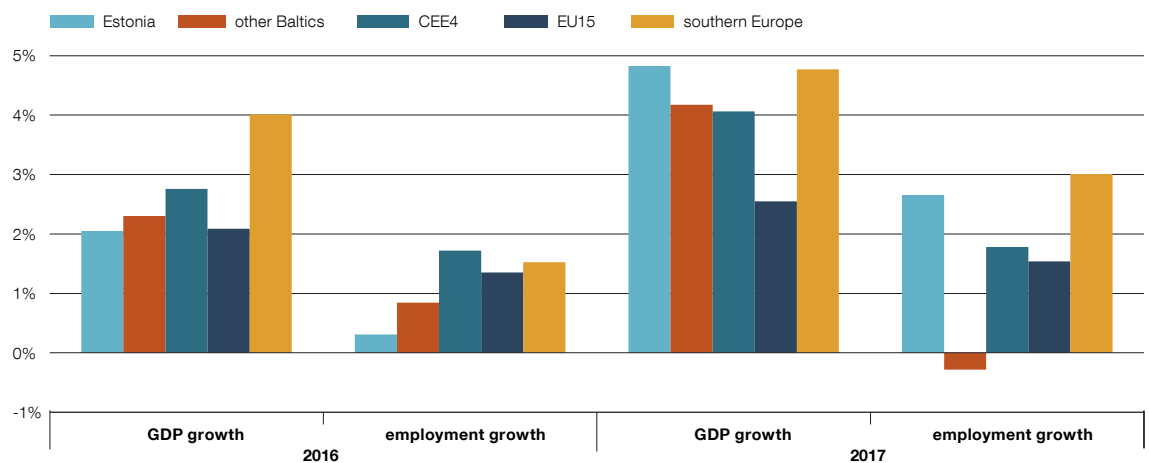


Sources: Statistics Estonia, Eesti Pank calculations

production and meet the demand that accompanied the growth in their economies using the labour already employed. The rapid growth in employment in Estonia in 2017 may also be a consequence of companies not managing to react to the increased need for labour in 2016, when the number of employees rose little, meaning that employment rose faster in subsequent years to compensate. A further indication of this is that the two-year average figures for growth in employment and in GDP in Estonia were at the same level as the equivalent indicators for other countries in Central and Eastern Europe (see Figure 16).

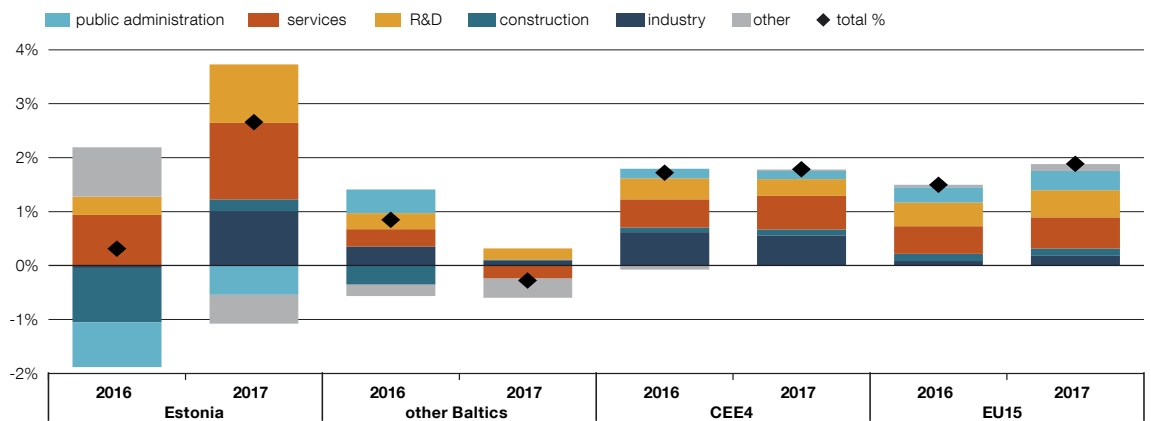
The structure of growth in employment in Estonia is also similar to that for the four Central and Eastern European countries of the CEE4. The growth in employment was mainly built on the rise in the number of workers in manufacturing, private sector services like retail, transport and storage, and information and communications, and in professional, technical and support activities (see Figure 17). In contrast to the countries of Central Eastern Europe and the

Figure 16. Change in employment and GDP



Sources: Eurostat, Eesti Pank calculations

Figure 17. Change in employment



* Services: trade; transport and storage; accommodation and catering; and information and communications

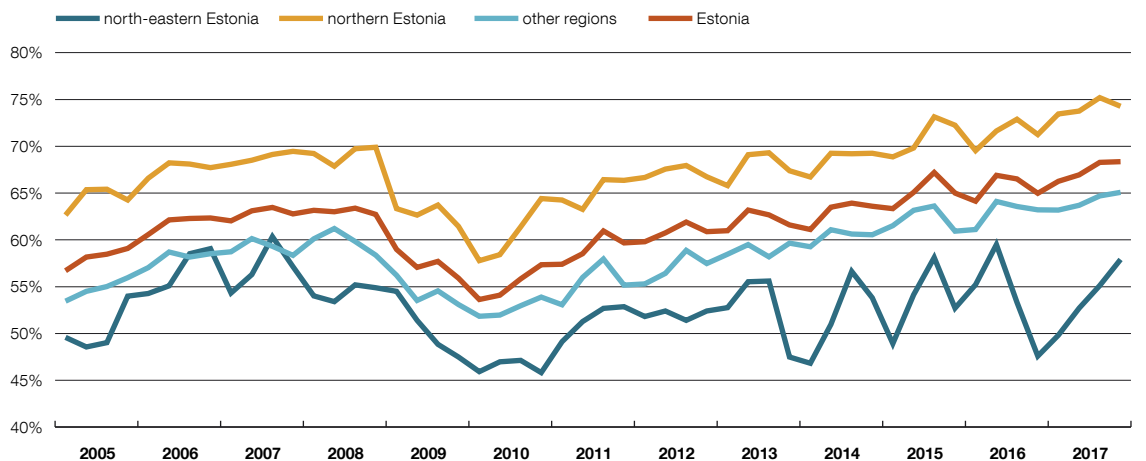
** R&D: scientific and technical activities; administrative and support service activities

Sources: Eurostat, Eesti Pank calculations

15 older members of the European Union (EU15), Estonia has seen a fall in the past couple of years in the number employed in the public sector, which is public administration, education and healthcare.

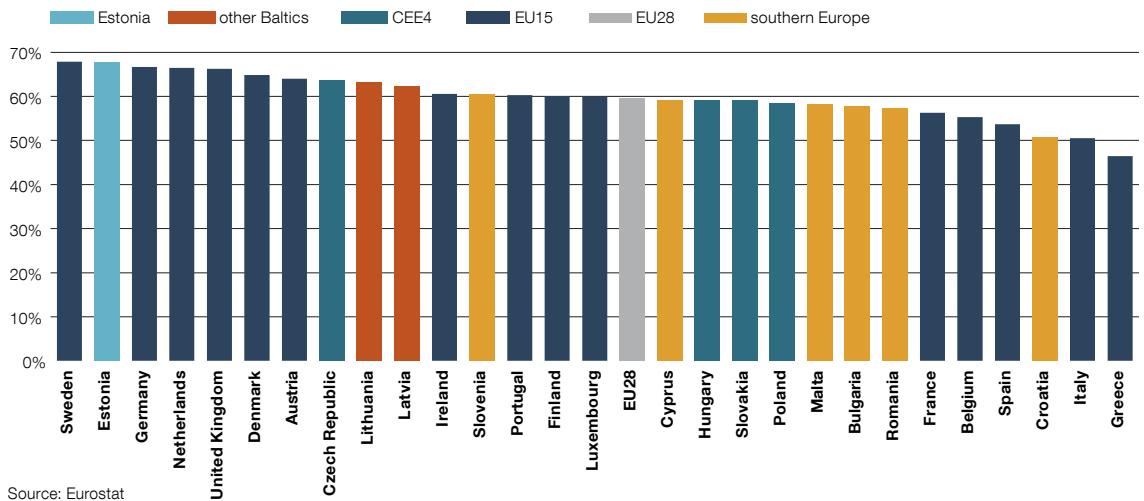
A consequence of the rapid growth in the number in employment in the second half of 2017 in Estonia was that the share of the working age population aged 15–74 who were in employment, or the employment rate, rose to 67.5% for 2017 as a whole. The employment rate rose fastest in the second half of 2017 in north-east Estonia, where the labour market improved gradually after the wave of redundancies in the past couple of years (see Figure 18). For the year 2017 as a whole though, the employment rate rose most in northern Estonia. The employment rate in Estonia has been one of the highest in the European Union for several years now (see Figure 19), indicating there is less slack in the labour supply in Estonia than

Figure 18. Employment rate



Sources: Statistics Estonia, Eesti Pank calculations

Figure 19. Employment rate, 2017



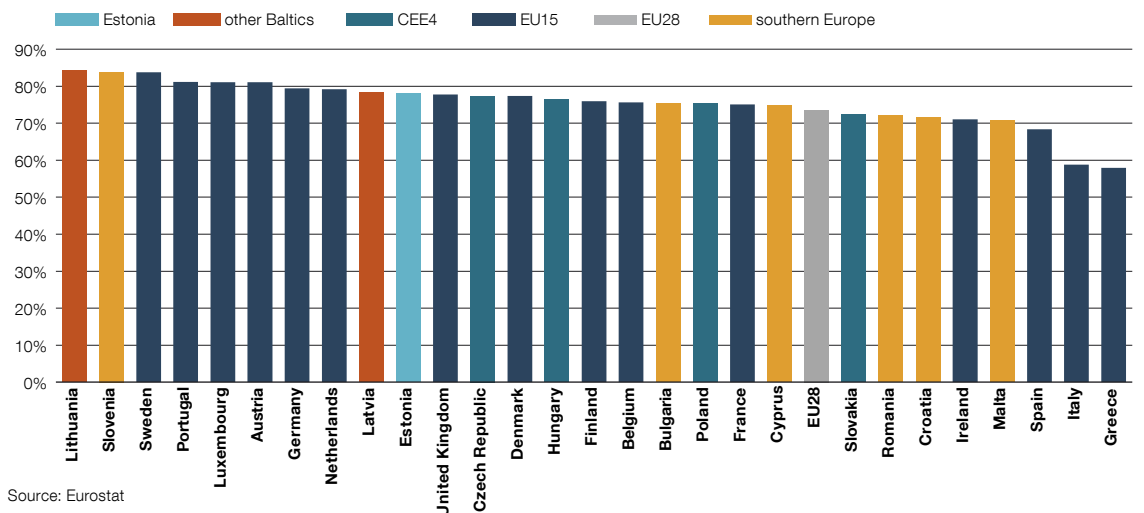
Source: Eurostat

the average. For this reason the strong growth in demand for labour and the number in employment in the second half of the year was accompanied by rapid rises in wages (see the section on unit labour costs). The area where it should be easiest to find labour resources is Ida-Virumaa, which also has the highest share of registered unemployed.

Estonia stands out from other countries in Europe for the share of the population aged 50–74 in employment, which is the highest in the European Union. In the European Union on average, 46.1% of people of this age are in employment, while in Estonia 57.4% are. The employment rate for this age group is raised higher than that in other countries by the very high employment rate for women of that age in Estonia.

Is also notable that while the employment rate for women aged 50–74 is the highest in the European Union, the employment rate for women aged 25–49 is close to the average (see Figure 20). This may be a consequence of parental leave, which is longer in Estonia than in

Figure 20. Employment rate for females aged 25–49 , 2017



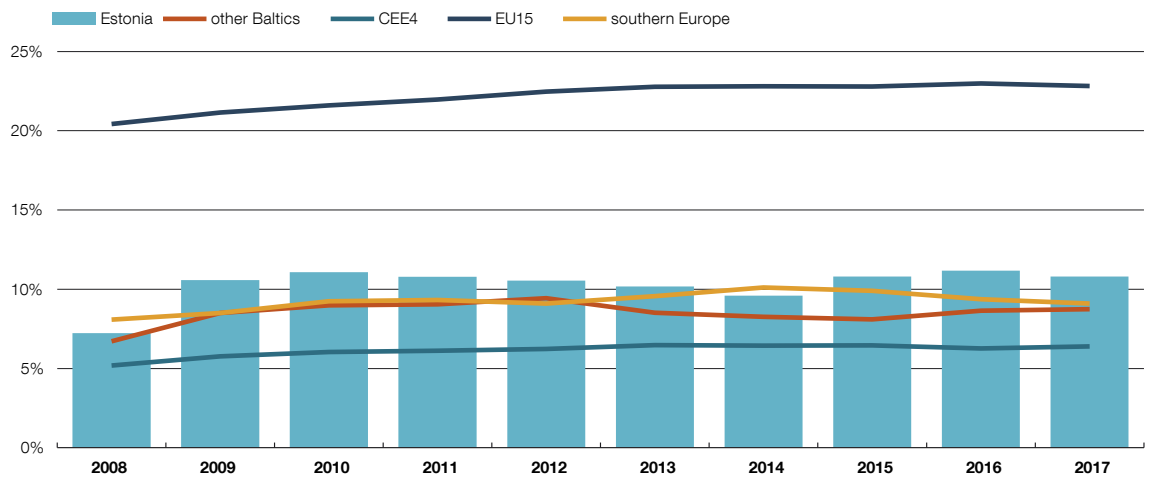
Source: Eurostat

other European countries, and may also be because of poor access to childcare services immediately after parental benefits end. Although the countries in Europe use the same methodology for the labour force survey, parental leave is classed as a suspension of work in the labour force surveys of some countries, so the employee maintains their status as employed, and this may affect the employment rate for women with small children. The employment rate for young parents in Estonia may seem low in international comparison in consequence, because Estonian residents taking parental leave are classed as inactive.

The growth in employment in recent years in Estonia has been supported by an increase in the number of part-time workers. The share of part-time workers² in total employment in Estonia is half as high again as 10 years ago, and in 2017 some 11% of all employees were working part-time. This remains well below the rate in Western European countries though, where almost a quarter of employees work part-time (see Figure 21). The growth in part-time work may illustrate how easy or normal it is for those who, for whatever reason, cannot or do not want to work full-time to participate in the labour market.

Equally, part-time working may be a consequence of the employee being unable to find full-time work, and this is known as underemployment. There are fewer workers in Estonia who are working part-time because they are unable to find full-time work relative to other European countries (see Figure 22). Given that the share of the working age population that is in employment is already very large, making part-time work simpler could be one way to bring even more of the population into employment.

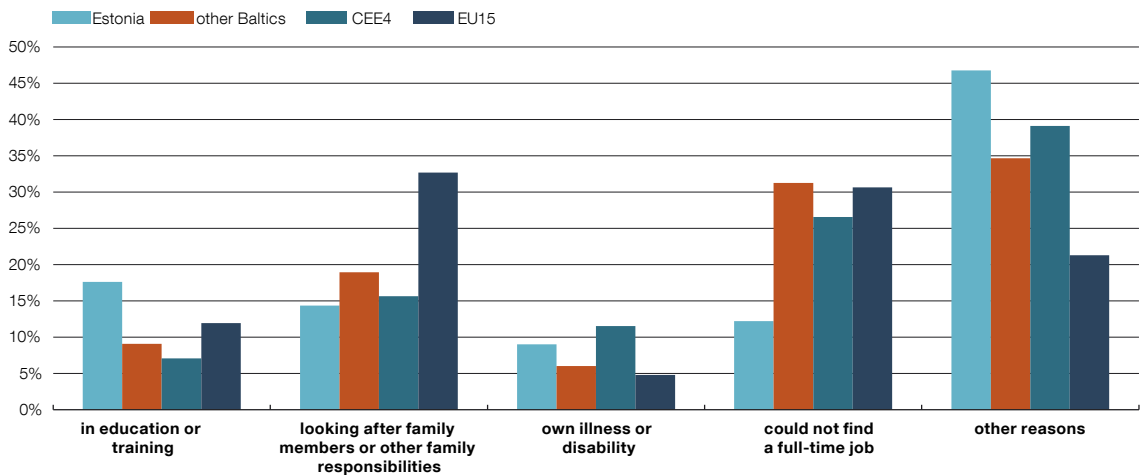
Figure 21. Share of employees working part-time



Sources: Eurostat, Eesti Pank calculations

² Part-time workers are the employed who usually work for fewer than 35 hours a week.

Figure 22. Reasons for part time working, 2014–2016 average

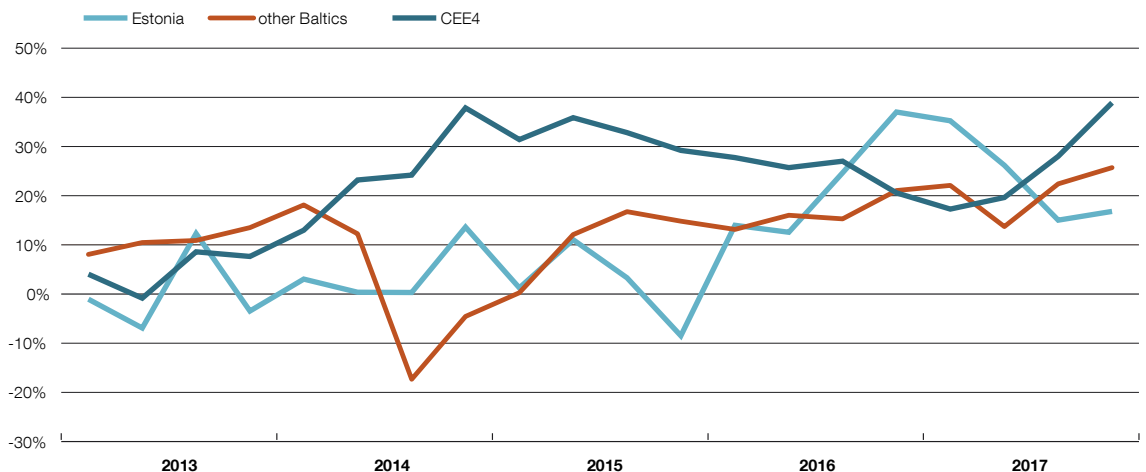


Sources: Eurostat, Eesti Pank calculations

Vacancies

Though the number employed rose fast in the second half of 2017, employers would have liked to have increased the number of employees even further. There were some 1590 more vacancies in the second half of 2017 than a year earlier, with a total of 11,650 vacancies according to the survey of vacant positions and labour mobility. The number of vacancies continued to rise at quite a rapid rate in the second half of the year, though more slowly than throughout the preceding year (see Figure 23). The rise in the number of vacancies illustrates clearly the differences in the growth in employment, as demand for labour increased strongly in Estonia in the second half of 2016 and this was reflected in faster growth in the number in employment in 2017. The demand for labour grew more strongly in the second half of 2017 in the countries of Central and Eastern Europe and in Latvia and Lithuania, and it may be assumed that this pushed employment to rise in those countries at the start of 2018 too.

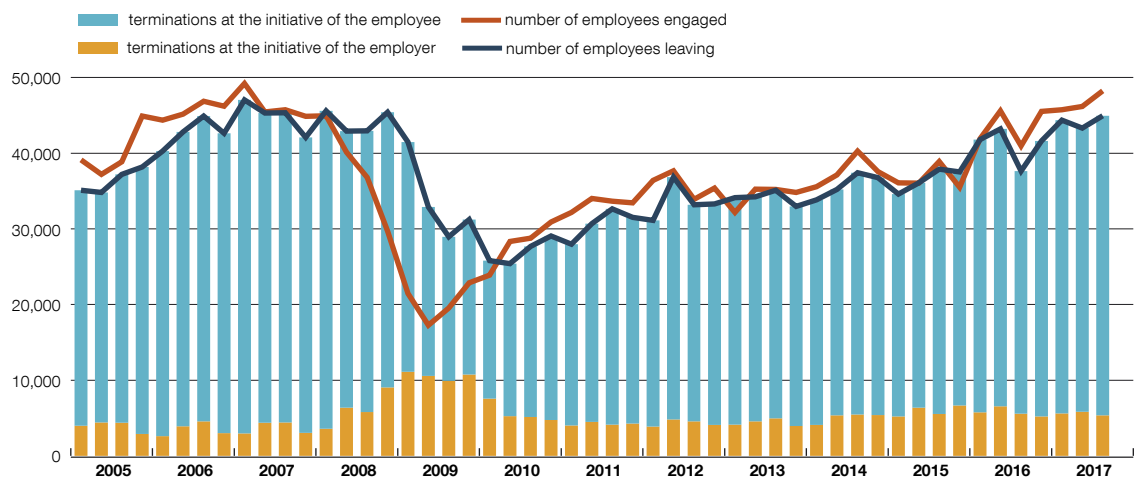
Figure 23. Yearly change in the number of vacancies



Sources: Eurostat, Eurostat, Eesti Pank calculations

The vacancy rate, which is the number of vacancies as a ratio to the total number of filled and unfilled jobs, averaged 2.1% in the first half of 2017, meaning that a suitable employee could not be found for two jobs in every hundred. The same survey already showed that the number of employees leaving their job at their own initiative and the number of employees hired started to rise in 2016 and it did so even faster in the second half of 2017 (see Figure 20). This indirectly indicates that job changing has become more frequent, which is typical at a time when there is little available labour in the market.

Figure 24. Labour mobility, seasonally adjusted

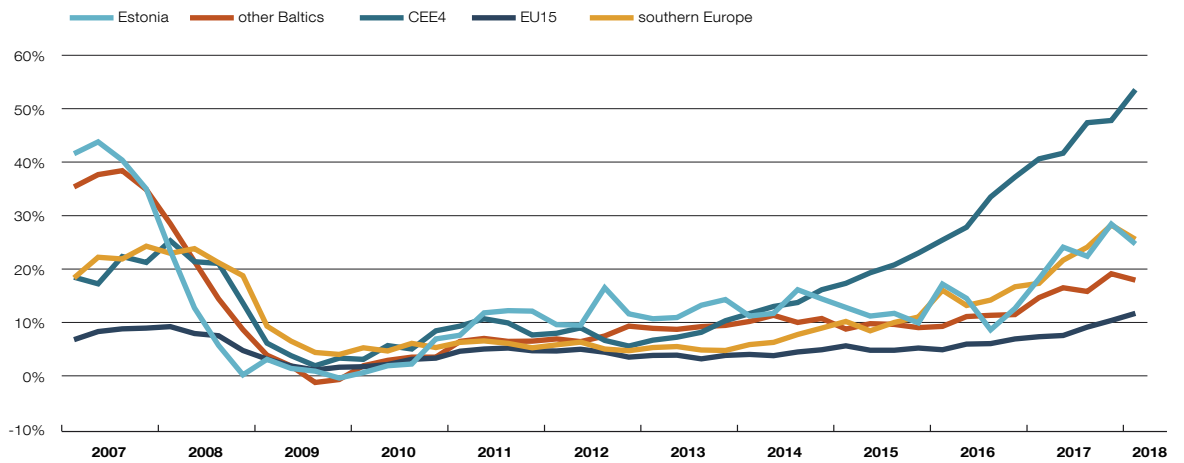


Sources: Statistics Estonia, Eesti Pank calculations

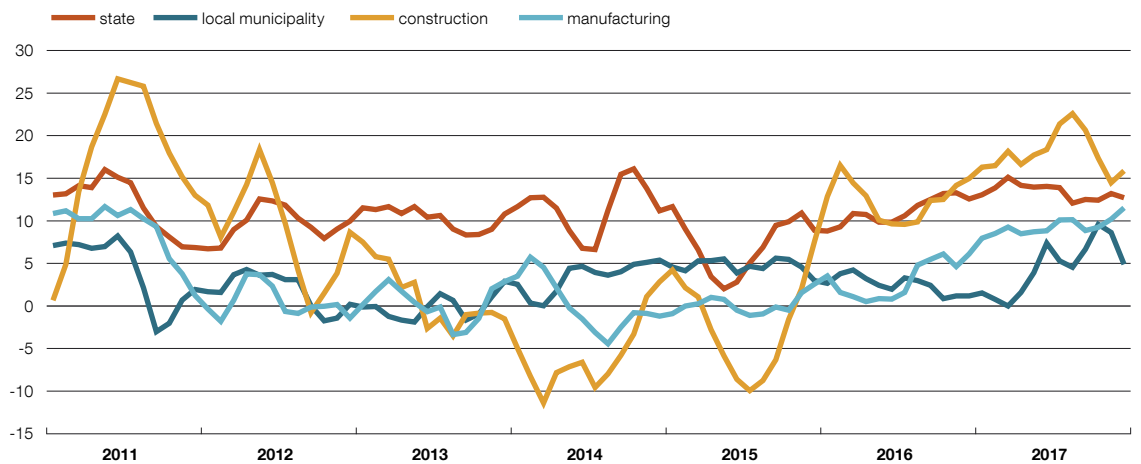
The largest number of vacancies in the second half of 2017 was in manufacturing, which is the largest employer by number of workers, and which had some 2490 vacancies. This was two thirds more than a year earlier. The sharpest rise in the number of vacancies was in construction however, where the 490 unfilled jobs in the second half of 2017 were more than twice the 225 of a year earlier. The most pressing labour problems are in information technology, and accommodation and catering, where an average of 2.9 jobs out of every 100 were unfilled in the second half of the year.

The need for additional labour can also be seen in the opinions of companies on how restrictive a problem the shortage of labour is for their activities. In manufacturing, where a little over one fifth of employees in Estonia work, and on average around 15% in the European Union, labour shortages increased sharply in 2017 (see Figure 25). Given the volatility in this indicator over time, it may be said that labour shortages in manufacturing are at least as pressing a problem in most European countries as they were during the rapid economic growth ten years ago. The importance of labour shortages as a factor restricting production has grown slightly more slowly in Estonia and especially in Latvia and Lithuania.

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. The expectations of Estonian employers for employment looking forwards were more or less the same at the end of 2017 and the start of 2018 as at the start of 2017 in manufacturing and services (see Figure 26). Companies in retail and construction were planning to hire slightly more employees than they were at the start of last year.

Figure 25. Manufacturing companies citing labour as the main factor limiting production, % seasonally adjusted

Source: European Commission

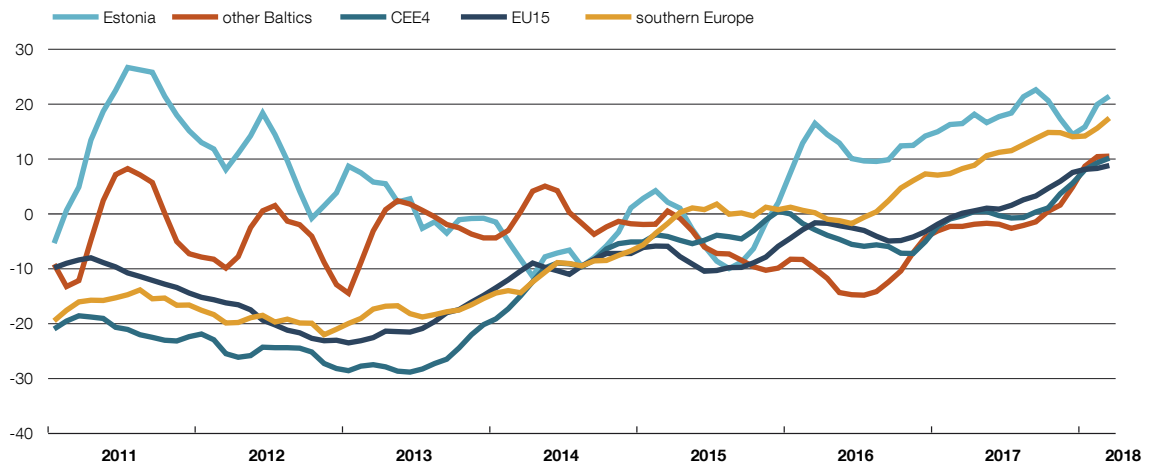
Figure 26. Employment expectations, three-month moving average

Sources: European Commission, Eesti Pank calculations

* the index shows net share of companies expecting employment to rise or to fall

Estonian construction companies see their need for labour in the next couple of years increasing substantially more than construction companies elsewhere in Europe do (see Figure 27). Growth in construction started to be expected in the older European Union member states, Latvia, Lithuania, and the countries of Central and Eastern Europe from the end of 2017.

Figure 27. Employment expectations in construction, three-month moving average



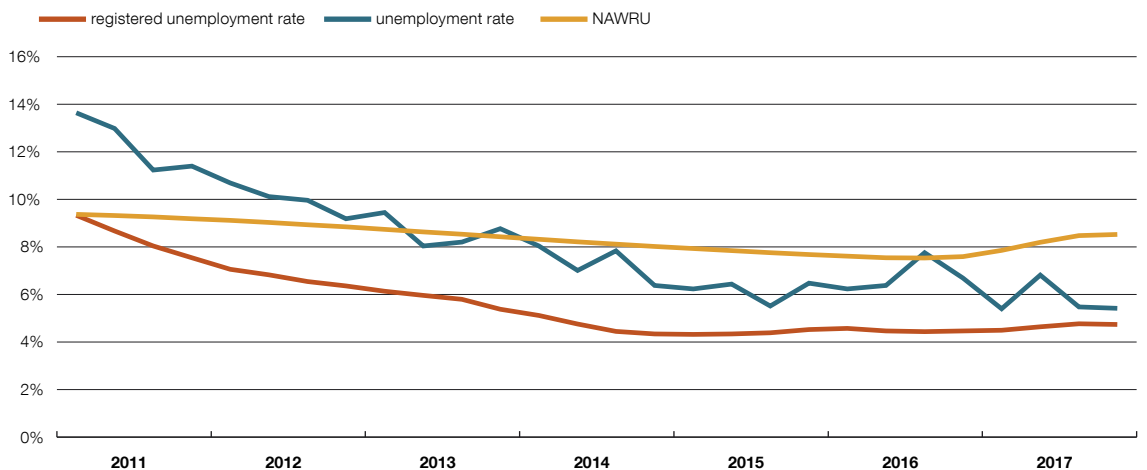
Sources: European Commission, Eesti Pank calculations

* the index shows net share of companies expecting employment to rise or to fall

Unemployment

In the second half of 2017 almost 37,000 people on average were without work and the unemployment rate fell in the data of the labour force survey from 7.1% in the second half of 2016 to 5.2% in the second half of 2017. The unemployment rate was the same in the third and fourth quarters (see Figure 28). The unemployment rate fell because employment increased at a faster rate than the number of participants in the labour force and unemployment ended up lower than expected by the Estonian macroeconomic forecast. It was forecast that unemployment would increase mainly because of people entering the labour market as a result of the Work Ability Reform for whom it would take longer than usual to find a job. Unemployment fell in the second half of 2017 for all age groups, though by most for the 15–24 age group. There was a notable fall during the year in unemployment among women and men aged 50–74, and combined with the high employment rate this means that older people are

Figure 28. Unemployment

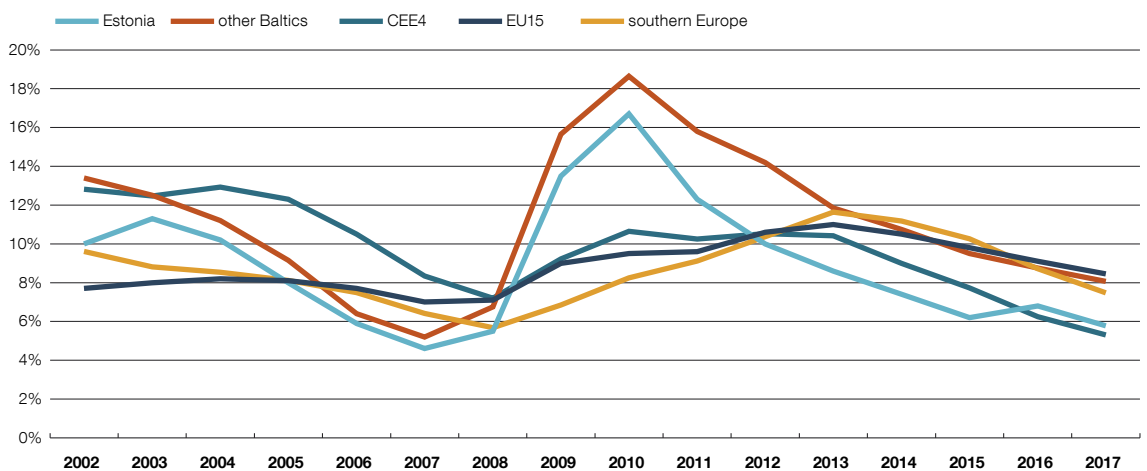


Sources: Statistics Estonia, Töötukassa, Eesti Pank

able to stay in work longer and find gainful activity. Unemployment among men at 5.6% was higher than the 4.8% among women, and the change over the year was the same for both men and women.

Unemployment has fallen at a rapid rate in Estonia since its spike after the financial crisis in 2008 relative to changes in other European countries. Unemployment in Estonia in 2017 was around two percentage points lower than in Latvia, Lithuania or Finland (see Figure 29). 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.

Figure 29. Unemployment rate, population aged 15–74



Sources: Eurostat, Eesti Pank calculations

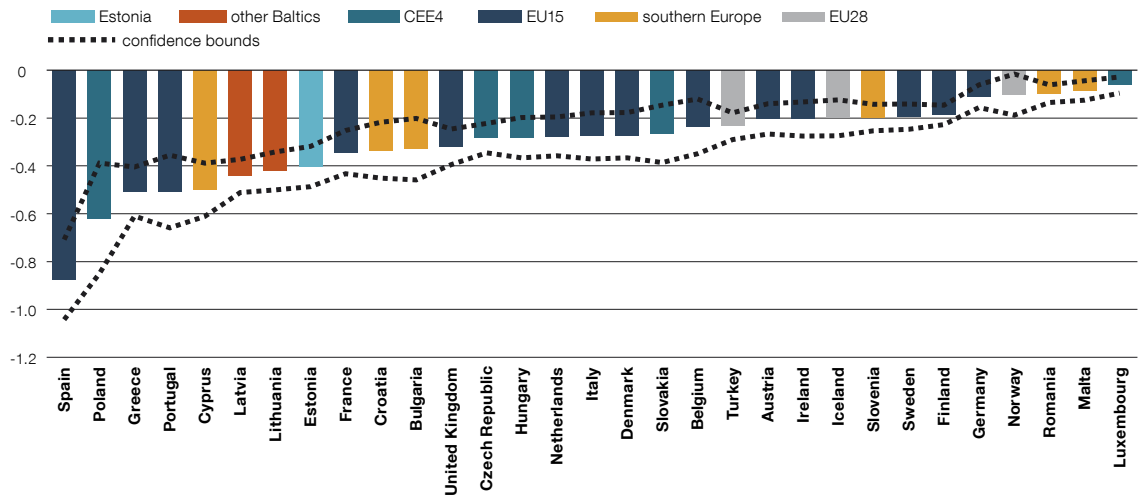
The high volatility in unemployment is partly explained by the fluctuations in the economies of different regions of Europe. How much unemployment changes in reaction to a change of 1% in real GDP is known as Okun's law³. Research in the USA and in the euro area has all found that a ratio of approximately 1 : 1/3 applies, so that when GDP growth increases by one percentage point, the unemployment rate falls by around one third of a percentage point. The sensitivity to unemployment varies widely across the member states of the European Union though. Estimates of the ratio calculated using data from 2006–2017 ranged from -0.83 percentage point in Spain to -0.01 percentage point in Luxembourg (see Figure 30). Unemployment changes to a relatively large extent in the older southern members of the European Union and in the Baltic states, and by little in Germany and Finland.

Ordering the countries of the European Union by their level of unemployment shows Estonia to be quite well in the middle. The unemployment rate was highest in Greece, which was recently rocked by crisis, and it was also high in several other countries in Southern Europe that were touched by the debt crisis. Very low unemployment rates were found in the large Central and Eastern European countries of Poland, Hungary and the Czech Republic, where wage growth also increased strongly in 2017.

It cannot be concluded from the level of unemployment alone whether there is tension in a country's labour market, meaning whether there is a lot of labour available in the market or whether labour shortages are causing wage pressures. Finding this can be done by looking

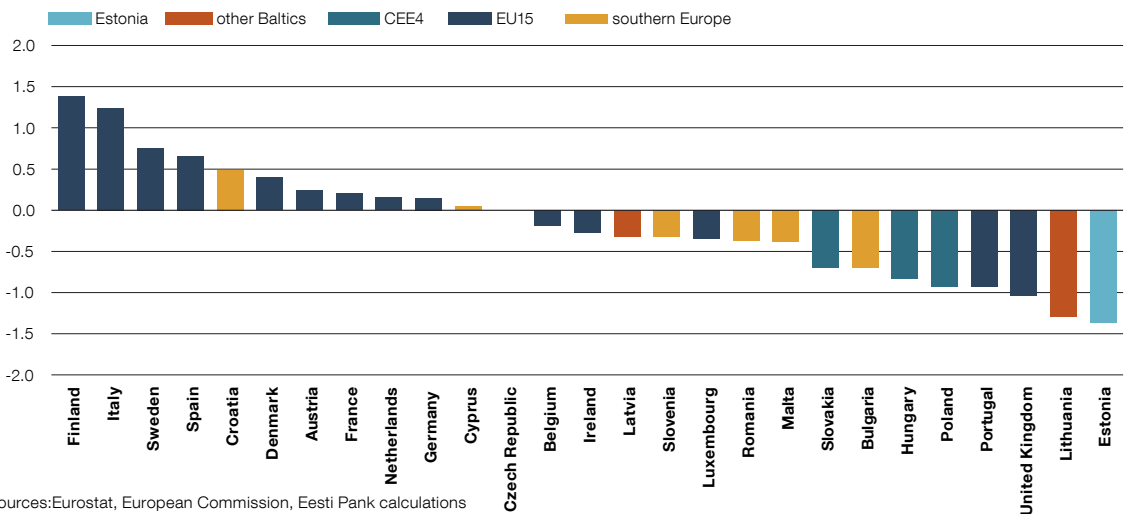
³ See Okun, A.M. (1962). *Potential GNP & Its Measurement and Significance*, American Statistical Association, Proceedings of the Business and Economics Statistics Section, pp 98–104.

Figure 30. Estimate of the Okun coefficient and confidence interval (+/- 2 standard deviations)



Sources: Eurostat, Eesti Pank calculations

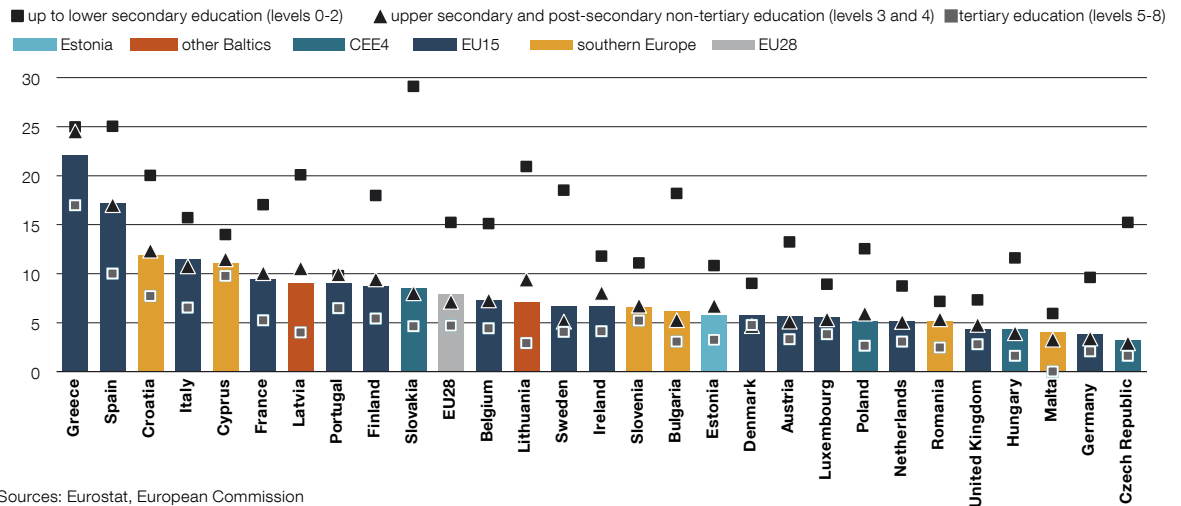
Figure 31. Unemployment gap in 2017



Sources: Eurostat, European Commission, Eesti Pank calculations

at the unemployment gap, which is the difference between the current rate of unemployment and the non-accelerating wage rate of unemployment (NAWRU). The NAWRU is the estimated level of unemployment where there is no additional wage pressure in the economy and wage rises do not accelerate. It is high if a lot of the unemployed are structurally unemployed, meaning they do not compete for the employment positions available in the economy because they do not have the skills required or they are not, for example, prepared to change their place of residence in order to find a job. Eesti Pank estimates that the unemployment rate in Estonia has been below the NAWRU since 2014 and the fall in the NAWRU was halted in 2016 by the impact of the Work Ability Reform. The estimate by the European Commission of the NAWRU put the unemployment gap in Estonia as the largest in the European Union in 2017. Like in Estonia, the unemployment rates in Lithuania and most of the large countries in Central and Eastern Europe are also notably below their NAWRUs. The labour markets in Finland and Sweden still have relatively large slack in them though (see Figure 31).

Figure 32. Unemployment rate by level of education, 2017



Sources: Eurostat, European Commission
Columns show the total unemployment rate

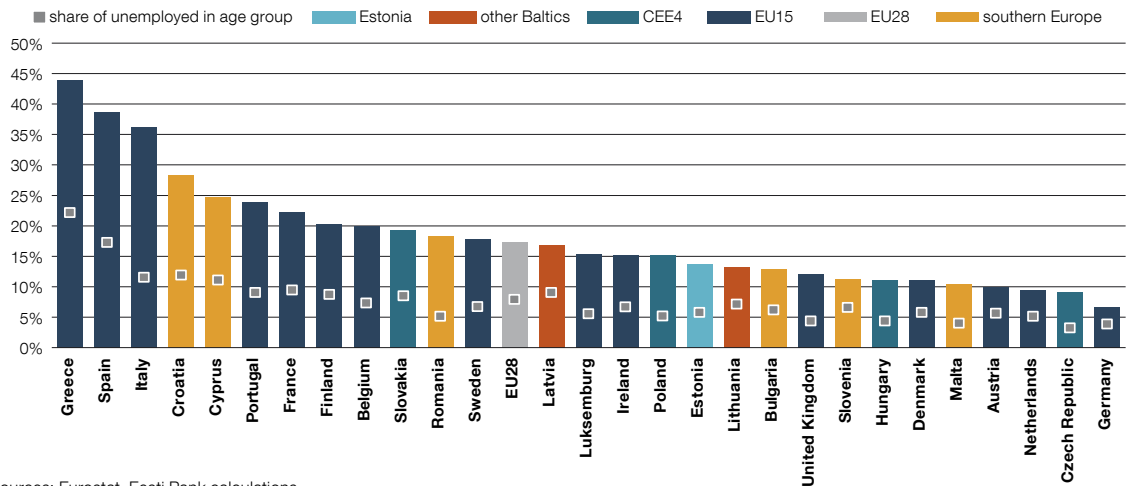
Similar rates for unemployment in the whole economy may disguise large differences in unemployment rates for people with different levels of education, gender, age or other indicators. Figure 32 illustrates this by showing the unemployment rates for different levels of education alongside the figure for the whole economy. Unemployment is generally lower with higher levels of education. Comparison of the Baltic states shows that the unemployment rate for people with higher education is quite similar across the three countries, but the rate for people with primary education is much lower in Estonia than in Latvia or Lithuania. The difference in unemployment rates for people with higher education and for those with lower levels of education is very small in German-speaking countries like Germany and Austria that have strong vocational education systems.

Youth unemployment fell in Estonia last year from 14.1% to 8.6% in the second half of 2017, and in the last quarter of the year it was as low as 6.2%. The youth unemployment rate in Estonia is lower than the average in the European Union and is as low as the rates in Latvia and Finland. Youth unemployment is a major problem in older European Union members from South Europe, especially Greece, where one person in five aged 15-24 was out of work and almost half of the young who participated in the labour market were unemployed (see Figure 33).

In contrast to the estimate of the labour force survey, the number registered as unemployed with Töötukassa rose throughout 2017 and in the first quarter of 2018. The number registered as unemployed was increased in 2017 by the Work Ability Reform, which requires those who are partly capable of work to participate actively in the labour market to receive their benefits. During the year there was a fall in the number of registered unemployed who did not have reduced capacity for work. The rate of fall has slowed since the last quarter of 2017 however, which means that in monthly terms the number of registered unemployed who are fully capable of work also rose in the fourth quarter.

In the second half of 2017 an average of 4355 applications were submitted on average each month for work ability to be assessed and the assessments found that 26% of applicants were fully incapable of working and 50% were partially capable of work, while 16% were found not to have a reduction in their work capacity. The total number of applications has remained around the same since the reform, but the share of rejections has increased slightly. Among

Figure 33. Youth unemployment in 2017, age 15–24



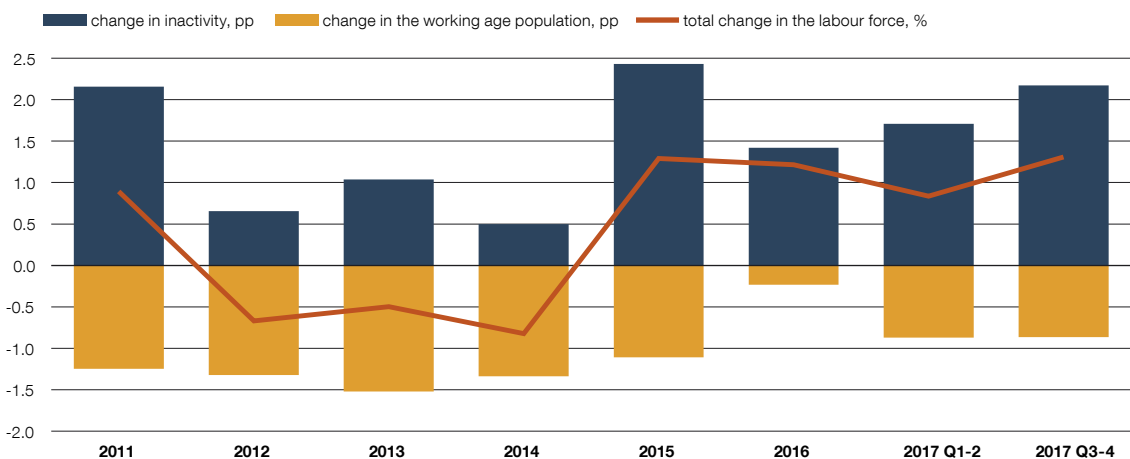
Sources: Eurostat, Eesti Pank calculations
Columns show the unemployment rate

those who were partially capable of work, 59% were working at the time of the assessment and the other 41%, or 11,792 people, had to meet the activity requirements in order to receive their benefits. There are various ways of meeting the activity requirement, such as studying, raising children or caring for family members, but most people were actively looking for work.

Participation in the labour force and the working age population

As the demand for labour increased, so the supply of labour grew in the second half of 2017. The labour force, which is residents aged 15–74 who are either working or looking for work, was 1.3%, or 9100 people, larger in the second half of 2017 than a year earlier according to the labour force survey (see Figure 34). Although there were about 6000 fewer people of working age than a year earlier, the labour force in Estonia grew because the number of people of working age who were not active in the labour market was smaller than before.

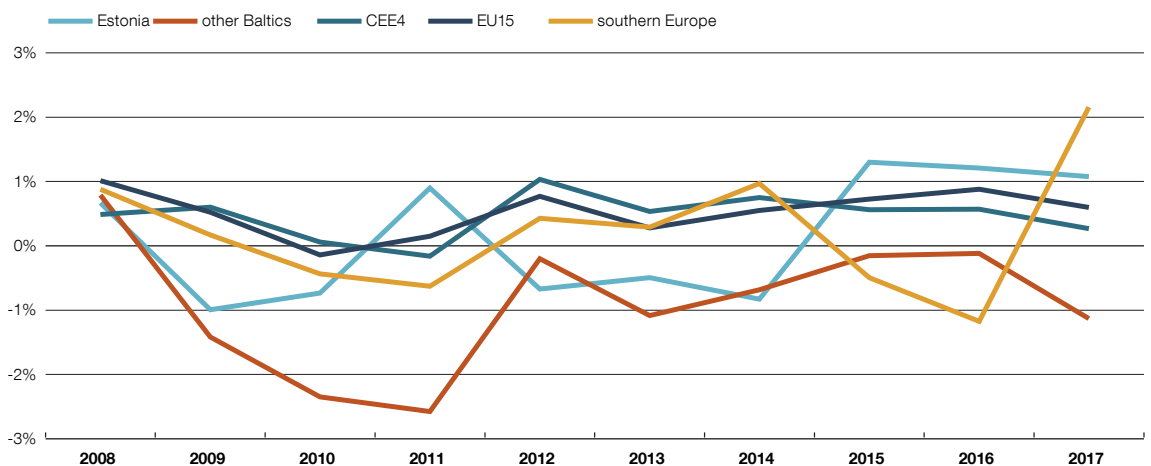
Figure 34. Yearly change in the labour force



Sources: Statistics Estonia, Eesti Pank calculations

The labour supply, which is the number of residents active in the labour market, has grown in the past three years by around 1% a year in Estonia, which is one of the fastest growth rates in Europe (see Figure 35). The average labour supply in Latvia and Lithuania has been falling since 2009 in contrast. This is mainly because the number of people of working age has fallen faster in Latvia and Lithuania than in Estonia, and the decline in inactivity has not managed to offset the overall shrinking of the population.

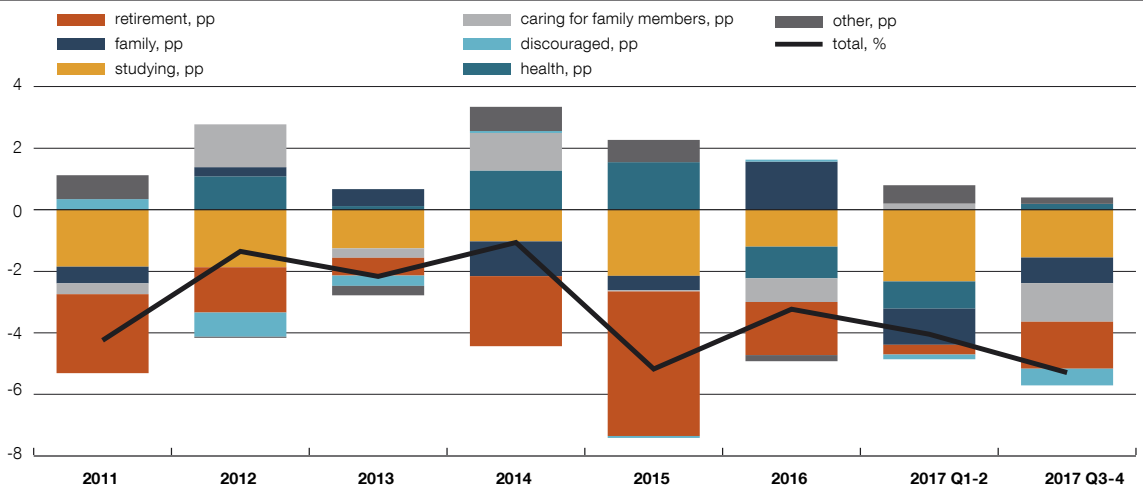
Figure 35. Yearly change in the labour force



Sources: Eurostat, Eesti Pank calculations

There were 15,100, or 5.3%, fewer people of working age inactive in the labour market in the second half of 2017 than a year before. Data from the labour force survey show the fall in the number of people inactive in the second half of the year was affected fairly equally by declines in the numbers out of the labour market for studies, retirement, or caring for children or other family members (see Figure 36). For the first time in some years the number of people who were out of the labour market because they had lost hope of finding a job also fell fast.

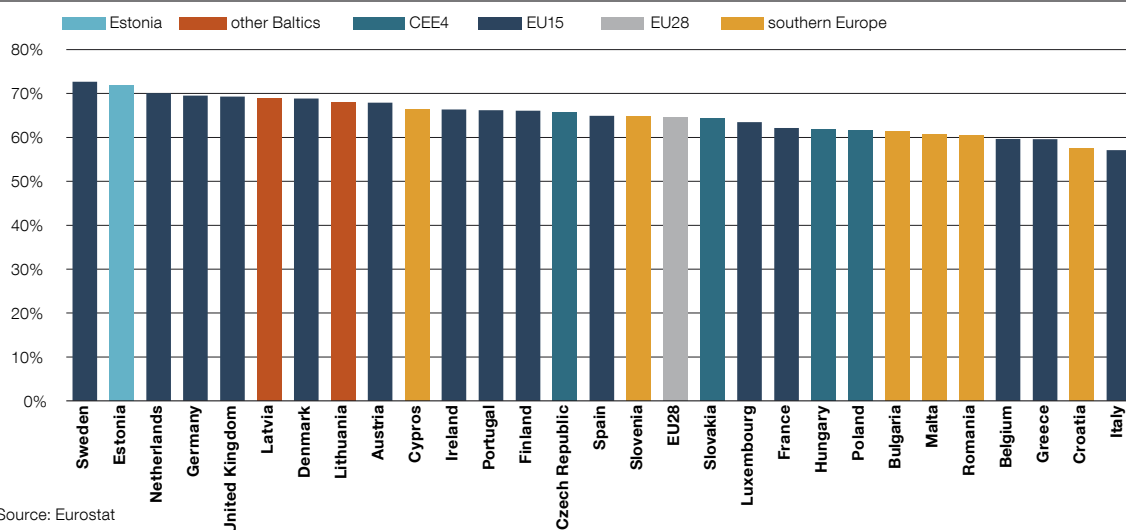
Figure 36. Yearly change in the number of inactive



Sources: Statistics Estonia, Eesti Pank calculations

As the number of inactive people has fallen in the past three years, so the labour force participation rate⁴ has risen strongly. In the second half of 2017, 72.1% of people of working age, 15–74, were active in the labour market, and the labour force participation rate was 1.4 percentage points higher than a year earlier. The participation rate for people of working age in Estonia is, like the employment rate, among the highest in the European Union, exceeding the average by some seven percentage points (see Figure 37). The participation rate for those aged 50–74 was the highest in the European Union in 2017 primarily because of the very high participation rate for women in that age group. As older people remain active in the labour market for longer, retirement is a less common cause of inactivity in Estonia than in the European Union on average. The unemployment rate for those aged 50–74 was 5.3% in the second half of 2017, which was 1.6 percentage points lower than a year earlier, indicating that older people are able to find themselves gainful activity.

Figure 37. Labour force participation rate, 2017



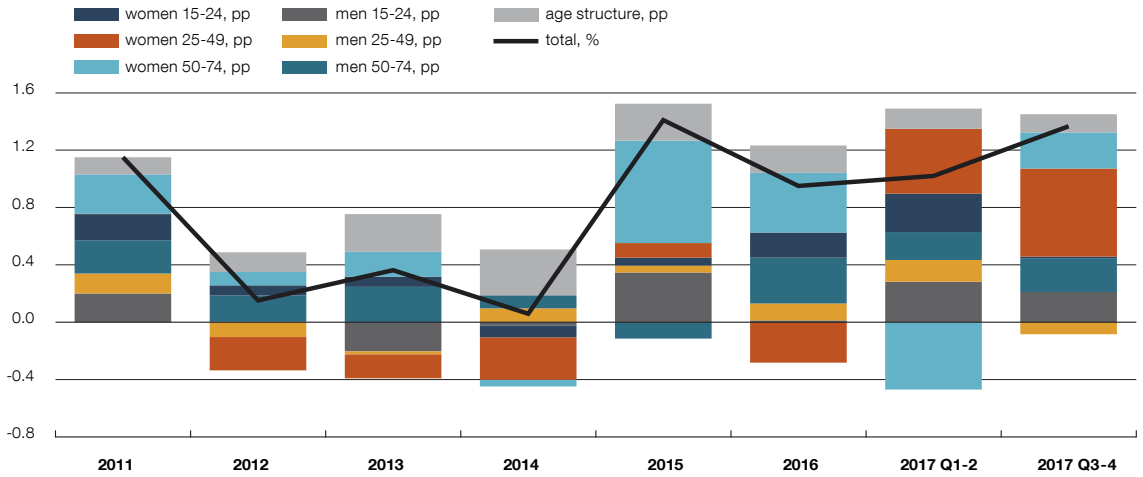
The more active participation in the labour market of women and men aged 50–74 lifted the labour force participation rate in Estonia in the second half of 2017 as well (see Figure 38). As the number of people who were inactive in the labour market because of caring for children or other family members fell, the participation rate for women aged 25–49 rose.

The number of people active in the labour market has also been raised by the ongoing Work Ability Reform. The Work Ability Reform increases labour force participation mainly because people who are partially capable of working, who would previously have been out of the labour market, have to be actively looking for a job in order to receive their work incapacity benefit. The number of people who were not working at the time they were assessed and who were assessed as partially capable of work reached a total of 14,890 by the end of February 2018. The Work Ability Reform is covered in more detail in a box in Estonian Economy and Monetary Policy 3/2017. The labour force participation rate should be lifted further in future by the Work Ability Reform, and also by the rise in the retirement rate, and so the labour force should increase.

The labour supply is affected not only by the participation rate of residents, but also by changes in the number of people of working age, which is important for the state of the labour

⁴ The labour force participation rate, or the level of activity of the working age population, is the weight of the employed and the unemployed in the working age population.

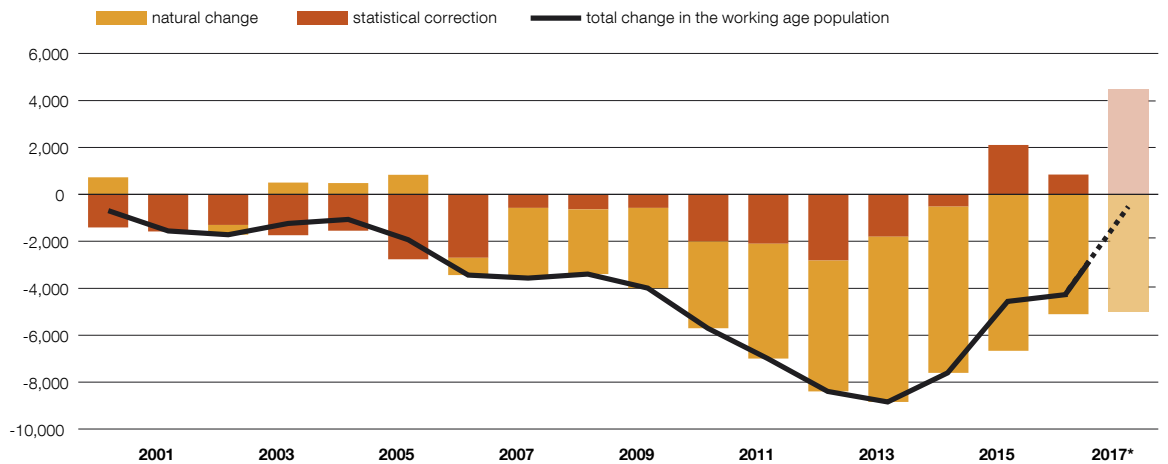
Figure 38. Contributions to the yearly change in the participation rate by age and gender



Sources: Statistics Estonia, Eesti Pank calculations

market. Although most 15-year-olds are inactive because they are studying, and fewer than 10% of 74-year-olds participate in the labour market, working age is defined in a broad sense as between the ages of 15 and 74. Changes in the total population and in the number of people of working age may be quite different, mainly because of the age structure of society. The number of people of working age has fallen somewhat faster in Estonia than the total population has. Although accurate population statistics will only be published in May 2018, it can be forecast that if migration and mortality remain the same in the age structure, the number of people of working age will fall by around 500 people, or 0.05% (see Figure 39). This is notably smaller than the fall in 2016 because of the large positive migration balance. In the coming years the number of people of working age will be affected a great deal by the age structure of the population. This is because some 3000 fewer people were born in the second half of the Second World War and after the war in 1944–1946 than a few years earlier or afterwards. This

Figure 39. Change in the working age population

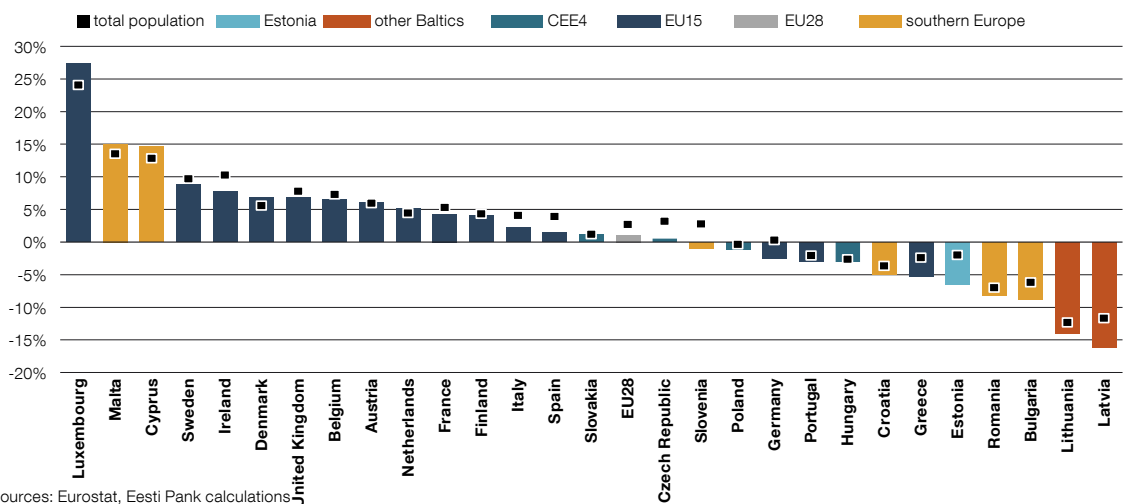


Sources: Statistics Estonia, Eesti Pank calculations
* Eesti Pank forecast from preliminary data

means though that fewer people will be exiting working age than usual, meaning the share of people aged 15–74 will increase. This increase will be aided by the number of 15-year-olds reaching working age, which is expected to rise in the coming years.

The population in most member states of the European Union is ageing, which generally means that the share of people of working age in the total population is shrinking. It does not necessarily mean though that the population or the number of people of working age is shrinking, as the population has increased in the past decade in most of the older members of the European Union, with the exceptions of Germany and Greece. The largest fall in population has been in the Baltic states and in Romania and Bulgaria, the poorest of the South Europe countries (see Figure 40). Differences between countries are affected most by migration (see Box 2), though also by natural demographic processes.

Figure 40. Change in the working age population 2007–2017



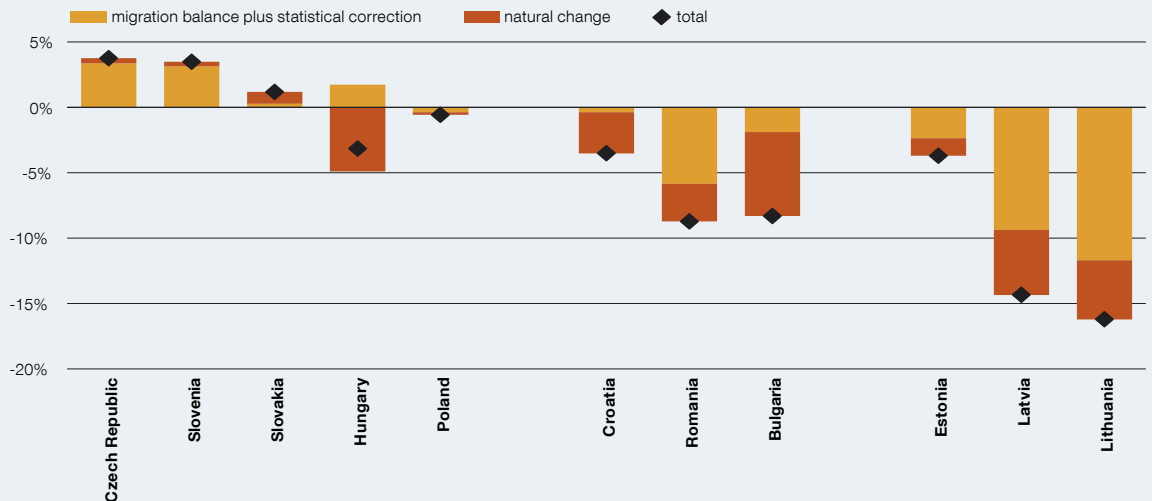
Sources: Eurostat, Eesti Pank calculations
Columns show the population aged 15–74

Box 2: Emigration in the newer members of the European Union

This box considers emigration from the eight countries of Central and Eastern Europe that joined the European Union in 2004, Bulgaria and Romania, which joined in 2007, and Croatia, which joined in 2013. Although the standard of living was lower in all the countries of Central and Eastern Europe at the time they joined the European Union than it was in the older member states, not all the new member states became countries of emigration. A major factor was whether the new member state had a neighbour that was culturally close where the standard of living was even lower.

The four Central and Eastern European countries of the Czech Republic, Hungary, Slovakia and Slovenia, stand out for having positive cumulative migration balances in 2004–2016. Slovenia and the Czech Republic, which have the highest standards of living among those countries, have attracted immigrants from Central and Eastern European countries. An exception with very high emigration is Poland, where statistics on registered migration strongly underestimate actual flows of migrants. An important push factor in Poland was the high rate of unemployment that had climbed to around 20% at the time Poland joined the European Union, and the large-scale movement of people from rural areas to the cities. The Baltic states, together with Croatia, Romania and Bulgaria, which have lower living standards and joined the European Union later, have lost a relatively large percentage of their population to emigration since joining the European Union. Emigration in these two groups of countries has exacerbated the natural decline in the population and had a negative impact on the supply of labour (see Figure B2.1).

Figure B2.1. Contributions of migration and natural change to the change in the population, 2004–2016

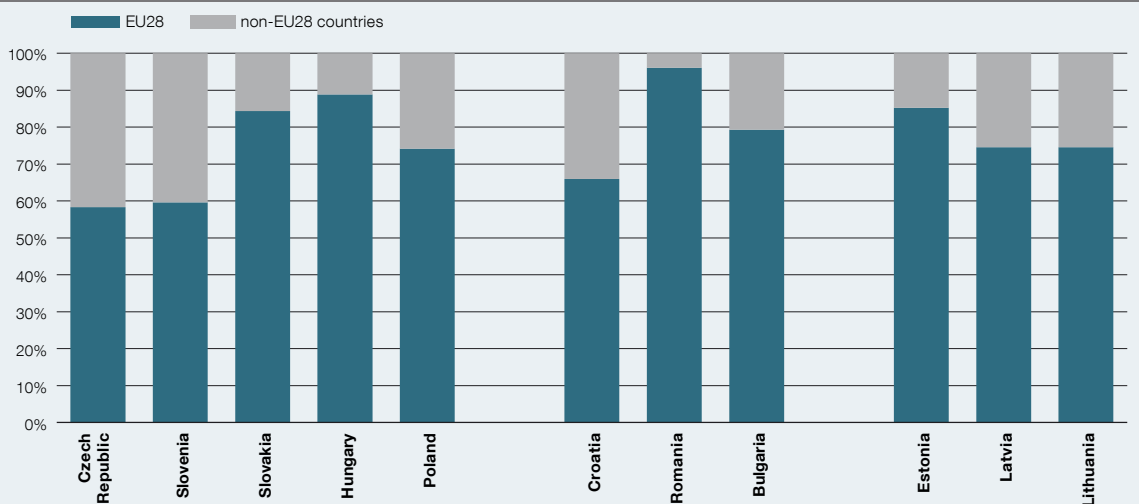


Sources: Eurostat, Eesti Pank calculations

Estonia differs from Latvia and Lithuania in 2004–2016 by having lower emigration, but immigration was about the same level. The migration balance is not necessarily directly related to migration activity, and flows of migrants are notably high in the Czech Republic and Slovenia where the migration balance is positive, and in Poland and Romania where it is negative. Large flows of migrants reflect the temporary nature of emigration in Central and Eastern Europe, as people go abroad to earn money for a few years while maintaining a place to live and connections with their home country.

Since 2013 most countries have had data on the country of birth of immigrants and half the countries considered here have had data on the destinations of emigrants. In 2013–2016 migration from all the countries was mainly to the European Union (see Figure B2.2). As many of the destination countries that are not members of the European Union are usually those from which there is large immigration, it is probably a case of return migration of people who earlier came from that country. For most countries in Central and Eastern Europe there is very often one or a few countries that dominate as destinations for emigrants,

Figure B2.2. Emigration by destination country 2013–2016

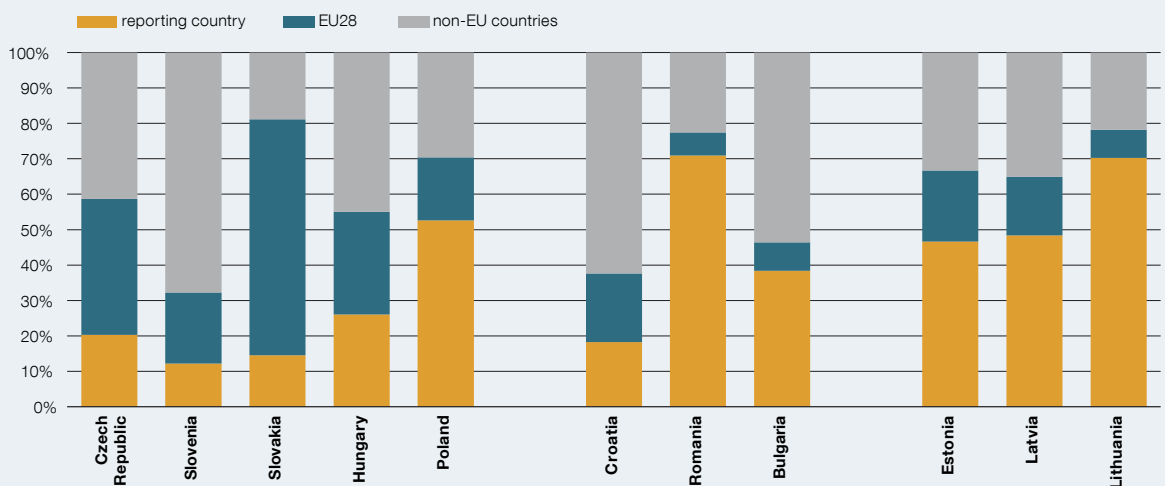


Sources: Eurostat, Eesti Pank calculations

so 51% of emigration from Estonia was to Finland, while 45% of emigration from Lithuania was to the United Kingdom and 8% to Ireland. A major part of emigration from Croatia, Slovenia, Slovakia and Bulgaria goes to Germany and Austria meanwhile, which have high standards of living and are geographically close. The main destination for emigration from Slovakia though is in fact the Czech Republic, Slovakia's neighbour. The United Kingdom is the dominant destination for emigration from Poland, and the population of Polish origin was almost one million in number at the start of 2016⁵.

A large part of immigration is now return migration (see Figure B2.3), and it accounted for 70% of the immigration to Lithuania in 2013-2016. The numbers of return migrants are added to by their foreign partners and children immigrating from European Union countries, which are the main destination for emigration. Immigration of this sort, which is not return migration, plays an important role in European countries with low living standards that are not part of the European Union, like Bosnia and Herzegovina, Kosovo, Serbia, Moldova, and also Ukraine and Russia. Sources of immigrants moving to Hungary are Romania, Ukraine and Serbia, where many ethnic Hungarians live. Flows of migrants between the Czech Republic and Slovakia, which were formerly one country, are large in both directions.

Figure B2.3. Immigration by country of birth 2013–2016



Sources: Eurostat, Eesti Pank calculations

⁵ According to a briefing paper of the Parliament of the United Kingdom. See Oliver Hawkins, Anna Moses, BRIEFING PAPER Number CBP7660, 15 July 2016 "Polish population of the United Kingdom".