CHAPTER 3

Working lives: the foundation of prosperity for all generations

1. INTRODUCTION ([151])

The labour market in the EU has been undergoing considerable change. Some of these changing realities have been due to the crisis and are likely to fade as the economic recovery continues, while other changes are more of a structural nature and are hence more long-term in impact. Indeed, whether the EU can tackle poverty and increase prosperity for all will depend strongly on how well the EU manages to ensure that the working-age population has good quality and well-paid jobs and its productivity is fully used and developed. This in particular concerns the younger working age population who have not only inherited a more precarious labour market with more non-standard and low paid work, but who have also felt this change more than prime-age and older people in terms of implications for their lives. The European Commission White Paper on the Future of Europe (March 2017) stressed that the younger generation are particularly at risk of having worse outcomes and fewer opportunities than their parents due to generational inequality. These elements are at the core of the European Pillar of Social Rights (April 2017) ([152]).

Enabling people to be active in the labour market fully using their skills and realising their potential aligns interests across the generations. It is of key importance for working age people. At the same time, the income they produce sustains social protection systems and thus facilitates intergenerational solidarity which benefits older people and children. This chapter therefore examines the challenges to enabling the working-age population to be productively employed, with a particular focus on intergenerational fairness among the different working age groups. Notably, it takes stock of the labour market-related problems younger generations are facing today. These include access to and outcomes in the labour market, the implications of fragmented working careers and atypical or precarious employment (including low wages and the role of new forms of work).

The analysis focuses on three working age groups: younger, prime-age and older people. Younger people are here defined as those aged 25 to 39 years; those aged 40 to 54 years old are referred to as prime-age people; and older people are defined as those aged 55 to 64. Young people below 25 are not included because this is an unstable group from a labour market perspective: they may be in full-time education and training or may combine studying and working and their labour market condition may be transitory. In addition, the young frequently rely on (or complement their income with) educational allowances and/or household transfers.

([151]) This chapter was written by Alessia Fulvimari, Giuseppe Piroli, Filip Tanay and Anneleen Vandeplas, with contributions from Katarina Jaksic, Eric Meyermans and Tim Van Rie.

([152]) The European Pillar of Social Rights was launched by President Junker on 26 April 2017. The package of the European Pillar of Social Rights includes different elements: a 'chapeau' communication; a Commission recommendation with 20 principles; an identical draft for a Joint Proclamation of Parliament, Council and Commission; short fiches on each principle; a scoreboard showing progress on employment and social indicators; and a consultation report. The European Pillar of Social Rights is accompanied by ongoing initiatives on Work-life Balance, Access to Social Protection, the Written Statement Directive and Working Time Directive. Other elements include the "Investing in Children Recommendation" and the "Active Inclusion Recommendation".

The generational comparisons across the chapter consider three dimensions: comparisons of age groups at a given point in time (e.g. 25-39 vs. 40-64 in a given year); comparison of cohorts (e.g. the 25-39 age group in 2015 vs. 2005/2007); and intergenerational mobility (the impact of parental background on educational and skills attainment).

These comparisons are used to analyse whether today's working-age population, in particular younger workers, are worse off than younger workers who came before them. To understand better whether this implies issues of intergenerational fairness, the chapter also analyses whether the prime-age and older workers are equally worse off as their peers one or two decades ago. In this context, it also looks at whether these socioeconomic changes are structural or temporary/cyclical.

Focusing first on labour market developments, the chapter analyses the challenges that have arisen over the last two decades and how they have been borne by the different age groups. Secondly, the analysis turns to the observed social implications of the labour market's age divide. Finally, it turns to education and examines the developments in educational and skills attainment over time, the link between education and employment outcomes and the impact of parental background on education and skills outcomes.

2. THE GENERATIONAL DIVIDE IN THE LABOUR MARKET

2.1. Developments in employment and unemployment

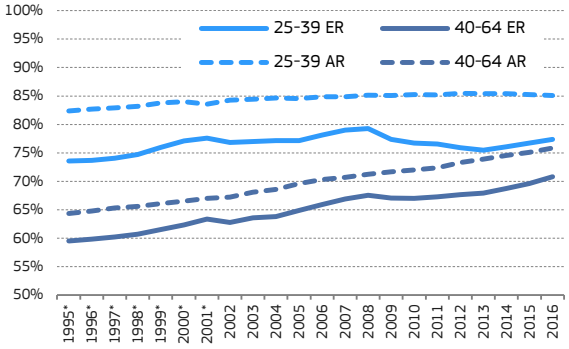
Younger workers today have employment and labour market participation rates broadly similar to those of previous cohorts. Comparing at EU level the performance of cohorts of younger workers aged 25-39 over time, their employment rate in 2016 was only slightly higher than that of the same cohort in 1995 (77 % vs. 74 %) and no different from that observed in 2005 (*Chart 3.1*). While the crisis has thus reversed some of the earlier progress, it did not have an impact on younger workers' activity rate for the EU as a whole.

On the other hand, prime-age and older workers (40-64) have seen their labour market outcomes improve considerably over time. Both their employment and activity rates have been steadily increasing in the last two decades (*Chart 3.1*). The recession of the early 2000s and crisis of 2008 did have a slight negative impact on their employment rates but they were nonetheless quite resilient, with falls of at most half a percentage point in the first year, respectively. This positive development has been attributed in great part to their increased labour market participation stemming from reduced pathways to early retirement ([153]). Disaggregating the 40-64 age group confirms this conclusion: the 40-54 age group have outcomes almost identical to the 25-39 age group, whereas the strong employment and labour market participation increase is mainly attributable to the 55-64 age group.

Chart 3.1

Employment: slight improvement and stagnation for younger workers, but major improvement for older ones

Employment and activity rates across age groups, 1995-2001 (EU-15) and 2002-2016 (EU-28)



Note: ER stands for employment rate and AR for activity rate. *Data for 1995-2001 period is for EU-15 and EU-28 for the 2002-2015 period.

Source: Own calculations based on EU-LFS.

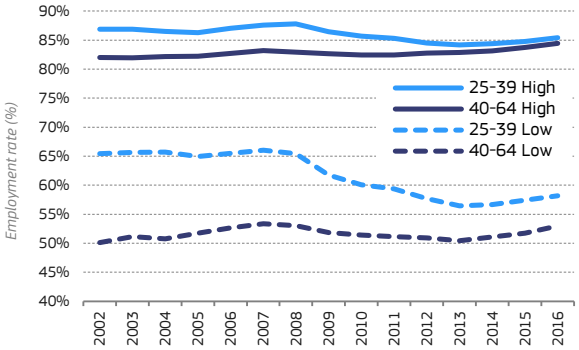
Click here to download chart.

The crisis hit younger workers more than older ones, particularly the younger low-skilled. Education levels allow further analysis of intergenerational developments in employment. Looking at the highly educated (university level) and the low-educated (below upper secondary school), shows that the employment chances of younger workers, unlike those of the older ones, were worse in 2015 than they were ten or more years ago (*Chart 3.2*). The employment rate of low-educated younger workers, after a period of relative stability before 2008, fell the most during the crisis (from 66.0 % in 2007 to 56.4 % in 2013).

Chart 3.2

Low-educated younger workers much more impacted by the crisis than older workers

Employment rate by age and education level, EU-28, 2002-2016



Note: Highly educated people are defined as those having the highest level of qualification equal to or above tertiary education level (ISCED 5–8); medium educated are defined as those who have finished upper secondary and post-secondary non-tertiary education (ISCED 3 to 4) and low educated are defined as those who have finished up to lower secondary school level (ISCED 0-2).

Source: Own calculations based on EU-LFS.

Click here to download chart.

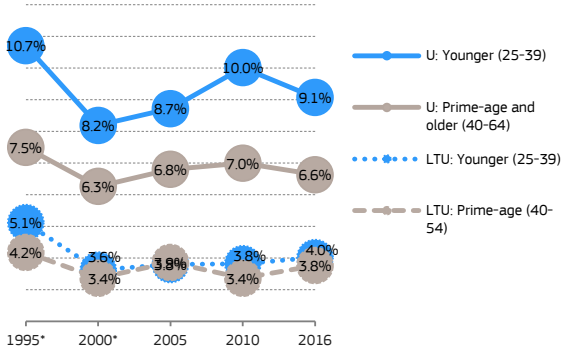
([153]) European Commission (2015a)

After a reduction in the 1990s, the unemployment gap between the younger and prime-age and older workers increased again in the context of the crisis. In 2005 the unemployment rate for younger workers stood at 8.7 % (*Chart 3.3*), 1.9 percentage points (pps) higher than that for prime-age and older workers (6.8 %). This gap increased to 2.4 pps in 2016 (which was lower, however, than the 3.5 pps peak in the gap observed in 2013). This increase was in large part due to the crisis, which is when the gap between the two age groups widened. This unemployment gap persists across all levels of education and is particularly pronounced for the low-educated (6.4 pps gap; 20 % vs. 13 % in 2016).

Chart 3.3

After some convergence, the unemployment gap between younger and older people increased during the crisis

Unemployment and long-term unemployment (12+ months) rates across age groups, 1995-2000 (EU-15) and 2005-2016 (EU-28)



Note: U stands for unemployment rate and LTU stands for long-term unemployment rate (those unemployed for 12 months or longer). *Data for 1995 and 2000 is for EU-15 and EU-28 for the 2005-2015 period.

Source: Own calculations based on EU-LFS.

Click here to download chart.

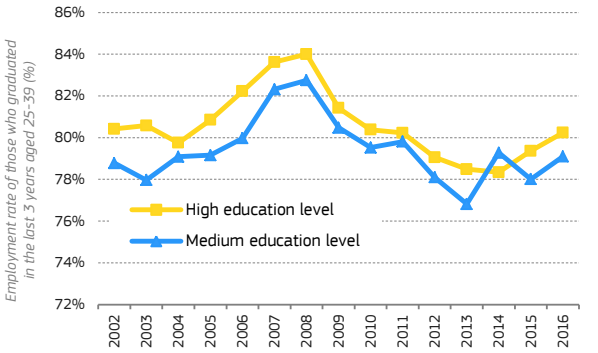
Once in unemployment, it takes younger workers somewhat longer to find a job: i.e. they are slightly more likely to be long-term unemployed than prime-age and older workers (4.0 % vs. 3.8 % in 2016). This is partly because they are more likely to be employed on temporary contracts ([154]): workers on temporary contracts are five times more likely than those on permanent contracts to transition to unemployment (9.9 % vs. 1.8 % in 2015 ([155])). However, this gap is not as substantial as the overall unemployment gap, although it has widened during the crisis. This finding of overall larger unemployment age gaps compared with the beginning of the century is particularly worrying, as these poor employment prospects for younger people after the crisis are likely to have had a negative impact on their economic independence and capacity for household formation ([156]).

Finding a job after graduation has become harder. School-to-work transitions in the first three years after graduation fell substantially during the crisis. In particular, 83.7 % of those who graduated within the preceding 1-3 years had found employment in 2008 in the EU-28, compared with 78.1 % of those in the same situation in 2013 (*Chart 3.4*). The employment rate of these recent graduates has risen with the economic recovery, reaching 80.0 % in 2016 at EU-28 level. Upper secondary school graduates continue to have employment success below that of university graduates, but not by much. Data from 2014 and 2015 also indicate that upper secondary school graduates with vocational education fare more than 10 pps better than their peers with general education ([157]).

Chart 3.4

Employment chances of recent graduates improving but still lower than for previous generations

Employment rate of younger workers (25-39) who graduated within the last 1-3 years



Note: Highly educated people are defined as those having the highest level of qualification equal to or above tertiary education level (ISCED 5–8) and medium educated are defined as those who have finished upper secondary and post-secondary non-tertiary education (ISCED 3 to 4). Non-responses to education level question are not included. *Data missing for the Czech Republic in 2004 and 2005, for France and the Netherlands in 2002 and for Croatia in 2002 and 2003.

Source: Own calculations based on EU-LFS.

Click here to download chart.

Recent young graduates today face more difficulties in finding a job than a decade ago in more than half of the Member States. This is true in 17 Member States (*Chart 3.5*). In Bulgaria, Slovenia, and Cyprus the employment rate of recent graduates was over 10 pps lower in 2016 than in 2005. Conversely, recent young graduates in Lithuania, Sweden, Poland and Germany now have considerably better employment outcomes than the 2005 cohort of graduates.

([154]) See Section 2.3 below for further details.

([155]) Based on EU-SILC data for EU-28 [ilc_lvhl32].

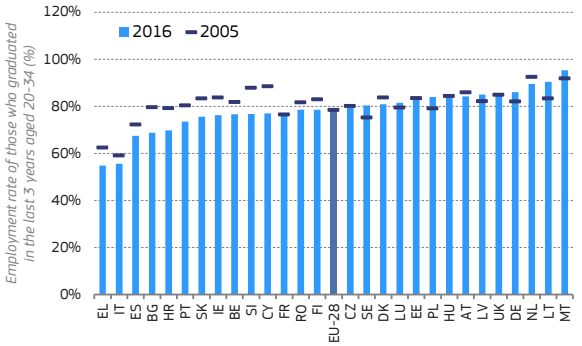
([156]) For further information on this see Section 4.

([157]) See for example Eurostat data [edat_lfse_24] on 20-34-year olds who graduated between 1 and 3 years before the reference year.

Chart 3.5

Finding employment is still more difficult for recent graduates than before in many Member States

Employment rate of younger workers (25-39) with medium and high education levels who graduated within the last 1-3 years



Note: Highly educated people are defined as those having the highest level of qualification equal to or above tertiary education level (ISCED 5–8) and medium educated are defined as those who have finished upper secondary and post-secondary non-tertiary education (ISCED 3 to 4). Non-responses to education level question are not included. *2006 value used for Czech Republic due to no data in 2005.

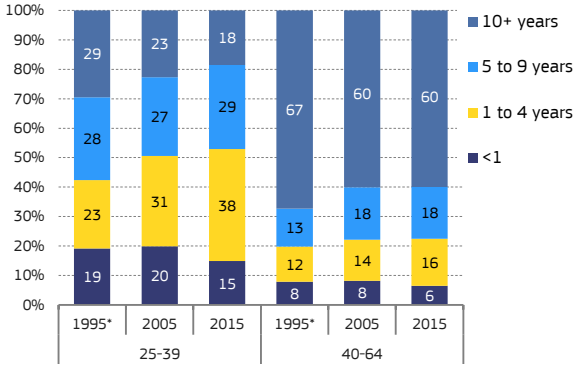
Source: Own calculations based on EU-LFS.

Click here to download chart.

Chart 3.6

Workers stay less long in the same company

Length of time people have been employed in a company by age and duration, 1995* (EU-15), 2005 (EU-28) and 2015 (EU-28)



Note: EU-28 weighted average used for 2005 and 2015 and EU-15 used for 1995. The trends observed hold even if only looking at the EU-15 across time. Based on answer provided to question 17 of the European Working Conditions Survey: "How many years have you been in your company or organisation?".

Source: European Working Conditions Survey

Click here to download chart.

Being employed by the same firm for longer than 10 years has become less frequent, especially for younger workers, signalling greater dynamism and insecurity. The proportion of younger workers (25-39) working for the same company for longer than 10 years fell by 11 pps between 1995 (29.5 %) and 2015 (18.5 %); among prime-age and older workers (40-64) the fall was only 7 pps (from 67 % to 60 %, *Chart 3.6*) ([158]). The falling proportion of workers staying in a company for 10 years or longer across all age groups over the last two decades signals a structural change in the functioning of the labour market that sees workers changing employment more often. This is consistent with previous findings showing falling job tenures between 2002 and 2012 when controlling for demographic factors ([159]). (The proportion of workers staying in a company for 1-4 years has grown across all age groups over time.) Although the length of time spent working with the same company is very much linked with a worker's age, the strong trend towards shorter employment spells, in particular for the younger workers, may mean that working for a company for 5 years or longer may become a rarity in the labour market to come. The New Skills Agenda for Europe ([160]) and Council Recommendation on "Upskilling Pathways" ([161]) recognise this change in the labour market and hence propose actions to, among other things, upskill the low-skilled and equip people with the new skills that are needed to ensure that they can find quality jobs when they need them.

([158]) Interestingly, the newer generation of younger workers is also less likely to be employed in the same company for less than a year (23.6% vs. 31.7%).

([159]) Eurofound (2015b).

([160]) A New Skills Agenda for Europe – COM(2016) 381 final.

([161]) Council Recommendation of 19 December 2016 on Upskilling Pathways: New Opportunities for Adults (2016/C 484/01).

2.2. Overqualification

Overqualification implies the inefficient utilisation of qualifications, skills and knowledge in a given workforce. It commonly refers to people with a tertiary level of education who are working in occupations for which tertiary education is not considered necessary. It estimates the amount of qualifications, skills and knowledge in a given workforce that are being underutilised and could be put to better use, especially if there are employers who are struggling to find highly skilled workers. On an individual level, overqualified workers tend to earn more than others in the same job ([162]), which may indicate that their productivity is higher than that of workers whose skills match those required by the job. However, on a macro level, analysing the extent of overqualification among the workforce is important to make sure that their skills and knowledge are being used to their full potential and where they are needed. This issue also has intergenerational implications, given the need to make full use of the available human resources in the face of an ageing population to secure the sustainability of social security systems embodying intergenerational fairness and solidarity in society ([163]).

Measuring overqualification is not a straightforward exercise. The mismatch between the skills of the worker and those required by the job can be vertical (e.g. an economics graduate working as a cashier in a supermarket) and/or horizontal (e.g. an economics graduate working as a biology teacher). Moreover, there are many ways of measuring overqualification of which two are applied in this chapter: the subjective approach (by asking a person whether they feel they are overqualified for the job they do) or the simplified taxonomy approach comparing the workers' qualification level with their

([162]) Buechel (2000); Kampelmann (2012).

([163]) See Chapter 1 for details.

occupation ([164]). The measurement in this chapter denotes overqualification primarily as a vertical skills mismatch that compares the education level of a person with their occupation.

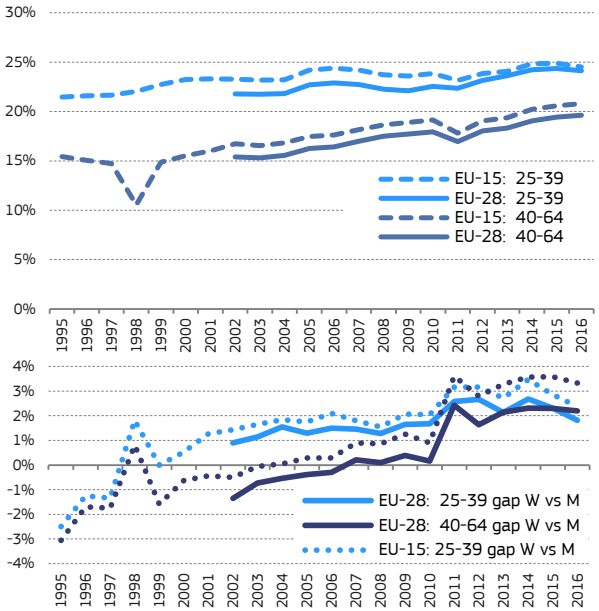
Overqualification has moderately increased in the EU over the last two decades. In the EU-15 in 1995 there were 2.8 million younger workers and 1.9 million prime-age and older workers who were highly qualified but working in occupations for which tertiary education is considered not to be required ([165]). In 2016 this number had grown to 6.1 million and 6.8 million respectively. In the EU-28, it increased by 2.1 million for younger workers between 2005 and 2016 and by 3.5 million for prime-age and older workers.

Younger workers are still comparatively more often overqualified than other age groups, but there has been some convergence. Newer cohorts of the younger workforce are more overqualified than those a decade before (EU-28: +1.4 pps 2005-16) and more often remain overqualified for the job they do than prime-age and older workers (24.1 % vs. 19.6 % of tertiary-educated workers in 2016, see *Chart 3.7*). The difference between recent and earlier cohorts of prime-age and older workers is even more pronounced: for them overqualification increased by +3.4 pps in the last decade in the EU-28 (double the increase for younger workers) and by +5.3 pps in the last two decades (1995-2016) in the EU-15. It is however important to note that a greater proportion of younger workers are highly educated than prime-age and older ones ([166]) and as a result the overall share of the workforce affected by overqualification may be greater. Indeed, the overqualified made up 10.0 % of employed younger workers of all education levels and 6.2 % of prime-age and older ones in 2016. The overqualification gap between younger and prime-age and older workers in 2016 was most pronounced in Poland (13.9 pps), Slovenia (13.6) and Greece (12.2), while in some cases it was inverted (e.g. in Estonia, Finland and Germany).

Chart 3.7

Overqualification increasing over time and more prevalent among women and younger workers

Proportion of high skilled workers in elementary occupations (overqualified) by age and gap between women and men, 1995-2016



Note: Over-qualified workers are defined here as those with tertiary education (ISCED11 categories 5 to 8) working in occupations in categories 4 to 9 of the ISCO08 classification, i.e. occupations for which tertiary education is not required. No answer and armed forces not included. Hence only tertiary-educated workers included.

Source: Own calculations based on EU-LFS.

Click here to download chart.

Women have been more overqualified than men, with gender gaps growing steadily. Two decades ago, women were less likely to be overqualified than men (-2.5 pps (25-39) and -3.1 pps (40-64) in 1995 in the EU-15) but the gap was reversed in 1999 for younger women and in 2004 for prime-age and older ones. Since then, the gender overqualification gap has steadily grown and amounted in 2016 to +2.4 pps and +3.3 pps respectively in the EU-15, +1.8 and +2.2 pps respectively in the EU-28. Studies ([167]) explain that the overqualification of women has multiple causes, principally associated with women taking on family and childcare responsibilities (and hence being more willing to accept jobs below their education level that fit with their work-care balance) and with 'glass ceiling' effects as women continue to be less likely to be promoted but are more and more likely to be highly educated.

Overqualification represents an underuse of valuable expertise and a loss of productivity. Due to the crisis and their comparatively lower level of experience it is perhaps not surprising that younger workers are more often willing than older ones to work in a job for which they are overqualified. However, given that there remain certain bottlenecks and skills shortages in the EU, this represents an underuse of resources that could be more productively used in the labour force. For example, in 2015 as many as 59 % of Greek and 46 % of German employers said that they had difficulties in finding employees with the

([164]) For further information on the measurement of overqualification and skills mismatches in general, see European Commission (2016c), p. 245.

([165]) These occupations include ISCO1d categories 4-9: clerks, service workers and shop and market sales workers, skilled agricultural and fishery workers, craft and related trades workers, plant and machine operators and assemblers and elementary occupations such as cleaners and helpers.

([166]) See Subsection 5.1.

([167]) See Luksyte and Spitzmueller (2011) for an overview of studies.

required skills ([168]). Such shortages are likely to increase with population ageing, which underlines the importance of addressing overqualification in a forward-looking perspective.

However, taking into account horizontal skills mismatches, overqualification has actually fallen over time. The European Working Conditions Survey asks workers whether they feel that their skills match their job tasks (see data in *Chart 3.8*). In contrast to the simplified taxonomy approach above, this self-assessed method shows that overqualification has been falling in the EU for workers of all education levels. This is most likely due to horizontal skills mismatches where many people end up working in jobs different from their field of study or expertise. Estimates of its extent have ranged from 10 % ([169]) to around 23 % ([170]). This would also be consistent with the crisis as the likelihood of horizontal mismatches increases with high unemployment rates ([171]).

Underqualification increased somewhat and is more prevalent among younger workers. Empirical evidence suggests that under-qualification is highly likely to reduce productivity ([172]). Over the last decade, the proportion of workers of all education levels stating that they need further training to cope well with their duties increased from 12.7 % to 14.4 % (*Chart 3.8*). Younger workers are more likely than prime-age and older ones to state that they need further training to cope well with their duties (15 % vs. 13 %). High levels of under-skilling at the time of entry into a new job are more common among graduates who make their first transition to the labour market or individuals returning to (high-skill) jobs after spells of unemployment or inactivity. Data on under-skilling at hiring by level of education in the EU in 2014 ([173]) show the highest percentage for higher education graduates. This points to deficiencies in higher education curricula and a possible lack of career guidance and could explain persisting skills shortages.

([168]) This is based on the 2015 Manpower survey data.

([169]) Verhaest et al. (2015).

([170]) Randstad (2012).

([171]) Wolbers (2003).

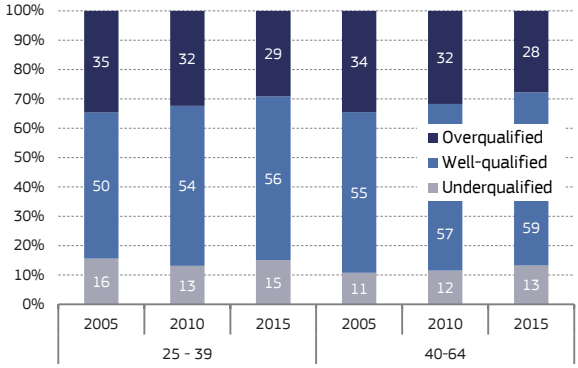
([172]) Zira (2016); McGowan and Andrews (2015).

([173]) Data from Cedefop, see http://skillspanorama.cedefop.europa.eu/en/indicators/under-skilling-hiring.

Chart 3.8

Self-assessed overqualification reduced while under-qualification increased somewhat and is more prevalent among younger workers

Self-assessed skills at work by age, EU-28, 2005, 2010 and 2015



Note: Based on answer to question 64 "Which of the following statements would best describe your skills in your own work?", the 'underqualified' category answered "I need further training to cope well with my duties", the 'well-qualified' answered "My present skills correspond well with my duties" and the 'overqualified' answered "I have the skills to cope with more demanding duties".

Source: European Working Conditions Survey

Click here to download chart.

2.3. Developments in non-standard work

This subsection examines developments in non-standard work across age groups in order to see whether, how and for whom the labour market has changed over the last decade in this respect. Non-standard work is a term used to denote forms of dependent employment that are not full-time employment with a permanent contract, which still remains the most common form of employment (73 % of all employment of those aged 25-64 in 2016). The three types of non-standard employment are permanent part-time, temporary full-time and temporary employment with a part-time regime. Self-employment can also be considered a form of non-standard employment, especially in cases where the self-employed person has no employees. In this section self-employment is treated separately from employment as an employee. Nevertheless, as it is possible that self-employment can include so-called 'dependent' or 'bogus' self-employment, these cases are also discussed and analysed in this subsection.

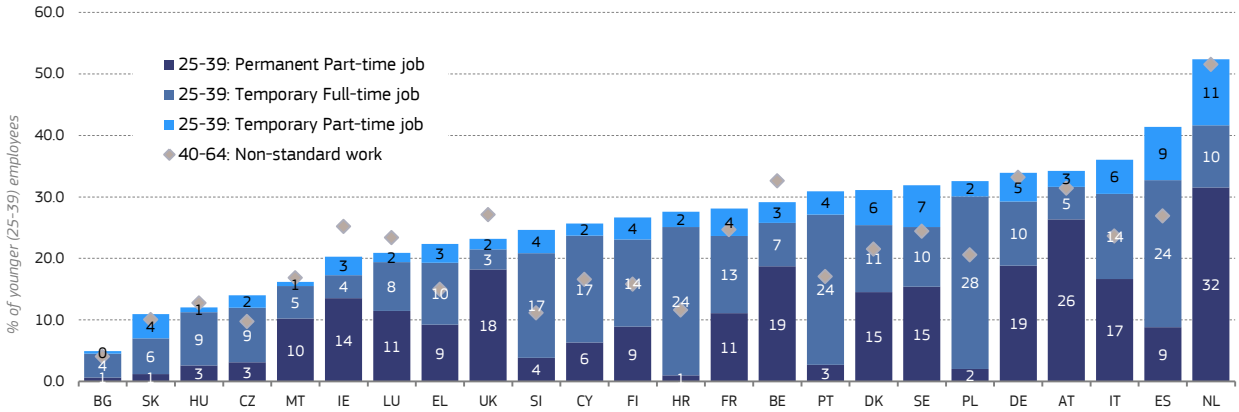
Non-standard work is a crucial part of a dynamic labour market but can be linked to some adverse social outcomes. Part-time work provides valuable flexibility for the variety of work-care preferences that workers may have. It also provides valuable options for individuals who wish to be active in the labour market but cannot for health or disability reasons work full-time. The flexibility provided by temporary contracts is an important tool employers can use for work of specific and non-permanent duration, for hiring in times of high economic uncertainty or for workers whose skills need to be evaluated on the job before an employer feels comfortable offering them a more permanent contract. Nevertheless, as shown below ([174]), there is sometimes a link between non-

([174]) See Subsection 2.4.

Chart 3.9

Prevalence and type of non-standard work varies considerably between Member States

Younger employees (25-39) by type of non-standard work and prime-age and older employees (40-64) by total incidence of non-standard work across EU Member States, 2016



Note: Non-standard work includes permanent part-time and temporary full-time and part-time work. Data for Lithuania, Latvia, Estonia and Romania were below the reliability limit and hence are not presented.

Source: Own calculations based on EU-LFS.

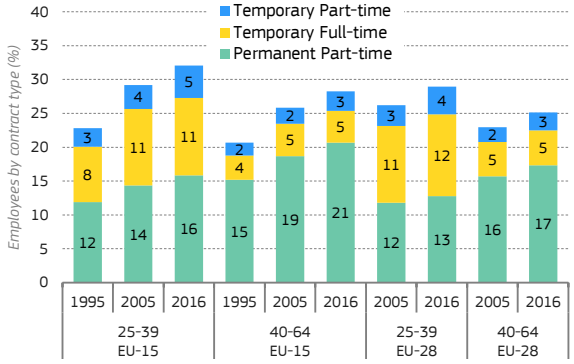
Click here to download chart.

standard work and low pay, with younger workers being more affected.

Chart 3.10

Recent cohorts of younger workers are more exposed to non-standard work contracts

Employees by type of contract and age, 1995, 2005 and 2016



Source: Own calculations based on EU-LFS.

Click here to download chart.

Non-standard work has increased for all age groups, in particular for the more recent cohorts of younger workers. In 1995, 23 % of younger employees in the EU-15 had non-standard contracts. This proportion had increased to 32 % for the same age group by 2016 (*Chart 3.10*). Prime-age and older workers in the EU-15 also saw an increase in non-standard work over the last two decades (from 21 % to 28 %) but to a lesser extent than younger workers. In absolute terms, there were 5.3 million fewer younger workers in standard employment (permanent full-time) in the EU-15 in 2016 compared with two decades before, but 4.7 million more employed on non-standard contracts. At the same time, prime-age and older workers in the EU-15 experienced an increase in both standard (+9.1 million employees) and non-standard employment (+12.5 million). Broadening the picture across Member States, development in the EU-28 over the last decade has been similar, with non-standard work increasing for younger workers from 26 % to 29 %, with 3.5 million fewer employees on permanent full-time contracts and 1.2 million more on non-standard contracts.

Non-standard work among younger employees increased for all types of contracts while it centred mostly on permanent part-time work for prime-age and older employees. The largest difference between the two age groups remained the proportion of employees working full-time but on temporary contracts (*Chart 3.10)*. Younger workers in 2016 were still more than twice as likely to be working full-time on temporary contracts than prime-age and older workers (12 % vs. 5 %), a difference that has somewhat increased in the last decade. This is likely to be due to a mixture of younger workers being more willing to use non-standard work as a stepping- stone after education is finished and to the reduction in the strictness of employment protection legislation over time ([175]).

Non-standard work is also more prevalent among the non-EU born, where generational differences also exist. Non-EU born younger employees had a higher share of non-standard work (39 % in 2016) than their peers born in the country or other EU-born (30 % and 28 % respectively). Interestingly, the differences in this respect between the age groups by country of birth were strongest between the non-EU born young vs. the prime-age and older workers (+6.3 pps higher for the younger), followed by the those born in the country (+3.6 pps), while the difference among the EU-mobile age groups was negligible (+0.5 pps).

The type of non-standard work and its extent varies considerably across Member States and in most cases it affects younger workers more. The share of non-standard work among younger employees ranges from 5.0 % in Bulgaria to 52.3 % in the Netherlands (*Chart 3.9*). Member States differ noticeably with regard to the type of non-standard work that is most prevalent among their younger workers. For instance, permanent part-time work is most common among younger employees in Austria

([175]) European Commission (2015).

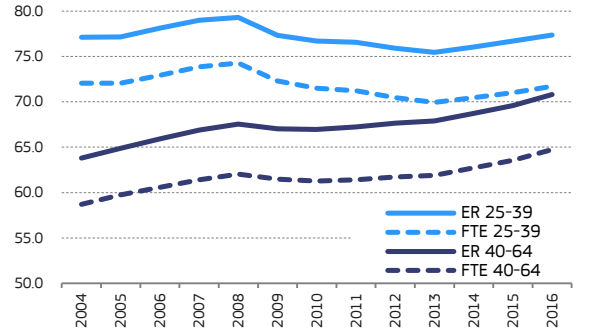
and Germany, while temporary full-time contracts are most used in Poland, Portugal and Spain. Temporary part-time contracts are most prevalent in the Netherlands, Spain and Sweden.

Large disparities also exist in the type of non-standard contract most used within each Member State. Permanent part-time contracts make up more than half of all non-standard contracts in eight Member States, while temporary full-time contracts do so in 11 Member States (*Chart 3.9*). Moreover, two thirds or more of non-standard contracts among younger employees in Ireland, Austria and the United Kingdom are permanent part-time contracts. In contrast, Croatia, Poland and Portugal have few or no younger workers on permanent part-time contracts, with temporary full-time work being almost the only form of non-standard work utilised.

Chart 3.11

Employment rate of younger workers has remained broadly stable partly due to fewer hours

Employment rate and full-time equivalent employment rate by age, EU-28, 2004-2016



Note: For the FTE employment rate, EU-27 figure instead of EU-28 used for 2005 and 2006 due to lack of data.

Source: Own calculations based on EU-LFS.

Click here to download chart.

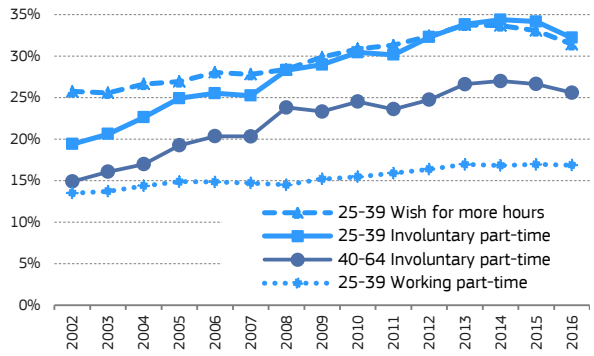
The employment rate of younger workers has remained stable partly due to fewer working hours. The increase in part-time work indicates that younger workers' employment rate has remained stable partly at the expense of their working hours. Focusing in particular on the division of employment between full-time and part-time work provides insight into what is happening behind the employment rate figures. The increased divergence between the standard employment rate and the full-time equivalent employment rate (5.1 pps in 2004 vs. 5.7 pps in 2016, *Chart 3.11*) indicates that adjustment to the crisis in terms of the employment of younger workers has in part been through their working hours. Part-time employment has become much more prevalent in the labour market in the last 20 years (*Chart 3.10*). The proportion of people working part-time has increased at a similar pace since 2005 for the recent cohorts of prime-age and older generations as for younger workers (+1.7 and +2.0 pps respectively).

.**An increasing share of part-time work is not voluntary.** More than one in three younger workers and one in four prime-age and older workers working part-time today do so only because they could not find full-time work. The higher proportion of people working part-time has thus increasingly been a matter of need and not of choice, particularly for the recent cohorts of younger workers. In 2002 19.4 % of younger workers were working part-time involuntarily, i.e. because they could not find full-time work, and 25.7 % of them wished to work more than the current amount of hours (*Chart 3.12*). By 2016 these proportions had risen to 32.2 % (+12.8 pps) and 31.4 % (+5.7 pps), respectively. Much of this under-employment was no doubt influenced and enlarged by the crisis and provided an alternative adjustment mechanism to unemployment. However, it also continues a trend that preceded the crisis, which suggests that it is likely to be a structural change in the labour market. Recent cohorts of prime-age and older workers experienced qualitatively similar but less pronounced trends toward more involuntary part-time work (25.6 % by 2016, +10.7 pps), suggesting that, while this is a structural change in the overall EU labour market, it has been felt more by the younger part of the labour force.

Chart 3.12

More part-time work but less of it voluntary

Part-time workers, involuntary part-time workers and part-time workers wishing to work more hours, by age, EU-28, 2002-2016



Note: People classified as working part-time involuntarily are those who said that they work part-time because they could not find full-time employment. People classified as wishing for more hours are people working part-time who said that they would prefer to work more hours if possible.

Source: Own calculations based on EU-LFS.

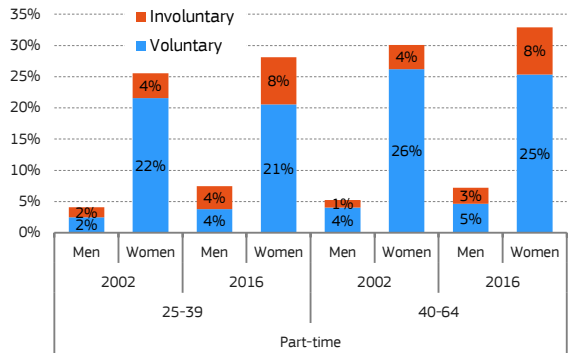
Click here to download chart.

Women of all ages continue to work part-time more often than men and somewhat more than past cohorts. On average 28.1 % of younger women were working part-time in 2016, compared with 7.5 % of men (*Chart 3.13*). This gender gap narrowed somewhat between 2002 and 2016 for younger workers (-0.8 pp), but increased for the prime-age and older age group (+0.9 pp). Working part-time was less of a choice for men than for women, with around half of younger men doing so involuntarily (49 % in 2016) compared with 27 % of young women.

Chart 3.13

Gender gaps: part-time and involuntary part-time

Part-time employment by age, gender and reason, EU-28, 2002 and 2016



Note: 'No answer' category not included in calculation. All employed persons included.

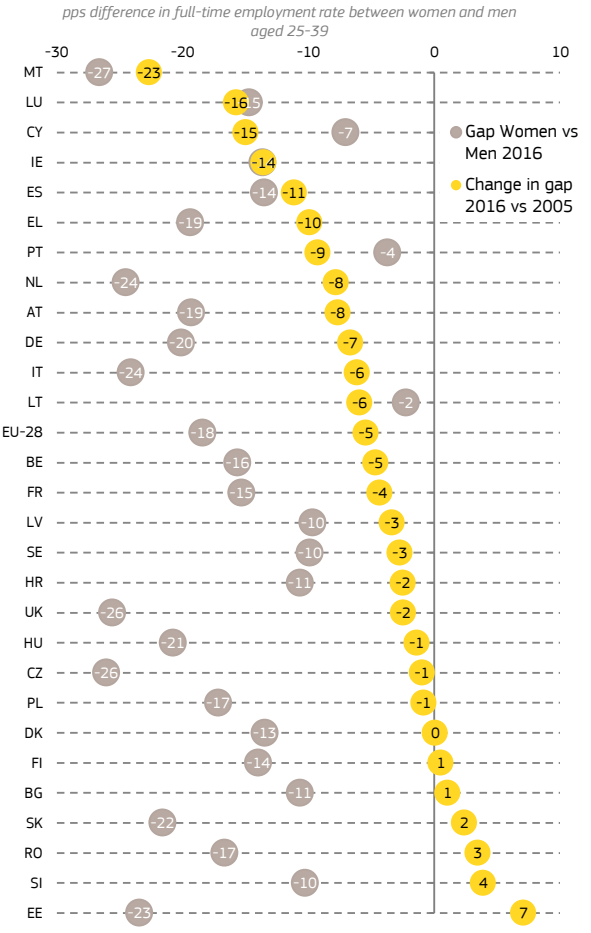
Source: Own calculations based on EU-LFS.

Click here to download chart.

Chart 3.14

FTE gender gap reducing but still present

Full-time equivalent employment rate of younger women compared to their male peers (25-39), 2016



Note: * Due to missing values, data for EU-28 uses data for EU-27 for 2005 and 2006.

Source: Own calculations based on EU-LFS.

Click here to download chart.

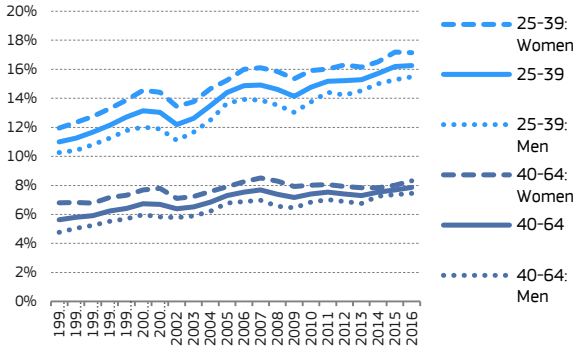
The gap between younger men and women in terms of full-time equivalent employment has been declining, but remains a challenge. There is not a single EU Member State where men on average are employed for fewer overall hours than women (*Chart 3.14*). When translating the hours worked into full-time equivalent employment (FTE) the gender gap ranges from -26 pps in Malta and the Czech Republic to only -2 pps in Lithuania. Nevertheless, young women today have a considerably lower FTE gender gap than their peers a decade ago (in 2005, see *Chart 3.15*). Furthermore, this gap has fallen in all but seven Member States over the same period. In seven countries the gap fell by double digit pps; in many countries it fell by 50 to 75 %.

Temporary work has increased primarily among the younger workers, widening the gap between the age groups. While the proportion of people working on temporary contracts has increased for all workers, the increase has centred considerably more on the recent cohorts of younger workers (11.0 % in 1995 to 16.3 % in 2016), rather than on the prime-age and older workers (5.6 % in 1995 to 7.9 % in 2016, *Chart 3.15*). This development over the last two decades widened the pre-existing gap between the two age groups (5.4 pps in 1995, 7.1 pps in 2005 and 8.4 pps in 2016).

Chart 3.15

More temporary jobs, especially for the younger workers

Share of employees employed on a temporary contract by age and gender, 1995-2001 (EU-15) and 2002-2016 (EU-28)



Note: *Data for 1995-2001 period is for EU-15 and EU-28 for the 2002-2015 period.

Source: Own calculations based on EU-LFS.

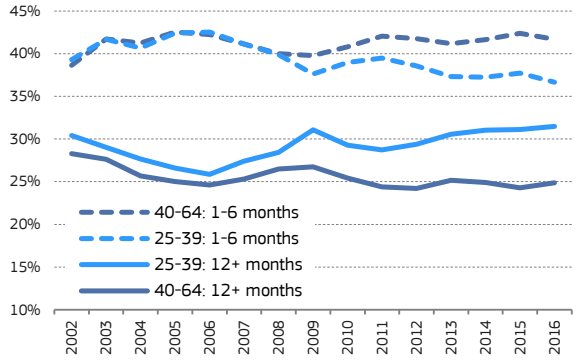
Click here to download chart.

Women continue to be more likely to work on temporary contracts than men, but the gap between them has been shrinking. The gender gap in terms of temporary employment shrank between 2002 and 2016 (*Chart 3.16*), but somewhat more for younger workers (from 2.3 pps in 2002 to 1.7 pp in 2016) than for prime-age and older workers (from 1.3 pps to 0.9 pps).

Chart 3.16

Increasing length of temporary contracts for younger workers

Temporary employment by duration of contracts and age, EU-28, 2002-2016



Note: 'No answer' category was not included.

Source: Own calculations based on EU-LFS.

Click here to download chart.

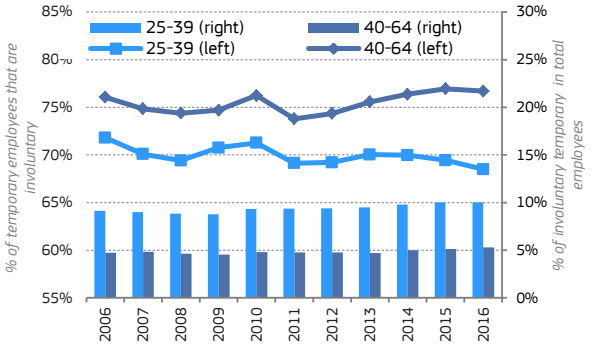
Temporary contracts are increasingly longer term for young employees, while the opposite is true of prime-age and older workers (*Chart 3.16*)**.** Nonetheless, for younger workers this change is likely to be of a temporary rather than of a structural nature, a consequence of the recent crisis indicating that employers may still be cautious about hiring younger workers on permanent contracts, even for work of a longer duration. The proportion of temporary young employees in the EU-28 with contracts for longer than a year has fluctuated a lot over time but in 2002 it was not very different from in 2016 (30.4 % vs. 31.5 %). In the EU-15 it also fluctuated a lot, but the difference between 2016 and 1995 was only +1.9 pps. Conversely, more recent cohorts of prime-age and older workers work on temporary contracts increasingly only for shorter durations. Between 2002 and 2016 fewer prime-age and older temporary employees in the EU-28 were hired on contracts longer than a year (-3.4 pps) and more on contracts shorter than six months (+3.0 pps). This suggests that recent cohorts of younger workers are now more likely to be employed on temporary contracts for longer-term work, whereas previous cohorts might have been more likely to be offered a permanent contract.

Over two thirds of employees who work on temporary contracts do so involuntarily, especially prime-age and older workers. In 2016, 76.7 % of prime-age and older temporary employees and 68.5 % of younger temporary employees were working on a temporary contract because they could not find a permanent one (*Chart 3.17*). The relatively lower level of involuntary temporary employment among younger workers is likely to be linked to their higher likelihood of undertaking apprenticeships, combining full-time education with work and of being asked to start a contract with a probationary period. It is also likely to be linked to the fact that younger workers are more than twice as likely to be employed on temporary rather than permanent contracts (16.3 % vs. 7.9 % in 2016). This translates into 10 % of all younger employees being involuntary temporary workers compared to 5.3 % of the prime-age and older employees.

Chart 3.17

Prime-age and older workers are less likely to work on temporary contracts out of choice

Temporary employees who could not find a permanent job as a percentage of all employees (permanent and temporary, bars)) and of temporary employees only (line), by age, 2006-2016



Note: Major break in series in 2005 so not possible to compare with earlier years. 'No answer' category was not included.

Source: Own calculations based on EU-LFS.

Click here to download chart.

The increasingly widespread use of temporary work may harm productivity growth. There is evidence that a high proportion of temporary work, even when controlling for sectoral differences and for firm size ([176]), harms total factor productivity growth in various ways, with the impact being more damaging in skilled sectors ([177]). These include limited incentives for workers to acquire firm-specific knowledge, fewer on-the-job training opportunities ([178]) and workers making less effort ([179]). Temporary jobs are also more likely to be associated with poor job quality and low utilisation of skills and discretion ([180]), and research has shown a concentration of temporary jobs in production opportunities with short expected durations ([181]). This may bias the production structure of the economy towards less productive activities. Moreover, if not followed by another job, short employment spells have negative fiscal implications due to lower contributions and higher expenditure on benefits.

The 'stepping-stone' function of temporary contracts has improved since the peak of the crisis, but remains low in many Member States. The proportion of younger workers who managed the transition from temporary to permanent contracts increased or remained stable in the majority of Member States for which data is available (*Chart 3.18*). Nonetheless, in most Member States fewer than one in five actually manages to make this transition. In Poland or Greece temporary jobs have almost no stepping-stone function.

([176]) Diaz and Sanchez (2008).

([177]) Lisi and Malo (2017).

([178]) Cabrales et al (2014); T. Boeri-J.F. Jimeno (2016); Eurofound (2016).

([179]) Dolado et al (2016).

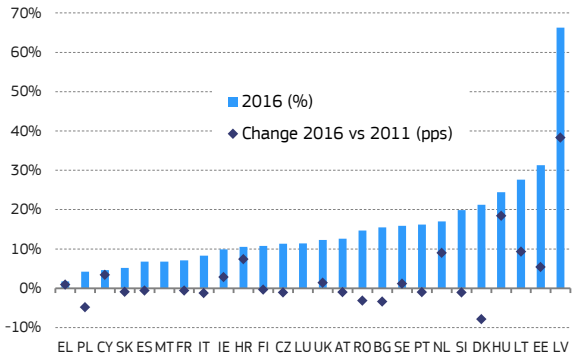
([180]) Eurofound, (2016).

([181]) Cahuc et al, (2016).

Chart 3.18

More younger workers find temporary work a "stepping-stone' function from temporary to permanent work, but numbers remain low in many Member States

Younger (25-39) employees that transitioned from temporary to permanent contracts across the EU, 2011, 2016



Note: Measures the share percentage of younger workers who in the previous year were employed on a temporary contract and in the reference year were employed on a permanent contract. No 2011 data available for Luxembourg and Malta. No transition data available for Germany and Belgium.

Source: EU-LFS longitudinal data

Click here to download chart.

Self-employment without employees or its subcategory of self-employment that is dependent (bogus) self-employment can also be considered as non-standard work ([182]). Self-employment without employees made up 10.2 % of all employment in the EU in 2015. It was somewhat more prevalent among prime-age and older workers than among younger ones (12.0 % vs. 8.6 % in 2015). The extent of self-employment without employees in total employment has remained more or less unchanged over the last decade. Data from the European Working Conditions Survey provide EU-28 estimates on the dependent self-employed ([183]). Based on this definition, in 2015 dependent self-employment among the working age population (15-64) amounted to 0.5 % of all employment in the EU-28, to 4.4 % of all self-employed people and to 6.7 % of all the self-employed people without employees.

2.4. Labour market precariousness: low wage jobs with non-standard contracts

Non-standard jobs ([184]) can entail lower job security, and potentially lower work intensity ([185]) over the years ([186]). Non-standard employment can be seen as positive when people voluntarily choose jobs that allow them to balance work and other pursuits in a context of adequate income security ([187]). Conversely, non-standard jobs can be problematic when the number of hours worked over the year is low (due to part-time arrangements and career interruptions for temporary workers) and they are coupled with low hourly wages. In particular, non-standard jobs on low wages are a serious concern when they are the only, or the main, income source in the household. This subsection presents evidence on non-standard jobs accompanied by low wages based on EU-SILC cross-sectional data from 2007 and 2014 ([188]).

Labour market precariousness encompasses both job insecurity and income insecurity. The concept of "precarious employment" does not have a universally accepted definition. It was first used in the early 1960s, referring not only to employment characteristics, but more generally to insecure housing and risk of poverty ([189]). More recently, both in the political and in the research debate, the idea of precariousness has been associated with "non-standard" or "atypical" employment relations.

Precarious employment is here defined as low-wage jobs with non-standard contracts. This two-dimensional definition is in line with existing literature ([190]) and helps to identify the most vulnerable workers, which is crucial for targeting active and passive labour market policies. Low wages are identified in this chapter as wages below two-thirds of the median hourly wage ([191]) ([192]). The discussion of

([182]) Self-employment can be generally defined by the absence of subordination between employer and employees (Gineste et al. 2008) and the term 'bogus' is associated with self-employment status that aims at reducing costs and circumventing payment obligations and regulations. 'Dependent self-employment' additionally refers to the managerial control function of the self-employed person and 'false self-employment' to the illicit intent to circumvent labour law or social security standards. Dependent self-employment thus captures a population of the self-employed who are without employees and have varying degrees of economic dependency.

([183]) Using these data this group can be defined as those workers that are (1) self-employed without employees, (2) have just one client and (3) obtain more than 75 % of their income from that client.

([184]) Non-standard jobs are forms of dependent employment that are not full-time employment with a permanent contract (Subsection 2.3).

([185]) Annual work intensity depends both on months in employment over the year and on weekly hours worked. It can be defined at the individual level, but also at household level (European Commission (2016b)).

([186]) As mentioned in Subsection 2.3.

([187]) European Commission (2016b).

([188]) EU-SILC (European Union Statistics on Income and Living Conditions) is an EU-wide survey which collects detailed data on individuals' and households' labour market status and income components in addition to various socio-demographic characteristics. Some of the empirical questions posed in this subsection and in Section 3 and Section 4 are answered by descriptive and econometric analysis based on EU-SILC time-series data from 2007 to 2014 at the country level. EU-SILC data of a given year reflect incomes in the previous year (except for the UK and Ireland where incomes refer to the last 12 months before the interview period), i.e. in EU-SILC 2014 income components refer to 2013. Analytical weights calculated by Eurostat are used. At the time of drafting this chapter 2015 EU-SILC micro-data were only available for a few countries and for this reason have not been used.

([189]) Pierre Bourdieu (1963) used the term precariousness ("précarité" in French) pointing to the social divide that separated permanent workers from contingent or casual workers.

([190]) Olsthoorn (2014); Kalleberg (2011), Vosko (2006), Rodgers and Rodgers (1989).

([191]) The wage information in EU-SILC is available at annual level. Hourly wages are calculated as annual wages divided by annual hours worked. Annual gross wages are available in the survey (variable PY010G), while annual hours worked are derived as total weeks worked per year (variables PL073 and PL074) multiplied by total hours worked per week (variable

non-standard work above ([193]) focused on the "contractual type". Here the idea is additionally to look at the "wage" in order to identify the group of workers exposed to both job insecurity and income insecurity. Therefore, this subsection builds on the previous one and looks at how many non-standard workers earn low wages, who they are, and what are the differences across age groups and Member States.

There are strong generational differences in the incidence of low-waged and precarious jobs, with younger workers most exposed. The proportion of low-wage earners in 2014 was 14.2 % among younger workers, around 4 pps higher than for prime-age and older workers (*Chart 3.19*, sum of green and blue bars).

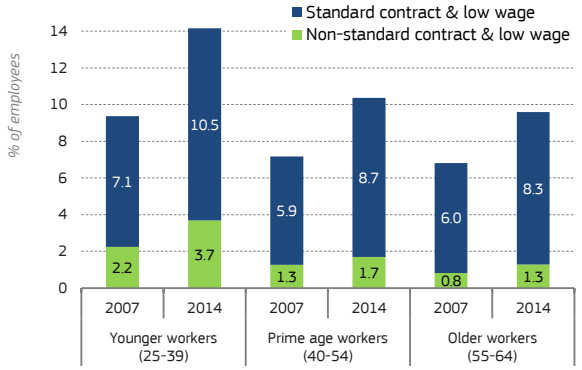
The proportion of precarious workers has increased as the proportion of low-waged employees rose. In particular, between 2007 and 2014 the proportion of low-waged workers rose considerably more among younger people than among prime-age and older workers.

Nevertheless, a relatively low proportion of employees face the double disadvantage of low wages and non-standard contracts. Overall, in the EU in 2014 the phenomenon of precarious jobs affected less than 2 % of employees among prime-age and older workers and 3.7 % of younger workers (*Chart 3.19*, green bar).

Chart 3.19

Incidence of low wage and precarious jobs is higher among younger workers than prime-age and older ones

Low-wage workers by contract type (employees), 2007-2014, EU



Note: Green (blue) bars show the proportion of low wage earners among non-standard (standard) employees. All EU countries are shown together (weighted average). For 2007 data for Croatia and Malta are not available. Low wages are defined as two-thirds of the median hourly wage and are calculated by country and year. The wage information refers to the previous year (2006 for 2007 survey and 2013 for 2014 survey).

Source: DG EMPL calculations based on EU-SILC cross-sectional data 2007 and 2014 (UDB).

Click here to download chart.

Overall, in the majority of Member States, younger non-standard workers are considerably more at risk of being precarious workers. Among the group of countries where younger workers are the most exposed to labour market precariousness, in 2014 the risk of getting a low wage varied from below 5 % of younger non-standard workers in the UK, the Netherlands, Latvia and Estonia, to over 15 % in Sweden, Greece, Italy, Spain, Portugal and Croatia and over 30 % among younger non-standard workers in Hungary and Cyprus (*Chart 3.20*).

The generational gap in the risk of employment precariousness is particularly high in some countries. For example it is high in Germany, where non-standard younger workers have a much higher risk than prime-age and older non-standard workers. This is possibly linked to the high incidence of so-called mini-jobs in Germany. While mini-jobs represent an alternative to unemployment, and are therefore preferable to not having a job at all, they are a form of marginal work common among young people. In Sweden younger non-standard workers are considerably more exposed than prime-age workers to employment precariousness, possibly because many students work in part-time jobs.

In other countries exposure to the risk of precariousness is similar among younger and prime-age non-standard workers, while it is lower among older ones. For example this is the case in Cyprus, Greece, Croatia and Spain where it seems that the 'precarisation' of the labour market does not affect only the youngest. Finally, in Slovenia older non-standard workers are at much higher risk of labour market precariousness than younger people, while in Romania and Finland prime-age non-standard employees are the most exposed to precarious jobs.

PL060). Given the discrepancy in EU-SILC between the income reference year (e.g. 2013 in EU-SILC 2014) and hours worked and employment status (2014 in EU-SILC 2014), hourly wages are calculated only for those employees who maintained their labour market status for seven or more months during the income reference year.

([192]) Low-wage jobs can be defined in many different ways. The definition used through this subsection is widely used. For a review on the topic see Lucifora and Salverda (2009).

([193]) See Subsection 2.3.

Chart 3.20

Risk of labour market precariousness affects non-standard workers across the EU differently

Percentage of low-wage earners among non-standard jobs (employees), 2014

Note: Low wages are defined as two-thirds of the median hourly wage and are calculated by country. The wage information refers to the previous year (2013 for 2014 survey).

Source: DG EMPL calculations based on EU-SILC cross-sectional data 2014 (UDB).

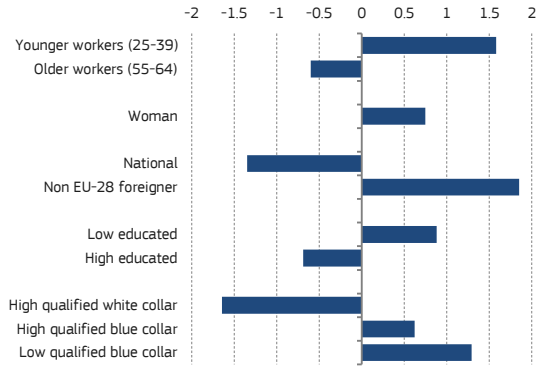
Click here to download chart.

Younger workers, women, immigrants, low-qualified and blue-collar workers are more likely to end up in precarious jobs. This is what emerges from a logistic regression model analysing individual characteristics connected with the risk of being a precarious worker (*Chart 3.21*). The individual characteristics associated with the risk of labour market precariousness are linked both to labour supply and labour demand side mechanisms. From the labour demand side, employers may offer non-standard low-paid jobs to people whom they consider relatively under-qualified for the job. This would explain why low-skilled individuals are more at risk of employment precariousness ([194]). From the labour supply side, some people may be readier than others to accept precarious jobs, both because individuals vary (e.g. they have different degrees of risk aversion) and because preferences can change over time. In times of economic downturn when jobs are hard to find, even non-risk-averse people may be more inclined to accept lower quality employment, such as precarious jobs ([195]). The design of tax and benefits systems may also affect decisions (for example where higher earnings make little difference to take-home pay or cause the loss of in-work benefits).

Chart 3.21

Younger workers, women, immigrants, low-qualified and blue-collar workers are more likely to end up in precarious jobs

Characteristics connected with precarious jobs (employees aged 25-64): results from logistic regression model for the EU



Note: Average marginal effects multiplied by 100 are shown in the Chart. All variables reported are significant at the 5% level. The model also includes country fixed effects. The full model is available upon request. The wage information refers to the previous year (2013 for 2014 survey). Reference categories are: prime-age workers (40-54), men, EU-28 foreigner, mid-level educated, low-qualified white collar.

Source: DG EMPL calculations based on EU-SILC cross-sectional data 2014 (UDB).

Click here to download chart.

2.5. Job satisfaction and quality

While employment is an important factor for ensuring decent living standards ([196]) it does not always do so successfully. What is more, job quality can have positive or negative impacts on a person's health ([197]). Given the increased prevalence of non-standard work over time and its intergenerational aspects identified above, it is important also to examine how job satisfaction and some of the main aspects of job quality differ between age groups and how they have developed over time.

Job quality is a multifaceted concept and complex to measure. The term itself encompasses many dimensions. Eurofound recently developed seven job quality indices to provide a more comprehensive picture: skills and discretion, social environment, physical environment, work intensity, prospects (of career advancement or losing one's job), working time quality and earnings ([198]). Based on these, it developed five distinct profiles of job quality, one of which was 'poor quality jobs'.

([194]) From the labour demand perspective, there may also be elements of discrimination, for example because of the gender or immigrant background of the person.

([195]) The model presented in *Chart 3.22* is a static model which does not include macroeconomic variables in order to account for labour demand side effects related to the business cycle and to the design of taxes and benefits.

([196]) European Commission (2016b).

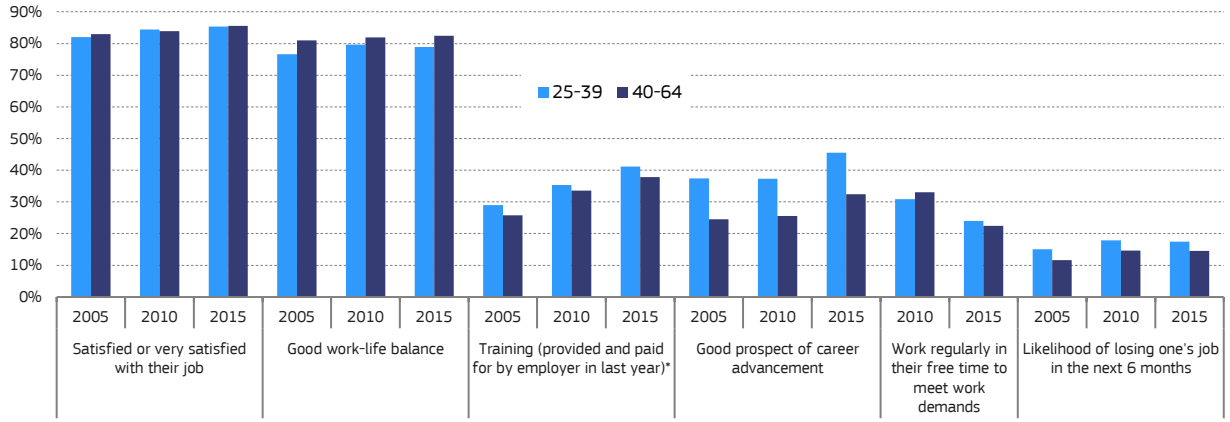
([197]) Eurofound (2016).

([198]) Eurofound (2016).

Chart 3.22

Job quality has improved over the last decade

Various job quality indices by age, EU-28, 2005, 2010 and 2015



Note: Includes employees and self-employed. *In the case of the self-employed, the paid training that the person participated in was paid by themselves.

Source: Own calculations based on European Working Conditions Survey from Eurofound.

Click here to download chart.

Poor quality jobs were held by as many as one in five workers in 2015. Such jobs are characterised by the lowest levels of skills and discretion as well as of earnings and prospects. Half of the workers in poor quality jobs were on a fixed-term or temporary-agency contract, or on no contract at all. Many younger workers (15-35) held these kind of jobs (24%), while at the same time they were considerably less likely to hold 'high flying' (well-paid with good prospects and skills and discretion) jobs (17%). Conversely, prime age and older workers (35-49) were most likely to hold 'high flying' jobs (24%) and least likely to hold poor quality (17%) or 'under pressure' jobs (11%) ([199]).

Job quality has improved over the last decade. Despite the increase in non-standard work and in the risk of precarious work identified in the previous sections, the quality of jobs as a whole seems to have somewhat improved, both for younger and for prime-age and older workers (*Chart 3.22*). Compared with a decade ago, younger and prime-age and older workers are now on average more satisfied with the jobs they do. This is partially because both age groups consider that they now have a better work-life balance, better prospects of career advancement and less likelihood of losing their job in the next 6 months than their peers had a decade ago. A greater proportion of them has also profited from paid training opportunities since 2005 and fewer of them work regularly in their free time to meet work demands compared with 2010.

Job quality is slightly higher among the prime-age and older workers than among younger workers. The difference between the two age groups in terms of job quality indices is relatively small (*Chart 3.22*). Younger workers have benefited more only in terms of paid training opportunities and career advancement. The changes on almost all of these indicators of job quality have been more or less uniform over time. How much work spills over into a person's free time, however, is the only indicator of job quality where older workers overtook younger ones.

([199]) Ibidem.

3. THE LABOUR MARKET INCOME DISTRIBUTION AMONG COHORTS

This section shifts the focus from forms of employment to the distribution of labour market income ([200]) between age groups and its change over time. It starts from the hypothesis that several drivers, including labour market institutions and cyclical factors, affect the labour market performance of different cohorts asymmetrically. The impact of the crisis has not been indiscriminate with respect to workers' age ([201]) and younger generations are often affected more than older ones. Indeed, younger people are less well represented and more vulnerable in the labour market. As a consequence they tend to be less able to preserve the value of their compensation ([202]) and to be more at risk of losing their jobs than prime-age workers ([203]). These characteristics of younger workers reflect a lower level of "socio-economic empowerment", which affects their performance in the labour market. From this perspective, there is a certain competition between the different working generations for the primary distribution of income that is generated by the economy.

3.1. The income allocation among cohorts and age groups

According to the above assumptions, the allocation of different proportions of income by cohort may not be due only to the demographic trends. In what follows, age-specific proportions of labour market income are

([200]) Labour market income corresponds to the income directly related to participation of workers, including employers, in the production process.

([201]) Sobotka at al. (2010).

([202]) For example Emmerson et al. (2015) argue that for UK, between 2008 and 2014, there is a clear pattern across the age spectrum, with larger falls in earnings at younger ages.

([203]) Verick (2009).

compared, using EU-SILC micro-data ([204]), from 2007 to 2014 waves.

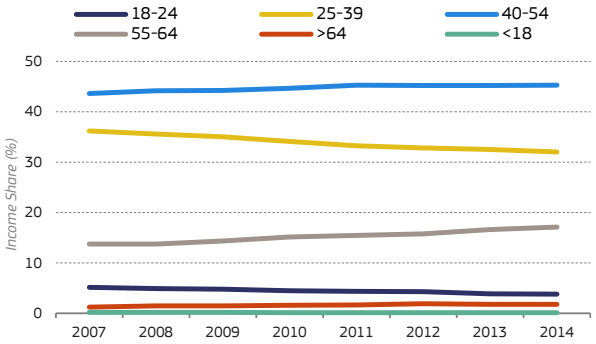
Prime age workers take up a bigger and increasing proportion of total income. EU-28 aggregated data show that, in 2014, the age group 40-54 earned by far the highest proportion of total income (45.3 %), though they accounted for just over one-fifth of the population. The youngest (younger than 25) and oldest workers had the smallest income proportion. At the same time, workers aged 25-39, who represent about 20 % of the population, gained only 32 % of total income.

Data suggest different patterns during the period 2007-2014 (*Chart 3.23*). Younger workers, here defined as aged 25-39, lost 4.2 pps of income share while older workers (55-64) saw their share significantly increase by 3.4 pps. Less pronounced variations characterised the age group 18-24 (-1.4 pps), the prime-age cohort (40-54) (+1.7 pps) and the workers over 64 (+0.5 pps).

Chart 3.23

The income share of younger workers is declining while that of prime age and older workers is rising.

EU-28 shares of income by age group, 2007-2014



Note: 2007 does not include Greece, Croatia and Malta, 2008 and 2009 do not include Croatia: the closest data have been used. The income information refers to the previous year.

Source: DG EMPL calculations based on EU-SILC cross-sectional data from 2007 to 2014 (UDB).

Click here to download chart.

A first general conclusion is that the total labour market income of younger workers is decreasing compared with that of older ones. To assess whether this gives rise to questions of intergenerational fairness, it is necessary to understand whether these patterns are driven by demographic trends or are also the result of different socio-economic empowerments. Similar patterns can be observed across Member States, although each country presents different issues.

The changes in income shares over time can be decomposed into three different components. The shares reflect the relative changes of each group compared with the others ([205]):

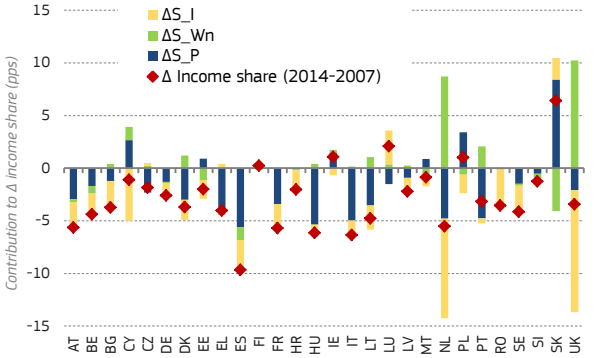
1. the relative income per worker in each age group;
2. each age group's proportion of the total population (a demographic effect, which is also affected by migration flows); and
3. the number of workers in each age group relative to the total number of workers.

Chart 3.24 shows the contribution to change in the income share between 2007 and 2014 ([206]) by country for the younger workers' group (25-39).

Chart 3.24

Falling income share of young workers is often driven by decreasing income per worker (ΔS_I).

Contribution to change in income share (2014-2007) by country - age group 25-39



Note: 2007 does not include Greece, Croatia and Malta, 2008 and 2009 do not include HR: the closest data have been used. The income information refers to the previous year. ΔS_P is the change in income share (Δ Income share (2014-2007)) due to the change in population. ΔS_Wn is the change in income share due to the change in the net number of workers. ΔS_I is the change in income share due to the change in income per worker.

Source: DG EMPL calculations based on EU-SILC cross-sectional data from 2007 to 2014 (UDB).

Click here to download chart.

In many countries the falling income share of younger workers is driven by lower relative income per worker. In the UK, the Netherlands and Cyprus in particular, the negative effect stemming from the relative fall in income per worker is strong enough to counterbalance the relative growth in the number of workers. Luxembourg and Slovakia are the only countries where the change in income share is positive and the income per worker significantly contributed to such changes. The patterns of changes for the age group of older workers (55-64) are very different (*Chart 3.25*).

Demographics are not the sole driver of the rise in older workers' income share. In most countries the growing income share of older workers reflects their rising employment and the demographic trends, but also higher relative income per worker. The contribution of income per worker has been very large in the Netherlands, France, Greece and (negatively) in Luxembourg.

([204]) Labour market income by age groups is calculated as the total of the personal gross market incomes of the workers in each age group, which includes the value of "employee cash or near cash income", "non-cash employee income", "company car" and "cash benefits or losses from self-employment". For this analysis, six age groups are identified - <18, 18-24, 25-39, 40-54, 55-64 and >64 - although the main focus will be on the specific groups introduced at the beginning of the chapter.

([205]) Technical details regarding the calculations are provided in the annex to this chapter.

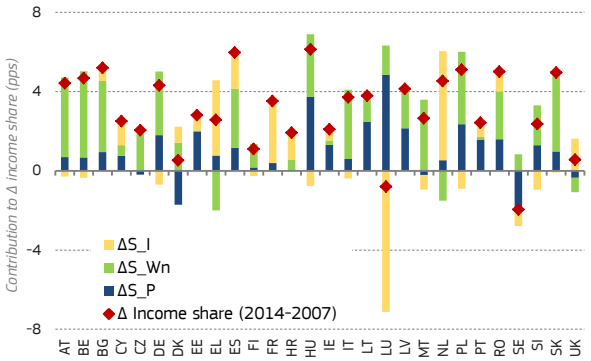
([206]) For a longer term perspective, see Chart 1.3 in Chapter 2 on the relative mean income by age group based on OECD statistics.

Changes in educational patterns may play a role. Beside the demographic trend, these dynamics could be partially explained by younger workers' later access to the income distribution compared with previous generations, mostly as a result of a longer period of education ([207]). The recent tendency of workers to enter the labour market later, but with higher levels of education and with relatively higher remuneration, contributes to compressing the income share of the younger age group ([208]).

Chart 3.25

Rising income share of old workers is often driven by the increasing number of workers (ΔS_Wn) and, in some cases, by higher income per worker (ΔS_I).

Contribution to change in income share (2014-2007) by country - age group 55-64



Note: 2007 does not include Greece, Croatia and Malta, 2008 and 2009 do not include HR: the closest data has been used. The income information refers to the previous year. ΔS_P is the change in income share (Δ Income share (2014-2007)) due to the change in population. ΔS_Wn is the change in income share due to the change in the net number of workers. ΔS_I is the change in income share due to the change in income per worker.

Source: DG EMPL calculations based on EU-SILC cross-sectional data from 2007 to 2014 (UDB).

Click here to download chart.

Longer-term developments in individual Member States are in line with the findings just described. The period covered by the analysis presented in this subsection is constrained by the availability of corresponding data at EU level ([209]). Existing analyses based on longer data series available for individual Member States help put the findings into perspective. For example, UK data ([210]) indicate that the generation born between 1981 and 2000 (the so called **millennials**) "... could be the first generation to earn less than their predecessors over the course of their working lives" ([211]).

3.2. Relative wages across generations: the driving factors

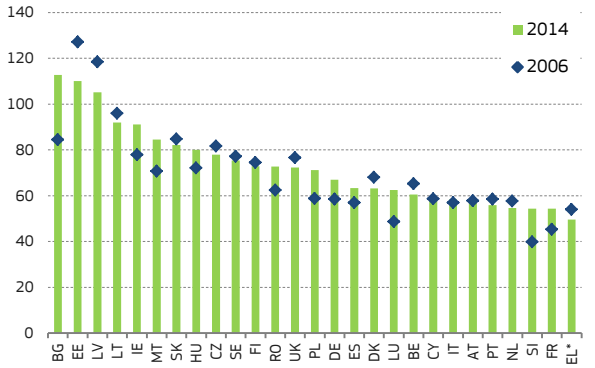
Intergenerational fairness also means that the different generations of workers receive their fair share of earnings from the production of goods and services. The previous subsection showed how, during the period 2007-2014, the different age groups shared the labour income produced by the economy, where wage income represents a major component. Although a deep analysis of wage differentials across generations is beyond the scope of this chapter, this subsection points to some possible drivers.

Older employees earn, on average, much higher wages than younger employees in all Member States except for Bulgaria, Estonia and Latvia. The strongest differences are to be found in Greece, France, Slovenia, the Netherlands, Portugal, Austria, Italy and Cyprus where employees younger than 30 earn on average less than 60 % of the average wage of workers older than 60 (*Chart 3.26*).

Chart 3.26

Older employees earn, on average, much higher wages than younger employees in all Member States except for Bulgaria, Estonia and Latvia.

Average hourly wage of workers younger than 30 (relative to workers 60+)



Note: Greece: 2010 observation instead of 2014.

Source: DG EMPL calculations bases on Structure of Earnings Survey (Eurostat).

Click here to download chart.

Such wage differentials may reflect differences in productivity (driven by experience and acquired expertise) and bargaining power. In labour markets characterised by asymmetric information and imperfect competition, employer strategies to deal with a lack of information regarding workers' productivity and composition effects are particularly relevant. Various factors may affect, in opposite directions, the bargaining power of different age groups.

First, the cost of replacing older workers will be higher than the cost of replacing younger workers. This holds to the extent that older workers accumulated firm-specific human capital during their career. In turn, their higher replacement cost may strengthen their bargaining position. On the other hand, employers may hesitate to hire older workers because of a perception that they may be reluctant to accept new types of work ([212]).

Secondly, labour market institutions may also affect relative wage bargaining power across generations. For example, to the extent that young workers are more likely to receive the minimum wage, changes in the minimum wage may have a direct

([207]) Chauvel and Schröder (2014).

([208]) Schwander and Hausermann (2013).

([209]) Notably relevant EU-SILC data are only available as from 2007, due to break in time series for previous years (2005 and 2006).

([210]) See also House of Commons, 2016.

([211]) Gardiner (2016).

([212]) Taylor and Walker (2003).

impact on their (relative) bargaining position ([213]). Older workers' bargaining power may strengthen to the extent that existing legislation provides stronger employment protection or generous pension schemes.

Wages increasing with seniority and age may to some extent reflect difficulties in observing productivity. If productivity can only be observed at a (high) cost ([214]), employees and employers may engage in long-term (implicit) commitments whereby workers have the prospect of wage increases if they remain with their employer and do not underperform. In such cases the wage may start at a lower level, but rise above productivity when a worker gets older, inducing young workers to perform at the optimal level of effort ([215]). Nevertheless, in an ever-changing world that requires stronger geographical and occupational mobility (see Subsection 2.1 above for the decreasing length of employment with one company), implicit contracts motivated by loyalty are becoming less tenable.

Finally, there may be a composition effect. To the extent that older workers with less favourable working conditions (especially those with a low wage) have fewer incentives to stay in employment and may thus retire early, the average wage of older workers may be higher for statistical reasons (i.e. so-called composition effects). At the same time, while older workers may enjoy a wage premium there is strong evidence that their probability of their receiving a wage raise is much lower than for younger workers ([216]).

Despite the potential conflicts described above, bargaining for a fair overall wage level is a strong common interest across generations. Indeed, empirical evidence suggests that past developments such as increased globalisation and financial market integration that have weakened the bargaining power of workers ([217]) had a downward impact on the overall wage share – although with a different intensity for different groups of workers according to their skill level ([218]).

([213]) Even if the level of minimum wage depends on the age of the recipient with the minimum wage for the young lower than that of the older.

([214]) So that employees may have an incentive to reduce their effort.

([215]) See, for example, Lazear (1981).

([216]) See for instance European Commission (2016). Using EU-SILC data, it shows that across the EU older workers aged 55 and above have the lowest chances of improving their wage position from one year to the next and a relatively higher risk than prime-age workers of moving downwards.

([217]) Globalisation weakens the bargaining power of labour which will face stronger competitive pressures from low-wage countries and is more likely to see its work being outsourced or off-shored. Furthermore, to the extent that further financial market integration increases capital mobility it may also lower the bargaining power of labour.

([218]) See for example OECD (2012) and European Commission (2007), with the medium- and high-skilled being complements to capital, and the low-skilled being substitutes to capital.

4. Social implications of the generational labour market divide

This section presents evidence on the impact of the observed generational labour market divide on social outcomes based on EU-SILC cross-sectional data from 2007 to 2014. It analyses the impact of wages on household income, the coverage of individual social benefits, the impact of different types of employment activity statuses on poverty and how these impacts differ across generations. It also sheds light on how recent labour market developments are affecting younger people, causing them to postpone crucial decisions, like household formation, parenthood and housing.

4.1. Impact of work on household income and poverty across generations

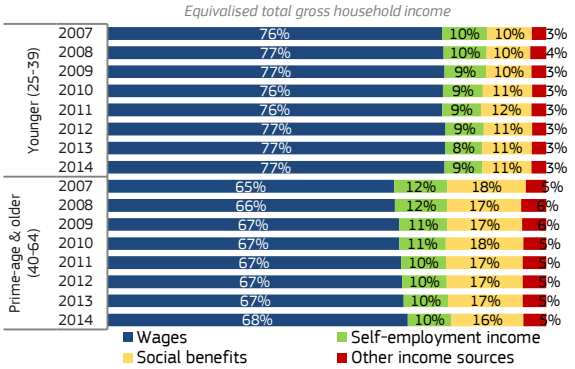
The average composition of household income illustrates the crucial importance of labour income and social benefits for the household ([219]). Wages represent the biggest proportion of household income for both younger, prime-age and older people (*Chart 3.27)*. The pattern of income composition during the period 2007-2014 appears to have changed to some extent for prime-age and older people, while it remained fairly stable for younger people in the EU. For example, the income share of prime-age and older people increased by around 3 pps, while it remained mostly unchanged for younger people. In addition, prime-age and older individuals registered an observable decrease in the proportion of income from self-employment and from social benefits. Overall, the dynamics of income composition appear to be slow and not very reactive to the cycle.

([219]) European Commission (2016b).

Chart 3.27

The wage proportion in income is higher for younger people

Income composition by age groups, 2007-2014, EU



Note: All EU countries are shown together (weighted average). For 2007 data for Croatia and Malta are not available. Only people aged 25-64 are considered, but the income of everyone in the household is taken into account (including old-age pensions received by retired members of the household). "Other income sources" includes: (1) interests, dividends and profit from capital investments; (2) private pension plans; (3) income from rental of a property or land; (4) intra-household transfers; (5) alimony; (6) income received by people less than 16 years old. "Gross incomes" means no taxes or social security contributions are taken into account. The income information refers to the previous year (e.g. 2006 for 2007 survey and 2013 for 2014 survey).

Source: DG EMPL calculations based on EU-SILC cross-sectional data from 2007 to 2014 (UDB).

Click here to download chart.

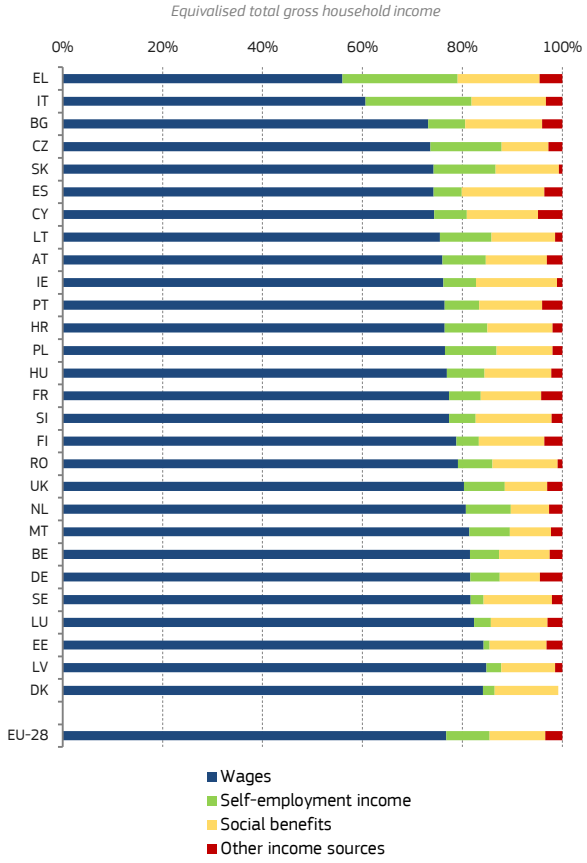
The proportion of wages within total income is higher among younger people, while social benefits are lower for them. This is true despite the fact that younger people are more exposed to unemployment, non-standard work and low wages than prime-age and older people. The widespread increase in non-standard employment among younger people in the EU gives added importance to the question of the extent to which younger generations are entitled to social benefits if they are unable to work or if their work intensity is low.

The shorter and lower contribution records of younger relative to older workers negatively affect their eligibility for benefits, as well as the amount and duration of those benefits. For example, the eligibility for and level of unemployment benefits normally depend on employees' contribution records, and often also on the wage level ([220]). The shorter contribution records of young people result, first of all, from their shorter working histories compared with older individuals, but also from frequent unemployment spells associated with temporary jobs. In addition, fewer hours worked in part-time arrangements (which are more likely to affect younger people) lead to lower contribution records. The lower labour income of younger people in the EU (Section 3), which may lead to a lower level of benefits from unemployment insurance, is linked to the fact that wages tend to increase with years of experience. Moreover, younger workers more often have non-standard jobs than older people and non-standard workers generally experience a negative hourly wage differential in comparison with standard workers ([221]).

Chart 3.28

The wage proportion of total income among young people varies between 60 % and 80 % across the EU

Income composition of younger people (25-39 years old), 2014



Note: Only people aged 25-64 are considered, but the income of everyone in the household is taken into account (including old-age pensions received by retired members of the household). "Other income sources" includes: (1) interests, dividends and profit from capital investments; (2) private pension plans; (3) income from rental of a property or land; (4) intra-household transfers; (5) alimony; (6) income received by people less than 16 years old. "Gross incomes" means no taxes or social security contributions are taken into account. The income information refers to the previous year (2013 for 2014 survey).

Source: DG EMPL calculations based on EU-SILC cross-sectional data 2014 (UDB).

Click here to download chart.

The proportion of younger people's total income coming from wages varies from above 80 % to below 60 % across Member States. As *Chart 3.28* shows, in 2014 younger people registered the lowest wages as a proportion of total income in Greece (56.0 %) and in Italy (60.6 %); in these countries, however, younger people had the highest income from self-employment as a proportion of total income in the EU (23.1 % in Greece and 21.2 % in Italy). The proportion of social benefits in the total income of younger workers is particularly low in the Netherlands, Germany, Malta, UK, the Czech Republic, Belgium and Latvia. Of these countries, qualifying conditions for unemployment insurance are likely to put at a disadvantage those on temporary contracts in the Netherlands (26 weeks of contributions in the previous

([220]) Matsaganis et al. (2016).

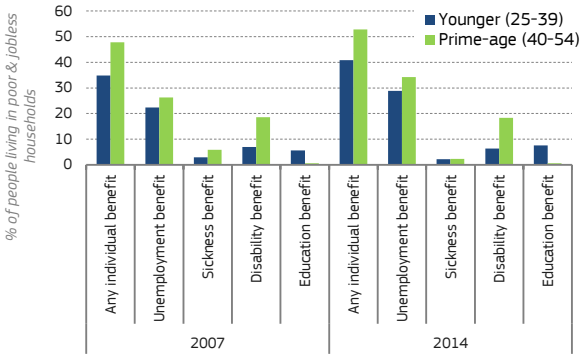
([221]) European Commission (2016b).

36), in Latvia (9 months in the previous 12) and in Malta (50 weeks in the previous 24 months) ([222]).

Chart 3.29

Younger people living in poor and jobless households receive less individual benefits than prime-age people

Coverage of individual social benefits among people living in poor and jobless households, 2007-2014, EU



Note: All EU countries are shown together (weighted average). For 2007 data for Croatia and Malta are not available. The target population here is all individuals living in households which are poor and jobless at the same time. Poor households are defined as those with equivalised disposable household income below the poverty threshold of the country. Jobless households are those with work intensity below 0.2 (less than 20 % of potential time at work); in practice this means that a single person would be working a maximum of 2.4 months a year or that in a household of two working-age adults, the first adult would be working, for example, a maximum of 4.8 months, while the other one would not work at all.

Source: DG EMPL calculations based on EU-SILC cross-sectional data 2007 and 2014 (UDB).

Click here to download chart.

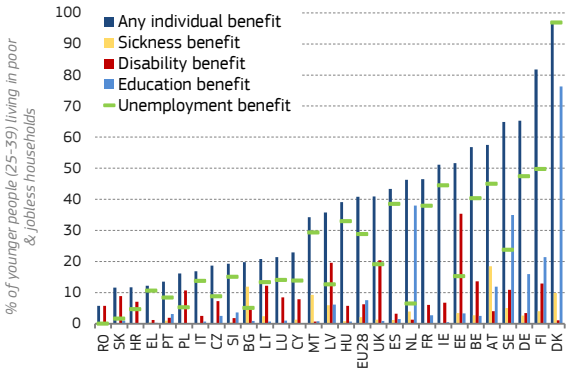
More than half of poor and jobless prime-age people receive at least one individual benefit, while this proportion is much lower among their younger counterparts. The coverage of social benefits is an important element in the effectiveness of social protection systems. It affects the capacity of the system to reach everyone in need of support. Individuals living in poor and jobless households can be considered as in need of social benefits. *Chart 3.29* shows the proportion of them, by age group, receiving some individual benefits ([223]). Both among younger and prime-age poor and jobless people, the coverage of individual social benefits has increased over time and it has remained higher among prime-age people. Unemployment benefits are the most common individual benefit among poor and jobless individuals, followed (to a much lower extent) by disability, sickness and education benefits. Unsurprisingly, the latter are the only type of individual benefits whose coverage is higher among younger poor and jobless people than among prime-age adults.

The coverage of individual social benefits among poor and jobless young people varies considerably across the EU, both in terms of its level and its composition. For instance, the coverage is very high among Nordic countries (i.e. Denmark, Finland and Sweden) and in Germany, where more than 60 % of poor and jobless young people receive at least one individual benefit (*Chart 3.30*), while it is below 20 % in some Mediterranean countries (i.e. Greece, Portugal, Italy) and Eastern European countries (i.e. Romania, Slovakia, Croatia, Poland, Czech Republic, Slovenia and Bulgaria). In addition, there is great variation in terms of types of benefits. Unemployment benefits are the most common individual benefit across most Member States, but there are exceptions. For example, in Sweden and in the Netherlands educational allowances are the main benefit among poor and jobless young people. This type of benefit is also very common in Denmark, which is the country where its coverage is highest (almost 80 %). Education benefits are also widespread in Finland, Germany and Austria.

Chart 3.30

Coverage of individual social benefits varies widely among younger poor and jobless individuals in the EU

Coverage of individual social benefits among young people (25-39) living in poor and jobless households, 2014, EU



Note: The target population here is all individuals living in households which are poor and jobless at the same time. Poor households are defined as those with equivalised disposable household income below the poverty threshold of the country. Jobless households are those with work intensity below 0.2 (less than 20 % of potential time at work); in practice this means that a single person would be working a maximum of 2.4 months a year or that in a household of two working-age adults, the first adult, would be working, for example, a maximum of 4.8 months, while the other one would not work at all.

Source: DG EMPL calculations based on EU-SILC cross-sectional data 2014 (UDB).

Click here to download chart.

Younger generations are less at risk of poverty than older ones when they are unemployed or in precarious jobs ([224]). On average the at-risk-of poverty (AROP) rate ([225]) for younger people does not differ from that for prime-age and older people (*Chart 3.32*, grey line). At EU level the AROP rate increased from around 14.0 % to 16.0 % between 2007 and 2014, for both younger people and prime-

([222]) MISOC, Mutual Information System on Social Protection, 2015.

([223]) Some benefits are paid to individuals while others are paid to households. EU-SILC maintains this structure and divides benefits into these two broad groups: individual and household benefits. Individual benefits in EU-SILC are: unemployment benefits, sickness benefits, disability benefits, educational related allowances, old age benefits and survivor's benefits. The latter two (old age benefits and survivor's benefits) are not considered in the analysis as here the interest is in benefits which are linked to working-age individuals and may possibly encourage them into the labour market. Old age benefits and survivor's benefits are examined in Chapter 4. Also, household benefits are not taken into account in this analysis (due to the focus on individuals' age groups). Household benefits are: family and child benefits, social exclusion benefits and housing allowances.

([224]) Precarious jobs are defined as low-wage jobs with non-standard contracts (see Subsection 2.4).

([225]) In order to define the at-risk-of poverty rate (AROP) the household income adjusted for household size and composition is compared with the median income of the country in which the household is located. If it is below 60 % of the median income, then the members of the household are considered as being 'at risk of poverty'.

age and older individuals. Nevertheless, generational differences exist when looking at AROP by activity status. For example, unemployment poses a serious poverty risk in the EU (*Chart 3.32*, yellow lines) and this risk is considerably higher among the prime-age and older unemployed, of whom more than half (51.2 %) were at risk of poverty in 2014 (as against 42.5 % of younger unemployed people). Over the time span analysed, the risk of poverty increased considerably for prime-age and older unemployed people, but much less for younger unemployed people, leading to an increasing generational gap.

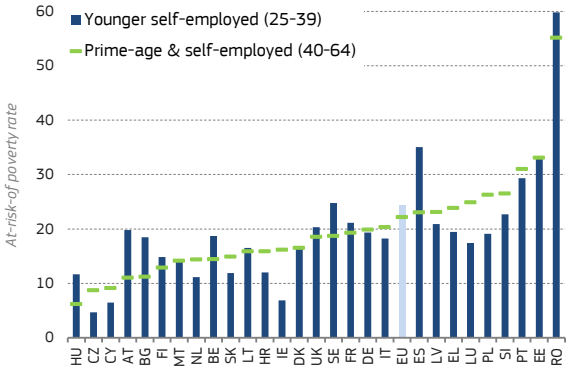
Unsurprisingly, precarious jobs pose the highest poverty risk among those in employment (*Chart 3.32*, red lines). For precarious workers there is a generational gap in terms of their risk of poverty (AROP) which reflects the more favourable situation for younger workers. This gap has become increasingly wider (by 4 pps in 2014). Overall, younger generations are at a lower risk of poverty than prime-age and older individuals when they have non-standard jobs and earn low wages. As will be explained in Subsection 4.2, this is linked both to their lower economic responsibilities at household level and the existence, in some Member States, of strong family networks and intergenerational households (see Chapter 2).

Among the self-employed, younger entrepreneurs are at a slightly higher risk of poverty than older ones, but generational gaps differ considerably across Member States. High poverty risks (above 20 %) also exist among the self-employed (*Chart 3.32*, green lines). In addition, at the EU level, between 2007 and 2014, younger self-employed people became more exposed to poverty risks than prime-age and older entrepreneurs. A possible explanation for this phenomenon may be connected to the phenomenon of dependent ('bogus') self-employment (as a replacement for standard employees), which gained some attention during the crisis (Section 2). In Spain, Austria, Bulgaria, Sweden, Hungary, Romania and Belgium younger self-employed people are at higher risk of poverty than older ones (*Chart 3.31*). By contrast, in Ireland, Luxembourg, Poland, Greece, the Czech Republic, Cyprus and the Netherlands prime-age and older self-employed are more at risk of poverty than their younger counterparts.

Chart 3.31

Younger self-employed are slightly more exposed to poverty, but there is great variation across Member States

At-risk-of poverty rate among self-employed, 2014



Note: The self-employment status refers to the status of seven or more months during the income reference period. The income information refers to the previous year (2013 for 2014 survey).

Source: DG EMPL calculations based on EU-SILC cross-sectional data 2014 (UDB).

Click here to download chart.

4.2. Impact of work on household decisions across generations

The lack of jobs and income security is affecting young people's economic independence and capacity for household formation. Younger generations are increasingly vulnerable in the labour market and less protected by welfare systems (i.e. lower benefit coverage) but not at a higher risk of poverty than older generations (Subsection 4.1, *Chart 3.32*). However, younger people have increasingly fewer economic responsibilities at household level, resulting from the postponement of independent living and household formation. Good employment prospects and job and income security are crucial prerequisites for being economically independent and for forming a household. Since the growing precariousness of the labour market for younger generations started to cause discontinuity and variation in income levels, it has become more common for parents to make financial transfers to assist them with rent expenses or mortgage costs/deposits ([226]). Decisions like parenthood and home ownership are being postponed in favour of prolonged intergenerational co-residence with parents (especially in Southern and Eastern European countries) or cohabitation and rental housing ([227]) ([228]).

Household formation, parenthood and fertility

Young people leave the parental home at a very different stage in life across the EU, and while it has been further delayed in some countries since 2000s, it has been brought forward in others. Overall, the average age for leaving the parental household varied from above 31 to below 20 years in 2015 (*Chart 3.33*). In Southern European countries (Malta, Italy, Greece, Spain, Portugal and Cyprus) and

([226]) Isengard and Szydlik (2012).

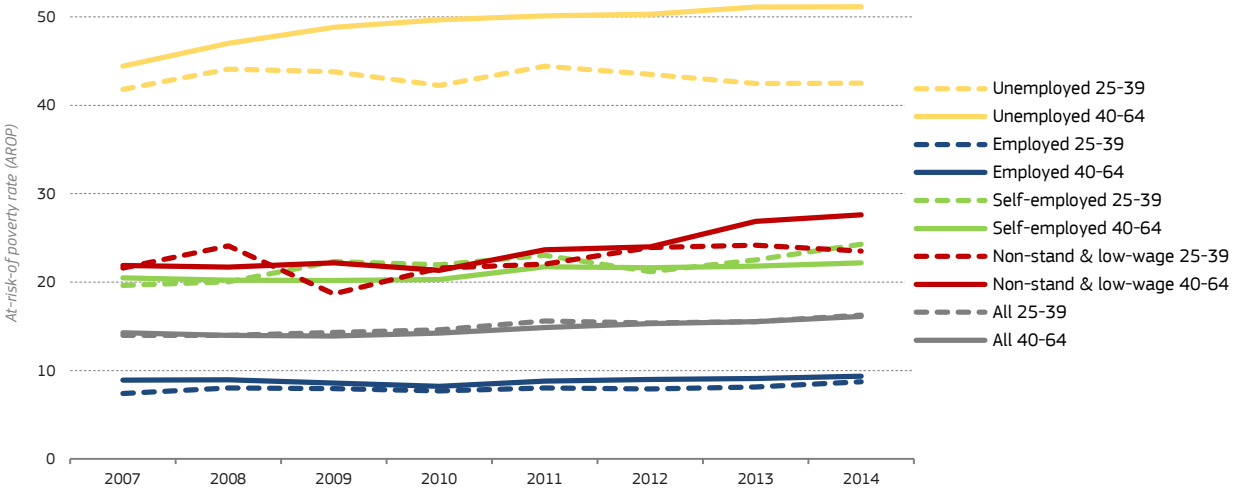
([227]) Filandri et al. (2016), Gökşen et al. (2016).

([228]) Iacovou (2010).

Chart 3.32

Generational differences in risk of poverty are high among unemployed and precarious workers

Working poor by activity status, 2007-2014, EU, %



Note: All EU countries are shown together (weighted average). For 2007 data for Croatia and Malta are not available. The income information refers to the previous year (2006 for 2007 survey and 2013 for 2014 survey). Labour market status refers to the status of seven or more months during the income reference period.

Source: DG EMPL calculations based on EU-SILC cross-sectional data from 2007 to 2014 (UDB).

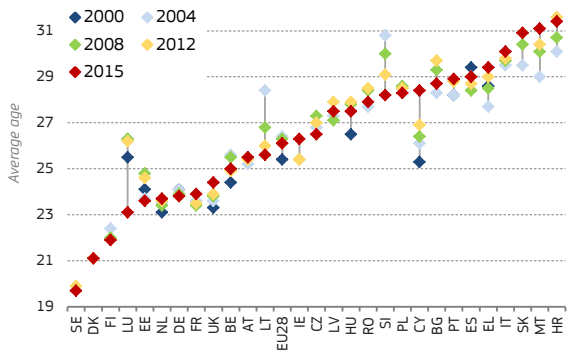
Click here to download chart.

in various Eastern European countries (Croatia, Slovakia and Bulgaria) young people typically leave the parental home at a relatively mature age. In some of these countries (particularly in Cyprus, but also in Greece, Slovakia, Malta, Italy and Portugal) the age when young people leave the parental home also increased since 2000-2004. Nordic countries (Sweden, Denmark and Finland) represent the opposite case, being systems which support an early residential independence, through for instance high educational allowances for students (Subsection 4.1). Interesting cases are Luxembourg, Lithuania and Slovenia, where contrary to the general trend in population ageing, younger people are increasingly leaving the parental household earlier.

Chart 3.33

The age for leaving the parental household varies widely across the EU

Estimated average age of young people leaving the parental household, 2000-2015



Source: DG EMPL elaboration based on Eurostat (variable "yth_demo_030").

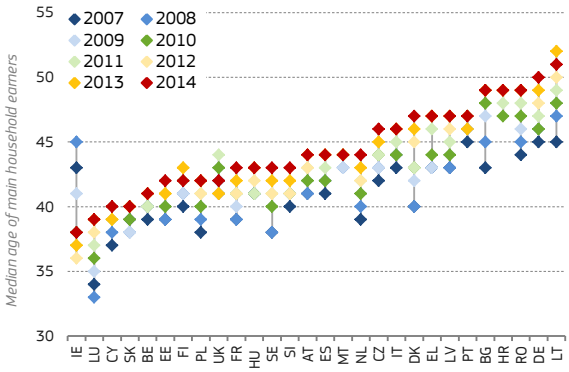
Click here to download chart.

Between 2007 and 2014 main household earners have become older and their median age has increased faster than that of society as a whole. In 2014 the median age of first household earners (*Chart 3.34*, red dot) ranged from almost 40 in Ireland and Luxembourg (38-39) to around 50 in Germany and Lithuania (50-51). In 2007, the oldest main household earners in the EU were aged around 45 on average (*Chart 3.34*, dark blue dot). Eurostat demographic projections indicate that across all 28 Member States but four (Ireland, Slovakia, Hungary and Portugal) the median age of the whole population increased less than the median age of main household earners between 2007 and 2014.

Chart 3.34

Main household earners are becoming older

Median age of main household earners, 2007-2014



Note: Main household earners are the individuals with the highest wage income in the household. If multiple adults have the same wages, the oldest one is defined as the main household earner.

Source: DG EMPL calculations based on EU-SILC cross-sectional data from 2007 to 2014 (UDB).

Click here to download chart.

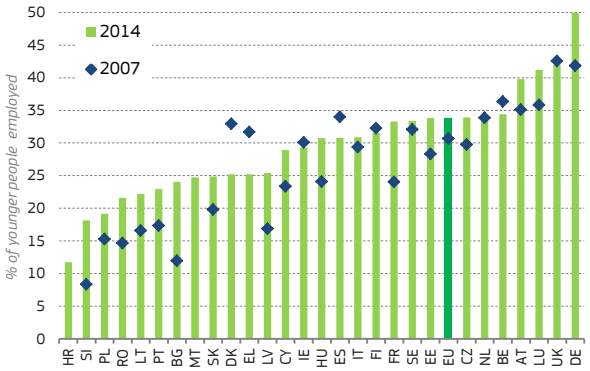
In addition, having no dependants has become more common among younger workers in the EU. The proportion of younger people at work (either as employees or self-employed) who have no children or unemployed or inactive people in the household to provide for increased from 30.7 % to 33.8 % between 2007 and 2014 (*Chart 3.35*). The proportion is particularly high in Germany (50 % in 2014) and also in the UK and Luxembourg (above 40 %), but is considerably lower in Croatia, Slovenia and Poland (below 20 %). Across the majority of Member States

the proportion of younger workers without dependants increased between 2007 and 2014, with the highest increases (above 8 pps) being registered in Bulgaria, Slovenia, France, Latvia and Germany.

Chart 3.35

Younger workers increasingly have fewer dependants

Younger individuals in work (employees and self-employed) who have no dependants, 2007-2014



Note: Dependants are defined as children (people aged below 18 years old), and inactive and unemployed individuals (aged between 18 and 64 years old). For 2007 data for Croatia and Malta are not available.

Source: DG EMPL calculations based on EU-SILC cross-sectional data 2007 and 2014 (UDB).

Click here to download chart.

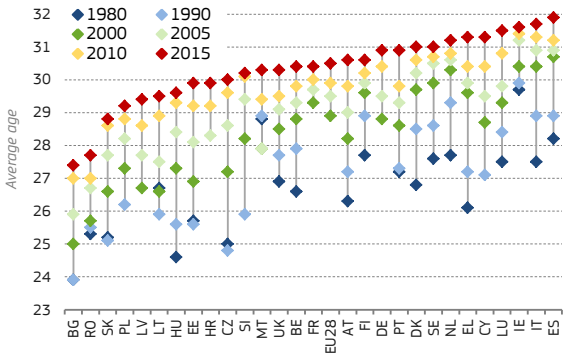
The ageing of main household earners and the lower proportion of younger workers with dependants is linked to the increase in the mean age of women at childbirth. Since 2000, the mean age of mothers at childbirth has been increasing in Europe, reaching 30.5 years in 2015. There is great variation among EU Member States, with a gap of four years and five months between the youngest and the oldest mean ages (*Chart 3.36*). The youngest average ages of mothers at childbirth were recorded in Bulgaria and Romania (27-28 years). Conversely, the highest average ages (31-32 years) were recorded in Spain, Italy, Ireland, Luxembourg, Cyprus, Greece and the Netherlands. Across most Member States, the increase in mothers' age was more pronounced between 2000 and 2010 than between 2005 and 2015. Notable exceptions are Greece, Spain, Malta and Portugal, four countries where the labour market was strongly impacted by the crisis, and where the increase in mothers' age was considerably higher in the second period (2005-2015 compared with 2000-2010).

Recent labour market developments are likely to be affecting fertility rates and the time when young people choose to start families. These trends may have adverse consequences for the sustainability of the pension system (Chapter 4). Most literature on the topic shows that the more highly educated and career-oriented women are, the more likely they will be to have their first child later ([229]). There is evidence that two-earner couples are more likely to have their first child when they both have full-year and full-time employment during the year before conception ([230]). In addition, women with stable employment are more likely than inactive and unemployed women to have a second child ([231]).

Chart 3.36

The mean age to become a mother has increased in all MS since 2000

Mean age of women at childbirth, 1980-2015



Source: DG EMPL elaboration based on Eurostat ("demo_find" indicators)

Click here to download chart.

The labour market participation of mothers of small children also depends on their access to childcare services. For instance, more extensive use of childcare for young children aged below 3 is highly connected to mothers' employment ([232]). Factors that can make access to childcare difficult include high costs; reduced availability (due to waiting lists and lack of services); complex physical access (for instance due to distance or limited opening hours); and poor quality of services. The most recent wave of the European Quality of Life Survey (2012) provides information on difficulties in accessing childcare ([233]) (*Chart 3.37*). At EU level 59 % of the respondents who had used childcare services over the past 12 months reported that costs made its use difficult. Childcare costs are perceived as particularly high in the UK, Malta, Greece, Ireland, Romania, Slovenia, Slovakia and Estonia, where more than 70 % of users reported difficulties in terms of costs. The second highest barrier to accessing childcare is its availability, which is reported as a problem by 58 % of users in the EU. Problems in terms of availability of childcare services are perceived as most frequent in Greece, France and Slovenia (more than 70 % of respondents).

([229]) d'Albis et al. (2015).

([230]) Rendall et al. (2014).

([231]) Greulich et al. (2016).

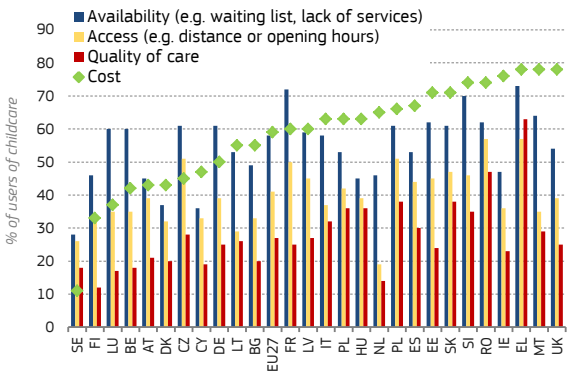
([232]) European Commission (2015b).

([233]) Data on barriers to childcare from the European Quality of Life Survey are subjective self-declared assessments which could differ from other type of objective measurement of childcare, such as childcare coverage indicators based on EU-SILC.

Chart 3.37

Access to childcare is made particularly difficult by its high costs and reduced availability

Percentage of users of childcare reporting difficulties with childcare use, 2012, EU



Note: Member States are sorted according to cost of childcare.

Source: DG EMPL elaboration based on European Quality of Life Survey (EQLS), 2012.

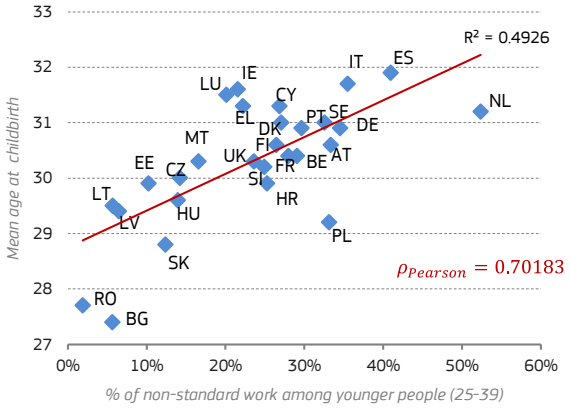
Click here to download chart.

The widespread increase in non-standard work is likely to be one of the causes of delayed parenthood. The mean age at which women become mothers is highly correlated to the proportion of non-standard workers among younger people in the country (*Chart 3.38*). For example, in 2015, countries like Spain and Italy registered some of the highest proportions of non-standard workers among younger people, and at the same time they had the oldest mothers in the EU. At the opposite end of the spectrum Romania and Bulgaria had the lowest proportions of non-standard young workers and the youngest mothers. The Netherlands is an exception, being a country with the highest proportion of non-standard younger workers, but relatively young mothers. This may be related to the fact that most non-standard workers in the Netherlands are on voluntary part-time contracts and therefore their job does not represent an obstacle to parenthood.

Chart 3.38

The higher the proportion of non-standard work the higher the age at which women become mothers

Scatter plot between mean age at childbirth and % of non-standard work among younger people, 2015



Note: Non-standard work includes permanent part-time and temporary full-time and part-time work. Data for Lithuania, Latvia, Estonia and Romania were below the reliability limit and hence are not presented.

Source: DG EMPL calculations based on Eurostat (variable "tps00017") and EU-LFS

Click here to download chart.

Over the past few decades, a two-child ideal has become generalised in Europe but fertility rates in all Member States remain well below this level ([234]). Today fertility rates in the EU are at around 1.6 children per woman. However, increases in fertility rates have recently been registered in many EU Member States. Between 2013 and 2015 fertility increased in 18 Member States in the EU28. Eurostat expects fertility to increase moderately, to 1.8 by 2060. National differences depend on how many women have a second (rather than one) child ([235]). In addition, the different rate of increase in the age at which women become mothers across the EU is likely to impact fertility differently. Policies to promote an increase in fertility beyond the level expected by Eurostat would have an important impact on the EU's declining workforce and its growth potential in the long run (Chapter 2). These include family policies (such as childcare and family allowances) and employment policies aiming at ensuring secure jobs for women ([236]).

Housing and access to credit

Housing is another household decision likely to be affected by labour market developments. Different types of housing tenure and timing are the result of a complex decision-making process which depends on many factors ([237]), such as the availability of individual resources (i.e. household income, savings, labour income, housing benefits, etc.), the accessibility and affordability of mortgage credit, the structure of the rental market and the structure of parental support. These factors differ considerably among EU Member States and the choice of buying a home depends on both individual ([238]) and country specific features ([239]). *Table 3.1* presents five groups of European Member States according to their main housing characteristics and outcomes (assessed through EU-SILC data 2010) ([240]) and the different level of taxation on immovable properties (elaborated, on Eurostat data for 2014, by the European Commission) ([241]). *Table 3.1* highlights significant differences between Member States in their housing system features and the perception of the housing costs. For example, recurrent taxation on immovable properties is high in Greece, France and the UK. Other taxes on property, such as transfer taxes, are high in Belgium. In some countries (Denmark, the Netherlands and Sweden) there is generous mortgage tax relief which could create an incentive for debt-financed home ownership. The table also highlights that the social expenditure on housing in the UK and Germany is rather substantial.

([234]) Sobotka and Beaujouan (2014).
([235]) Wood et al. (2015).
([236]) Greulich et al. (2016).
([237]) Lennartz et al. (2016).
([238]) Lersch and Dewilde (2015).
([239]) Maestri (2015).
([240]) Table 4 reported at page 693 of Maestri (2015).
([241]) DG Taxation and Customs Union (2016).

Table 3.1

Significant differences exist between Member States regarding housing system features and perceived housing costs

Housing systems' characteristics and outcomes

Member States group	Housing structure	Housing policies	Redistributive effect of housing and expenses*	Recurrent taxes on immovable property**	Other taxes on property***	Housing costs perception
BG, ES, IT, LT, MT, PL, SI	High outright; homeownership and mostly very low with mortgage (ES high)	Very low to low social expenditure on housing	Very good to good	Very low in BG, LT and MT; low in SI, ES and PL; medium in IT	Low in BG, LT, PL , MT, SI and IT; medium in ES	Heavy burden
AT, BE, FI, EL, PT, SK, HU, LV, RO	Medium/high outright; homeownership and medium/high with mortgage (RO & SK very low)	Low to medium social expenditure on housing	Good to fair	Very low in AT, FI, SK and RO; low in BE, PT, HU and LV; high in EL	Low in AT, FI, EL, SK, HU, LV and RO; medium in PT; high in BE	Mixed: mosly dispersed; low in AT and FI; heavy in HU, LV and RO
CZ, DK, FR, NL, SE	Very low to low outright homeownership (high CZ) and very high with mortgage (FR medium & CZ low)	Often generous mortgage tax relief	Poor	Low in CZ and SE; low in NL; medium in DK; very high in FR	Low in CZ, DK, NL and SE, medium in FR	Mostly low burden; dispersed in FR and CZ
Special cases:						
DE	Low outright; medium with mortgage	High	Poor for inequality, fair/good for poverty	Very low	Low	Low burden
EE	High outright; low with mortgage	Very low	Good, poor for expense on poverty	Very low	Low	Dispersed
LU	Low outright; high with mortgage	Medium	Good imputed rent, poor expenses	Very low	Medium	Mostly high burden
UK	Low outright, high with mortgage	Very high social expenditure on housing	Very good imputed rent, poor expenses	Very High	Medium	Dispersed

* Very good: strong income equalizing effect to imputed rent and a relatively low income disequalizing effect of housing expenses. Poor: very week income equalizing effect to imputed rent (or even disequalizing) and a relatively strong income disequalizing effect of housing expenses.

** Very low: <0.5 % of GDP; low: 0.51 %-1.5 % of GDP; medium: 1.51 %-2.5 % of GDP; high: 2.51 %-3 %; very high: >3 % of GDP.

*** Low: <1 % of GDP; medium: 1.1 %-2 % of GDP; high: >2 % of GDP.

Source: DG EMPL elaboration on Maestri (2015), based on EU-SILC (2010) and DG Taxation and Customs Union, based on Eurostat data (2014)

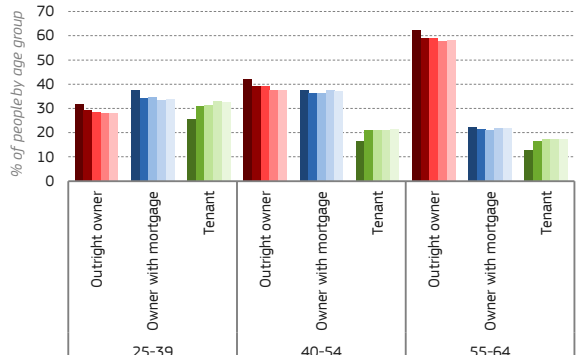
Click here to download table.

Rental housing is becoming more and more common among younger people. Between 2010 and 2014 rental housing increased by 7.3 pps among younger people and by 4.6 pps among prime-age individuals (*Chart 3.39*, green bars) ([242]). The availability of family resources, and parents' willingness or otherwise to assist the early steps of their offspring's independent lives through financial support, may have a strong influence on home-leaving and tenure choice.

Chart 3.39

Between 2010 and 2014 home ownership decreased and rental housing increased, particularly among younger people

Tenure types by age of the main household earner, 2010-2014, EU



Note: All EU countries are shown together (weighted average). For each variable, the darkest bar represents 2010 values and the lighter 2014 values. Main household earners are the individuals with the highest wage income in the household. If multiple adults have the same wages, the oldest one is defined as the main household earner.

Source: DG EMPL calculations based on EU-SILC cross-sectional data from 2010 to 2014 (UDB).

Click here to download chart.

Younger people face higher relative housing costs than prime-age and older people, and their housing expenses have increased between 2007 and 2014 while those expenses have decreased for older people. At EU level in 2014 (*Chart 3.40*), younger people spent a quarter of disposable household income (25.1 %) on housing costs; for prime-age and older working-age adults the comparable figures were 21.8 % and 19.6 % respectively. Unsurprisingly, in 2014 fewer younger people owned their homes (61.8 % against 74.9 % for prime-age individuals in 2014, *Chart 3.39*). For younger people the level of outright home ownership had decreased by almost 4 pps since 2007, while for prime-age individuals it remained fairly stable. The proportion of owners paying mortgages is also slightly lower (3.5 pps less) among younger people than among prime-age individuals. There is evidence that precarious employment has a negative effect on home ownership. This effect is larger in countries with less subsidised housing systems, smaller in countries where family support networks are relatively strong and homeownership rates are higher ([243]). The higher housing expenses younger people pay are often rental expenses.

In a longer-term perspective it is possible to identify some evidence at country level. The house price-to-income ratio (HPIR) ([244]), a common indicator for measuring real house price change and the affordability of owning a dwelling, is shown in *Chart 3.41* for the period since 1980 for twenty-three Member States ([245]).

([242]) The variable on housing tenure used in *Chart 3.38* is available in EU-SILC since 2010. In previous waves of EU-SILC the homeownership status was not differentiated by "outright owner" and "owner with mortgage".

([243]) Lersch and Dewilde (2013).

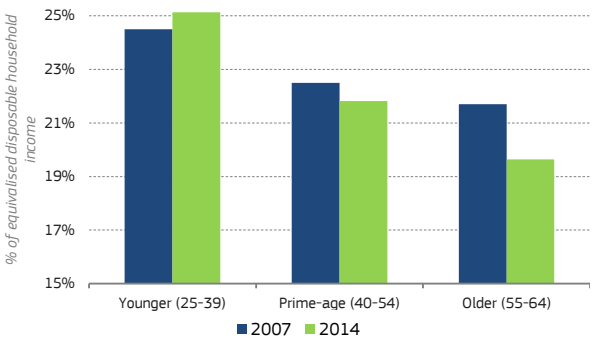
([244]) The price to income ratio is the nominal house price divided by the nominal disposable income per head.

([245]) Data do not cover all EU countries because are provided by OECD.

Chart 3.40

Housing costs are higher for younger people and slightly increased during the crisis

Housing costs as a proportion of disposable household income, 2007-2014, EU



Note: All EU countries are shown together (weighted average). For 2007 data for Croatia and Malta are not available. Housing costs are annualised and equivalised. Income variables refer to the year before (2006 for 2007 survey and 2013 for 2014 survey).

Source: DG EMPL calculations based on EU-SILC cross-sectional data 2007 and 2014 (UDB).

Click here to download chart.

Many countries entered the crisis with overvalued house prices ([246]) and affordability has improved in all but four Member States since then. Only Germany, Austria, Luxembourg and Sweden had a higher HPIR in 2016 than in 2007. It is possible to cluster countries in five groups according to changes in this indicator since 2010 ([247]). The first group of countries includes Belgium, Czech Republic, Estonia, Denmark, Finland, France, Latvia, Lithuania, Portugal and Slovakia. In this first cluster the HPIR has remained broadly stable. The second group is constituted by Poland, Italy and Greece, and has experienced a more or less steady decrease in the HPIR. In Netherlands and Spain (the third group), after an initial deep fall, the HPIR has almost stabilised at a much lower value than the pre-crisis one. In Austria, Germany, Luxembourg (fourth group), the HPIR has steadily increased, mainly due to the rise in the nominal house price. Finally, the HPIR in the UK ([248]) and Sweden had already recovered its 2010 value in 2013/2014 and has continued to grow since then.

([246]) Pittini (2012).

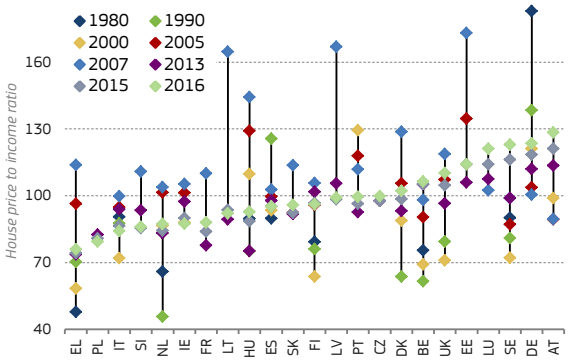
([247]) OECD (2016).

([248]) The increasing difficulties for younger generations to access the housing market and in particular to become house owners are especially pronounced and well documented in the UK, where there has been a steep increase in house prices. For an extensive analysis of intergenerational fairness in the UK, see the report by House of Commons (2016).

Chart 3.41

The house price-to-income ratio peaked in 2007 and has recovered only in a few Member States

House price-to-income ratio (2010=100) by country, 1980-2016



Note: OECD calculates the price to income ratio as the nominal house price divided by the nominal disposable income per head.

Source: DG EMPL elaboration based on OECD Affordable Housing Database

Click here to download chart.

Declining house price-to-income ratios facilitate house purchases ([249]), but despite this, younger workers' chances of acquiring a house may be strongly conditioned by other major issues. These are, for example, incomes lower than the average ([250]) and credit constraints, as will be further discussed below. The affordability of rental housing has decreased in all but two Member States for which data is available (see *Chart 3.42*) ([251]). Using OECD data, it is possible to calculate a similar index to the HPIR in order to track the evolution of rents in relation to income. The house rent-to-income ratio (HRIR) ([252]) shows that the average increase in rents since 1990 has been larger than the increase in income, particularly in the first part of the period. This suggests that rent represents an increasing burden for individuals. This burden is likely to be heavier for younger generations given their relatively lower income and higher propensity to be tenants.

([249]) At the same time, falling house prices also imply some loss of capital value of the property owned or inherited in the future. Further analysis would be needed to understand the net result of these two opposite drivers.

([250]) Note that as measured by the HPIR, affordability improved relative to the average income across age groups while Subsection 3.1 above provided some evidence of relatively less favourable income developments for younger age groups.

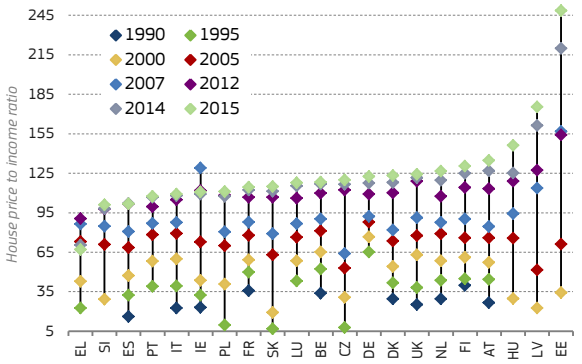
([251]) Ireland and Greece are the exceptions to the trend

([252]) The rent to income ratio is calculated as the nominal house rent divided by the average annual wages per full-time equivalent dependent employee. Average annual wages provide the best proxy for income per head available in time series.

Chart 3.42

The house rent-to-income ratio has increased for all countries except Ireland and Greece

House rent-to-income ratio (2010=100) by country, 1990-2015



Note: The price to income ratio is calculated as the nominal house rent divided by the average annual wages per full-time equivalent dependent employee.

Source: DG EMPL elaboration based on OECD Affordable Housing Database.

Click here to download chart.

The increasing rental burden may contribute to younger people's growing difficulties in accessing credit. Younger people are using a larger share of their income on housing expenses, but are delaying homeownership in favour of renting. High rental cost (especially in big cities) may often leave young people trapped in a prolonged rental cycle, unable to save enough money for a down payment on a home. In addition, since the crisis and in response to the housing market bubbles observed in some Member States in the pre-crisis years, the criteria which have to be met to qualify for mortgage loans have become stricter. As young workers are particularly likely to be holding insecure non-standard jobs, they may be particularly affected by this.

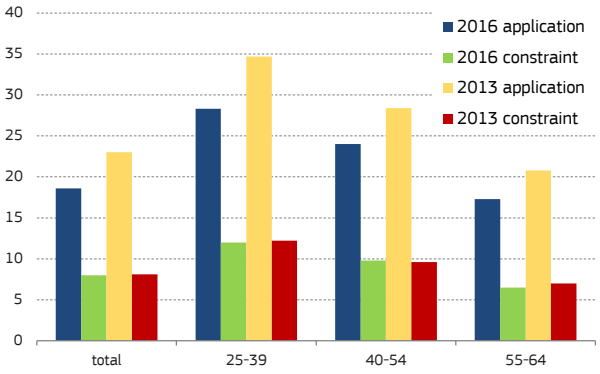
Young people apply for loans more often than prime-age individuals, but their demand for loans has decreased more over the last three years than for older age groups. According to the Household Finance and Consumption Survey (HFC) of the European Central Bank (ECB) ([253]), which started to be collected in 2013, the proportion of young people (aged 25-39) who applied for a loan within the last three years reached 28.3 % in 2016 (*Chart 3.43*), which is substantially higher than the comparable figures for prime age adults (24 % of those aged 40-54 and 17.3 % of those 55-64). In 2016 fewer people applied for loans in the euro area compared to 2013, with the highest fall in demand among young people (-6.4 pps). An increase in the demand for loans for both the total population and young people was recorded only in Belgium and Germany, while the Netherlands was the only country in which young people applied for a loan more often than older people.

([253]) The ECB's Household Finance and Consumption Survey (HFC) has two waves: wave 1 which was run in 2013, and wave 2 run in 2016. Countries covered are: Belgium, Germany, Estonia (only wave 2), Ireland (only wave 2), Greece, Spain, France, Italy, Cyprus, Latvia (only wave 2), Luxembourg, Hungary (only wave 2), Malta, the Netherland, Austria, Poland (only wave 2), Portugal, Slovenia, Slovakia and Finland.

Chart 3.43

Young people apply for loans more often than prime-age individuals, but they also face tighter credit constraints

Households applying for credit and households facing constraints by age group in EU, 2016 and 2013



Source: European Central Bank, EHFC survey, I and II wave (2013 and 2016 respectively), special extraction.

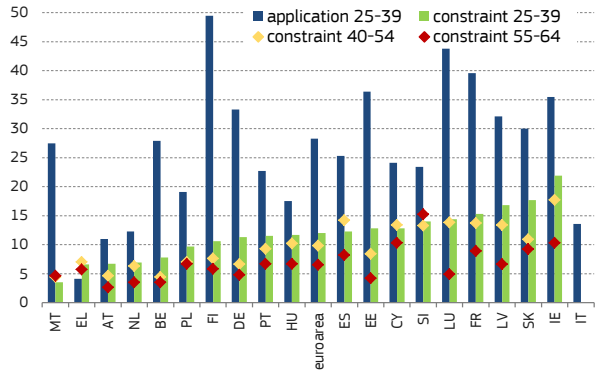
Click here to download chart.

Young people face greater credit constraints when applying for loans, with few changes over the last few years ([254]). In 2016, the proportion of households applying which were headed by a credit-constrained young individual reached 12 % in the EU, compared with 9.8 % of households headed by a credit-constrained person aged 40-54 and 6.5 % of households headed by a credit-constrained person aged 55-64 (*Chart 3.43*).

Chart 3.44

Younger people have greater credit constrains than others in most Member States.

Younger people (25-39) applying for credit and share of households facing credit constraints by country and age group, 2016



Source: European Central Bank, EHFC survey, II wave (2016), special extraction.

Click here to download chart.

Demand for loans and credit constraints differ considerably among younger people in the EU. The averages reported above hide significant differences across Member States. In 2016, the highest proportions of households headed by a young person applying for credit (*Chart 3.44*) were in Finland (49.5 %) and Luxembourg (43 %), while the lowest was in Greece (4 %). The highest percentage of credit constraints among younger people was registered in

([254]) Credit constrained households are those that applied for credit within the last 3 years and i) were turned down, and did not report successful later reapplication; ii) applied for credit but were not given as much as they applied for; iii) did not applied for credit due to the perceived credit constraint.

Ireland (21.9 %) and the lowest in Malta (3.5 %). In most Member States, younger people had greater credit constrains than other age groups.

Existing constraints in applying for loans may influence young people's family formation decisions. While the figures reported above relate to total loans across categories, mortgage debt represents 85.8 % of households' total debt. Consequently, despite the historically low level of interest rates in the capital market, existing credit constraints may impact on the realisation of younger generations' life projects, particularly as regards housing, and also on their future economic situation in old age to the extent that wealth accumulation connected to house ownership is reduced.

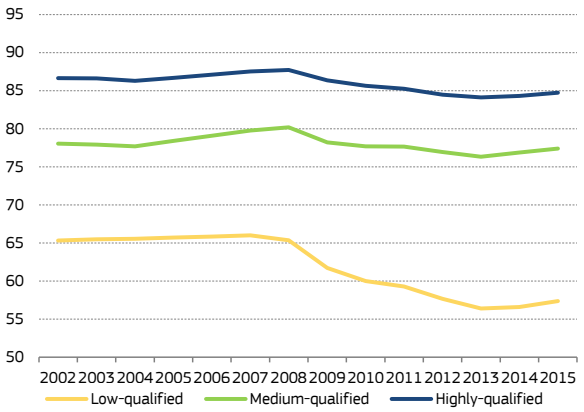
5. YOUNG PEOPLE'S EDUCATION AND SKILLS ACROSS TIME AND GENERATIONS

Qualifications and skills are becoming ever more important for employment. While employment rates have always been higher for those with higher educational attainment, since the crisis gaps have widened between low-qualified young people ([255]) and their better-qualified contemporaries. In 2008 low-qualified young people had an employment rate 15 pps below that of medium-qualified young people and 23 pps below that of highly qualified young people. By 2015 the low-qualified young people were 20 pps below the medium-qualified and 28 pps below the highly qualified (*Chart 3.45*) ([256]). Looking forward, skills and education are expected to gain even more importance in the labour market as a result of globalisation and technological change, and to become an ever stronger determinant of access to good-quality jobs. Education and skills are not only crucial for employment but also important drivers of productivity as a source of GDP growth (Chapter 2). Against this background, this section considers how younger cohorts are faring in terms of education and skills compared with their predecessors (Subsection 5.1 and Subsection 5.2), and the extent to which young people in the EU have "equal opportunities" to gain relevant skills and qualifications (Subsection 5.3). Subsection 5.4 compares participation in adult learning across cohorts, and investigates how individuals are updating and strengthening their skills over the course of their careers.

Chart 3.45

Finding stable employment has become substantially more difficult for low-qualified youth since the crisis

Employment rate of age group 25-39, by educational attainment



Source: EUROSTAT (LFS special extraction)

Click here to download chart.

5.1. Educational attainment

Younger people are increasingly well equipped in terms of human capital. This is reflected in growing educational attainment across all EU Member States (*Chart 3.46,* see also Chapter 1). In 2005 nearly one in four young people aged 25-39 had not completed upper secondary education and just over one in four held a tertiary degree. By 2015 almost four in ten young people in that age group held a tertiary degree and less than one in five had left school without an upper secondary qualification ([257]). Substantial progress in educational attainment was observed in the countries which were hit strongly by the crisis (Greece, Cyprus, Portugal, Italy and Spain). This suggests that the deterioration of the labour market may have reduced incentives to drop out of school. It is also possible that the greater resilience of high-skilled employment to the crisis has strengthened incentives to attain a tertiary qualification. Today's younger people are educated to a significantly higher level than their parents. In 2015 28.1 % of those aged 40-54 and 21.8 % of those aged 55-64 had tertiary attainment; 23.9 % and 32.0 % respectively had below upper secondary attainment.

In some Member States, however, the proportion of low-qualified young adults remains extremely high. The proportion of low-qualified people in the age group 25-39 ranges from as high as 41 % in Malta to only 6 % in the Czech Republic. In general, the smaller the proportion of low-qualified people in a Member State, the more difficult their employment situation is vis-à-vis people with higher attainment. For instance,

([255]) This chapter refers to low-qualified individuals as those who left school without completing upper secondary education. Medium-qualified individuals are those who hold an upper secondary and/or a post-secondary non-tertiary degree. Highly qualified individuals are individuals with a tertiary degree.

([256]) In this context, the European Commission launched the new Skills Agenda for Europe in June 2016, consisting of 10 actions to ensure that the right training, the right skills, and the right support is available to people in the European Union. Education, training and life-long learning is also priority of the Social Pillar, which was proposed by the European Commission on 26 April 2017. One of the 20 principles of the Pillar is that "*Everyone should have the right to quality and inclusive education, training and life-long learning in order to maintain and acquire skills that enable them to participate fully in society and manage successfully transitions in the labour market.*"

([257]) As a matter of fact, the EU2020 targets for education seem to be within reach: in 2016, 39% of individuals in the age group 30-34 held a tertiary degree (compared with the target of 40%) and 10.8% of individuals in the age group 18-24 had left school before obtaining an upper secondary qualification (compared with the target of 10%).

in countries such as the Czech Republic and Slovakia, where the low-qualified account for less than 10 % of the population aged 25-39, their employment rates are almost 40 pps below those of medium- and highly-qualified individuals of the same age. Conversely, in Portugal, where the proportion of low-qualified younger people is close to 36 %, their employment rate differs less from that of medium- and highly-qualified individuals (5-8 pps). Still, these patterns are far from universal. Slovenia is an exception: very strong educational attainment coincides with average employment rate gaps between groups with different education levels. At the other extreme, the highest employment rate gaps for the low-qualified are found in Bulgaria, although it has a fairly high percentage of low-qualified people (almost 20 % in the age group 25-39). It is worth noting that Bulgaria is the country where the risk of poverty and social exclusion (AROPE) is highest for low-qualified adults (up to 75 % for those aged 18-64) and where the poverty risk increases most steeply for those with low qualifications as compared with those with higher educational attainment.

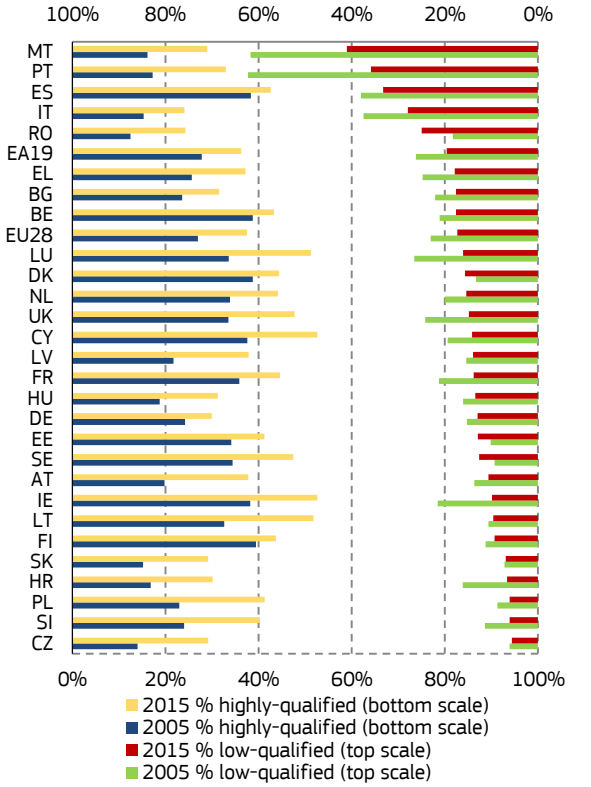
Cross-country trends in educational attainment show a pattern of (mostly upward) convergence. The largest decline (in pps) in low-qualified people is in four of the five countries which started off with the largest proportion of low-qualified youth in 2005 (Malta, Portugal, Italy and Luxembourg; Spain, the fifth country, has made less progress) (*Chart 3.46*). In Sweden and Denmark, which are historically good performers, the proportion of low-qualified people increased by 2-3 pps between 2005 and 2015, moving those countries closer to the EU average ([258]). However, it is a matter of concern that the percentage of low-qualified young people increased substantially in Romania, putting it among the five countries with the highest proportions of youth with low qualifications. The expansion of tertiary education was least pronounced in those countries (Belgium, Denmark, Spain and Finland) which already had high proportions of highly-qualified youth in 2005.

([258]) This may however to a large extent be attributable to breaks in the data collection methodology and a growing share of immigrants who are more likely to be low-qualified than the population born in the country.

Chart 3.46

Educational attainment is rising across the EU

Changes in distribution of educational attainment among age group 25-39, 2005-2015



Note: "Low" stands for the share of low-qualified individuals; "high" reflects the share of highly-qualified individuals.

Source: EUROSTAT variable lfsa_pgaed, based on LFS

Click here to download chart.

5.2. Skills attainment

Educational attainment relates strongly to, but is not a perfect measure of, skills attainment. While skills are more difficult to assess than educational attainment, resulting in poor data availability, some relevant lessons can be drawn from OECD surveys such as the Programme for International Student Assessment (PISA) and the Programme for the International Assessment of Adult Competences (PIAAC). These measure key information-processing competencies (or 'skills') that are considered essential for accessing, understanding, analysing and using information. Such skills are highly transferable across many social contexts and work situations, learnable, and necessary for successful participation in the labour market and in society (OECD, 2016). PISA assesses the mathematics, reading and science skills of 15-year-olds and has been carried out every three years since 2000. PIAAC was set up more recently. Its first round of data collection took place over the period 2008-13 and assessed the numeracy, literacy and problem-solving skills of the adult population (age group 16-64). These surveys reveal considerable variations in skills proficiency among individuals of similar ages (and, where applicable, similar educational attainment) in different countries ([259]).

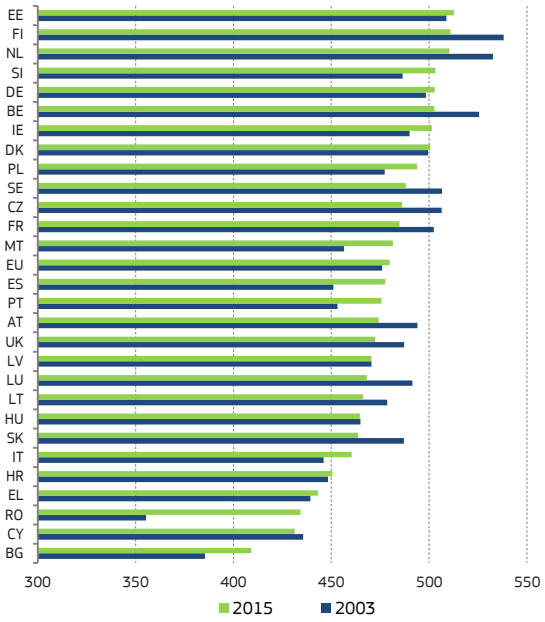
([259]) For example, PIAAC shows that while young adults (25-39) in Ireland and Poland have high educational attainment compared

On average, the mathematics skills of 15-year-olds have improved slightly over time. Results of successive rounds of the PISA survey show that the mathematics skills of 15-year-olds strengthened in around half of EU Member States over the period 2003-15, but worsened in the other half (*Chart 3.47*). Some countries that were traditionally among the worst performers made major progress (for instance Bulgaria, Romania, Portugal, Malta and Spain). However, a set of countries which showed relatively weak skills performance in 2003 saw further deterioration in mathematics proficiency by 2015: examples are Cyprus, Slovakia and Lithuania.

Chart 3.47

On average, only modest progress was made in the mathematics skills of 15-year-olds

Median mathematics scores among 15-year-olds



Note: No 2003 data available for Slovenia, Estonia, Lithuania, Romania, Croatia, Bulgaria, UK, Malta and Cyprus. 2006 data are used instead where available (Slovenia, Estonia, Lithuania, Romania, Croatia, Bulgaria and UK). For Malta and Cyprus, 2009 and 2012 data are shown respectively.

Source: OECD PISA survey

Click here to download chart.

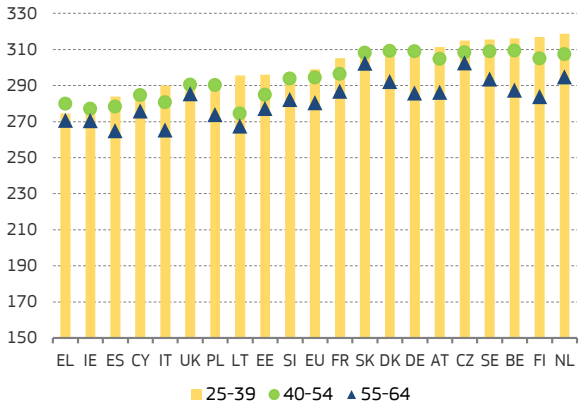
Across Member States, a gradual pattern of convergence in the mathematics skills of 15-year-olds can be observed. With progress concentrated mainly among those Member States which had been performing weakly in 2003 and a deterioration mainly among those with a solid performance in 2003, overall the 2015 outcomes show substantially less cross-country variation than in 2003.

PIAAC data show that the basic numeracy skills of young tertiary graduates are generally higher than those of older graduates ([260]). This generational difference is particularly pronounced for tertiary graduates in Finland, Lithuania, Italy and Belgium. On the other hand, hardly any difference is observed between generations in Greece, UK and Slovakia. The presence of a generational difference may reflect improvements in the quality of education, but it may also be the result of skills dynamics over the lifecycle, as a result of atrophy (the degeneration of skills due to insufficient use) and depreciation (De Grip, 2006). Intuitively, even if the quality of education (in the sense of its effectiveness in promoting mathematics skills acquisition) remains constant over time, older generations will typically still have lower skills levels than younger generations because of these dynamics.

Chart 3.48

In most countries, younger tertiary graduates have higher mathematics proficiency than older graduates

Median numeracy score among tertiary graduates, different age groups



Source: OECD PIAAC Survey (Round 1: 2008-2013). Data for Greece, Lithuania and Slovenia are based on PIAAC Round 2 (2012-2016) Click here to download chart.

Click here to download chart.

There is substantial variation across countries in skills attainment for graduates. These patterns do not necessarily correlate with the size of the tertiary education sector ([261]). On the one hand, the skills attainment of tertiary graduates is relatively low for those countries with the highest rates of tertiary attainment (Cyprus, Lithuania and Ireland), and above the EU average for those countries with the lowest proportion of tertiary graduates (Czech Republic, Slovakia and Germany). On the other hand, Italy combines the lowest tertiary attainment rate with relatively weak proficiency scores for tertiary graduates. Moreover, the Netherlands, Finland, Belgium and Sweden combine relatively high tertiary attainment rates with high average mathematics proficiency among tertiary graduates. This seems to result from a solid foundation in mathematics skills built up in secondary school, because these countries also score among the best on the mathematics skills of 15-year-olds (as does Germany).

to other Member States, their numeracy proficiency is among the lowest when individuals of all educational attainment levels are considered together.

([260]) Caution is due in drawing overly strong conclusions from these analyses, as the figures based on PIAAC are in some cases based on relatively small samples, which increases the risk of sampling error.

([261]) Some scholars have suggested that an increase in tertiary attainment lowers the quality of graduates; see e.g. Juhn et al. (2005) and Carneiro and Lee (2011) on the US.

The increase in key information processing skills seems limited as compared with the strong rise in job skills requirements. However, one must keep in mind that only information-processing skills are considered and these cover only a relatively narrow range of the skills required in the labour market (advanced information processing skills, digital skills, manual skills, technical skills, non-cognitive skills). Especially at the level of digital and technical skills, stronger improvements might have been expected over recent decades. Unfortunately, key weaknesses remain. In 2016, only 56 % of EU28 citizens were estimated to have basic or above basic digital skills, ranging from 26 % in Bulgaria to 86 % in Luxembourg ([262]). The corresponding figures for individuals in the age group 55-74 and for people aged 25-64 with low qualifications were just 32 % and 23 % respectively.

5.3. Intergenerational mobility: the impact of parental background on educational and skills attainment

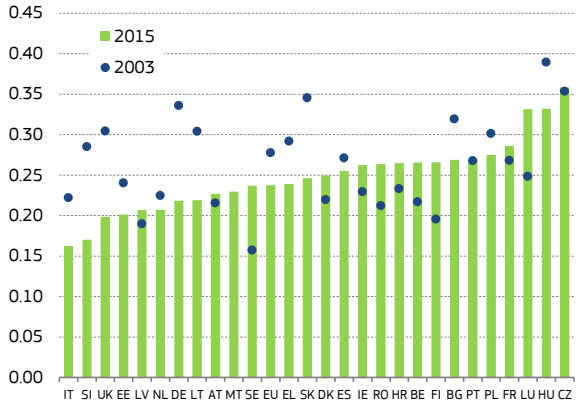
From an equality of opportunities perspective, an issue of key concern is the impact of parental background on education and skills outcomes. Educational attainment and skills are crucial determinants of access to quality jobs, in terms of stable employment and attractive working conditions, including wages, and hence of socio-economic outcomes. Some variation in these outcomes across individuals can be expected. However, if these outcomes are strongly linked to individuals' parental background, there is likely to be a problem of inequality of opportunities, which may result in a lack of social mobility ([263]). If individuals are not able to realise their full potential because of restrictions imposed by social structures, this will not only have deleterious impacts on social inclusion and poverty reduction but also hold back productivity and economic growth. As discussed in Chapter 2, the underutilisation of the available supply of human resources and skills can put a strain on intergenerational fairness and solidarity, especially in the context of demographic change. This subsection explores the impact of parental background on the skills of 15-year-olds (and how this has changed across subsequent PISA rounds) and on educational attainment (and how this has evolved across different cohorts).

Parental background has a significant impact on the mathematics skills of 15-year-olds. Only about 13% of pupils from a weak parental background perform in the top skills quartile in their country, compared with almost 40% of pupils from a strong parental background ([264]). At the EU level, these percentages have hardly changed over the past 12 years. However, substantial changes (in both directions) can be observed at the individual Member State level (*Chart 3.49*).

Chart 3.49

Some convergence in the impact of parental background on mathematics skills

Gap in probability of being a top performer in mathematics between pupils from strong and weak parental backgrounds



Note: 2003 PISA data are used as this is the first round available with solid data on mathematics skills. The 2000 PISA survey focused mostly on literacy. No 2003 data are available for Slovenia, Estonia, Lithuania, Romania, Croatia, Bulgaria, Malta. 2006 data are used instead where available (Slovenia, Estonia, Lithuania, Romania, Croatia, Bulgaria). EU is calculated as the population-weighted average of the individual countries included in the chart.

Source: OECD PISA survey

Click here to download chart.

On average in the EU, the impact of parental background on mathematics skills has declined only marginally. However, there has been considerable cross-country variation. With the exception of the Czech Republic, Member States where parental background had a very strong impact on mathematics skills in 2003 (Hungary, Slovakia, Germany, Bulgaria, UK, Poland and Greece) showed a substantial reduction in this impact by 2015. On the other hand, the influence of parental background became stronger in 13 Member States, with a notable increase in Sweden, Luxembourg, Finland, Romania and Belgium. As a result, there was some convergence in the impact of parental background on 15-year-olds' mathematics skills.

At the Member State level, lower tertiary attainment rates seem to coincide with a stronger impact of parental background on educational attainment ([265]). For example, parental

([262]) See Eurostat variable "isco_sk_dskl_i", based on the Eurostat ICT surveys.

([263]) There are different ways to measure social mobility. Instead of looking at the correlation between an individual's and his/her parents' education level, other studies have looked at the correlation in occupational status between individuals and their parents (see e.g. Eurofound (2017) for a recent study of EU28 Member States).

([264]) The impact of parental background on mathematics performance is measured as the percentage point difference between the incidence of top-performing pupils among those with a strong parental background and the incidence among those coming from a weak parental background. "Top-performing" pupils are defined as those scoring in the top quartile in their own country. Strong and weak parental background are defined by the top and bottom quartile of a ranking of pupils based on their parents' education levels (6 ISCED-based categories) and occupational status (according to the PISA International socio-economic index of occupational Status, following Ganzeboom et al. (1992)'s methodology).

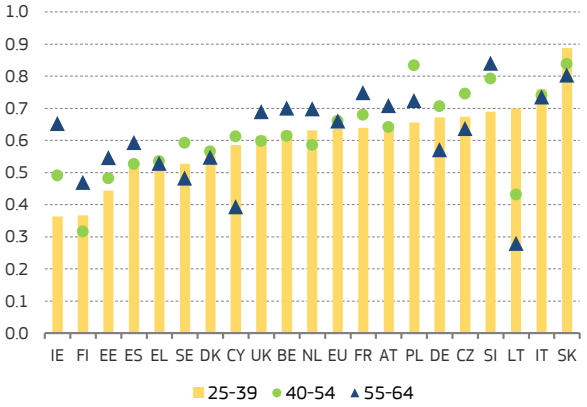
([265]) The impact of parental background on educational attainment is measured as the relative gap (in %) in tertiary attainment

attainment matters a lot for children's tertiary attainment in Italy, Czech Republic, Slovakia and Germany, where tertiary attainment is relatively low among 25-39 year olds as compared with other Member States. The lowest impact of parental background is observed in Ireland and Finland, where educational attainment is relatively high. Again, there are many exceptions to this broad pattern. Lithuania combines one of the strongest impacts of parental background on attainment with one of the highest tertiary attainment rates in the EU. The strong impact of parental background on educational attainment in Italy, Germany and Lithuania is notable, given that the impact of parental background on skills attainment of 15-year-olds in these countries is relatively weak.

Chart 3.50

The impact of parental background on tertiary attainment weakens slightly across generations

Relative gap in tertiary attainment rates between children of parents with stronger and weaker educational attainment, different generations



Source: OECD PIAAC Survey (Round 1: 2008-2013). Data for Greece, Lithuania and Slovenia are based on PIAAC Round 2 (2012-2016). EU is calculated as the population-weighted average of the individual countries included in the graph.

Click here to download chart.

For younger people in the EU, tertiary attainment is less dependent on parental background than it was for their parents. The 2012 PIAAC survey data allows the impact of parental educational attainment on their children's educational attainment to be tracked across generations. The data show that on average, this impact is slightly weaker for younger than for older generations, especially in countries where tertiary attainment has expanded strongly. Typically, children from weaker parental backgrounds seem to have benefited more from the expansion of tertiary attainment (in relative terms) than those from stronger parental backgrounds (who already had high rates of tertiary attainment). An exception is Lithuania, where tertiary attainment expanded on average, but declined strongly for students from weaker parental backgrounds. And in Slovakia and Italy, where the impact of parental background was already relatively high among older people, this impact is slightly stronger for the younger generation. However, a consistently weakening impact of parental attainment was observed in Ireland, Spain, Estonia, France and Slovenia.

between children from a strong and those from a weak parental background. A strong (weak) parental background is defined as being in the top (bottom) quartile of a ranking of students based on their parents' educational attainment.

5.4. Adult learning

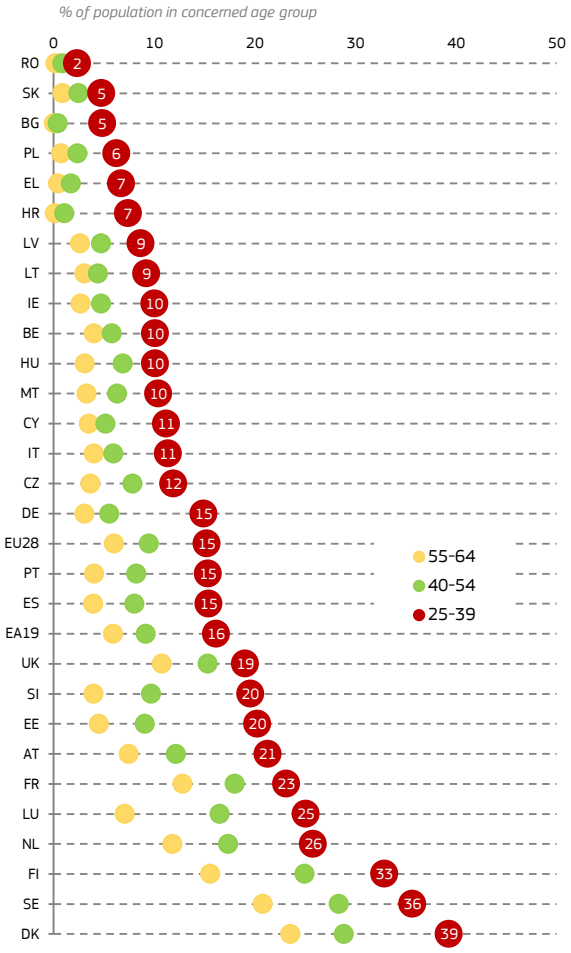
Participation in education and training has an important lifecycle dimension. Most education is undertaken by individuals before entering employment. However, as labour markets are changing at an ever-increasing pace and jobs are becoming more skills-intensive, it becomes progressively more important to reskill and upskill throughout one's lifetime.

Young people may have more incentives to invest in training and education, as they can reap the benefit of this investment over the long career ahead of them. On the other hand, it can be argued that older people have a greater need to invest in reskilling because the skills and knowledge they built up during the initial stages of their life may have become out-dated. Younger people have been observed to participate significantly more in adult learning than older age groups (*Chart 3.51*).

Chart 3.51

Young adults are participating in learning more often than older individuals

Participation in lifelong learning by age group (2015)



Source: LFS

Click here to download chart.

Box 3.1: Intergenerational mobility: a literature review

Intergenerational mobility reflects the extent to which the socio-economic characteristics (most prominently education, occupation or income) of children are related to those of their parents ([1]). The literature in this field distinguishes between *absolute* and *relative* mobility. Absolute mobility considers whether children are on average better off than their parents and so refers to intergenerational changes in outcome levels. To a large extent, these are determined by the nature of structural changes in an economy and by societal progress. The transition of economies from agricultural to industrial and service-based economies typically goes together with an increase in labour productivity and an expansion in highly-skilled occupations. If societies make fast progress over a generation, children generally will be better off than their parents and the degree of absolute mobility will be high. As income growth slows down or if the benefits from income growth are spread unequally across the income distribution, absolute mobility is likely to taper off. A recent study finds a decrease in absolute income mobility (expressed as the proportion of individuals who earn more than their parents) from around 90% for cohorts born in 1940 to around 50% for those born in the 1980s, and attributes this to increased inequality in the distribution of the benefits from growth ([2]). Recent work on the EU finds that absolute occupational mobility varies strongly across the EU, mostly reflecting country variation in structural change over time but that, on average, absolute occupational mobility has been steady across three generations born in the 20th century, with only a minor decline for the youngest generation, particularly for men ([3]).

Relative mobility, on the other hand, looks at the association between children's relative position and their parents' relative position, each within their own generation, and so refers to changes in ranking order. Relative mobility is low if children's education, occupation and/or income levels depend strongly on their parents' characteristics. This is an issue of major policy concern, as a strong association is likely to reflect a lack of equal opportunities in a society.

Parental background can influence offspring's outcomes through different channels. A major one is education ([4]). However, there are other direct channels of parental influence on their offspring's employability, occupation and earnings, including genetic endowments, soft skills, aspirations, inherited wealth, capital constraints, peer/neighbourhood effects and parental assistance (possibly through networks) to secure jobs for their children ([5]).

A related topic of interest is the impact of parental migrant background on descendants' labour market outcomes. Preliminary empirical results of a new project carried out by OECD ([6]) find that outcomes in the labour market are lower for EU-born individuals with non-EU-born parents than for individuals with EU-born parents who have otherwise similar education and parental characteristics. The former seem to encounter particular difficulties in obtaining good jobs requiring high levels of skills. This could be related to the (relative) lack of networks and of knowledge about labour market functioning, but also to discrimination.

Research has found a negative correlation between relative mobility and income inequality, as depicted by the so-called "Great Gatsby" curve, and a positive correlation with spending on education, particularly at early stages ([7]). The evidence on trends over time in relative mobility is inconclusive, to a large extent due to data limitations, large sampling errors and strong dependence on whichever measure of relative mobility and whichever time period is considered. While some recent studies in the US suggest that relative income mobility has remained stable over time, others find that relative income and educational mobility have declined ([8]).

Results for the EU are also mixed. Influential work in the early 2000s signalled a decline in relative income mobility in the UK and attributed this to the expansion of higher education which would benefit the children of well-off parents more ([9]). However, other studies find that relative mobility in the UK has remained relatively stable ([10]). Moreover, there seems to be a consensus in the literature that higher and more equal levels of educational attainment are

([1]) *Inter*generational mobility is one type of social mobility. Another type of social mobility is *intra*generational mobility, which considers the extent to which socio-economic characteristics (most prominently income and labour market status) change (rather than persist) over an individual's own career or lifetime. This box only considers the former type of social mobility.

([2]) Chetty et al. (2017).

([3]) See Eurofound (2017) and Bukodi et al. (2017) for studies on the EU. Note that income and occupational mobility do not necessarily move in the same direction (Breen et al. 2016; Torche 2015: 49).

([4]) Torche (2015); Mazzonna (2016); Björklund and Jäntti (2009).

([5]) See e.g. Knoll et al. (2017); Berloffa et al. (2015); Torche (2015); Marcenaro-Gutierrez et al. (2015); Franzini et al. (2013); Björklund et al. 2012; Franzini and Raitano (2009); d'Addio (2007); Bowles and Gintis (2002). Peer effects refer to the influence of friends, family and acquaintances on outcomes. This relates to parents' choice of where to live and where to send their children to school.

([6]) This forthcoming study on "Intergenerational mobility of the children of immigrants" is carried out by the OECD with the financial assistance of the European Union Programme for Employment and Social Innovation "EaSI" (2014-2020).

([7]) Corak (2013); Chauvel and Hartung (2016); Ichino et al. (2011); Mayer and Lopoo (2008); Corak (2006).

([8]) Lee and Solon (2009) find that relative income mobility has been stable between cohorts born in the 1950s and those born in the 1970s. Chetty et al. (2014) conclude the same between those born in the 1970s and in the 1990s. On the other hand, Davis and Mazumder (2017) find that relative mobility is lower for cohorts born in the 1960s than for those born in the 1940s, in line with Hilger (2015)'s findings that relative educational mobility declined over that period.

([9]) See e.g. Blanden et al. (2004).

(Continued on the next page)

Box (continued)

generally associated with higher relative mobility ([11]). Results for Finland and Sweden suggest an increase in relative income mobility over time, possibly related to educational changes ([12]). A recent study finds find that relative occupational mobility trends across the EU follow a complex pattern, with some convergence between Member States over time; another study identifies a small increase in inequality of opportunity between 2004 and 2010 on average in the EU ([13]).

([11]) See e.g. Blanden and Machin (2007); Palomino et al. (2016); and the findings of Subsection 5.3.

([12]) See Björklund et al. (2009); Pekkala and Lucas (2007).

([13]) Eurofound (2017) Palomino et al. (2016).

A large share of young people's participation in adult learning reflects their continued participation in initial education. Once one excludes those who are enrolled in formal secondary or university education programmes, the gap in adult learning participation between age groups 25-39 and 40-54 declines markedly, or even reverses. Finland, Denmark and Sweden are the countries with the largest proportion of 25-39 year-olds enrolled in secondary or university education programmes (21 %, 17 % and 15 % respectively). This is consistent with data on school expectancy, which measures the number of years of education an individual is expected to undertake over a lifetime and shows that of all EU Member States, people in Finland, Sweden and Denmark are expected to stay in education longest.

6. Conclusions

The world of work has been changing over the last two decades with important social, economic and demographic implications. The evidence presented in this chapter confirms that many of the changes, whether structural or cyclical, have affected the younger people (25-39) more than prime-age and older people (40-64).

Younger people have been hit hardest by increases in unemployment and non-standard work. Employment of younger workers has been stagnating since 2002, while prime-age and older workers have witnessed a rapid rise in their employment rates. In addition, during the crisis, younger generations have been the most exposed to unemployment. For example, finding a job after graduation has become harder. Job security has declined over time with the increased use of non-standard contracts and this shift too has affected younger cohorts more than prime-age and older ones. Beyond the decline in job security, younger workers are also more exposed than older ones to low-wage jobs and precarious working conditions.

The increasingly widespread use of temporary work and reduction of job and income security on the labour market may harm productivity growth in the long run. There is evidence that a high proportion of temporary work can harm total factor productivity growth through various channels. These include limited incentives for workers to acquire firm-specific knowledge and lower on-the-job training opportunities.

The labour income allocation among age groups has changed, resulting in a lower share for younger workers. Most countries have seen a progressive decline in younger workers' (25-39) income share between 2007 and 2014. The changes in the income share by age group during this period have been driven by the change in the relative number of workers and in the relative income per worker, as well as by demographic trends.

Younger generations are increasingly vulnerable in the labour market and less protected by welfare systems (i.e. have lower benefit coverage)**, but they are not at greater risk of poverty than older generations.** Overall, the analysis in this chapter suggests that the deterioration in job and income security has had an impact on household decisions across generations. Younger people have increasingly fewer economic responsibilities at household level, resulting from the postponement of independent living and household formation and greater likelihood of prolonged co-residence with parents (particularly in Southern and Eastern European countries).

The postponement of household formation and parenthood is a cause for concern because of the adverse consequences for fertility rates and the sustainability of the pension system. The chapter has highlighted the likelihood that the widespread increase in non-standard work is one of the causes of delayed parenthood. The increase in the average age at which women become mothers across the EU is in turn likely to have a negative effect on fertility. This sheds light on the important role of family policies (such as childcare) and employment policies for women aiming at increasing fertility.

The higher housing expenses younger people face and their increasing difficulties in accessing credit are also causes for concern because they may impact on the realisation of life projects. Younger people are increasingly spending their income on housing and delaying homeownership in favour of renting. In addition, since the crisis younger people have had higher credit constraints. These factors are likely to have a negative effect on their capacity for wealth accumulation.

Qualifications and skills are becoming increasingly important for employment. In response to rising demands for skills in the labour market, younger generations are increasingly well equipped in terms of human capital. Some Member States, however, still have very high proportions of young adults who are low-qualified, highlighting the need for increased efficiency and effectiveness in education spending. Across the EU, upskilling trends show a pattern of mostly upward convergence.

From an equality of opportunities perspective, an issue of key concern is the impact of parental background on education and skills outcomes. Only small proportions of the 15-year-olds from a weak parental background perform in the top skills quartile in their respective countries. However, in the EU as a whole, tertiary attainment is less dependent on parental background for younger generations than it was for older generations.

Overall, these findings raise major questions about intergenerational fairness. Compared with cohorts one and two decades ago, younger workers today, despite being better educated, are living and working in a more precarious labour market, with more non-standard contracts, less job security and more low-paid employment. As well as having consequences for intergenerational fairness, these differences have had and will continue to have social, economic and demographic implications which need to be considered and addressed by policy-makers.

The European Pillar of Social Rights covers three broad areas: equal opportunities and access to the labour market, fair working conditions and adequate and sustainable social protection. Its 20 principles range from the right to a fair wage to the right to health care; from the principles of work-life balance and equal opportunities to the right to social protection.

Several components of the **European Pillar of Social Rights** provide potential policy avenues to address these challenges: ensuring access to quality education and training for all (Pillar 1); tackling abuse of precarious and non-permanent contracts and low wages (Pillar 5d, 6ab); ensuring transitions to open-ended contracts (Pillar 5a); and providing adequate and sustainable social protection against poverty by replacing or supplementing the income of individuals who have insufficient or no access to employment (Pillar 12, 13, 14). They show that the European Union is taking active steps to try and shape a fairer labour market that manages to combine social inclusion with competitiveness and high quality and well-paid jobs ([266]).

([266]) See European Commission (2017).

Annex 1: Labour market income shares' changes

The changes in the labour marker income share of each age group over time are driven by different factors: demographic trends, the number of workers in each age group and individual remuneration. Specifically, for a given income share (S) for the age group α in year t, the variation at time $t+1$ of the income share is approximately ([267]) equal to the relative change in population (P), plus the net composition effect of the workers (Wn), ([268]) affecting the relative size of each cohort, plus the relative change of income per worker (I):

$$\Delta S_{\alpha,t+1} = \Delta \frac{P_{\alpha,t+1}}{P_{total,t+1}} + \Delta \frac{Wn_{\alpha,t+1}}{Wn_{total,t+1}} + \Delta \frac{I_{\alpha,t+1}}{I_{total,t+1}}$$

Assuming that demographic changes are exogenous ([269]), the socio-economic empowerment could determine both the net composition effect and the variation of the personal incomes. Each component of the change in the income share by cohort is calculated proportionally to its relative change under the hypothesis that the other variables remain constant. For example, the income share in $t+1$ which an age group would have if the change only depended on the variation of the population in that age group compared to the total variation in the population is given by:

$$S^{P}_{\alpha,t+1} = S_{\alpha,t} \times \left(\frac{P_{\alpha,t+1} / P_{total,t+1}}{P_{\alpha,t} / P_{total,t}} \right)$$

Then $S^{P}_{\alpha,t+1}$ is used to calculate the part of the change in income share explained by the relative variation of the population in the period ($\Delta S^{P}_{\alpha,t+1}$). ([270])

The charts in Subsection 3.1 on the contribution to change in the income share by age group between 2007 and 2014 present the results of such calculations.

([267]) A simple additive model is adopted neglecting Interactions among different components.

([268]) Implicitly, the overall gross composition effect in the number of workers by age group ($Wg_{\alpha,t}$) already accounts for the population change. In this analysis it is not possible to perfectly separate the two effects: $Wg_{\alpha,t} = \Delta P_{\alpha,t} + \Delta Wn_{\alpha,t}$.

([269]) Past labour market performances and socio-economic empowerment could theoretically affect the current birth and mortality rates for example.

([270]) In the case of the number of workers, the net composition effect is obtained cleaning the gross composition effect by $\Delta S^{P}_{\alpha,t+1}$.

References

Arundel R., Lennartz C. (2017), "Returning to the parental home: Boomerang moves of younger adults and the welfare regime context", *Journal of European Social Policy*, 1-19.

Barrett, G., Riddell, W.C. (2016) Ageing and Literacy Skills: Evidence from IALS, ALL and PIAAC. IZA Discussion Paper No. 10017.

Becker S.O., Bentolila S., Fernandes A., Ichino A. (2008), "Youth Emancipation And Perceived Job Insecurity Of Parents And Children". *Journal of Population Economics* vol. 23, no 3, 1047–1071.

Berloffa G., Filandri M., Matteazzi E., Nazio T., Negri N., O'Reilly J., Villa P., Zuccotti C. (2015), "Work-poor and work-rich families: Influence on youth labour market outcomes", FP7 *Project STYLE Working Papers*, STYLE WP8.1

Björklund, A., Jäntti, M. (2009) Intergenerational income mobility and the role of family background. In: Salverda, W., Nolan, B., Smeeding, T.M. (eds.) *The Oxford Handbook of Economic Inequality*. Oxford: Oxford University Press. pp. 491-521

Björklund, A., Jäntti, M., Lindquist, M.J., (2009). Family background and income during the rise of the welfare state: brother correlations in income for Swedish men born 1932–1968. *Journal of Public Economics*, *93*(5), 671-680.

Björklund, A., Roine, J., Waldenström, D. (2012) Intergenerational top income mobility in Sweden: Capitalist dynasties in the land of equal opportunity? *Journal of Public Economics*, 96, 474-484.

Blanden, J., Goodman, A., Gregg, P., Machin, S. (2004) 'Changes in Intergenerational Mobility in Britain', in M. Corak (ed.) *Generational Income Mobility in North America and Europe*, Cambridge: Cambridge University Press.

Blanden, J., Machin, S., (2007). *Recent changes in intergenerational mobility in Britain*. London: Sutton Trust.

Boeri, T. and Jimeno, J.F., (2016), Learning from the Great Divergence in unemployment in Europe during the crisis, Labour Economics, 41, issue C, p. 32-46.

Bourdieu, P. (1963). *Travail et travailleurs en Algérie*. Paris: Mouton & Co.

Bowles, S. and Gintis, H., (2002) Social capital and community governance. *The Economic Journal,* 112(483), F419-F436.

Breen, R., Mood, C., Jonsson, J.O. (2016) How Much Scope for a Mobility Paradox? The Relationship between Social and Income Mobility in Sweden. *Sociological Science* 3, 39-60.

Büchel, F. (2000) 'The effects of overeducation on productivity in Germany – the firms' viewpoint. IZA Discussion Paper 2016.

Bukodi, E., Paskov, M., Nolan, B. (2017) Intergenerational class mobility in Europe: a new account and an old story. Institute for New Economic Thinking Oxford Working Paper no. 2017-03.

Cabrales, A, J Dolado, and R Mora (2014), "Dual Labour Markets and (Lack of) On-the-Job Training: PIAAC Evidence from Spain and Other EU Countries", CEPR Discussion Paper 10246, November.

Calero, J., Murillo Huertas, I.P., Raymond Bara, J.L. (2016) Education, age and skills: an analysis using the PIAAC survey. Barcelona Institute of Economics Working Paper 2016/3

Carneiro, P., Lee, S. (2011) Trends in quality-adjusted skill premia in the United States, 1960-2000. *American Economic Review*, 101(6), 2754-2781.

Chauvel, L., Hartung, A. (2016) More inequality, more viscosity? Intergenerational mobility in Europe and the US. Paper presented at the PAA 2016 Annual Meeting, Washington.

Chetty, R., Grusky, D., Hell, M., Hendren, N., Manduca, R. and Narang, J., 2017. 'The fading American dream: Trends in absolute income mobility since 1940.' *Science*, *356*(6336), 398-406.

Chetty, R., Hendren, N., Kline, P. and Saez, E., (2014). Where is the land of opportunity? The geography of intergenerational mobility in the United States. *The Quarterly Journal of Economics*, *129*(4), 1553-1623.

Corak, M. (2006). Do poor children become poor adults? Lessons for public policy from a cross-country comparison of generational earnings mobility. *Research on Economic Inequality*, 13(1), 143–188.

Corak, M. (2013) 'Income inequality, equality of opportunity, and intergenerational mobility.' The *Journal of Economic Perspectives*, 27(3), 79-102.

d'Addio, A.C., (2007). Intergenerational transmission of disadvantage: mobility or immobility across generations? OECD Social, Employment, and Migration Working Paper nr. 52.

D'Albis H., Greulich A., Gobbi P. (2015), "Access to childcare and second child arrival in European countries", Institut des Recherches Economiques et Sociales Université Catholique de Louvain, *Discussion Paper*, 2015-10.

Davis, J. and Mazumder, B. (2017) The Decline in Intergenerational Mobility after 1980. FRB of Chicago Working Paper No. WP-2017-5.

de Grip A., (2006), "Evaluating Human Capital Obsolescence". Working paper ROA-W-2006/2E, *Research Centre for Education and the Labour Market, Maastricht University*.

DG Taxation and Customs Union (2016), Taxation Trends in the European Union. Data for the EU Member States, Iceland and Norway. 2016 Edition, Publications Office of the European Union, Luxembourg.

Diaz, M., & Sanchez, R. (2008). Firm size and productivity in Spain: A stochastic frontier analysis. *Small Business Economics, 30*(3), 315-323. Retrieved from https://link.springer.com/article/10.1007/s11187-007-9058-x

Dolado, J.J., Ortigueira, S., Stucchi R. (2016), Does dual employment protection affect TFP? Evidence from Spanish manufacturing firms' in *Journal of the Spanish economic association* (SERIEs), 2016, Vol. 7, No. 4, pp. 421-459

Eurofound (2015a), *Third European Company Survey – Overview report: Workplace practices – Patterns, performance and well-being*, Publications Office of the European Union, Luxembourg.

Eurofound (2015b), *Job tenure in turbulent times*, Publications Office of the European Union, Luxembourg.

Eurofound (2016), *Sixth European Working Conditions Survey – Overview report*, Publications Office of the European Union, Luxembourg.

Eurofound (2017) *Social mobility in the EU*, Publications Office of the European Union, Luxembourg.

European Commission (2015a), "The Legacy of the Crisis: Resilience and Challenges" in *2016 Employment and Social Developments in Europe Review* http://ec.europa.eu/social/BlobServlet?docId=13408&langId=en

European Commission (2015b), "The efficiency and effectiveness of social protection systems over the life course". Chapter III.2 in *Employment and Social Developments in Europe 2015*. Luxembourg: Publication Office of the European Commission.

European Commission (2016a), "Mobility and Migration in the EU: Opportunities and Challenges" in *2015 Employment and Social Developments in Europe Review* http://ec.europa.eu/social/BlobServlet?docId=14954&langId=en

European Commission (2016b) Employment dynamics and social implications. Chapter 2 in *Employment and Social Developments in Europe 2016*. Luxembourg: Publication Office of the European Commission.

European Commission (2016c), "Supporting skills development and matching in the EU" in *2015 Employment and Social Developments in Europe Review* http://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=7859&furtherPubs=yes

European Commission (2017) Commission Staff Working Document Accompanying the document Communication from the Commission to the European Parliament, the Council, the European and Social Committee and the Committee of the Regions Establishing a European Pillar of Social Rights. SWD/2017/0201 final.

Fernandes A., Becker S.O., Bentolila S., Ichino A. (2008), "Income Insecurity and Youth Emancipation: A Theoretical Approach". *The Journal of Economic Analysis & Policy* 8(1), 1047–1071.

Filandri M., Gábos A., Mariani E., Nazio T. (2016). "Family formation strategies among the youth". FP7 *Project STYLE Working Papers*, WP8.5.

Flisi S., Goglio V., Meroni E., Vera-Toscano E. and Dragomirescu Gaina C. (2015). Skills beyond education. An analysis of cognitive skill evolution and its implications for employment chances. Publications Office of the European Union. JRC95221.

Franzini, M. Raitano, M., 2009. Persistence of inequality in Europe: the role of family economic conditions. *International Review of Applied Economics*, *23*(3), 345-366

Franzini, M., Raitano, M. and Vona, F., (2013). 'The channels of intergenerational transmission of inequality: a cross-country comparison.' *Rivista italiana degli economisti*, *18*(2), 201-226.

Freedman, M. (2017) *Are Recent Generations Catching Up or Falling Behind? Trends in Inter-Generational Inequality*. Luxembourg Income Study (LIS), No. 689.

Ganzeboom, H. B. G., De Graaf, P. M., and Treiman, D. J. (1992), ‘‘A standard international socio-economic index of occupational status,’’ Social Science Research 21, 1–56.

Gökşen F., Yükseker D., Filiztekin A., Öker I., Kuz S., Mazzotta F., Parisi L. (2016), "Leaving and returning to the parental home during the economic crisis". FP7 *Project STYLE Working Papers* WP8.

Goldthorpe, J.H., (2013) 'Understanding – and misunderstanding – social mobility in Britain: the entry of the economists, the confusion of politicians and the limits of educational policy.' *Journal of Social Policy*, *42*(03), 431-450.

Greulich A., Thevenon O., Guergoat-Larivière M., (2016), "Securing women's employment: A fertility booster in European countries?", <*hal-01298862*>.

Gustafsson, J.E. (2016) Lasting effects of quality of schooling: Evidence from PISA and PIAAC. *Intelligence*, 57, 66-72.

Hilger, N.G. (2015) The Great Escape: Intergenerational Mobility in the United States since 1940. NBER Working Paper No. 21217.

House of Commons, Work and Pensions Committee (2016), "Intergenerational fairness", Third Report of Session 2016-17, November 2016.

Iacovou, M. (2010), "Leaving home: Independence, togetherness and income". *Advances in life course research* 15.4: 147-160.

Ichino, A., Karabarbounis, L., Moretti, E. (2011) The political economy of intergenerational income mobility. *Economic Inquiry* 49(1), 47-69.

Isengard B., Szydlik M., (2012), "Living apart (or) together? Coresidence of elderly parents and their adult children in Europe". *Research on Aging,* 34.4: 449-474.

Juhn, C., Kim, D.I., Vella, F. (2005) 'The expansion of college education in the United States: Is there evidene of declining cohort quality?' *Economic Inquiry*, 43(2), 303-315.

Kalleberg, A. (2011). *Good jobs, bad jobs: The rise of polarized and precarious employment in the United Stetes, 1970s to 2000s*. New York: Russel Sage Foundation.

Kampelmann, S. (2012) 'The impact of educational mismatch on firm productivity: evidence from linked panel data' in *Economics of Education Review*, 31(6): 918-931.

Knoll, B., Riedel, N., Schlenker, E. (2017) He's a chip off the old block – the persistence of occupational choices across generations. *Labour*, 31(2), 174-2013.

Lee K. O., Painter G. (2013), "What happens to household formation in a recession?", *Journal of Urban Economics*, 76, 93-109.

Lee, C.I. and Solon, G., (2009). Trends in intergenerational income mobility. *The Review of Economics and Statistics*, *91*(4), 766-772.

Lennartz C., Arundel R., Ronald R. (2016), "Younger adults and homeownership in Europe through the global financial crisis", *Population, Space and Place*, 22, 823-835.

Lersch P. M., Dewilde C., (2013), "Young people's employment and homeownership in Europe". No. 3, Tilburg University *HOWCOME Working Paper Series*.

Lersch P. M., Dewilde C., (2015), Employment insecurity and first-time homeownership: evidence from twenty-two European countries, Environment and Planning A 2015, volume 47, pages 607 – 624.

Letablier M. T., Salles. A. (2013), "Labour market uncertainties for the young workforce in France and Germany: Implications for family formation and fertility", *Documents de travail du Centre d'Economie de la Sorbonne*, .04 - ISSN : 1955-611X. 2013. <halshs-00786291>

Lisi, D. & Malo, M.A. (2017), 'The impact of temporary employment on productivity: The importance of sectors' skill intensity' in *Jorunal of Labour Market Research*, pp. 1-22

Lucifora, C., Salverda W. (2009), "Low pay", *Oxford Handbook of Economic Inequality*, Ch. 11.

Luksyte, A. and Spitzmueller, C. (2011), "Overqualified Women: What Can Be Done About This Potentially Bad Situation?" in *Industrial and Organizational Psychology*, 4 (2011), 256–259.

Maestri, V. (2015), A Measure of Income Poverty Including Housing: Benefits and Limitations for Policy Making, Social Indicators Research 121: 675. doi:10.1007/s11205-014-0657-z

Marcenaro-Gutierrez, O., Micklewright, J., Vignoles, A. (2015) Social mobility, parental help, and the importance of networks: evidence for Britain. *Longitudinal and Life Course Studies* 6(2), 190-211.

Matsaganis M., Özdemir E., Ward T., Zavakou A. (2016), "Non-standard employment and access to social security benefits", *Social Situation Monitor research note*, European Union.

Mayer, S.E., Lopoo, L.M. (2008). Government spending and intergenerational mobility. *Journal of Public Economics*, *92*(1), pp.139-158

Mazzonna, F. (2016) The long-lasting effects of family background: a European cross-country comparison. *Economics of Education Review* 40, 25-42.

McGowan, M. and D. Andrews (2015) *Labour market mismatch and labour productivity: Evidence from PIAAC data*, OECD Economics Department Working Paper No. 1209. ECO/WKP(2015)27, Paris, France.

Nicoletti, C., Ermisch, J., (2007) 'Intergenerational earnings mobility: changes across cohorts in Britain.' *The BE Journal of Economic Analysis & Policy*, *7*(2).

OECD (2016), Affordable Housing Database, HM1.2 HOUSE PRICES.

OECD (forthcoming) Intergenerational mobility in labour market outcomes: how do natives with immigrant parents fare? Draft report, financed by the European Commission.

Olsthoorn, M. (2014), "Measuring Precarious Employment: A Proposal for two Indicators of Precarious Employment Based on Set-Theory and Tested with Dutch Labour-Market Data", Social Indicators Research, 119 (1), pp. 421-441.

Orsetta Causa & Catherine Chapuis, 2009. "Equity in Student Achievement Across OECD Countries: An Investigation of the Role of Policies," *OECD Economics Department Working Papers* 708, OECD, Economics Department.

Palomino, J.C., Marrero, G.A., Rodríguez, J.G. (2016) Channels of inequality of opportunity: the role of education and occupation in Europe. ECINEQ Working Paper 2016-411.

Pekkala, S., Lucas, R.E., (2007). Differences across cohorts in Finnish intergenerational income mobility. *Industrial Relations: A Journal of Economy and Society*, *46*(1), 81-111.

Pittini, A. (2012) Housing Affordability in the EU. Current situation and recent trends, CECHODAS, Year 5, Number 1, January.

Randstat (2012). I*nto the gap: exploring skills and mismatches*, SEO report nr. 2011-56, Amsterdam.

Rendall M., DeRose A., Evans A., Gray E., Hanappi D., Kreuter F, Lappegard T., Reeder L., Rønsen M., Toulemon L. (2014) "Employment Impacts on Partnership and Parenthood Entry in Different Family-Policy Regimes", *European Population Conference*.

Rodgers, G., Rodgers J. (1989). *Precarious jobs in labour market regulation: The growth of atypical employment in Western Europe*. Geneva: ILO.

Schwander, H., and Hausermann, S. (2013). *"Who is in and who is out? A risk-based conceptualization of insiders and outsiders."* Journal of European Social Policy, 23(3), 248-269.

Sobotka, T., Skirbekk, V., Dimiter Philipov, D. (2010) Economic recession and fertility in the developed world: A literature review. Report for the European Commission. Vienna Institute for Demography.

Torche, F. (2015) Analyses of intergenerational mobility: an interdisciplinary review. *The Annals of the American Academy of Political and Social Science* 657(1), 37-62.

Vera-Toscano E., Meroni E. (2014). Formal qualifications and individuals' skills. Evidence from the Survey of Adult Skills (PIAAC). Publications Office of the European Union. JRC92997.

Verhaest, D., Sellami, S. and Van de Velden, R. (2015), 'Differences in horizontal and vertical mismatches across countries and fields of study', in *International Labour Review*. Accepted Author Manuscript. doi:10.1111/j.1564-913X.2015.00031.x

Verick, S. (2009) "Who is hardest hit during a financial crisis? The vulnerability of young men and women to unemployment in an economic downturn." IZA Discussion Paper, no. 4359, Institute for the Study of Labor, Bonn.

Vosko, L. (2006). *Precarious employment: Understanding labour market insecurity in Canada*. Montreal: McGill-Queen's University Press.

Werner E., Boeri T., De Coen A., Galasso V., Kendzia M. and Steiber N. (2014) *How to combine the entry of young people in the labour market with the retention of older workers?* IZA Journal of European Labor Studies, 3:19.

Wolbers, M. (2003), 'Job mismatches and their labour-market effects among school-leavers in Europe', *European Sociological Review*, 19, 249-266.

Wood J., Vergauwen J., Neels K. (2015), "Economic conditions and variation in First Birth Hazards in 22 European Countries between 1970 and 2005.", Population change in Europe, the middle-East and North Africa. Beyond the demographic divide. London, Ashgate, *International Population Series*.

Zira, E. (2016) *The impact of skill mismatch on aggregate productivity: cross-country analysis in OECD economies*, Master Thesis, KTH Royal Institute of Technology, Stockholm, Sweden.