



LABOUR MARKET REVIEW

2/2016

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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KEY DEVELOPMENTS IN THE FIRST HALF OF 2016

Despite slow economic growth the situation in the labour market remained good for employees in the first half of 2016 as employment increased and wage growth accelerated. Within the satisfactory aggregate number though were larger differences between sectors than in the previous year. Most of the indicators for employment in the industrial sector showed that employment has either increased or remained unchanged, while wage growth was below the average rate of growth for the economy. The service sector meanwhile saw increases in both employment and wage growth.

Although employment growth was slower than in 2015, demand for labour remains strong, which was shown by the simultaneous increases in employment and wage growth. Although the number of people of working age declined, the labour force increased by more than 1% as expected wages rose and structural reforms were made to the labour market. The largest contribution to this increase came from women and men aged over 50 as the number of people inactive because they were of retirement age or for health reasons declined. The introduction of the working capacity reform means that more people who were previously inactive for health reasons can be expected to return to the labour market in future. Together with a rise in life expectancy, the number of years of healthy life expectancy has risen in Estonia. Box 1 discusses in more detail the indicators used to measure it.

The unemployment rate in the first half of 2016 was about the same as in the previous six months, as new entrants to the labour market took the places of those who found jobs. Like in 2015, both the labour force survey and the data on registered unemployment showed a rise in the number of short-term unemployed. The data from Töötukassa, the unemployment insurance fund, for the registered unemployed showed an increase in the number registering as unemployed because their working relationship had ended, though the number entering the labour market remained the same as in the previous year. At the same time there was also a rise in the number exiting the register because they had found jobs. Rising unit labour costs indicate that the unemployment rate is below its natural level, where there is no upwards pressure on wages.

Labour costs grew at a faster rate in the first half of 2016 than a year earlier. Wages rose faster in the private sector, at foreign-owned employers in the first quarter and at Estonian-owned employers in the second. Wage growth in the public sector slowed at the same time. Data on wages paid out show wage growth to have been fastest for lower wages, probably because of the sharp rise in the minimum wage. How much the minimum wage affects the wage distribution is analysed in Box 3. Research results showed that a rise in the minimum wage affects all the wage distribution below the median wage, but the effect is diminishing. Confidence surveys show that the share of companies naming labour shortages as a factor hindering production was larger than a year ago.

Despite a short-lived rise in the first quarter of 2016, labour productivity declined over the half year. The growth rate of real unit labour costs slowed in the first half of 2016 from its rate of 2015 because the fall in productivity came together with a slowdown in growth in compensation per employee. Even so, unit labour costs grew considerably faster in 2015 and 2016 than in previous years, which points to an increase in imbalances in the economy. According to the recently revised data from Statistics Estonia, the labour market tightened only in 2015, which is considerably later than previously thought as real unit labour costs rose by only 0.5% a year in 2013–2014. Rising unit labour costs over the longer term mean that corporate profit margins shrink and Estonia becomes less attractive as a place to base production. Equally, companies with thin profit margins become more vulnerable to any future negative shocks because they have smaller buffers to tide them over through temporary difficulties. Given, however, that the earlier estimates of rises in unit labour costs in recent years have been systematically revised downwards, the estimates for 2015–2016 are also surrounded by some uncertainty.

DEMAND AND SUPPLY FOR LABOUR

The working age population

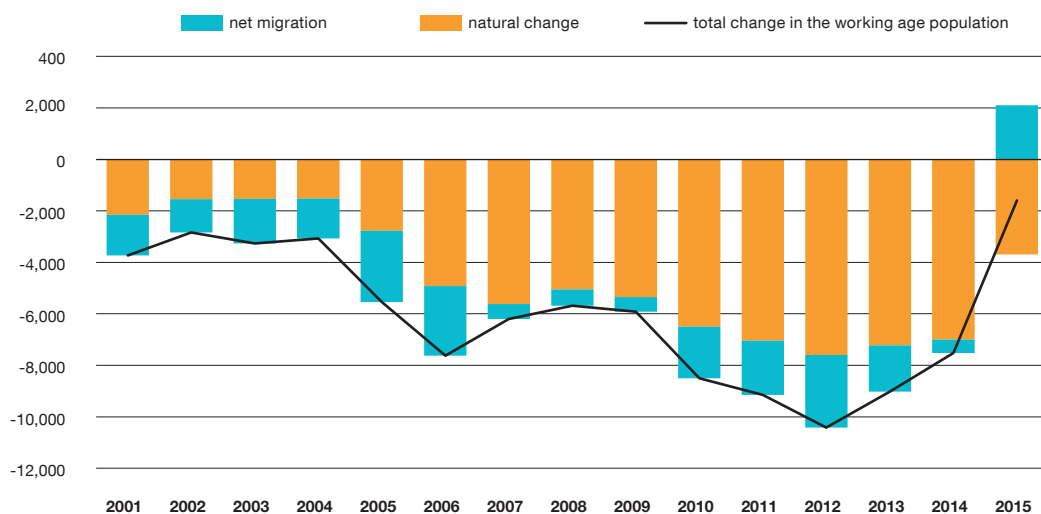
Data from Statistics Estonia show the migration balance was positive in 2015 for the first time since Estonia regained independence. This meant that the Estonian population increased in 2015. At the start of 2016 there were 1,315,944 permanent residents in Estonia, which was 0.2% more than at the start of 2015.

Statistics Estonia changed its methodology for estimating migration this year by estimating unregistered migration as well as counting registered migration¹. In consequence, the figures for 2015 are not directly comparable with those for earlier years. In 2011–2013 more than 6000 residents a year moved to live permanently in another country, and in 2014 around 4600 people did so, but the estimate using the new methodology shows that some 13,000 residents emigrated from Estonia in 2015. There was equally a sharp jump in the estimates for immigration. In the preceding couple of years, the number of people moving to live permanently in Estonia was about 4000, but in 2015 immigration hit more than 15,400.

It can be seen clearly from the migration data that the migration balance is positive because of increased immigration or return migration. Around half of those immigrating were return migrants who were born in Estonia. The share of immigrants who were born in Russia continues to decline, while the share born in Finland rises.

The Statistics Estonia data show that 983,826 of the permanent residents in 2015 were of working age, which is taken as 15–74. Although the overall population figure increased, the working age population fell by 0.16%, or 1595 people. The number of people of working age was reduced by natural change by 3697 and raised by the positive migration balance by 2102. The rate at which the working age population is shrinking has slowed each year though (see Figure 1). The decline has been slowed by both the improvement in the migration balance and natural demographic processes, which have been driven by two factors. The first is that the larger cohorts born in the early 2000s are joining the working age population, and the second is that the small cohorts born at the start of the second world war have been leaving it.

Figure 1. Change in the working age population aged 15–74



Source: Statistics Estonia

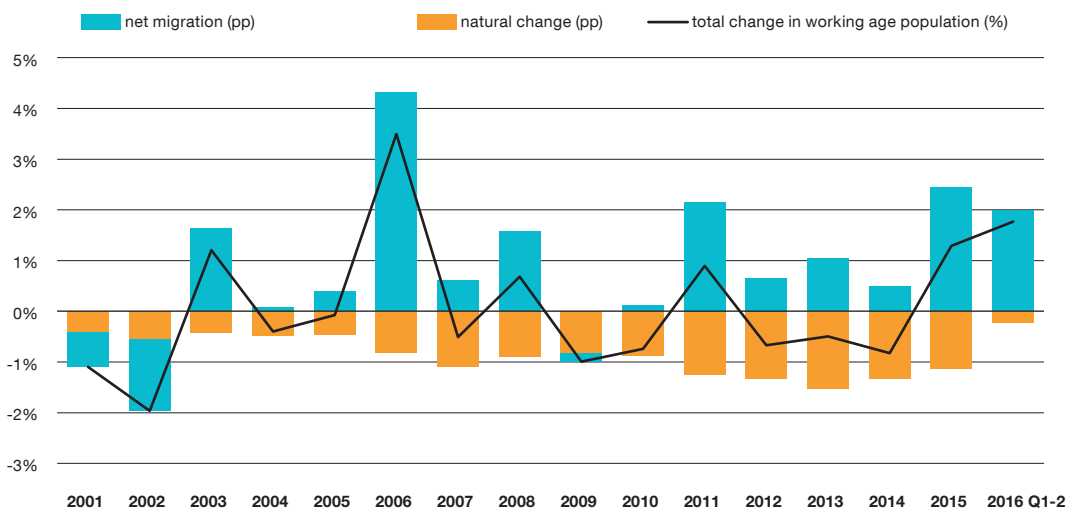
¹ Statistics Estonia news release "The population increase was influenced by external migration" <https://www.stat.ee/277564>.

It has also been slowed by the fall in the mortality rate among the working age population aged 15–74. The rise in the average life expectancy of men from its level in 2000 has had a major impact on reducing the mortality rate of the working age population. A 20-year-old man in 2000 had life expectancy of 67 years, but in 2015 that had risen to 74 years. The life expectancy of a woman aged 20 in 2000 was 77 years, which is higher than the upper limit set for working age at 74. By 2015 the life expectancy of a woman aged 20 was 82 years.

Participation in the labour force and inactivity

Although the working age population in Estonia was smaller in 2015 than a year earlier, the labour force² in the Estonian economy was still 1.3% larger than in 2014 (see Figure 2). The number of residents participating in the labour force grew further in the first half of 2016, due particularly to the high labour force participation rate³. The rise in the activity rate and consequent reduction in the share of people who are inactive mean that although the working age population shrank by around 1600 people over the year, the labour force in the economy still increased by 12,100 people, or 1.8%, in the first half of 2016.

Figure 2. Change in the labour force



Sources: Statistics Estonia, Eesti Pank calculations

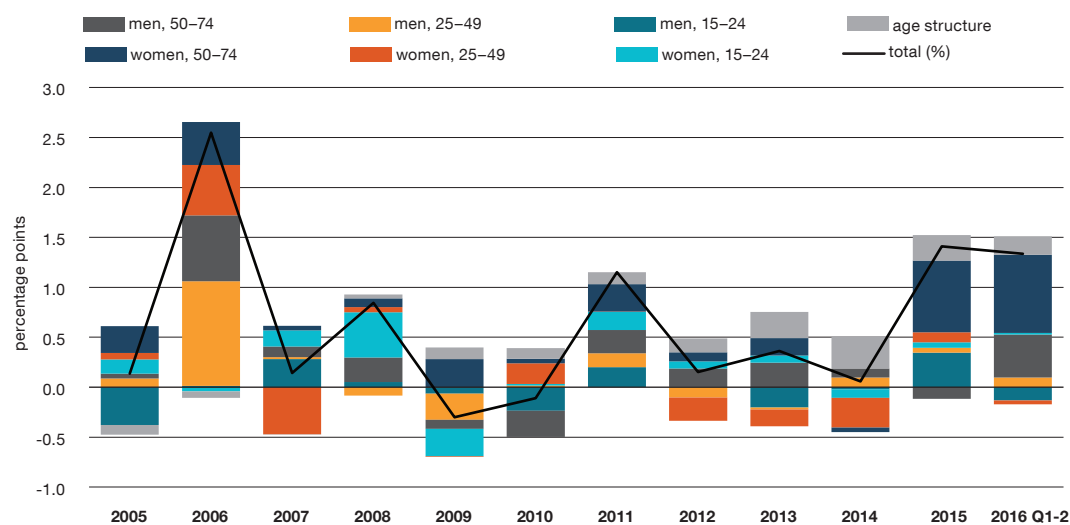
The labour force participation rate, or the level of activity of the working age population, was 1.4 percentage points higher in the first half of 2016 than in the first half of 2015 at 70.1%. In the first quarter of this year, 68.6% of the working age population participated in the labour force, and that rate then rose to 71.5% in the second quarter, the highest level it has reached since 1997.

Like it did in 2015, the participation rate rose in the first half of 2016 because older people participated more actively in the labour market. In 2015 it was the increase in the labour market activity of women aged 50–74 that contributed most to the rise in the participation rate, but the first half of this year has seen strong growth in the labour market participation of men aged 50–74 as well (see Figure 3). Statistics Estonia finds that the participation in the labour market of women aged 50–74 was 3.5 percentage points higher in the first half of 2016 than a year earlier, and the rate for men aged 50–74 was 2.4 percentage points higher. This meant the rate of active participation in the labour markets rose to 59.6% for older women, and to 60.6% for men of the same age.

² The labour force consists of residents of working age who are active in the labour market, either working or looking for work.

³ 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 3. Contributions to the change in the participation rate by age and gender



Sources: Statistics Estonia, Eesti Pank calculations

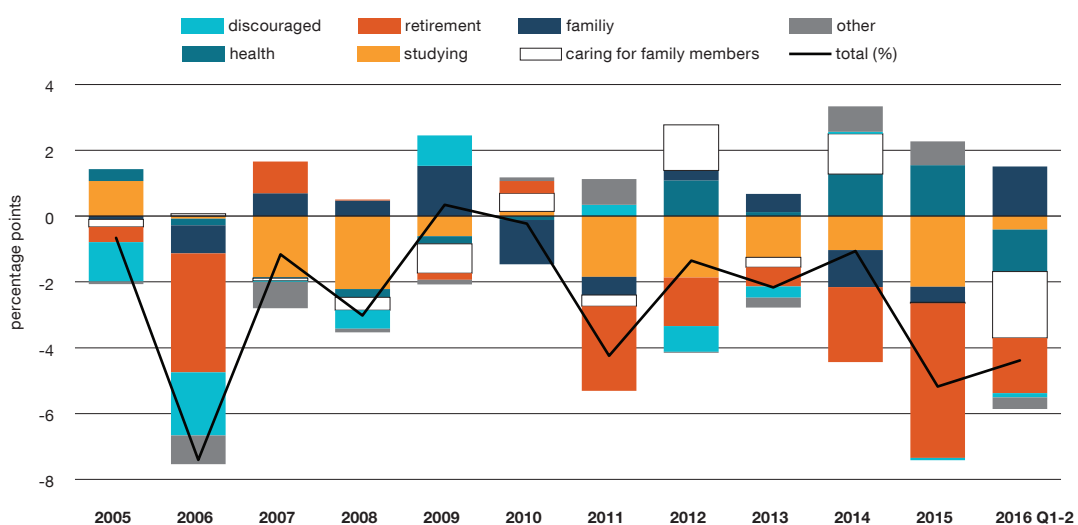
The data also show that the participation rate for women aged 50–74 rose in 2015 mainly because women aged 60–69 were more ready to participate in the labour market. This is a positive development because the falling number of residents of working age and the shrinking population make it ever more important that those who have already reached retirement age should still want and be able to participate in the labour market.

The rise in the activity rate of the working age population also meant that there was an equivalent decline in the share of the working age population that was inactive in the labour market. Reflecting the increase in activity in the labour market in the 50–74 age group, the inactive working age population has shrunk largely due to the steady fall each year in the number of people leaving the labour market because of retirement (see Figure 4). There were 5.2% fewer residents inactive in the labour market because of retirement in the first half of 2016 than a year earlier.

There was also a significant drop in the first half of 2016 in the number of residents who were inactive for health reasons, as 6% fewer people were inactive because of illness or injury than a year earlier. Around three quarters of those inactive in the labour market for health reasons in 2015 were aged 50–74, from which it follows that the participation rate for older people continued to rise in the first half of 2016 because the number of those inactive because of illness or injury fell in that age group. Although the work ability reform only came into force in July 2016 and until the end of the year only directly affects people who have newly lost their capacity to work, it may have already altered people’s expectations and so changed their behaviour in the first half of the year. The biggest change that the reform introduced is a transition from assessment based on a diagnosis of incapacity to assessment of the limits that the health condition puts on work. People who are partly capable of working will have to meet conditions for activity if they want to receive incapacity benefits. This means that those who are not working, studying or looking after small children have to search actively for work. Data from Töötukassa also show the number of disabled people registered as unemployed had started rising in 2015, and in the first half of 2016 it reached 4300, which was 47% more than a year earlier.

The aim of the work ability reform is to alleviate the effect of health limitations on people’s labour market participation. However even if the reform meets its goals, health will always remain an important determinant of a person’s labour supply decisions, especially in older ages given that the

Figure 4. Contribution of different reasons to change in the number inactive



Sources: Statistics Estonia, Eesti Pank calculations

retirement age is being steadily lifted. It is true that Estonia has seen considerable improvements in life expectancy during the last decade, but only part of this is longer time lived in good health. It is much harder to monitor developments in healthy life years than in total life expectancy though. Box 1 describes the methodology used to calculate this, and compares developments in Estonia with those in other countries in Europe. Both of the indicators described point to an increase in healthy life expectancy. The one based on self-assessed health is much more pessimistic than the one based on burden of disease however.

Box 1: Health and healthy life years

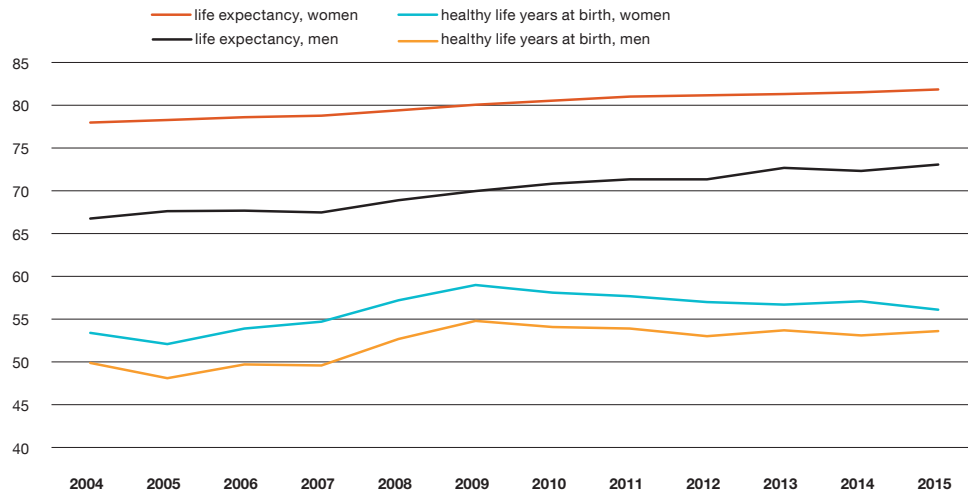
The expected number of years of healthy life generally rises together with life expectancy, though this is not always the case. Longer life could mean a longer period of bad health, mostly in later years. Several indicators have been developed to measure how much the number of years of healthy life rises together with life expectancy.

One of the most commonly used indicators in Europe is healthy life years (HLY), which for Estonia is based on questions in the health module of the Estonian social survey about limitations caused by ill health. This indicator can be interpreted as showing the expected number of years of life free of any major health impairment⁴. Figure B1.1 shows that this indicator rose rapidly from 2004 to 2009, but since 2009 it has changed direction, sliding by 2.9 years for women, and 1.2 for men.

Breaking the increase in life expectancy in 2004–2015 down by age and gender reveals that the change in healthy life years for men has been quite small relative to the fast rise in life expectancy. The higher the age, the relatively smaller the part played in the additional life expectancy by the increase in healthy life years.

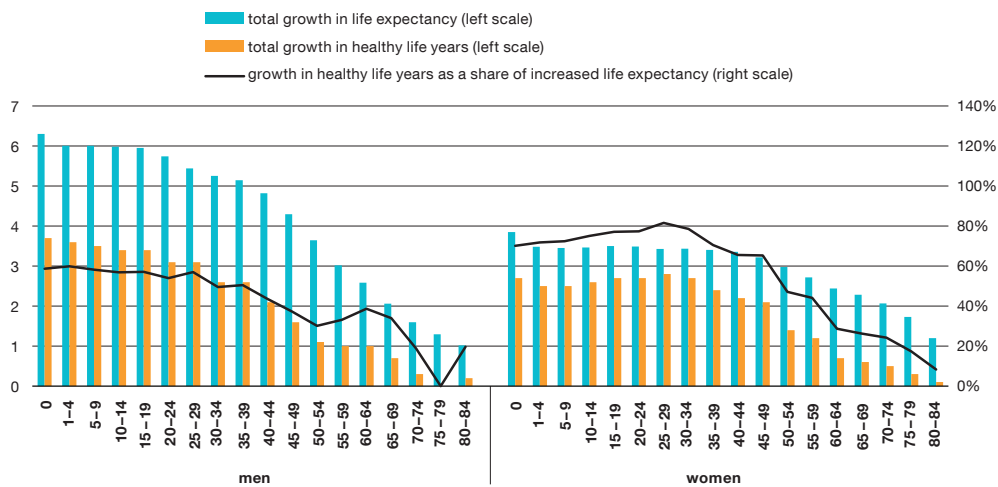
⁴ The method is described in more detail at: https://intra.tai.ee/images/prints/documents/140170177040_Tervena%20elatud%20aastad%20Eestis.pdf.

Figure B1.1. Life expectancy at birth indicators



Source: Statistics Estonia

Figure B1.2. Life expectancy and healthy life years change 2004 to 2015 by age and sex



Source: Statistics Estonia

The main advantage of the self-assessed indicator is that it is quite easy to collect data for, but the disadvantage is that the self-assessment may be affected by the subject's behaviour in the labour market and by their general sense of security. The disadvantages of the self-assessment based indicator can be avoided by adjusting life expectancy by an indicator for the burden placed on the quality of life of the population by illness. This method is used by the World Health Organisation (WHO) in its indicator for healthy life expectancy (HALE). The change in HALE as a ratio to life expectancy has been larger than that in the indicator for healthy years remaining, and the level of the indicator is also notably higher (see Table B1.1).

Table B1.1. Indicators for life expectancy and change in them

		2000	2004	2015	change 2000–2015	change 2004–2015
Men	life expectancy	65.86	66.78	73.08	7.2	6.3
	WHO Healthy Life Expectancy	59.0		65.6	6.5	
	years of unrestricted activity		49.9	53.6		3.7
Women	life expectancy	76.34	78	81.85	5.5	3.8
	WHO Healthy Life Expectancy	67.0		72.0	5.0	
	years of unrestricted activity		53.4	56.1		2.7

Sources: Statistics Estonia, WHO

The participation rate for people in their prime working years of 25–49 was 87.1% in the first half of 2015, which was about the same as a year earlier. The participation rate for men was 93.6%, which was 13.2 percentage points higher than that for women. This meant the rate for men was 0.5 percentage point higher than a year earlier, while the rate for women was 0.2 percentage point lower. Men in this age group are more active mainly because the majority of those who are kept out of the labour market raising children or caring for families are women.

Labour market activity among the young aged 15–24 declined slightly in the first half of 2016, as an average of 40.5% of people in that group participated in the labour market then, and this was 0.8 percentage point less than a year previously. The change came mainly from the participation rate for young men, which was 1.8 percentage points down over the year. The main reason the young are inactive is that they are studying.

The labour force participation rate rose in the first half of 2016 for Estonians by 1.0 percentage point, and for non-Estonians by 2.1 percentage points. The participation rate for Estonians was 71.4%, which was still higher than the rate of 67.2% for non-Estonians. The participation rate for Estonians is higher because Estonian women participate significantly more in the labour market than non-Estonian women. At the same time, the rate for Estonian men is slightly below that for non-Estonian men.

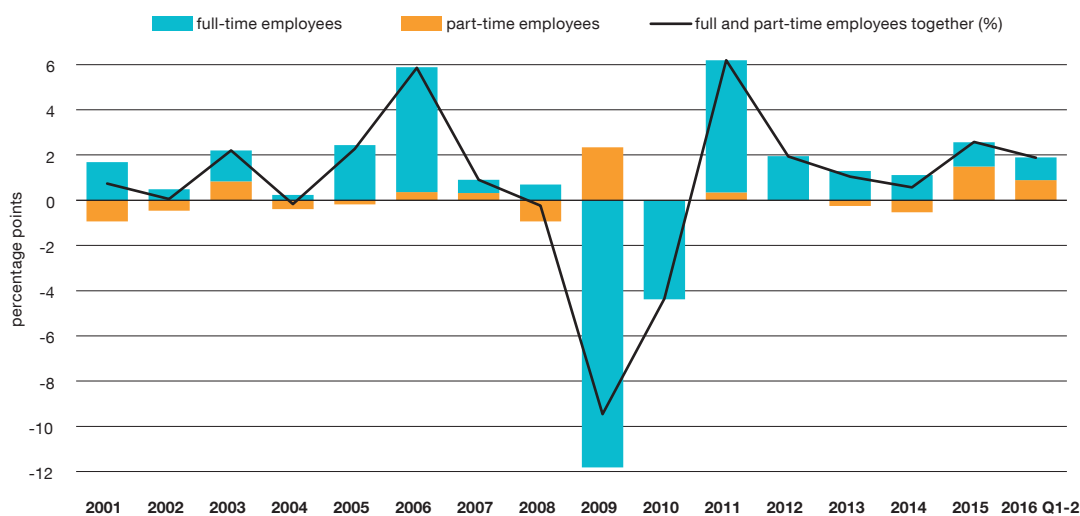
Employment

The labour force survey shows that employment was an average of 1.5% higher than a year earlier in the first half of 2016 in companies and institutions operating in Estonia. Employment of Estonian residents increased a little faster at 1.8% than employment in resident production units as the number of Estonian residents working abroad increased by an average of 13.5% in the first half of 2016. Despite the speed of growth slowing down, employment still grew by more than would be expected from the developments of labour costs and profits.

The labour input, which is the number of hours worked by waged employees, increased by 1.4% in the first half of the year, which was slightly slower than the growth in employment as around half of the growth in the number of people employed came from a rise in employment for part-time employees (see Figure 5). The number of employees working part-time in their main job was 8.3% higher in the first half of 2016 than a year earlier and 11.5% of all the employed were part-time employees. The number of part-time employees first jumped up in 2015, and it is evident from the Statistics Estonia labour market data that the share of those working part-time in their main job increased in 2015 primarily among those aged 15–24 and among women aged 25–49.

The labour force survey is a sample-based 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. These include the enterprise statistics that draw on

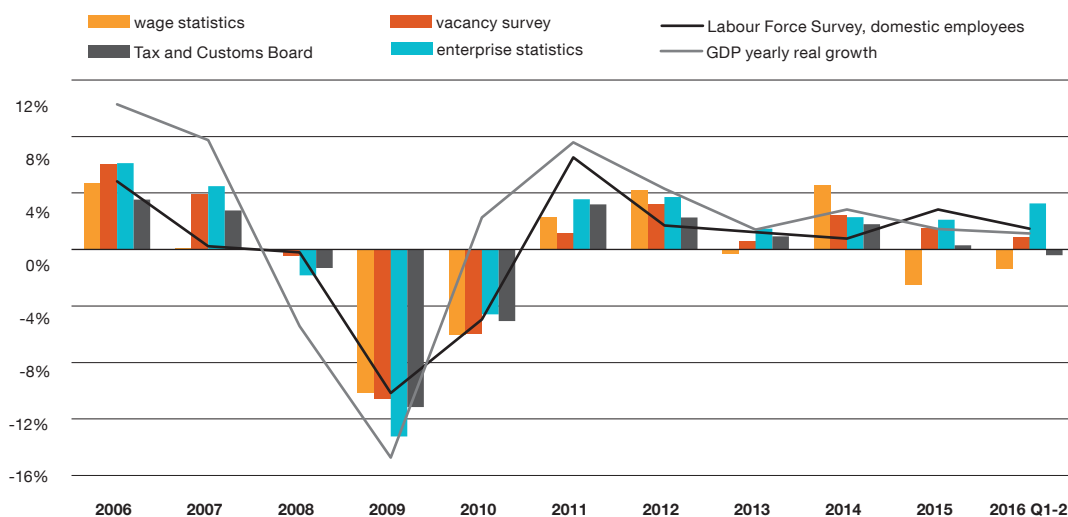
Figure 5. Yearly change in the number employed by working time



Sources: Statistics Estonia, Eesti Pank calculations

corporate quarterly accounts, the wage survey, the vacancy survey, and data from the Tax and Customs Board on wage recipients (see Figure 6). These surveys cover various parts of employment and have different definitions of numbers of employees and so there can be discrepancies in the indicators for employment they give.

Figure 6. Growth in employment in different sources and GDP growth



Sources: Statistics Estonia, Tax and Customs Board

Growth in the number of people in employment has also slowed in the data from the labour mobility survey, which is an approximation taken from the number of jobs filled. The number employed in the first half of 2016 given by both the wage survey and the data from the Tax and Customs Board was a little lower than a year earlier. The wage survey gives the number of employees as

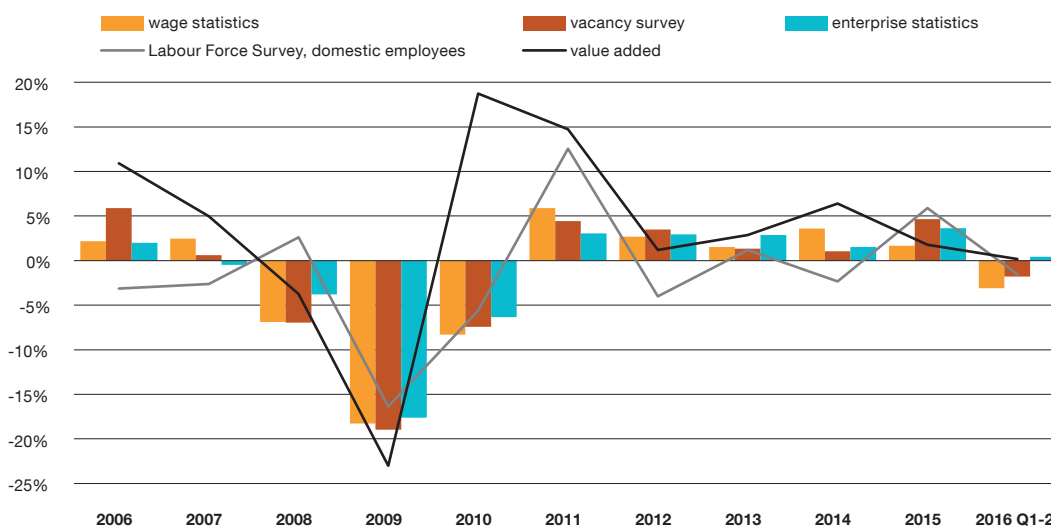
full-time equivalent, and so part of the reason for the reduction in the number of employees is that the number of part-time employees has risen (see Figure 5). The Tax and Customs Board data provide the only source that contains just registry data, but they only cover recipients of declared wages. Given the difference between the estimate of growth in employment from the labour force survey and the growth in the number of declared wage recipients, the gap of two percentage points for the first half of 2016 is not extraordinary, but it still indicates the possibility that growth in employment is overestimated.

Data from the enterprise statistics, which do not cover the public sector, the financial sector or the self-employed, show growth accelerating in the number employed in the business sector in the first half of 2016. Employment in the business sector has also grown faster than in the whole economy before, in 2006–2007 and 2012–2014 for example.

As the number of people of working age fell and the number in employment rose at the same time, the employment rate⁵ for people aged 15–74 rose by 1.3 percentage points to 65.5% in the first half of 2016. The employment rate for residents aged 20–64 rose to 76.1% in the first half of 2016, passing the target of 75% set in the European Union's "Europe 2020" growth strategy.

The number employed in the secondary sector, where manufacturing predominates, fell slightly in the first half of 2016. Manufacturing is the largest exporting sector, and 19% of all the employed worked there in the first half of the year. The labour force survey estimates that in the first half of the year there were on average 117,400 people employed by manufacturing companies, which is around 1800 fewer than a year earlier. Employment also fell in manufacturing in the estimates of the wage survey and the labour mobility survey too (see Figure 7). Data on employment from enterprise statistics for the first half of the year have not changed from last year. The modest reduction in the number employed is in line with the growth in value added in manufacturing stopping.

Figure 7. Growth in employment in manufacturing from different data sources and value added growth

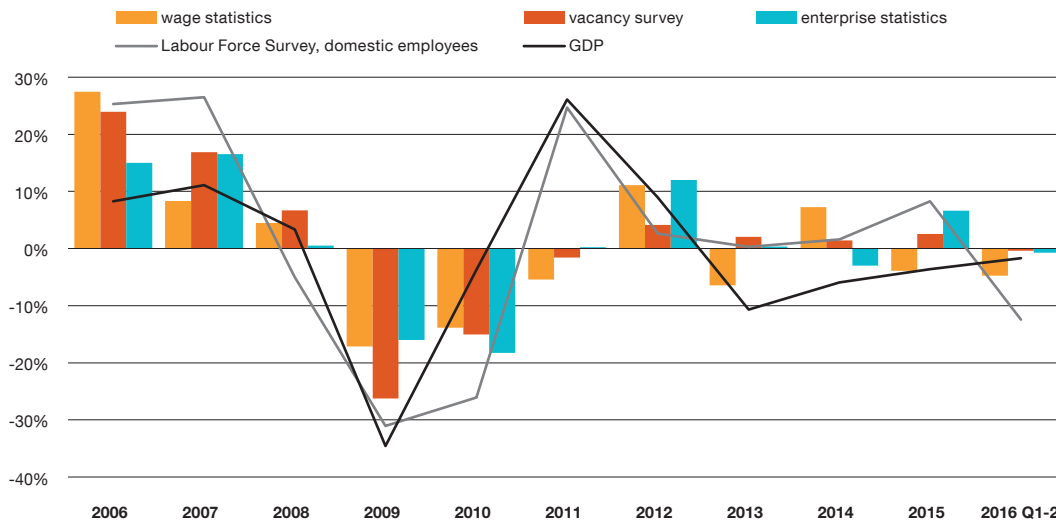


Source: Statistics Estonia

The labour force survey estimated that an average of 43,300 people worked in construction in the first half of 2016, which is around 6150 or 12% fewer than a year earlier (see Figure 8). The number employed in construction fell according to the data from the wage survey. The labour mobility survey estimate of the number of jobs filled in construction has not changed from last year though,

⁵ The employment rate is the employed as a share of the working age population.

Figure 8. Growth in employment in construction from different sources and GDP growth

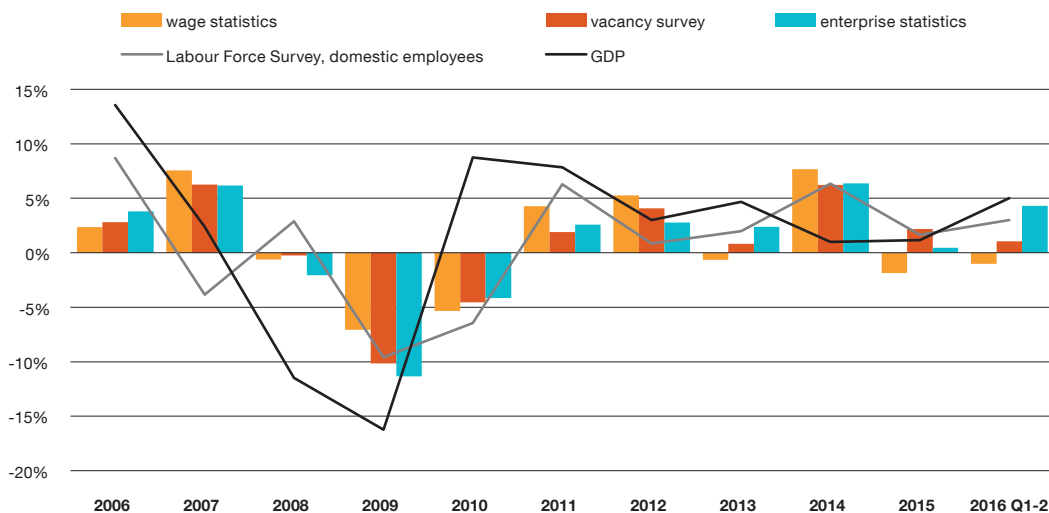


Source: Statistics Estonia

and the enterprise statistics do not indicate any change in the number employed. Development in the construction sector is mainly being restrained by low levels of investment in plant and facilities, which is not balanced out by increased construction of buildings.

Employment increased in the service sector, which is mainly trade, transport and storage, information and communication, and accommodation and catering, in the first half of 2016. An average of 182,500 were employed in trade, transport and storage, information and communication, and accommodation and catering in the first half of 2016, accounting for around 30% of total employment. Employment increased 3% over the year in these areas, adding around 5300 employees (see Figure 9). The labour mobility survey and the enterprise statistics as well as

Figure 9. Growth in employment in construction from different sources and GDP growth



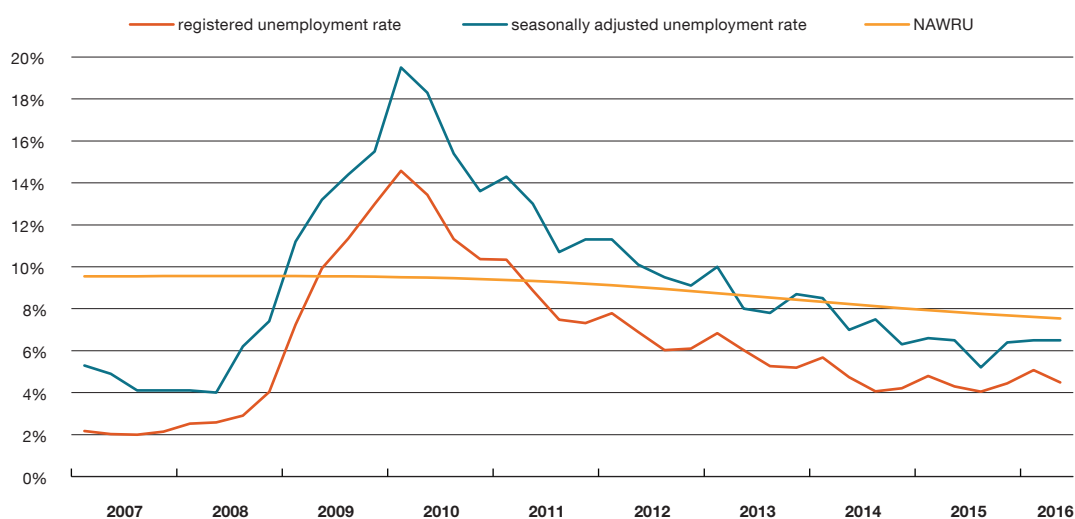
Source: Statistics Estonia

the labour force survey show employment increasing in those areas. The labour mobility survey and the enterprise statistics indicate that employment grew because the numbers employed in information and communications and in accommodation and catering increased.

Unemployment

Although the number of people in employment was higher in the first half of 2016 than a year earlier, the number of unemployed was more or less the same in the two periods as more people came into the labour market. The labour force survey shows that in the first half of the year there were on average 44,450 people unemployed. The unemployment rate, or the unemployed as a share of the labour force, averaged 6.5% according to the labour force survey, which is the same as a year before (see Figure 10). The unemployment rate remained at its level of the previous year across different age groups too.

Figure 10. Unemployment



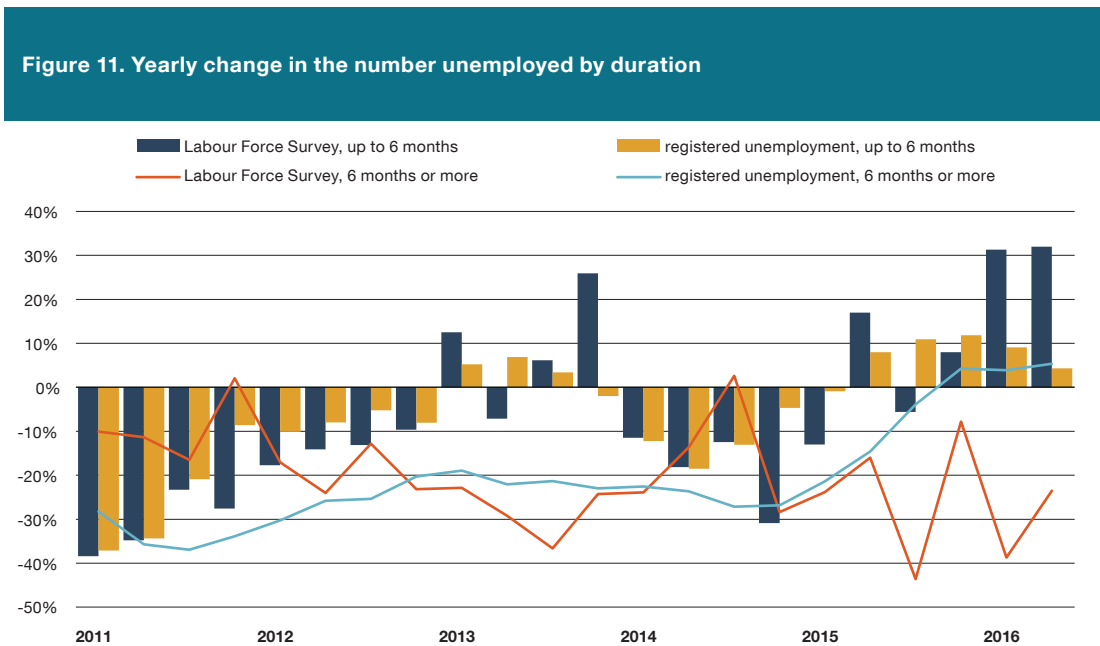
Sources: Statistics Estonia, Töötukassa, Eesti Pank

The non-accelerating wage rate of unemployment (NAWRU) is the level of unemployment where the scarcity of free labour does not fuel wage increases. 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. This is known as a mismatch of employees and jobs, and this situation has improved in recent years as labour market policy measures, including retraining, are much more effective at matching the qualifications and skills of the unemployed and the demands of the labour market. Although the estimated NAWRU has fallen, unemployment has been below it for two years now. This is indicated by the wage pressures that are much in evidence in the labour market and stem from labour shortages and the rise in unit labour costs.

The number of registered unemployed stopped falling in the second half of 2015 and rose again in the first half of 2016. In the first half of the year Töötukassa had an average of some 35,200 people registered each month, and at the end of the second quarter there were around 27,200 registered, or 4.9% more than a year before. The counties which had the largest share of the registered unemployed in the first half of the year were Ida-Virumaa, where an average of 11.6% of all the unemployed were, and Valgamaa, where 9.1% were. Redundancies in the oil shale sector made the number of registered

unemployed in Ida-Virumaa 1100–1300, or about one fifth, higher than in the first half of 2015. A large share of those made redundant have since been re-employed, which gives hope that the rise in unemployment in Ida-Virumaa will not be long-lasting.

The number registered as unemployed who were last in employment less than six months ago first started to rise in the first half of last year. In the first half of 2016 the number registered as unemployed who were last in employment more than six months ago also rose (see Figure 11). The labour force survey estimate does not show any change in unemployment in Estonia precisely because the rise in the number of those who have recently become unemployed is balanced out by the continuing decline in the number who have been out of work for more than six months. The number registered as unemployed stood at 70% of all the unemployed in the first half of 2016 in the estimate of the labour force survey. Because the motivation to register is mostly strong for the newly unemployed and weaker for the long-term unemployed, the two sources of data are not able to agree on the group of the long-term unemployed.



Sources: Töötukassa, Statistics Estonia

Data from Töötukassa show the same number being registered as newly unemployed in the first half of 2016 as a year earlier, and a little over 32,200 newly unemployed were registered in the first half of the year, which is 1.4% more than in the first half of 2015 (see Figure 12). There was a decline among the newly registered in the number of those who were previously inactive and steady growth in the number of those who became unemployed when their working relations ended. This group accounted for about half of newly registered unemployed.

In the first half of the year, 35,500 people exited registered unemployment, which is 3.7% more than in the first half of last year. The number exiting registered unemployment has been rising for several years now because of people succeeding in finding jobs (see Figure 13). The number removed from the register for other reasons, such as retirement, the personal decision to exit the register or the failure to comply with its conditions remained about the same in the first half of the year as in the first half of the previous year.

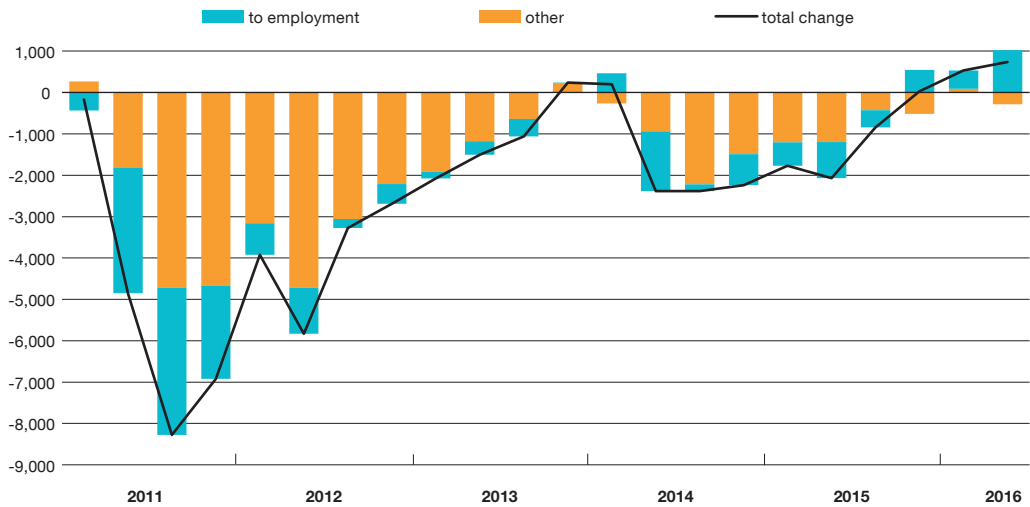
Flows into and out of the Töötukassa register do not measure the changes in the probability of finding or losing a job well, because of the changes in the stock of the unemployed and employed at risk. Changes in the share of the registered unemployed who succeed in finding a job indicate the

Figure 12. Yearly change in the inflow into registered unemployment by reason



Sources: Töötukassa, Eesti Pank

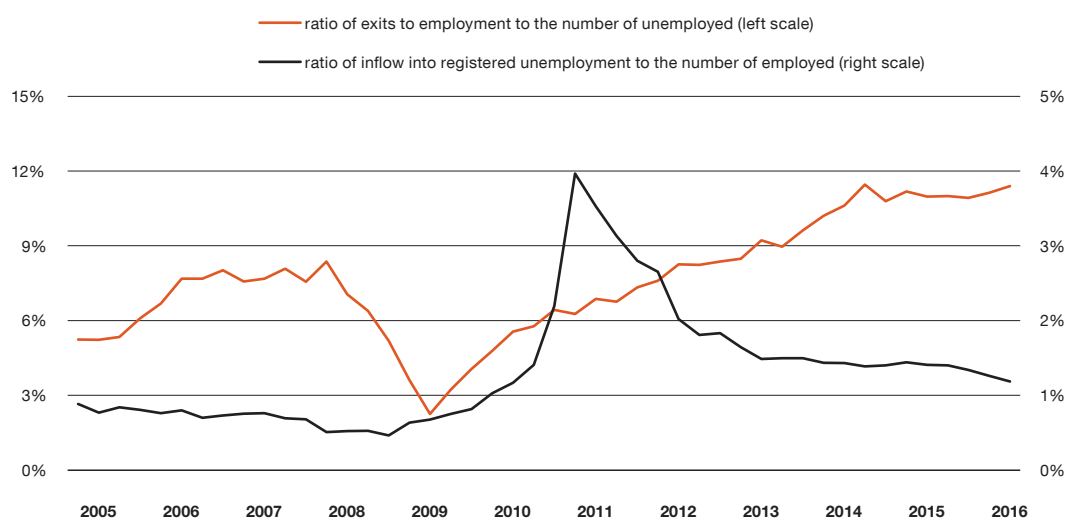
Figure 13. Yearly change in the outflow from registered unemployment by reason



Sources: Töötukassa, Eesti Pank

development in the probability of finding work better, and this figure has remained about the same since 2014 and is higher than before the economic crisis (see Figure 14). The ratio of the newly registered unemployed to the total number in employment is in turn a better measure of job loss probability and it has diminished slightly in the past half year, though it remains higher than before the crisis. Increased motivation to register as unemployed may play a role here.

Figure 14. The probability of entering registered unemployment and the probability of exiting registered unemployment into employment (seasonally adjusted)



Sources: Töötukassa, Eesti Pank

Vacancies

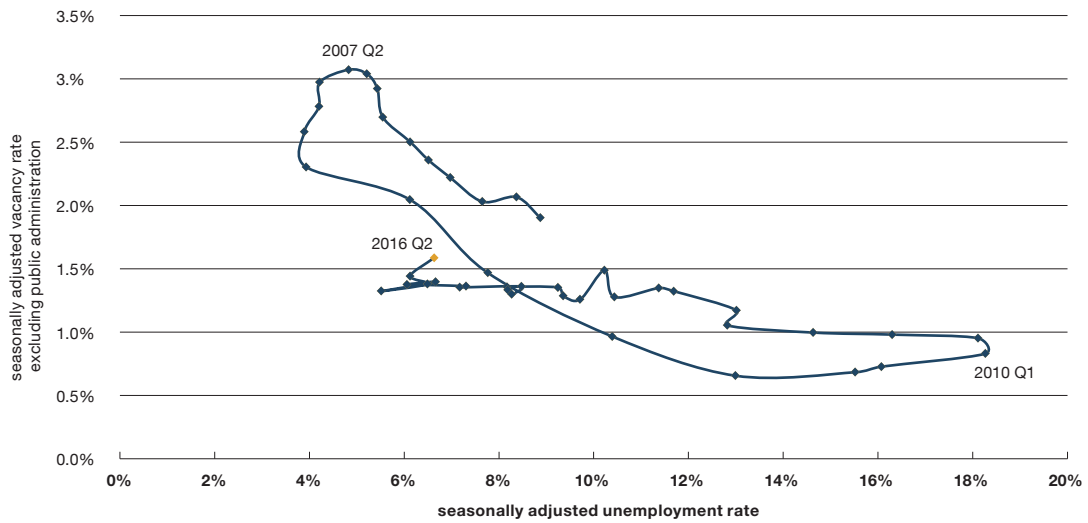
The survey of vacant positions and the movement of labour indicate that there were around 8900 vacant positions in the first half of 2016, which is about 1040, or 13%, more than in the first half of 2015. The last time the number of vacancies rose by more than 13% was in the first half of 2012. The main contributor to the rise in the number of vacant positions was the increase in the number of vacancies in administrative and support services, information and communication services, and accommodation and catering. However, the labour force mobility survey still found the majority of vacant positions to be in manufacturing, where there were on average 1426 vacancies, and in wholesale and retail, where there were 1342, though the change in the number of vacancies in those sectors was very small. Around 70% of all the vacancies are in Tallinn and the surrounding Harju county.

The vacancy rate, which is the number of vacancies as a ratio to the total number of filled and unfilled jobs, was 1.6% in the first half of 2016, which is 0.17 percentage point higher than a year earlier. 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. This match between jobs and available labour is shown by the Beveridge curve, which shows the vacancy rate relative to unemployment. Although the seasonally adjusted unemployment rate has remained around 6% for the past year and a half, vacancies excluding public administration have increased slightly as a share of all positions (see Figure 15). Although conclusions cannot be drawn from one single observation, a further rise in the vacancy rate while unemployment is holding steady could indicate that the match between the unemployed and the needs of the labour market has deteriorated.

The labour mobility survey also gives information on labour flows in addition to vacancies. These flows increased in the first quarter of 2016 and after falling in 2015, the number leaving work at their own initiative rose by 22% and as a result the number getting jobs rose by 18%. This increase probably occurred because more people were changing job, which is quite usual when unemployment is low.

The employment expectations index in the survey by the Estonian Institute of Economic Research can help in assessing the future plans of companies to hire. The index shows the relative shares

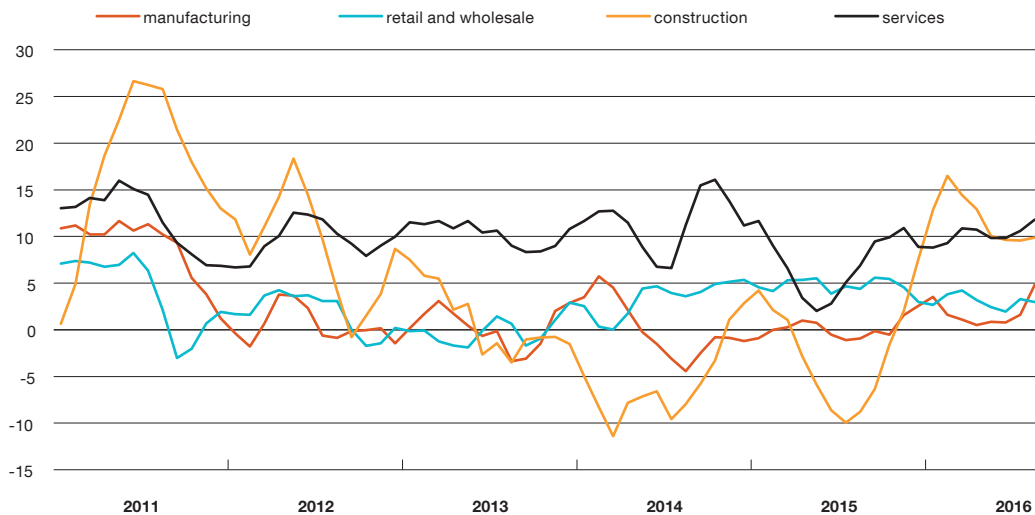
Figure 15. The Beveridge curve



Sources: Statistics Estonia, Eesti Pank

of companies expecting to increase employment and those expecting to reduce it. Companies in construction were more optimistic in 2016 than in the previous years, while the expectations of industrial companies have also become more positive (see Figure 16). In contrast, expectations for companies in trade were more pessimistic than in 2015, though the proportion of companies expecting employment to grow is still larger than the proportion expecting it to decline.

Figure 16. Seasonally adjusted employment expectations (three-month moving average)



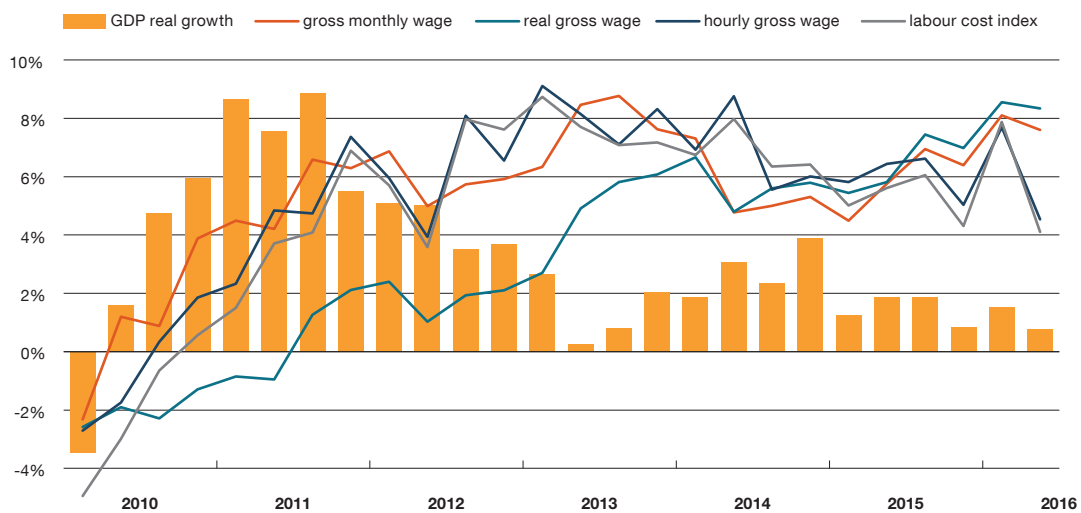
Sources: European Commission, Eesti Pank calculations

WAGES AND LABOUR COSTS

Average wages

Contradicting the expectations of economic forecasts, growth in the average gross monthly wage actually accelerated to reach 7.8% in the first half of 2016, which was 1.1 points more than in the second half of 2015. In the first quarter of the year the wage was up 8.1% and in the second quarter it was up 7.6% at 1163 euros (see Figure 17). The average gross hourly wage rose by 6.1%, which was slower than the rise in the monthly wage, but still faster than in the previous half year.

Figure 17. Wage growth and GDP growth



Source: Statistics Estonia

The difference between the growth rates for the average hourly wage and the full-time equivalent monthly wage arise partly because holiday pay and irregular bonuses are increasing faster than base wages. A positive contribution may also have come from a rise in the number of hours worked by full-time workers, which would give a larger monthly wage to those working on a fixed hourly wage. This is particularly relevant for the second quarter, as there were two more working days than a year earlier, which raised the number of working days by 3.3%.

The Tax and Customs Board data on average declared wages did not show an increase in wage growth in the first half of 2016. Declared wages grew on average by 6.3%, which is approximately half a percentage point slower than in the second half of 2015. This can be partly explained by the increase in part-time work, which pulls down the growth rate of wages if they are not transformed to full time equivalent.

The most important indicator of wages from the point of view of households is the rising real net wage, which shows the increasing purchasing power of the wage received. The fall in consumer prices in 2016 meant that real wages rose faster than nominal wages. Prices started falling in Estonia in 2014, and continued doing so through to the second quarter of 2016. They started rising again from August though, and it is expected that in future inflation will reduce the purchasing power of wages. When it is not possible to cut wages and 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.

The difference between gross and net wage growth is determined by the labour tax burden, which can be measured using the tax wedge on labour income defined as the ratio of total taxes to total labour costs. For the sake of comparability, various family benefits that are independent of income

are subtracted from the taxes as they are in essence similar to tax rebates. The labour tax wedge has an impact on the labour supply, as the higher it is, the smaller the share is that the worker receives from the value added created, and so the lower the motivation to work is. The cut of one percentage point in personal income tax in recent years, together with the lowering of unemployment insurance premiums in 2015, reduced the tax wedge on labour income the most. Compared to that, tax changes in 2016 and 2017 will have less of an impact on the net wage received. Box 2 discusses the labour tax wedge, comparing the case in Estonia with those in the European Union and the OECD, and looking at how the tax wedge has developed over time.

Box 2: The labour tax wedge

The tax wedge is the ratio of labour taxes less family benefits to the total labour costs borne by employers. The tax wedge shows the burden of tax on labour taking into account state benefits, which are treated in the same way as tax rebates. To make it internationally comparable and allow its dynamics to be observed over time, the tax wedge is usually calculated for different types of household and by relative income levels.

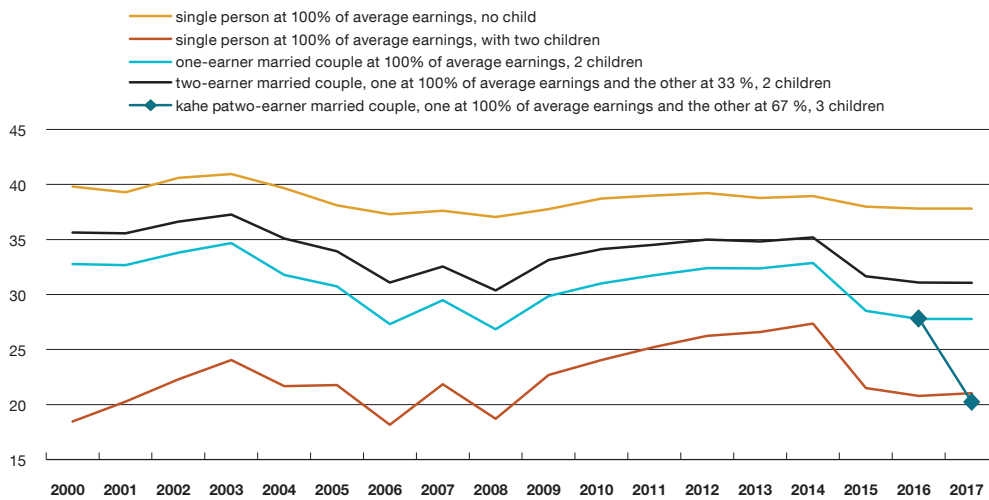
The labour tax wedge in Estonia in 2015 was less progressive than those in other countries in both the European Union and the OECD, as the Estonian figure was notably lower for those earning higher wages (see Table B2.1). This is largely because most countries have progressive income taxes. The tax wedge for a family with two adults and two children in Estonia was a little below the average, but it was a little higher than the average for a single parent with two children earning around the median wage. The calculation for Estonia includes child support and the additional basic tax exemption from the second child onwards. This would probably make the tax wedge for a single parent with only one child in Estonia even higher than those in other countries. The tax system in neighbouring Finland is more progressive than those in European Union members that are in the OECD and the tax wedge for families with children is higher, so the difference between Estonia and Finland is larger than the average difference between Estonia and European Union members in the OECD.

Table B2.1 The average tax wedge in selected countries in 2015 (%)

Family type	Estonia	Finland	Average for European Union members in the OECD
Single person at 100% of average earnings, no child	38.0	38.3	37.8
Single person at 67% of average earnings, no child	39.0	43.9	41.8
Single person at 167% of average earnings, no child	39.9	49.7	46.6
Single person at 100% of average earnings, with two children	21.5	28.4	21.2
One-earner married couple at 100% of average earnings, 2 children	28.5	39.3	31.1
Two-earner married couple, one at 100% of average earnings and the other at 33 %, 2 children	31.7	36.5	32.6
Two-earner married couple, one at 100% of average earnings and the other at 67 %, 2 children	33.6	38.9	35.8
Two-earner married couple, one at 100% of average earnings and the other at 33 %, no child	38.0	40.0	38.0

The changes in recent years have seen the tax wedge reduced most by the cut in income tax rates in 2015 (see Figure B2.1). Looking forwards, the tax wedge for families with three children will shrink from the middle of 2017, mainly because of the sharp rise in child support for the third child (the figure shows as an example a family with two wage earners, one earning 100% of the average wage and the other earning 67%). The tax wedge for the example

Figure B2.1. Average tax wedge in Estonia (%)



Sources: OECD, Eesti Pank

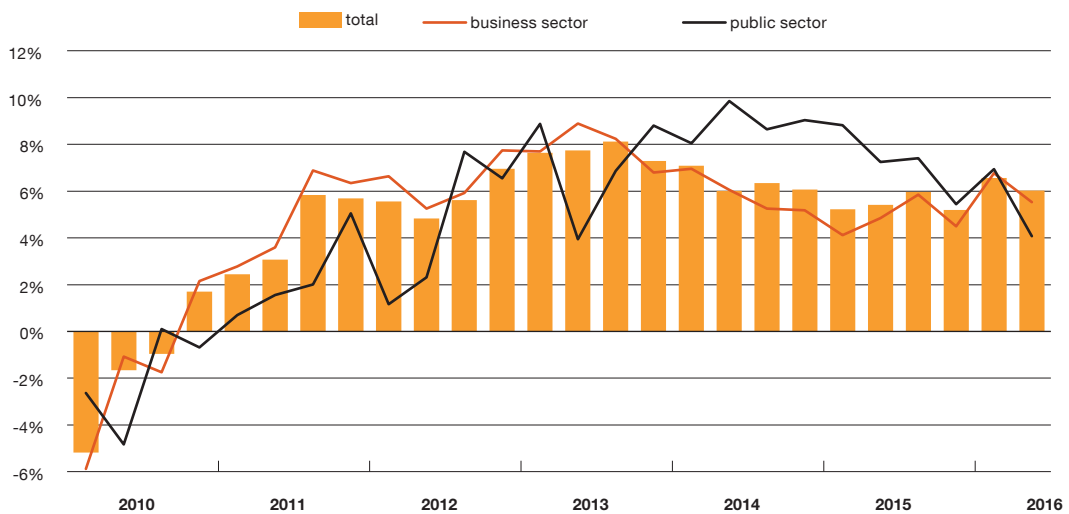
household would fall from 27.8% in 2016 to 20.2%. The system of tax rebates for low earners will lead to a larger reduction in the tax wedge for employees earning around 43% of the average wage who have fewer than two children aged under 17 in the household. The tax wedge for a single person on this wedge will fall from almost 36% to 26.5%. Households with two or more children can gain from the additional tax-free threshold from the second child onwards, so the effect of the tax rebate for low earners will be weaker for them. The reduction in the tax rate reduces the risk of low earners falling into the unemployment trap or into poverty. At the same time the marginal tax rate, which is the tax on each additional euro earned, becomes notably higher than before in the range where the tax rebate is phased out. This is because the wage earner loses a part of the rebate when earning an additional euro on top of the income tax.

The labour cost index, which measures growth in labour costs per hour actually worked, indicated an acceleration in the growth rate in early 2016 similar to that in hourly wages, in both the public and private sectors (see Figure 18). Yearly growth in the labour cost index adjusted for the number of working days slowed in the second quarter, especially in the public sector, though at the level of the whole economy it was still higher than in 2015.

The employer ownership model that saw the fastest wage growth at the start of 2016 was foreign-owned private companies, and in the second quarter they were followed by Estonian private companies. As growth in both monthly and hourly wages increased by the same amount in foreign-owned companies, the effect was probably not due to bonuses. Growth increased in monthly wages in Estonian private companies in the second quarter, but not in hourly wages, so this may have been affected by bonuses and by the number of working days. Having grown at a faster rate for some time, wages in the public sector showed some sign of the rapid rises in pay in local government and state administration coming to an end (see Figure 19).

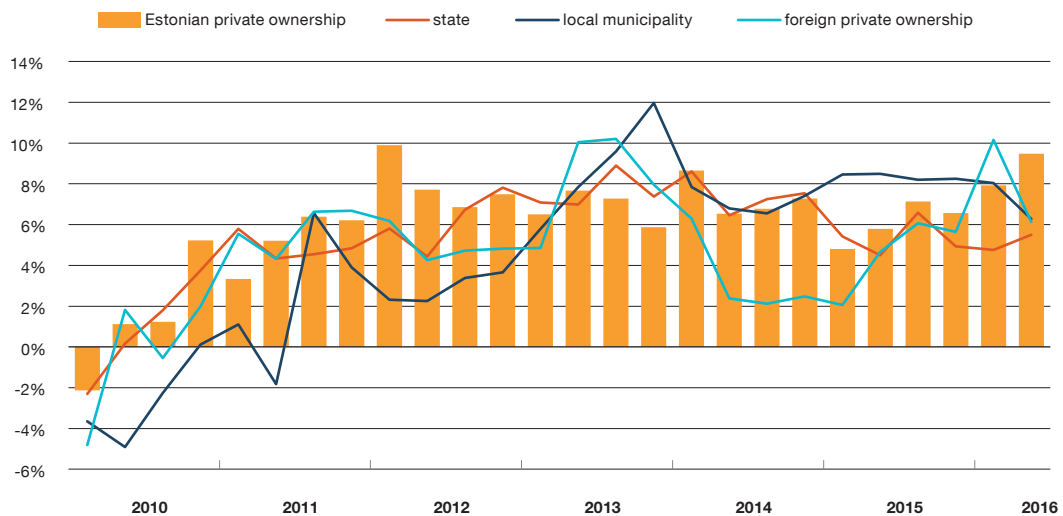
The sector where wage growth is clearly below the average is the secondary or industrial sector. The value added of companies in mining and energy fell in 2015 and 2016 because of low energy prices, and their financial results were reflected clearly in wage growth. Wages in the majority of the service sector rose faster than the average meanwhile. Wage growth may have been boosted

Figure 18. Labour cost growth per hour worked, adjusted for number of working days



Source: Statistics Estonia

Figure 19. Wage growth by type of ownership



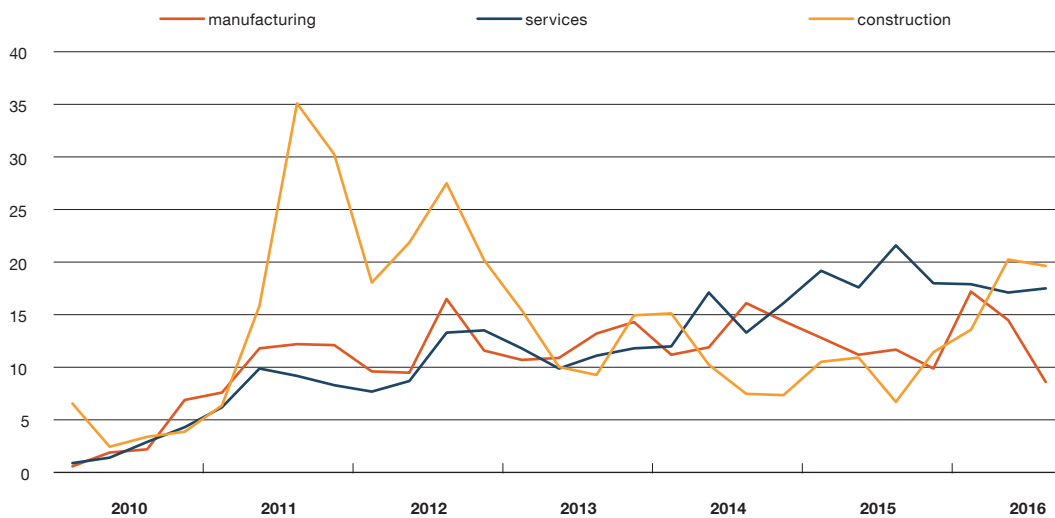
Source: Statistics Estonia

in accommodation and catering and in real estate activities by the large share of employees receiving the minimum wage, whose wage rose by 10% as the minimum wage was raised, and by the successful efforts of the Tax and Customs Board to reduce the under-declaration of wages.

The sector with the highest growth in 2016 was administrative and support activities, where it was 18%, followed by real estate activities at 16.7% and accommodation and catering at 12.6%. Full-time equivalent employment in all those sectors fell at the same time, however. Wages also rose by a rapid 12.1% in the information and communication sector, where full-time equivalent employment increased strongly. The slowest wage growth was the 0.6% in mining, where the hourly wage actually fell, and in other non-manufacturing industry sectors. The average wage in the trade sector grew unusually slowly at 3.7%.

Looking ahead, the share of companies telling the survey by the Estonian Institute of Economic Research that labour shortages are a factor limiting production indicates that no rapid cooling of wage growth is to be expected. The share of such companies in the industrial sector contracted temporarily at the start of 2016, but equally there are more industrial companies expecting employment to grow than there were before. Since the middle of 2015 the limits imposed by labour on construction companies have become more significant, and they remain at a historically high level for the service sector (see Figure 20).

Figure 20. Percentage of firms citing labour shortages as a factor currently limiting production, seasonally adjusted



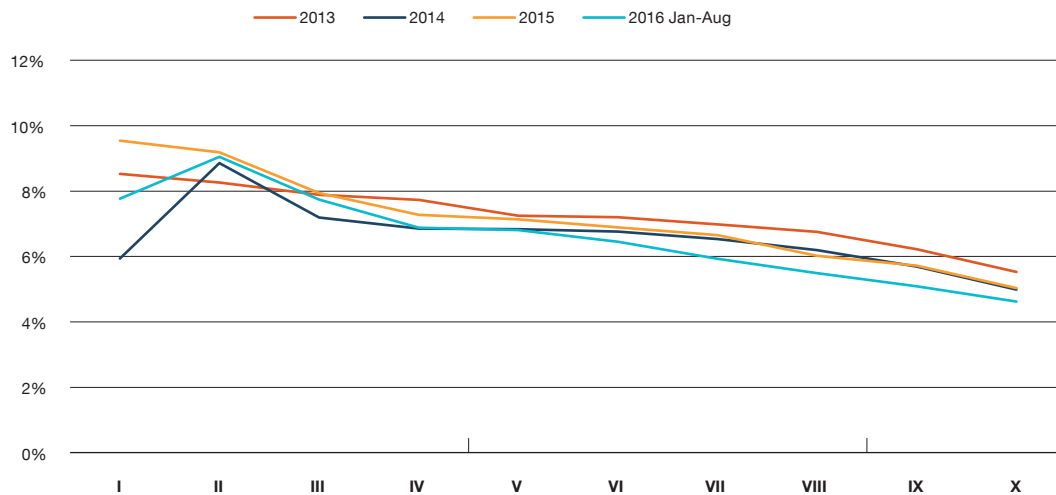
Sources: European Commission, Eesti Pank calculations

Wage distribution

Statistics from the Tax and Customs Board on the distribution of wages paid out show that wages in the lowest part of the wage distribution rose fastest in the first half of 2016 (see Figure 21). The structure of earnings survey also shows the wage distribution to be narrower than in the last two observations in 2014 and 2010, as the ratio of the median hourly wage to the average hourly wage increased by around two percentage points, and the ratio of wages in the second decile to those in the eighth decile also increased. The spread of the wage distribution is also shown by the ratio of the median wage to the average wage, and the average of this for the year had risen to 80.5% by September 2016. The lower the average wage was in each job, the faster it rose, so the largest gains in wages were made by the unskilled and the smallest gains by managers. Wage gaps widened though in most jobs, as the gap in 2014 between the highest earning tenth of unskilled workers as a ratio to the lowest earners was wider than in 2010.

Faster growth in the lowest wages is built on rises of around 10% each year in the minimum wage in 2014–2016. The minimum wage in 2016 reached 430 euros. At the same time the rise in the minimum wage contributed to the rise in the average declared wage only modestly. Box 3 reviews how the growth in the minimum wage is transmitted into the higher part of the wage distribution.

Figure 21. Average declared wage growth by decile



Sources: Tax and Customs Board, Eesti Pank calculations

Box 3. The statutory minimum wage has helped reduce wage inequality in Estonia

Simona Ferraro, Jaanika Meriküll and Karsten Staehr

A rise in the minimum wage can affect not only the wages of those who earn the minimum wage, who are 3-5% of all full-time workers, but also the wages of those who earn more than the minimum. This is a spill-over effect. A positive spill-over effect may occur because of employers substituting away from the low-income workers affected by the rise in the minimum wage to higher-paid workers; because the minimum wage is being taken as a benchmark in wage setting; or because employers are seeking to maintain a given wage structure or wage hierarchy. In this way a rise in the minimum wage can affect the wage distribution and through that can raise the average wage.

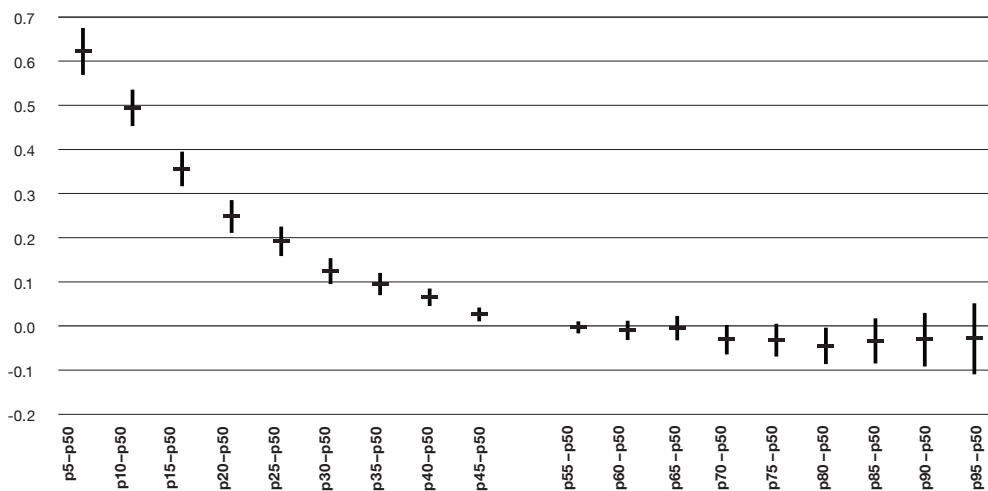
As the minimum wage in Estonia applies to all workers at the same time, it is not straightforward to find spill-over effects from the minimum wage. For this reason we use the methodology of David S. Lee⁶. We divide the employed into strata by the year, region and sector of activity and analyse how the effective minimum wage, which is the difference between the minimum wage and the median wage in each stratum, affects the wage at different percentiles of the wage distribution. This led to one of the innovations in this research, which was to adapt the identification strategy by depicting labour markets not only by their time and region but also by an additional dimension, either the sector of activity or the occupation of the wage-earners. This adaptation means the method is also applicable to cases with a limited number of regions, as Estonia cannot be analysed in the same way as the USA for example, where the 50 states can be treated as independent labour markets.

The results are shown in Figure B3.1. It shows the percentage increase in wages in different percentiles of the wage distribution if there is a 1% rise in the minimum wage. Analysis

⁶ Lee, David S. (1999): "Wage inequality in the United States during the 1980s: rising dispersion or falling minimum wages?", *Quarterly Journal of Economics*, Vol. 114, No. 3, pp 77–1023.

across the whole 14-year sample shows that there are substantial spill-over effects from the minimum wage to the lower percentiles of the wage distribution. Wages at the fifth percentile for example rise by around 0.6% following a 1% rise in the minimum wage, and those at the tenth percentile rise by 0.5%. The effects are most substantial up to the 20th percentile and then decline quite quickly as the wage approaches the median. The upshot is that the minimum wage appears to have contributed to lower wage inequality in Estonia. The estimated spill-over effects imply for 2014 that an increase of one euro in the minimum wage is associated with an increase of 0.11 euro in the average wage of all full-time wage-earners.

Figure B3.1 Effect of a rise in the minimum wage at different percentiles with 95% confidence bounds for elasticity



Source: S. Ferraro, J. Meriküll, K. Staehr. Minimum wages and the wage distribution in Estonia. Working Paper Series of Eesti Pank 6/2016
 Note: p5-p50 is the gap between the fifth percentile and the median wage, p10-p50 is the gap between the tenth percentile and the median, and so on.

We also analyse the effect of the minimum wage by the gender and age of wage recipients and by the stage of the economic cycle. The spill-over at given percentiles of the wage distribution is larger for women than for men and is likewise larger for wage-earners aged over 45 than for those aged below 45. This means the spill-over effects are stronger in those demographic groups where wages are generally lower, and it also means that the rise in the minimum wage may have helped reduce the gender and age wage gaps in Estonia. The spill-over effects in the lower tail of the wage distribution were smaller at the height of the global financial crisis in 2008-2010 than before or after the crisis.

The overall substantial spill-over effects for Estonia bear clear resemblance to those found in earlier studies for the USA, emerging-market economies in Latin America and some Eastern European transition countries, but the effects are larger than those found for the United Kingdom and some continental European countries. The substantial effects may be tied to a number of structural features of the Estonian economy and the role played by the minimum wage in wage and price setting. Such structural features include the virtual absence of collective bargaining, the concentration of wage setting in January, the indexation of some fees and prices to the minimum wage, and the relatively low level of wages immediately above the minimum in Estonia.

The research draws on micro-data from the Statistics Estonia labour force survey for 2001-2014. We consider full-time wage-earners who are Estonian residents, meaning we

exclude those who work part-time, whose main employment status is self-employment, or whose current residence is abroad. Net wages are studied, meaning the amount that the worker actually receives after taxes. As the minimum wage is set as a gross amount, it has been converted into net terms using the statutory income tax and unemployment insurance rates. The sample covers a relatively long period, making it possible to research whether the effect of the minimum wage on the wage distribution changes over the business cycle. Particular attention was paid to the differences in the effects during the boom before the global economic crisis, during the crisis years, and in the post-crisis recovery.

The gender wage gap may be considered a special aspect of the wage distribution. It was found by the structure of earnings survey to be 23.4% of the average gross hourly wage across the whole economy in Estonia in 2014, which is very close to the figure of 23.3% from 2010. In companies and institutions excluding the primary sector that have ten or more employees, the gender pay gap in Estonia was 26.4%, while it was 18.2% in Finland, 15.9% in Latvia and 12.9% in Lithuania. Women working in the smallest companies earned 83% of the hourly wage of women working in larger companies, and men earned 70% of the wage of men working in larger companies. The gender wage gap in the smallest companies was 12%. Companies with more than ten employees are normally considered in comparisons with European countries, with the primary sector and the public sector excluded. This made the gender wage gap in Estonia 28.2%, which is the highest in Europe, while the average for the European Union was 17.1%. Box 4 reviews how much of the wage gap comes from differences in what men and women earn for the same job, and how much is from men and women working in different jobs.

Box 4: Differences in the wages of men and women with the same job

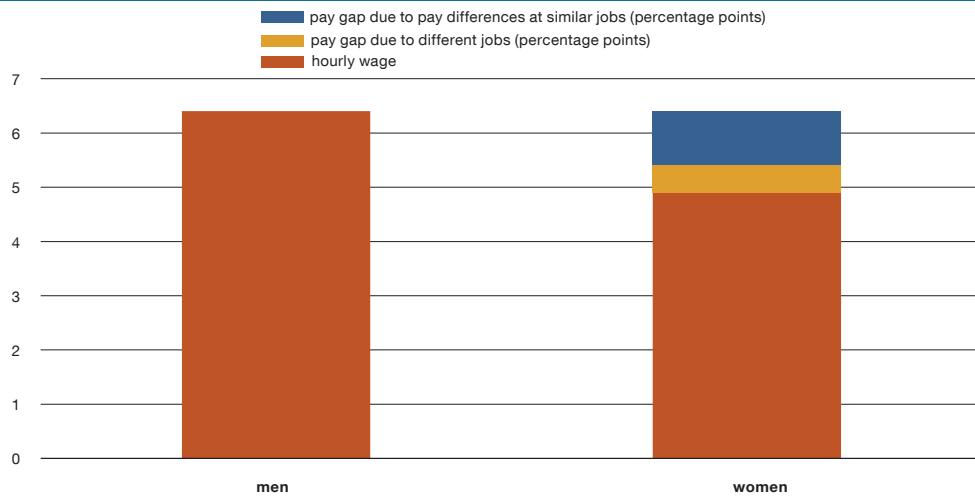
Kaspar Oja

The gender wage gap in Estonia is one of the widest in Europe. This raises the question of how much of this is due to men working in better paid jobs, and how much is due to women being paid less than men for doing the same job. The 2014 survey of the structure of wages indicated that less than half of the gender pay gap can be explained by the difference in where men and women work. In 2014 women earned on average 1.50 euros less per hour than men. Around 50 cents of the difference arises from men working in better-paid jobs (see Figure B4.1) and around one euro of the difference in the hourly wage comes from men earning more than women in the same job.

To estimate this, data were taken from the 2014 structure of earnings survey, which is the largest known survey in Estonia covering wages in different jobs. Jobs are defined in the survey using a four-digit classification, which identifies the level of detail at which jobs can be compared. The more detailed the level of distinction that can be used, the larger the effect of structural differences on the wage gap is expected to be. Thus the estimate here applies only to this particular level of detail. As this survey has been run over several years, the estimates it produces can be compared over time.

The structural difference in 2014 that arises from men and women working in different jobs explained about one third of the gender pay gap. The wage gap for men and women working in the same job was wider than in 2010 even though there was no major change in the total

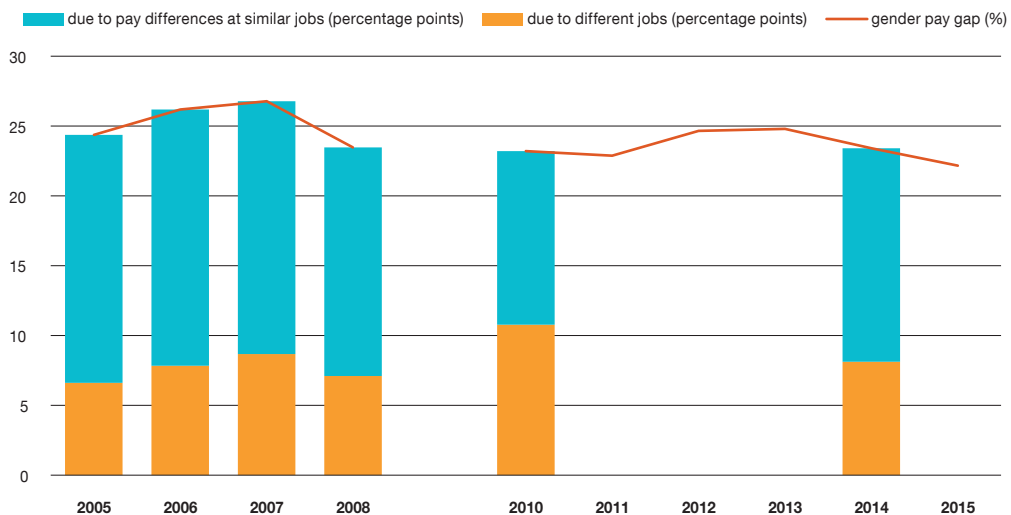
Figure B4.1. Hourly wages and the gender pay gap



Sources: Statistics Estonia, Eesti Pank

wage gap (see Figure B4.2). Comparison of 2008 and 2009 with the years before the crisis shows that there has still been some reduction in the wage gap for men and women working in the same job. The result for 2010 differed from the other observations, though it may have been an outlier because of the crisis that had just ended.

Figure B4.2. Sources of the gender pay gap



Sources: Statistics Estonia, Eesti Pank

The wage gap may be underestimated by the data used. In the data it publishes on the gender wage gap, Eurostat only looks at data for employers with at least ten employees, and those statistics show the wage gap to be wider. This may mean that the wage gap in companies and institutions where fewer people work is smaller, but it could also be that

the small size of the employer means there is a risk of undeclared wages and hidden wage income, so the data on wages paid by small employers are not necessarily comparable with the statistics on larger employers.

More on the method used to calculate the wage gap can be found in the first Labour Market Review of 2014.

Institutional characteristics of the labour market: collective wage negotiations and wage rises in Estonia

The membership of trade unions in Estonia is quite small as a percentage of employees next to the percentage in Western members of the European Union, and wage negotiations are mostly conducted by employees individually. Information on collective agreements and trade unions comes from the Work Life Survey of 2009 and 2015. The survey established that only 3.9% of companies fixed their working conditions under a collective agreement, and that share was smaller than in 2009. There was a positive correlation in both survey years between the size of the company and the use of collective agreements. Collective agreements were in use at 11.3% of companies with 50–249 employees and 27.2% of companies with over 250 employees.

The same survey also questioned employees of the companies surveyed, and found 18.6% of them were aware that they were covered by a collective agreement. However, 27.6%, which is a very large share, did not know whether they were covered or not. For comparison, workers are also asked by the structure of earnings survey whether they are covered by a collective wage agreement, and in the 2014 survey, 16.2% of all employees outside of agriculture said they were covered, which is similar to the figure in the work life survey.

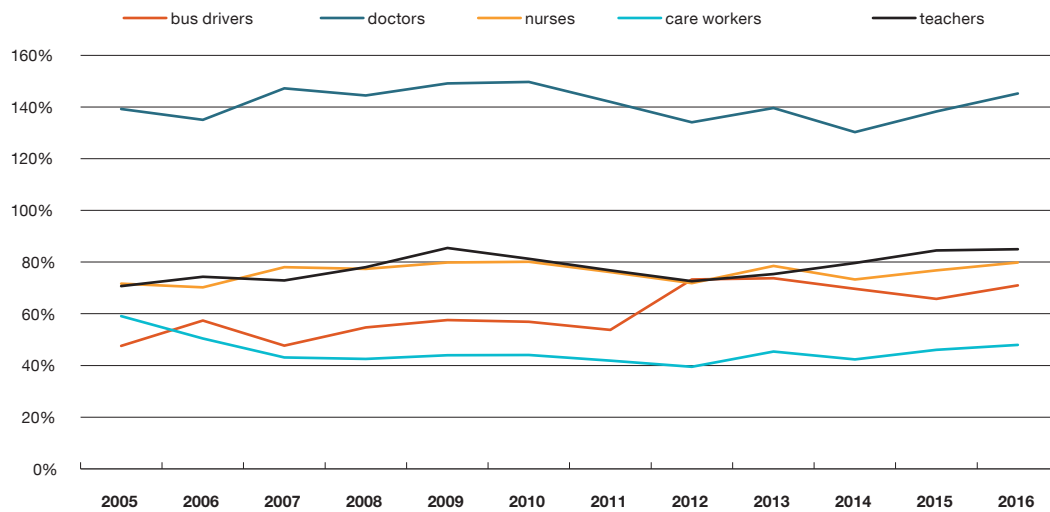
The existence of a collective agreement does not necessarily mean that wages are agreed under it. The database on collective agreements held by the Ministry of Social Affairs records 823 collective agreements, of which 374 had a more favourable agreement on employee wages than the terms initially offered⁷. Many of those agreements were signed years ago however and have automatically become permanent, because there has been no new agreement. This may mean though that the wage agreed in them is now below the minimum wage, which has risen rapidly in the meantime.

The structure of earnings survey found that the coverage of collective agreements varies widely between sectors, with 71% coverage in electricity generation, where there are only a few large companies operating, and 66% in mining. In transport and storage, which are mainly in the private sector, 27% of employees said they were covered by collective wage agreements, while 22% were in education and 44% in healthcare, which are both mainly in the public sector.

Industry-level wage agreements are signed in healthcare and in public transport and freight transport, which come under the transport sector, and they are extended to cover everyone working in the sector. The Union of Estonian Automobile Enterprises and the trade union for transport workers recently signed a collective agreement on 21 September 2016. This agreement sets minimum wages for drivers of public service vehicles for 2017–2019. The extension of sector-level wage agreements means that collective wage agreements have a notably bigger effect on the Estonian economy than might be assumed from the small share of workers who are members of trade unions. Although it is the minimum hourly rate in the sector that is negotiated for wages, raising that floor probably has a significant effect on rises in wages within the sector above that minimum. Figure 22 illustrates this with collectively agreed minimum rates for wages in transport and healthcare in relation to the average wage. Sector-level agreements are not formally used in education, but the minimum rates for wages are

⁷ As at 28 September 2016.

Figure 22. Negotiated minimum wages as a ratio to the national average wage



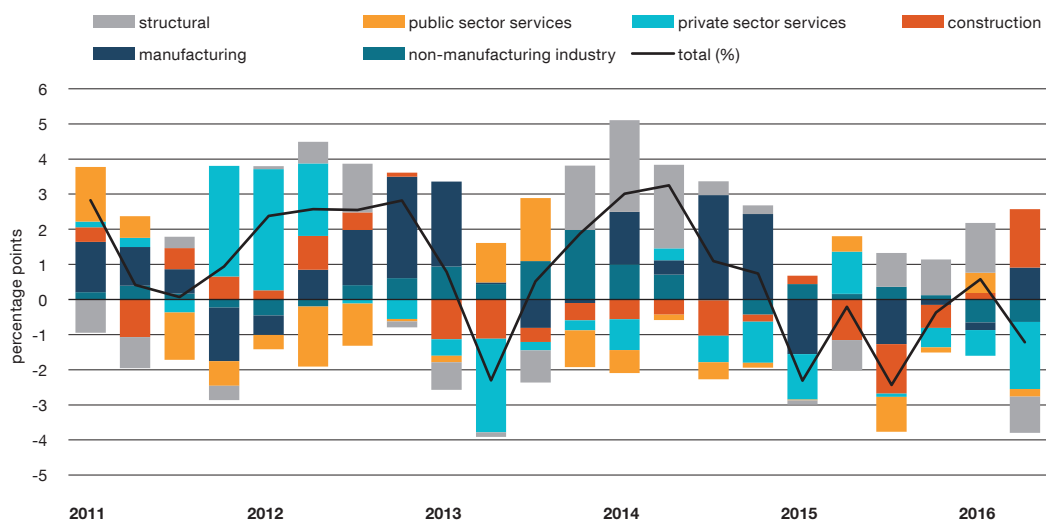
Sources: Statistics Estonia, Eesti Pank

discussed between the Ministry of Education and Research and the Education Personnel Union. All the minimum rates have risen in relation to average wages, with the exception of wages for care workers.

Labour productivity and unit labour costs

Productivity stopped falling in the first quarter of 2016 as yearly GDP growth picked up and the number in employment increased at a more moderate rate than in 2015. As yearly economic growth slowed in the second quarter however, productivity did not increase over the whole half year, but actually fell by 0.3% per employee and per hour worked. Productivity growth dropped the most in services in the private sector (see Figure 23), where the rise in employment was faster than

Figure 23. Productivity growth and contributions of sectors

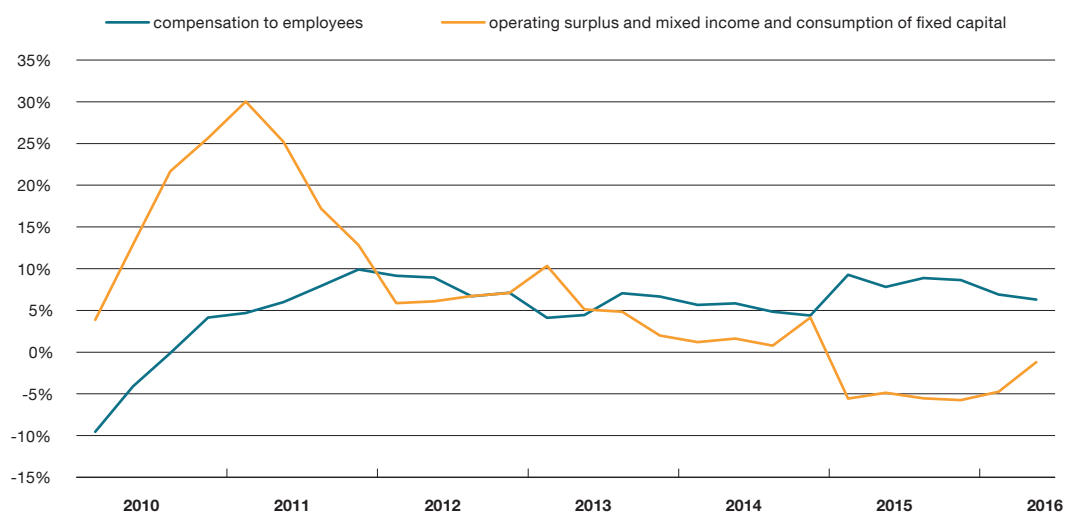


Sources: Statistics Estonia, Eesti Pank calculations

that in real value added. There was also a negative contribution from non-manufacturing industry, which includes mining and energy, where value added declined but the number of employees did not fall by as much.

The value added in the economy can be divided between labour and capital. Labour income, or the payroll, continued to increase as a share of GDP in the first half of 2016, and rose to 50.2%. The figure for the first half of 2015 was 48.4%. In recent years the share of labour costs in value added in Estonia has climbed above the European Union average of 47.5%, and the gap is even wider if the differences in the structure of the economy are taken into account. Yearly growth in the payroll slowed from 8.8% in the previous half year to 6.6% at the start of 2016. At the same time the decline in business income, which is operating surplus, mixed income and depreciation, slowed from 5.6% to 3% (see Figure 24).

Figure 24. Growth rate of income side components of GDP

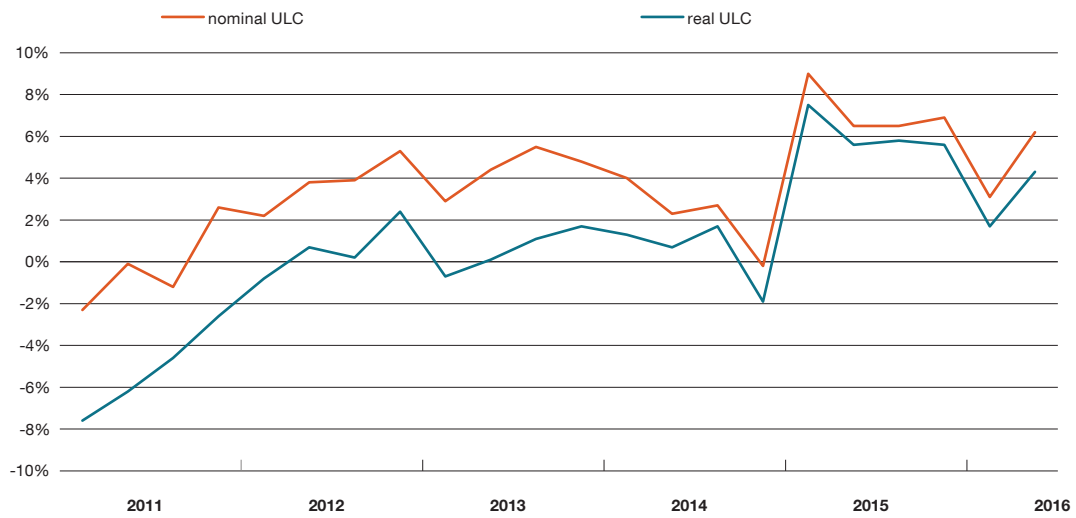


Sources: Statistics Estonia, Töötukassa, Eesti Pank

Growth in unit labour costs indicates the rise in the cost of labour needed to produce one unit of value added. Growth in real unit labour costs is very similar to the growth in the share of labour costs described above, but it also considers the change in the share of waged employees in employment. The growth in real unit labour costs shows the relative positions of labour and capital in the economy. It rises if labour shortages are dominant in the labour market, and falls if unemployment is high. Growth in nominal unit labour costs measures the increased labour costs for each unit of real value added. This is used for analysing competitiveness and a sharp rise in nominal unit costs indicates that there are price pressures in the economy. The growth in unit labour costs was slower in the first half of 2016 than in 2015, especially in the first quarter (see Figure 25).

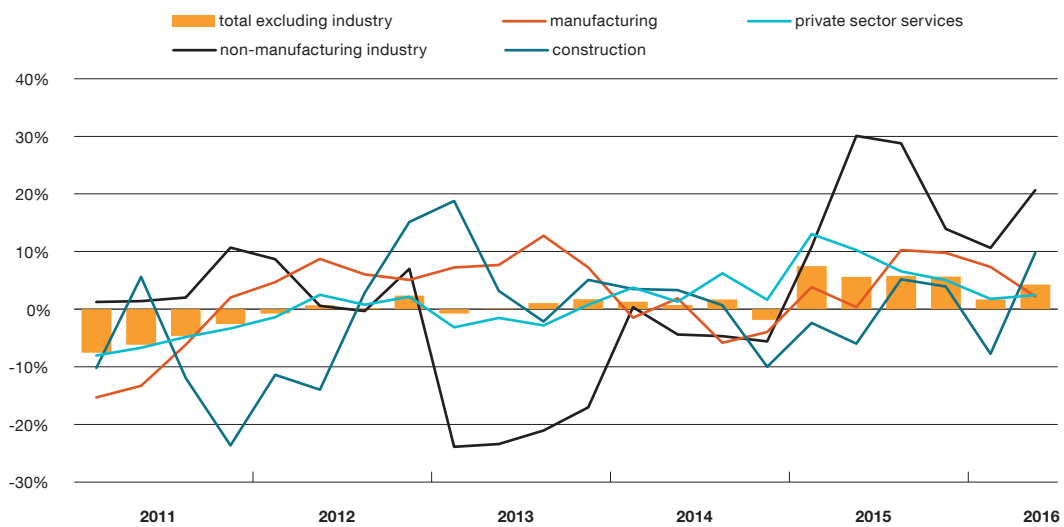
The share of labour income increased in the first half of 2016 in most sectors. Growth was particularly fast in non-manufacturing industry, though this was mainly because of the drop in the value added of the sector. Despite its high growth rates, non-manufacturing industry made only a small contribution to the figure for the whole economy. Growth in real unit labour costs also increased in 2015 in manufacturing, which is Estonia's main exporting sector, and in the first half of 2016 it was up 4.8%. This was mainly due to value added growing at a rate that was still not negative, but was only just positive, and to the growth in the payroll, which slowed but was still notably faster than the growth in value added (see Figure 26).

Figure 25. Unit labour cost growth



Source: Statistics Estonia

Figure 26. Real unit labour cost growth



Source: Statistics Estonia