Eurofound

Aspects of non-standard employment in Europe

Produced at the request of the European Commission

Contents

Executive summary....1
Introduction....1
Key findings....2
Introduction....4
1. Recent trends in the main categories non-standard work....5
Temporary contracts....6
Temporary agency work....8
Working time and part-time work....8
Self-employment....11
Recent trends in self-employment....11
Box 1: Self-employment and the changing nature of work in the United Kingdom....13
Own-account workers....14
Box 2: Own-account self-employment in Germany and the Netherlands....16
2. Wages and recent trends in non-standard employment....18
The recent the growth of non-standard work?....19
3. Digital platform work....21
The phenomenon of digital platforms....21
Measuring the extent of digital platform work....22
Empirical estimates of extent of work on digital platforms....23
Who works via digital platforms and why?....25
Social protection of digital platform workers....27
Box 3: Belgium introduces a tax regime for work on digital platforms....28
4. Social protection issues: Casual work, strategic employee sharing and voucher-based work....29
Casual work....30
Strategic employee sharing....30
Voucher-based work....31
References....33
Annex: Temporary employment rates in the EU15....36

When citing this report, please use the following wording: Eurofound (2017), *Aspects of non-standard employment in Europe,* Eurofound, Dublin.
Author: Donald Storrie
Produced at the request of the European Commission

The European Foundation for the Improvement of Living and Working Conditions (Eurofound) is a tripartite European Union Agency, whose role is to provide knowledge in the area of social, employment and work-related policies. Eurofound was established in 1975 by Council Regulation (EEC) No. 1365/75 to contribute to the planning and design of better living and working conditions in Europe.

European Foundation for the Improvement of Living and Working Conditions

Telephone: (+353 1) 204 31 00
Email: information@eurofound.europa.eu
Web: www.eurofound.europa.eu

Executive summary

Introduction

This report investigates recent developments in non-standard employment in the European Union. While the overall policy context is 'social protection for all', it does not focus exclusively on social protection. This was the orientation of the report from the European Social Policy Network *Access to social protection for people working on non-standard contracts and as self-employed in Europe: A study of national policies*.

One focus of the report is on the growth in non-standard employment in the last decade. It finds that, apart from part-time work, there has not been an increase in non-standard employment during this time. However, both temporary contracts and self-employment grew, quite strongly in some Member States, in the long economic boom from the mid-1990s and up to the onset of the recession in 2007. It is, of course, primarily when times are bad that the need for employment and social protection is made manifest.

The most relevant of possible future developments of non-standard work, whatever their contractual form, are related to digitalisation. The cost efficiency of work mediated by digital platforms implies that potential exchanges of low economic value relative to the transaction cost, which previously were not economically viable, are becoming so. Thus one of the more meaningful characterisations of this phenomenon is the 'gig' economy, that is, trade in one-off exchanges. While evidence on the extent of such work is very limited, this report estimates that people engaging in this work as their main labour market status do not make up more than 0.5% of all employment in Europe. While the economic logic of these platforms appears to be compelling, and certainly the stock market is predicting strong future growth, it would be premature to predict significant employment growth as a result of digital platforms in their current form. Possible barriers to future growth include the internalisation of such business models within the firm and the substitution of labour by new technology in the more routine of the tasks currently performed by platform workers.

Social protection is a prominent issue for digital platform work. The short duration and occasional nature of 'gigs' organised through platforms raises essentially the same issues, of income and other thresholds, as those which apply to casual work on temporary contracts. The most prominent labour law and social protection issue, however, is whether the worker is self-employed or an employee. There is no clear definition of the employment status for work via platforms, and it varies with the particular circumstances of the many various forms of platform work. Of particular relevance is where on the continuum from mere matching to management a particular platform is located. While the European Social Insurance Platform sees little need for a comprehensive reform of social protection, at least as regards digital platforms doing virtual work, some Member States have enacted specific legislation.

Other social protection issues taken up are based upon those forms of employment analysed in Eurofound's *New forms of employment* report. Some focus is placed on the most problematic of these forms from a social protection perspective, namely casual work. Examples are provided of legislation that specifically excludes casual workers from social protection, and other legislation that acts to include them, typically by compensating from income thresholds. Voucher-based work and strategic employee sharing are examples of non-standard work that aim to address the inadequacy of social protection in occasional or part-time work.

Key findings

- There was previously a significant increase in the temporary employment rate, particularly since the late 1980s. This occurred, for example, in France and Spain between 1985 and 1995, Sweden in the early 1990s and Germany in the early 2000s. More recently, the large increase in Poland was particularly striking, rising from only 4.6% in 1999 to 28.2% by 2007.

- However, in the last decade, there has been no upward trend in the rate of temporary contracts overall in the European Union; indeed, there was a slight decline from 14.5% in 2006 to 14.2% in 2016.

- The probability of having a temporary contract is high for the young, foreign-born workers, those with low educational attainment and those in elementary occupations. There is now less than a one-percentage-point difference in the male and female rates.

- Despite growing in the 15 years up to the recession, temporary agency work has remained well below the rate of temporary contracts. In recent years, it has declined, and in 2015, it accounted for 1.9% of all employment in Europe.

- Part-time work, which has been growing for decades, continued to grow since the onset of the recession. It now accounts for just under 20% of all jobs in the EU (24% in EU15), up from 16% in 1996. This is a widespread phenomenon and has occurred for all ages, both genders, and among various labour market states, occupations and sectors.

- There has been a notable increase in very short weekly hours (10 hours or less per week) in, for example, Austria, Germany and Denmark. Overall in the EU, the male share has grown from 1.5% to 2.8% (of all male workers), while the female share has increased from 6.1% to 6.6%; it has risen particularly among the young. Almost half of part-time workers working short hours do not consider their main labour status to be that of a worker.

- Involuntary part-time work increased from 22.4% of all part-time work to 29.1% between 2007 and 2015. This change is correlated with the change in unemployment rates in Member States, with strong increases in Cyprus, Greece and Spain; Germany showed the sharpest decline in both unemployment and involuntary part-time work.

- Despite relatively more men becoming involuntarily part-time, there are twice as many involuntary female part-timers. Involuntary part-time work is more prevalent in lower-paid service occupations and among sales and service workers.

- Own-account workers (self-employed without employees) make up 10% of all employed, while employers (self-employed with employees) account for 4.5%. Of the self-employed, 18% could be classified as dependent on the basis of their self-perceived and objective economic situation.

- Self-employment, which rose in many Member States up to the recession, has at EU level declined by almost half a million in the last decade. It has increased rapidly, however, in the UK since the turn of the millennium; growth is mainly among own-account workers. The Czech Republic, France, the Netherlands and Slovakia also show strong growth. Germany, Poland Sweden are among the Member States with declining self-employment.

- Evidence from the Netherlands and Germany suggests that the primary motives for own-account self-employment are positive factors related to, for example, autonomy and opportunity. However, there are also more negative motivations, related to the lack of other options, and more so in Germany than the Netherlands. A small percentage even stated that it was due to their 'employer' wanting them to be self-employed.

- Still, a sizeable share (12.6%) of the self-employed in the Netherlands and Germany – countries with relatively well-developed social protection systems – could be classified as 'precariously self-employed', based on various measures of financial resilience and social protection. Nevertheless, a high proportion of self-employed believe it is incumbent upon themselves to provide for their own social protection.

- Evidence from European surveys shows that most of the most recent growth in self-employment has been in well-paid occupations. This was also found in studies based on national data from the UK.

- The only estimate of the prevalence of digital platform work identifying labour market status *at a single point in time*, based on a random sample of the population, is from the USA, where was estimated to be 0.5% of all employment in 2015. While the authors state that this number 'requires many caveats', they note that other estimates, using other methods arrive at a similar number.

- In Europe, the most reliable estimate is from the UK in 2016, which found that 4% of employed people performed such work *at any time* in the past year; 25% of these reported that this was their main job. This is not incompatible with the 0.5% (at a single point in time) reported in the US study. Other recent studies arrive at a similar figure not only for the UK but also for the Netherlands, Germany and Sweden.

- Slightly more men than women work via digital platforms and more young than old, particularly among those who do this work intensively. They have similar levels of education as other workers.

Introduction

This report is a response to an ad-hoc request from the European Commission. It complements a report by the European Social Policy Network (ESPN), *Access to social protection for people working on non-standard contracts and as self-employed in Europe: A study of national policies* (ESPN, 2017). That report examines social protection for those on part-time, temporary and temporary agency contracts and for the self-employed. The current report examines recent trends and some aspects of the labour market situation in relation to non-standard work. It includes a specific focus on work mediated by digital platforms, which has been viewed as an emerging challenge.

Non-standard work, which only describes what type of work it is not, is obviously a very vague term. Here, it will include various types of employment status as found in labour law and reflected in conventional labour market statistical categories. But it will also include forms of employment that are not regulated in labour law (or are unclearly so) or that have sparse coverage in official statistics. The approach is decidedly eclectic, both as regards the types of employment dealt with and which aspects of these employment forms are taken up. Regarding the forms of employment, one consideration is to examine those that are new or gaining appreciably in significance. This motivates the emphasis placed upon digital platform work and the attention given to part-time work.

This study starts with an overview of the trends in the main categories of temporary contracts, part-time work and self-employment, based mainly on the European Union Labour Force Survey (EU- LFS). It reports on the characteristics of those who work part time and those with temporary contracts and what motivates them to accept such work. From other sources, it also charts recent developments in the extent of temporary agency work, where it is underlined that this form of work has remained at rather low levels.

Self-employment, particularly those self-employed without employees (own-account workers), while remaining stable in the EU in the last decade overall, has grown very rapidly in the UK and the Netherlands in particular. These are countries with a history of innovative forms of employment. For example, they introduced temporary agency work well before many other Member States. The national (and European) evidence presented shows that recent growth has largely been in better-paid occupations. But even here the issue of social protection contributions is a significant factor behind this growth.

Among the various emerging forms of employment, work provided via digital platforms appears to be the most innovative and to have considerable potential for growth. Both the strong economic logic of online platforms and their high stock market valuations suggest that this may be the case. The report devotes some attention to the statistical issues related to the measurement of the often very occasional work, and typically of very short duration, provided through platforms. The limited empirical material available suggests that it is, as yet, still a rather small phenomenon.

Digital platform work highlights many of the labour law and social protection issues related to casual work, but the report notes its potential role in addressing the non-payment of social security contributions in undeclared work. The report concludes with some social protection implications of the new forms of employment examined in previous Eurofound research.

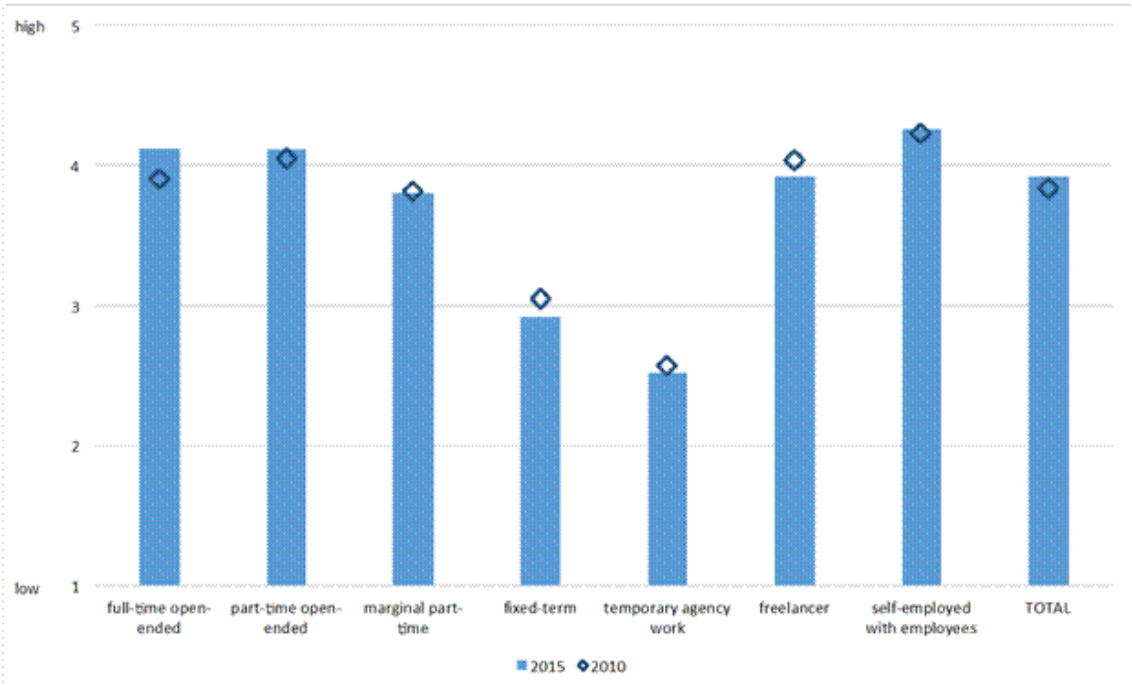
1. Recent trends in the main categories non-standard work

The standard employment contract, typically a five-day week on an open-ended contract, is strongly correlated with economic development. This is apparent when looking at the trends within countries or a cross-section of more- and less-developed countries. In a long-term perspective, it is the standard employment contract that is new. However, since the late 1970s, temporary contracts began to grow significantly in many European countries, with bouts of strong growth in particular countries concentrated in different decades up to the recession of 2008. Self-employment, which had been in secular decline for most of the last century, turned slowly upward in some Member States from the beginning of the 1980s.

In the last decade, at EU level, both temporary contracts and self-employment have been stable. The previous numerically significant new form of employment, temporary agency work, emerged in most European countries in the late 1990s. It initially rose quite rapidly but never accounted for more than 3% of all employment (CIETT, 2015). It peaked in 2007 and is now around 1.9% (World Employment Confederation, 2017).

Work can be insecure due to weak contractual rights or exposure to market forces. By definition, temporary contracts are expected to be of limited duration, with low or even no dismissal cost to the employer. Security of self-employment, typically in very small companies and with limited financial resources to parry shocks, depends directly upon the demand for the services provided, so such work is highly exposed to market fluctuations. Figure 1 shows job-holders' perception of their job security by contractual form. Thus, the starting point of this report should be an examination of work done under these types of contracts.

Figure 1: Self-reported perception of job security in Europe, by type of employment, 2010 and 2015

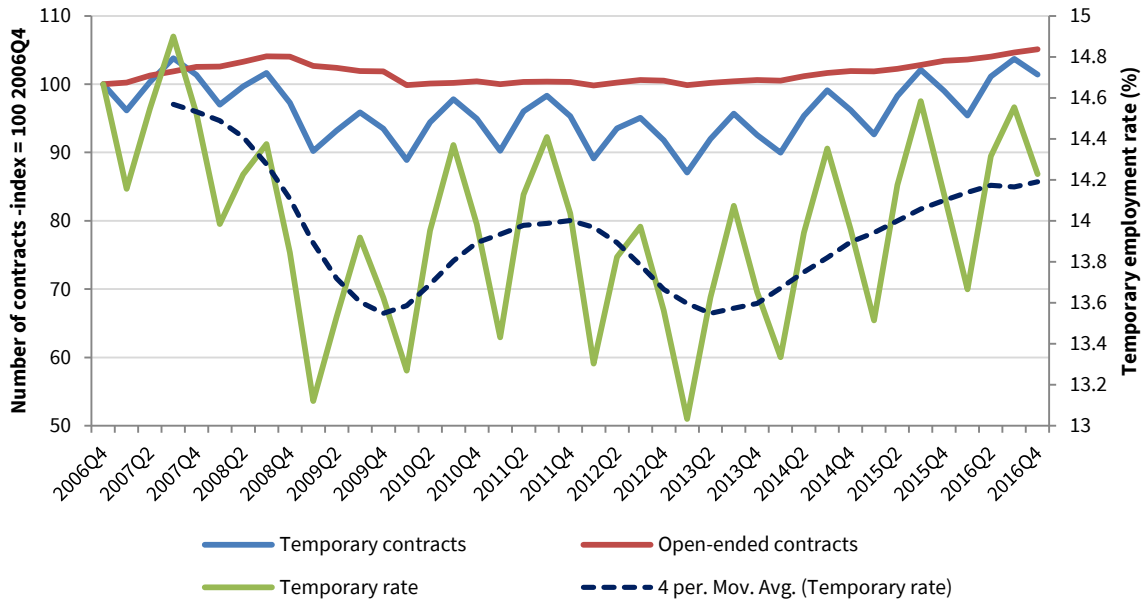


Source: European Working Conditions Survey 2010, 2015, weighted results, as calculated by Eichhorst and Tobsch (European Parliament, 2017)

Temporary contracts

Both the number of temporary contracts and the temporary employment rate (number of temporary employees as a percentage of all employees) show a strong cyclical (and seasonal) pattern. Both declined at the onset of the recession and tended to increase with the recovery (and picked up during the 'double dip' around 2010–2011), as many new hires are employed on temporary contracts. Both open-ended and temporary contracts have increased steadily since the trough of 2013 Q1, even if the increase in the temporary rate appears to have abated somewhat in 2016: the 2015 Q4 figure is 14.1% and the 2016 Q4 rate is 14.2% (Figure 2).

Figure 2: Trends in open-ended and temporary employment, EU, 2006 Q4–2016 Q4

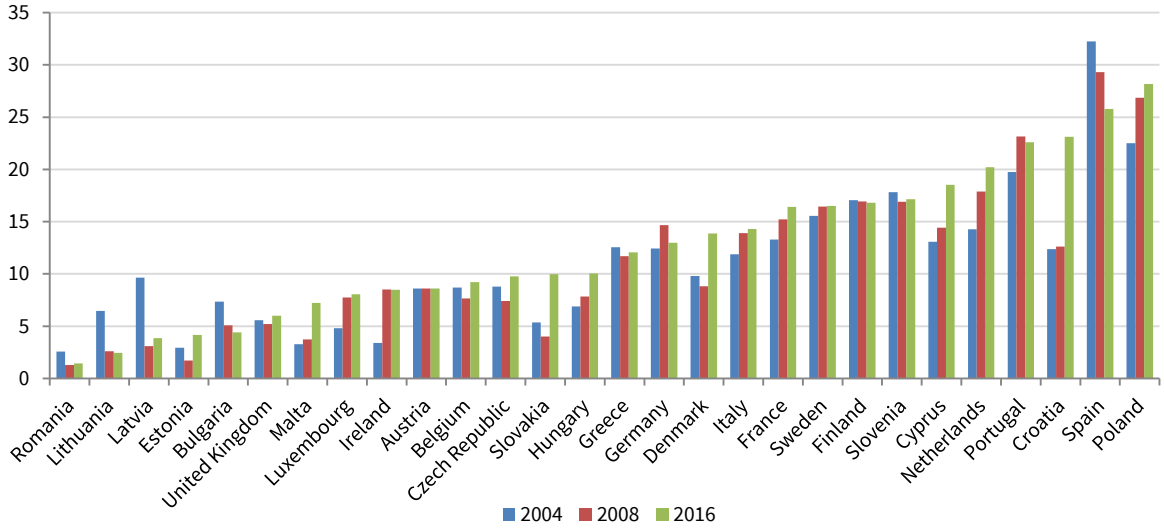


Source: EU-LFS

Denmark, the Netherlands, Slovenia, Malta, Croatia and Poland show some appreciable increase in the temporary rate since the onset of the recession in 2008. Spain, Germany, Latvia and Lithuania show a significant decrease post-recession. Given Spain's large share of temporary contracts in Europe, the decline there has held down the EU rate over this period, and vice-versa for Poland (Figure 3).

The key feature of the data presented above is that the temporary employment rate in 2016 was lower than it was before the recession. The recently published annual figures show an EU-wide rate of 14.5% in 2006, 14.6% in 2007 and 14.2% in 2016. The big increase in temporary employment (at least in the EU15) came much earlier, for example, in Spain and France between 1985 and 1995, Sweden in the early 1990s and Germany in the early 2000s. In Italy and the Netherlands, the increase was also strong but more evenly spread over the entire period since 1985. (See Figure A1 in Annex.) The massive increase in temporary employment in Poland occurred in the first half of the century, rising from only 4.6% in 1999 to 28.2% by 2007.

Figure 3: Temporary employment rates (%) in Member States 2004, 2008 and 2016 (Q2)



Source: EU-LFS

The motives for employees to take up a temporary contract are essentially non-voluntary. Given the option of two identical jobs, one with an open-ended contract and the other with a temporary contract, the rational choice is to take the open-ended one, as employment protection places obligations on the employer, not the employee. The EU-LFS publishes results on motives, and around 12% of respondents report that they did not want a permanent job. One should treat this figure with some scepticism, as interview questions on motives can be open to many interpretations. Also, as noted in Eurofound (2015a), responses vary significantly over time, and in several cases they are obviously unreliable.

Eurofound (2015a) used a multivariate regression analysis (to isolate the effect of a single factor with others held constant) to estimate the probability of holding a temporary contract compared to an open-ended one. The results are summarised as follows.

- The odds of holding a temporary contract are much higher for employees aged 20–29 years (and for those aged 30–39 years and above 60 years, although to a lesser extent) and lower for those aged 50–59 years than for those aged 40–49 years.

- The odds are slightly higher for female than male employees, although not statistically significant. Note that by 2016 there was less than a percentage point difference in the temporary employment rate between men (13.8%) and women (14.7%).

- There is a negative relationship between educational attainment and the likelihood of holding a temporary contract.

- The probability is much higher in agriculture and some service sectors than in manufacturing, while it is lowest in the financial, mining, and activities of households as employers sectors.

- It is slightly higher for employees working in medium-sized companies (20–49 employees) than for employees of larger companies (50 or more employees).

- It is much higher among elementary occupations, and much lower among managers, professionals and technicians than for craft and related trades workers, reflecting a negative relationship between the skills intensity of the occupational category and the likelihood of holding a temporary contract.

- It is higher for part-time than for full-time workers, and higher for employees having more than one job than for those having only one.

Temporary agency work

Evidence from the European Working Conditions Survey (EWCS) (see Figure 1 above) shows that temporary agency work is experienced as the most insecure of contractual forms. Prior to the now-emerging digital platform work, temporary agency work was probably the main recent contractual innovation in the labour market. According to the World Employment Confederation (2017), it accounted for 1.9% of all employment in Europe in 2015. This compares to a figure of 1.2% in 1999 (Eurofound, 2002), when this form of employment had just become legally permissible in most of Europe. In 2015, the highest rate was in the UK (3.8%). Other significant numbers can be found in the Netherlands (3.0%) and France (2.1%), and the lowest rate was 0.1% in Greece. These figures are rather similar to those from 1999, with the exception of Germany, where the agency worker rate increased from 0.7% to 2.4% of all employment.

Other available estimates of the size of the temporary agency workforce are based on the NACE classification in the EU-LFS. It yields lower numbers and very probably underestimates this type of employment. See Eurofound (2016a) for a discussion of the issues and estimates based on national sources. Our judgement is that the figure in the World Employment Confederation report of just under 2%, cited above, is not far off the mark.

The issue of whether agency work is a stepping stone to other more secure employment has been a common focus of policy research. Overall, the research indicates that it is not. Houseman (2014), reviewing evidence from Germany, Spain and Italy, finds rather low transition rates for agency workers (lower than those on fixed-term contracts) and conclude that there is no evidence of a stepping-stone effect. There is, however, more positive evidence from both Sweden and Denmark as regards the role of temporary agency work as stepping-stones for migrants.

Working time and part-time work

Part-time work is one type of non-standard employment that undoubtedly has grown since the onset of the recession. It has grown for decades due to the structural shift in the economy towards services and preferences for part-time work, not least related to the increase in female labour force participation. It now accounts for just under 20% of all jobs in the EU (24% in the EU15), up from 16% in 1996. In the most recent few years, as the labour market improves, the part-time employment rate has declined marginally, thus indicating that not all part-time is voluntary.

There have been quite significant changes in the distribution of working-time schedules *for all workers* since the late 1990s (Table 1).

Table 1: Usual weekly working hours, EU15, 1996–2015

Usual weekly working hours	1996 %	2002 %	2008 %	2015 %
≤10 hours	3.4	3.8	4.0	4.6
11–15 hours	2.0	2.3	2.5	2.6
16–20 hours	5.4	5.8	6.1	6.4
21–25 hours	3.2	3.4	3.9	4.5
26–30 hours	3.8	4.3	5.0	5.8
31–35 hours	4.8	10.4	9.4	9.6
36+ hours	77.4	70.2	69.2	66.7
Total	100.0	100.0	100.0	100.0

Note: Workers aged 15–64 years

Source: Eurofound (forthcoming a), based on EU-LFS data

While women account for the majority of part-time work with very short hours (up to 10 hours per week), the male share has grown relatively faster since 1996 (from 1.5% to 2.8% of all male workers) compared to the female share (from 6.1% to 6.6% of all female workers). Highest shares were recorded amongst both young workers (aged 24 years or younger) and workers above 64 years, and it was in these groups, in particular the younger group, that the greatest growth in the share of part-time work with very short hours was recorded. However, almost half of short hours part-time workers (47%, EU26,[1] 2015) do not consider their main labour status to be that of a worker.[2] Over a quarter (26%) say they are students, 9% are retired, and the others state they are unemployed or inactive. Interestingly, one in six (16%) of involuntary part-timers working very short hours give their professional status as self-employed. This has increased by 4 percentage points since 2008. Further analysis of this group might be able to capture the recent phenomenon of very occasional work on digital platforms, to be discussed below.

Self-reported involuntary part-time work has increased since 2007, from 22.4% of all part-time work to 29.1% in 2015. Respondents to the survey are classified as involuntary part-timers if the reason given for working part time is 'Person could not find a full-time job'. There are, however, in some cases significant breaks in the statistical series, not least in the UK and Germany. Also, questions on behaviour and motives can be difficult to interpret. In the rest of this section, an alternative measure is used, where self-reported part-timers indicate that they are available and willing to work more hours.

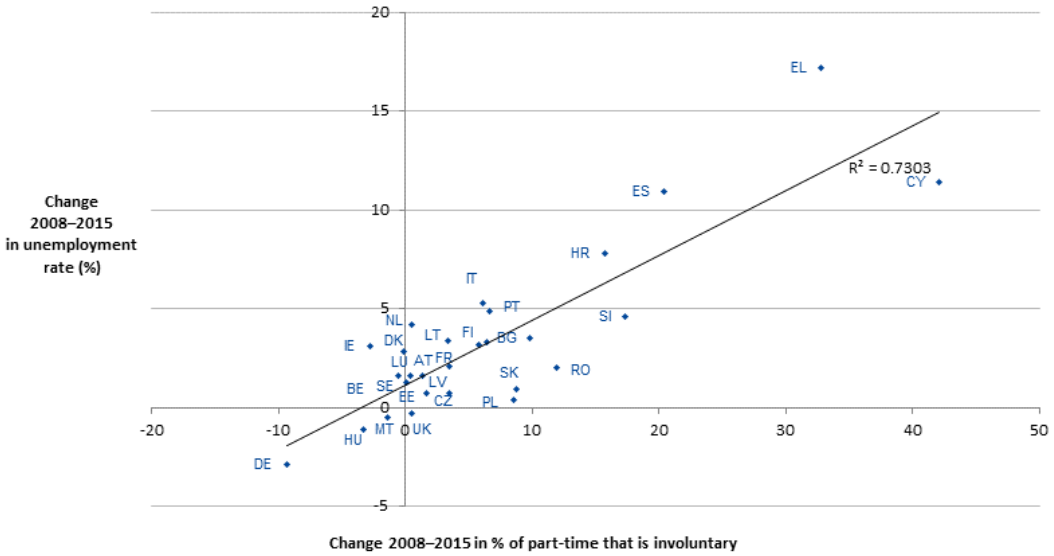
There is a very strong association between national labour market performance and changes in the share of involuntary part-time work. Where the unemployment rate has increased most, there is a strong likelihood that the involuntary part-time share has also grown strongly.[3] Greece, Spain and Cyprus are again illustrative. The corollary is also true. The Member State with the most improved unemployment record over the period, Germany, is also the one with the sharpest decline in involuntary part-time share (Figure 4).

[1] Data not available for the MAINSTAT variable for the UK and Germany.

[2] The relevant category of the MAINSTAT variable in the EU-LFS is described more precisely as 'carries out a job or profession, including unpaid work for a family business or holding, including an apprenticeship or paid traineeship, etc.'

[3] A similar finding is observed if the employment rate (sign reversed) is used rather than the unemployment rate ($R^2 = 0.69$)

Figure 4: Change in involuntary part-time employment share and in unemployment rate, EU Member States, 2008-2015



Source: Eurofound (forthcoming a), based on EU-LFS data

Who are these involuntary part-timers? Table 2 compares workers with different personal and work characteristics according to the share of overall employment, of part-time employment and of involuntary part-time in the EU28.

Nearly four out of five part-time workers in the EU are women, but amongst involuntary part-time workers the gender imbalance is not so marked, indicating a stronger likelihood that part-time men fall into the category than part-time women. Nonetheless, there are twice as many involuntary female part-timers in the EU than involuntary male part-timers. Younger workers, less educated workers and – especially – workers new to their current job (tenure of less than one year) or those on temporary contracts are more likely to be involuntary part-time workers. Lower-paid service occupations, elementary occupations and sales and service workers account for 57% of all involuntary part-time employment but around one-quarter (26%) of total employment. Managers, on the other hand, are much less likely to be working part time and, if working part time, to be doing so involuntarily.

Sector-wise, traditionally male-employing sectors such as manufacturing and construction combine a prevalence of full-time employment with very low shares of involuntary part-time employment. This is interesting as it implies that the disproportionately high male share of involuntary part-timers is concentrated in service sector employment. A gender disaggregated breakdown by occupation (not shown) confirms that this is the case; the retail sector and the accommodation and food services sector are both predominantly female-employing sectors but are also those that account for the highest shares of involuntary part-time employment amongst male workers.

Of the other service sectors with high shares of involuntary part-time employment, the most important is administrative and support service activities, a broad grouping that includes private security, services to buildings (including cleaning and facilities support) as well as call centres. The highest likelihood of being an involuntary part-time worker is in domestic employment, that is, services to individual householders, which accounts for just over 1% of all workers but 6% of all involuntary part-timers. This sector has a large majority of female workers.

Table 2: Share of overall employment, voluntary part-time and involuntary part time, by personal and work characteristics, EU28, 2015

Variable	Category	All workers (%)	Voluntary part-time (%)	Involuntary part-time (%)
Sex	Male	53.9	21.8	33.5
	Female	46.1	78.2	66.5
Age	15–24 years	8.5	13.3	15.4
	25–39 years	35.3	29.1	35.9
	40–54 years	40.3	37.4	36.9
	55–64 years	16.0	20.1	11.8
Education	Lower secondary	18.0	21.4	27.7
	Upper secondary	48.4	50.0	47.1
	Tertiary	33.5	28.7	25.2
Tenure	< 12 months	13.6	17.9	31.9
	1–5 years	24.3	26.1	31.8
	> 5 years	62.1	56.0	36.3
Contract type*	Permanent	85.9	83.5	63.7
	Temporary	14.1	16.5	36.3
Selected sectors (high prevalence)	Activities of households as employer	1.1	2.5	5.6
	Arts, entertainment and recreation	1.8	2.7	3.6
	Accommodation and food service activities	4.7	7.3	10.4
	Administrative and support service activities	4.2	6.2	8.9
Selected sectors (low prevalence)	Manufacturing	15.7	6.4	4.1
	Financial and insurance activities	3.0	2.4	0.9
	Construction	6.8	2.4	3.3
Selected occupations (high prevalence)	Elementary occupations	9.1	16.1	26.5
	Service and sales workers	17.0	26.8	30.1
Selected occupations (low prevalence)	Managers	5.9	2.2	0.9
	Craft and related trades workers	11.8	3.2	4.9
	Plant and machine operators and assemblers	7.4	2.4	3.3

** Employees only*
Note: 'Don't knows' and 'Not applicable' omitted from calculations.
Source: Eurofound (forthcoming a), based on EU-LFS data

Self-employment

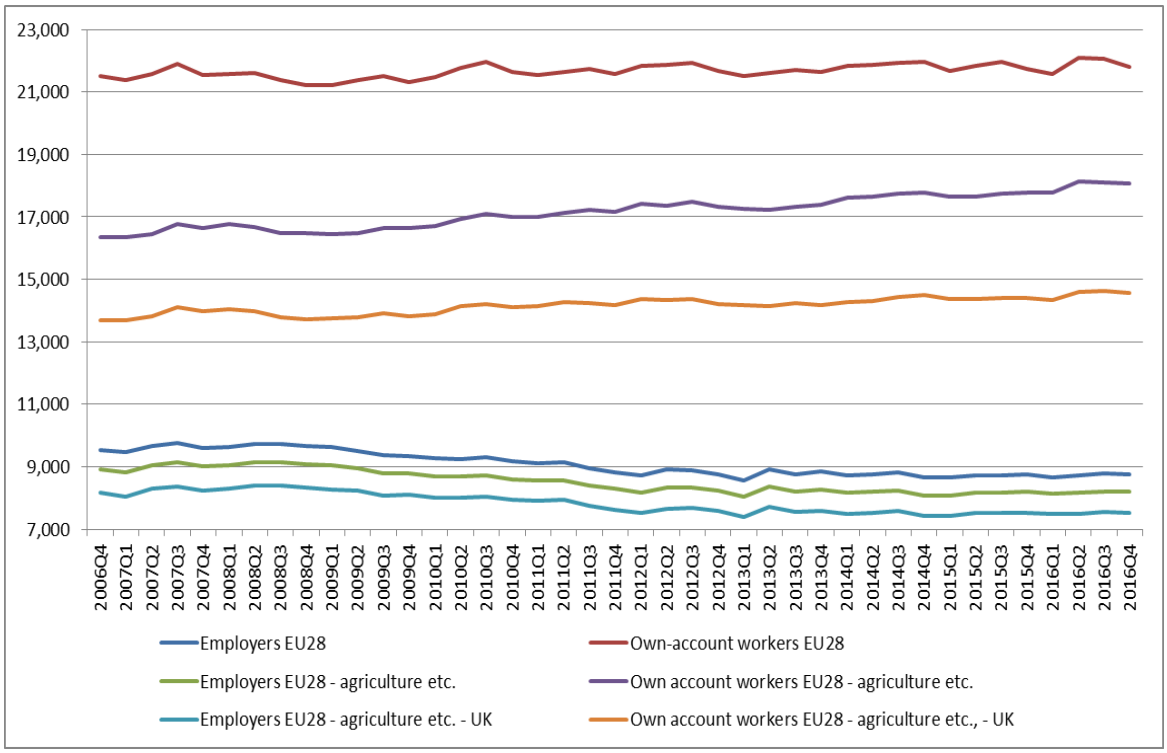
Recent trends in self-employment

Self-employment declined through much of the last century but started to increase again towards its later part. It turned first in the UK and Sweden, in 1979 (self-employment as percentage of the non-agricultural workforce). In other countries, the rebound came later, for example, in Germany in 1983 and in the Netherlands in 1990, (OECD, 2000). However, in the last decade, in the EU28 it has remained stable at around 15% of all employment, though

with quite significant variation between Member States. For example, in the countries mentioned above, it has increased appreciably in the UK and the Netherlands but has remained rather stable (with a slight decline even) in Germany and Sweden.

Self-employment does not exhibit the cyclical fluctuations that are typical of temporary contracts or involuntary part-time work. The number of self-employed has fallen by almost a half million between 2006 Q4 and 2016 Q4. The decline totalled 1.8 million in Greece, Spain, Croatia, Italy Portugal and Romania and is partly due to declining employment levels in agriculture. The countries showing the largest absolute increases were the UK (750,000) and the Netherlands (320,000). The rate of self-employment, that is, the number of self-employed divided by the number employed, shows a very similar trend to that of the number of self-employed. The self-employment rate in the EU28 for those with employees (employers) is around 4.5% and for those without (own-account workers), around 10%. Figure 5 shows the development of these two types of self-employed since 2006 Q4.

Figure 5: Number of self-employed workers, in thousands, according to various self-employment categories, EU, 2006 Q4–2016 Q4



Note: Includes own-account workers and employers, with and without agriculture and with and without the UK.
Source: EU-LFS

The number of employers has declined in the last decade, with no trend since 2013. They have a relatively low risk of precariousness, experience the best (subjective perceptions of) working conditions, satisfaction with career opportunities, job security and pay, according the analysis of the EWCS by Eichhorst and Tobsch (European Parliament, 2017).

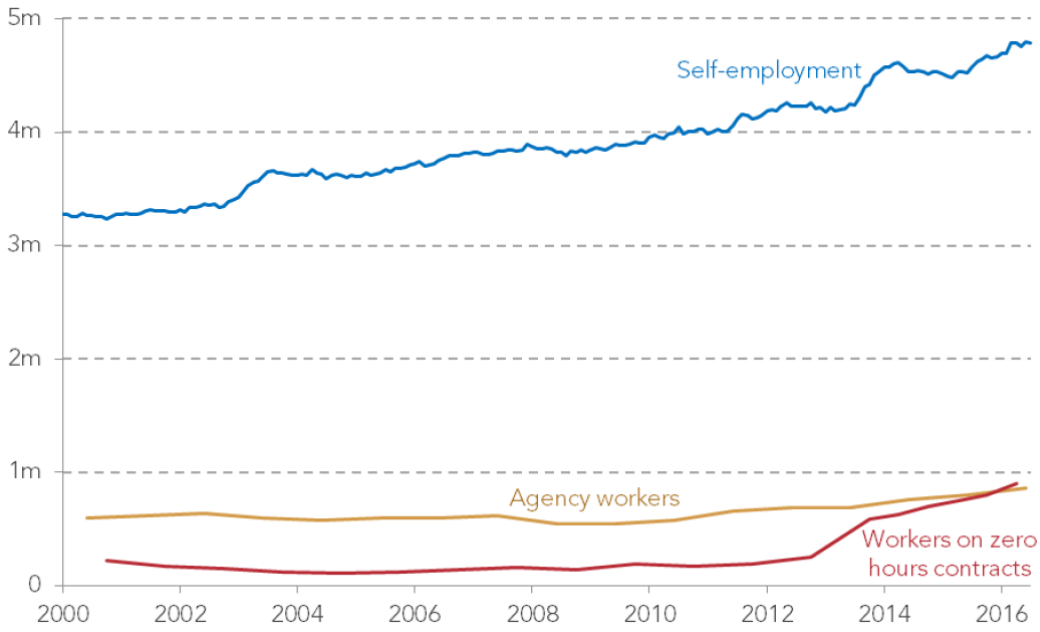
The UK has by far the largest number of self-employed in Europe, and the number has increased considerably over the last decade. Indeed, the recent growth of self-employment in the UK is one of the most striking labour market developments there, as almost half of

employment growth between 2008 and 2016 was due to the growth of self-employment. (See Box 1.)

Box 1: Self-employment and the changing nature of work in the United Kingdom

Figure 6, from a recent Resolution Foundation publication (Tomlinson and Corlett, 2017), shows that the real story about the changing contractual nature of work in the UK is the big increase in self-employment, which was already increasing before the recession. Zero-hours contracts have indeed increased rapidly since 2011, but the growth has abated recently.

Figure 6: Changing nature of work in the UK, 2000–2016



Source: ONS, Resolution Foundation analysis

A large part of the increase in self-employment in the UK is related to fewer people leaving self-employment status. This in turn is largely related to the ageing of the workforce: it was estimated by the Bank of England (2015) that roughly half of the increase in self-employment between 2004 and 2014 could be attributed to an ageing workforce – the self-employed are on average older than employees. Looking at sectors, nearly 60% of the growth in self-employment since 2009 has been in the better-paid sectors, with the strongest growth in advertising and public administration, where it has almost doubled, and in banking (60% growth rate). The remaining 40% of the growth has taken place in more precarious sectors, such as construction and cleaning. The Resolution Foundation (2017) claims that 'One of the key drivers of this growth has been the tax advantages enjoyed by the self-employed. For a worker costing a firm £100,000, a self-employed worker enjoys a tax advantage of around £7,000 over a similarly expensive employee.'

Most policy concern is related to the blurring of the lines between self-employment and employment contracts, with a focus on the dependency of the former. There is very little EU-wide evidence of this dependency among the self-employed. However, the 2015 EWCS asked more detailed questions on various types of self-employment in order to provide a more nuanced picture of self-employment than is available in other EU-wide representative surveys. Three main criteria were applied to define various subcategories: self-perceived status in employment; magnitude of the economic activity; and economic independence. This led to the classification of categories listed in Table 3.

Table 3: Subcategories of self-employment in Europe

	No. (thousands)	%
Director: medium to big employer	373	5
Director: small employer	1,416	17
Farmer: no employees	1,217	15
Independent own-account, freelancer, subcontractor	2,703	33
Dependent own-account, freelancer, subcontractor	1,494	18
Liberal profession	430	5
Other	584	7
Total self-employed	8,217	100

Source: EWCS 2015

These results suggest that around 18% of the self-employed are in a possible grey zone where, while they are formally self-employed, their degree of dependency indicates an employment status similar to that of a dependent employee. This is hardly to be equated with 'bogus' or 'false' self-employment, but presumably it is among the dependent self-employed that this group can be found. It could be considered as an upper-bound estimate. Eurofound (forthcoming b) develops this analysis further.

Own-account workers

In the context of this report, it is own-account self-employed that are of most interest. This group accounts for the largest part of self-employment. As it can have elements of dependency (with a single client) and vulnerability (due to small size and lack of resources), it may have many features that approximate that of dependent and rather precarious employment contracts and may have similarly low levels of social protection as the most casual of employment contracts. Its proximity to the circumstances of a dependent employment relationship also makes it a rather unclear field of labour law, with a blurred distinction between an employment relationship and self-employment.

The number of own-account workers increased slightly over the period (by 283,000) up to 2016 Q4. Figure 5 plots the EU28 trend without agriculture and, as agriculture is in decline, leads to a slight upward trend in own-account workers. While this may give a better indication of possibly new forms of self-employment, it should be underlined that poverty and social protection issues for agricultural labourers may be very acute and should not, from this perspective, be excluded from the analysis. Another data series in Figure 5 is the EU28 minus agriculture and minus the UK. The overall increase of 283,000 was more than accounted for by the increase in the UK of 834,000 and obviously leads to a flatter trend in own-account workers.

Table 4 shows the absolute and relative change in own-account workers. It demonstrates that own-account work has increased considerably, both in relative and absolute terms, not only in the UK but also in the Netherlands. France also has shown a significant increase, and even the growth in both the Czech Republic and Slovakia is striking. The countries showing a decline are predominantly in the south and east of the continent. Germany and Sweden are exceptions, even if the relative decline is small.

Table 4: Absolute and relative growth of own-account self-employed, EU Member States, 2006 Q4–2016 Q4

	Change 2006 Q4 to 2016 Q4				
	Absolute (thousands)	**Relative (%)**		**Absolute (thousands)**	**Relative (%)**
EU28	283.1	1.3	**Estonia**	-0.2	-0.6
UK	834.4	30.0	**Sweden**	-0.9	-0.4
France	354.9	24.2	**Cyprus**	-7.2	-16.7
Netherlands	299.5	45.3	**Bulgaria**	-8.8	-4.0
Czech Republic	142.3	26.4	**Lithuania**	-37	-25.0
Slovakia	87.1	40.1	**Hungary**	-40.8	-15.6
Belgium	76.9	21.2	**Poland**	-45	-2.0
Denmark	13.1	11.8	**Spain**	-98.4	-4.5
Finland	9.2	4.9	**Croatia**	-104.1	-49.9
Slovenia	8.6	13.7	**Germany**	-127.2	-5.8
Austria	6.1	2.5	**Greece**	-128	-13.8
Luxembourg	4.2	43.8	**Portugal**	-241.3	-37.6
Latvia	4.2	6.6	**Romania**	-283.2	-19.3
Malta	3.7	27.2	**Italy**	-441.9	-11.5
Ireland	2.9	1.5			

Source: EU-LFS

The rate of part-time work among own-account self-employed has increased from 17% to 19%, according to EU-LFS data. This is in line with overall developments of part-time employment, with the share of these self-employed among all employed stable over the period at just under 10%. If upward trends had been identified here, it could have been an indication of an increase in the gig work of digital platforms. Another possible means of identifying such work could be an increase in employed persons with a second job. Again, there would appear to be no evidence of a significant increase of this in the EU-LFS, which shows no trends for all self-employed with a second job, including those without employees.

Box 2 presents some results of a recent comprehensive study of own-account workers (or 'solo self-employed' as they are referred to) in the Netherlands and Germany (Conen et al, 2016). These are interesting Member States: Germany is the largest country in the EU, and the Netherlands has been at the forefront of innovative forms of employment, such as agency work and various types of part-time work. Indeed, own-account work has been rising appreciably in the Netherlands for some time and in the last decade showed the largest relative increase in the EU28, with a 45% growth rate since 2006, amounting to 300,000 more self-employed (Table 4). Moreover, the comparative perspective is useful. It appears to be a high-quality study with excellent and unique data.

Box 2: Own-account self-employment in Germany and the Netherlands

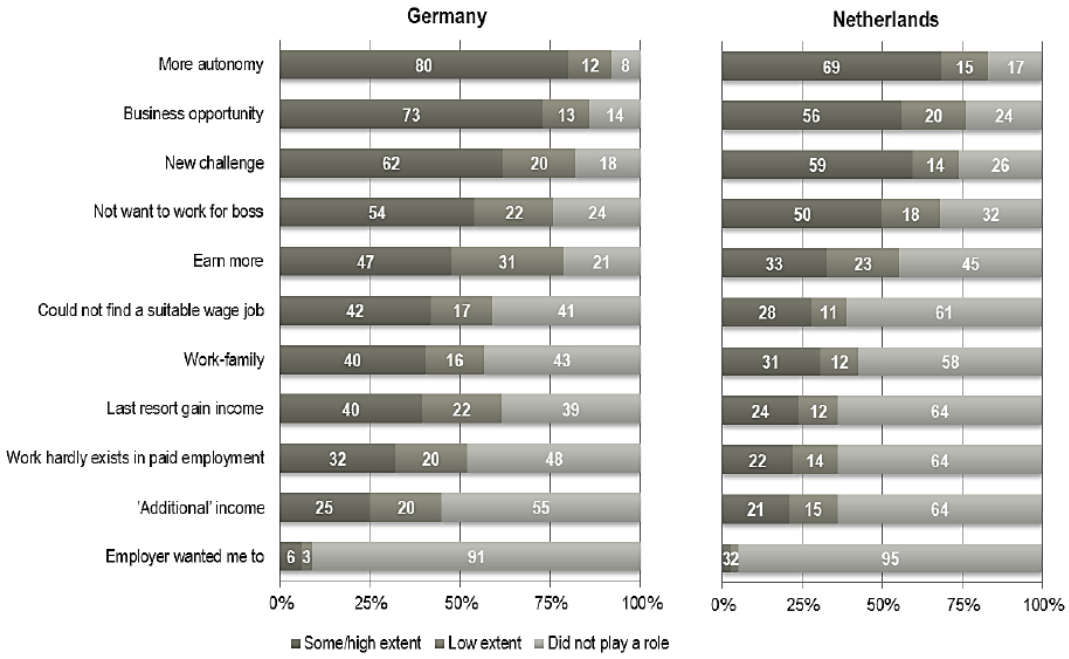
The following is a summary of a study by Conen et al (2016).

Method: Results are based on the labour force surveys, national panel datasets (German Socio-Economic Panel and the Dutch Labour Supply Panel), covering the period 2000 to 2010 and a specific survey developed by the authors to provide more insight into the attitudes and behaviour of solo self-employed (own-account self-employed). Interviews were held in 2015–2016. (The latter survey was not a classic random sample.)

Basic data: The levels and growth of own-account workers in the Netherlands and Germany differ considerably. In 1992, the own-account rate (number of own-account workers divided by total employment) was 6% in the Netherlands and rose slowly to 8% by 2006 but accelerated to over 10% by 2016. In Germany, it rose strongly from a low level in 1992 of 4% to 6% in 2006 but subsequently declined slightly to around 5% in 2016. The authors show that growth was prominent among older workers, the higher educated and in specific industries and sectors (such as various services and construction). In Germany, there was stronger growth among women and non-natives, but not so in the Netherlands. In Germany, the initiative to set up as solo self-employed was more necessity-driven, while in the Netherlands, it was relatively often more improvement-driven opportunity for entrepreneurs, and for relatively many, their self-employment was a 'second job'.

Motives: This was based on the authors' own survey of the solo self-employed. A clear result from Figure 7, which reproduces the results published in the report, is that most respondents in both Germany and the Netherlands ranked highly the more positive features of being self-employed as a reason for being solo self-employed. In both countries, 50%–80% of respondents indicated that these reasons played a role to some or a high extent.

Figure 7: Motives for becoming self-employed



Source: Conen et al (2016)

On other hand, the responses to the more negative motives were not insignificant. Roughly 40% of German and about 25% of Dutch self-employed agreed with the statements 'I could not find a suitable job as an employee (in paid employment)' and 'self-employment was my last resort to gain income'.

From a social protection perspective, the most concerning response is that their employer wanted them to work as self-employed. However, rather few responded so, only 6% in Germany and 3% in the Netherlands. This may provide a lower-bound estimate of the so-called 'false' or 'bogus' self-employment, as presumably the employer viewed this as a means to avoid potential dismissal costs and social security contributions. The study also attempted to capture the determinants of the elusive concept of motivation, in terms of voluntary and involuntary self-employment, but found limited statistical significance in many of the variables tested. They found that probability of involuntary self-employment increased with age, was positively related to chronic illness, and while in Germany, it was related to low education attainment, this was not the case in the Netherlands

Social insurance: Three-quarters reported that they lacked disability insurance at work. About half of these declared that insurance was 'too expensive', and that those that did have insurance were among the better off. Roughly a third thought that their pension savings and other sources of income were insufficient to live comfortably after retirement, which according to Van Dalen et al (2010) is higher than among employees. Perhaps surprisingly, only a small share of the self-employed wished for collective solutions to unemployment risks. Indeed, a large majority of self-employed believed that it was inherent to self-employment that they bear the responsibility of dealing with unemployment. However, while some solo self-employed also strongly believed self-employed people should be responsible for their own pension and wished to be able to make their own decisions in this respect, others thought the pension system should be reorganised. The latter group frequently indicated that within the current pension system they could not afford pension premiums, and they reported concern about this.

Precarious self-employment: The study also used a cluster analysis to identify three types of solo self-employed based on the level of financial resilience and social protection. One they labelled 'precariously self-employed' amounted to 12.6%, while the self-employed who 'get by' made up 43.7%, and 43.8% were classified as 'self-sufficient'. The presence of this substantial group of precariously self-employed in both countries seems to indicate that at present there indeed seems to be an issue for social policy, not least as regards social security provisions.

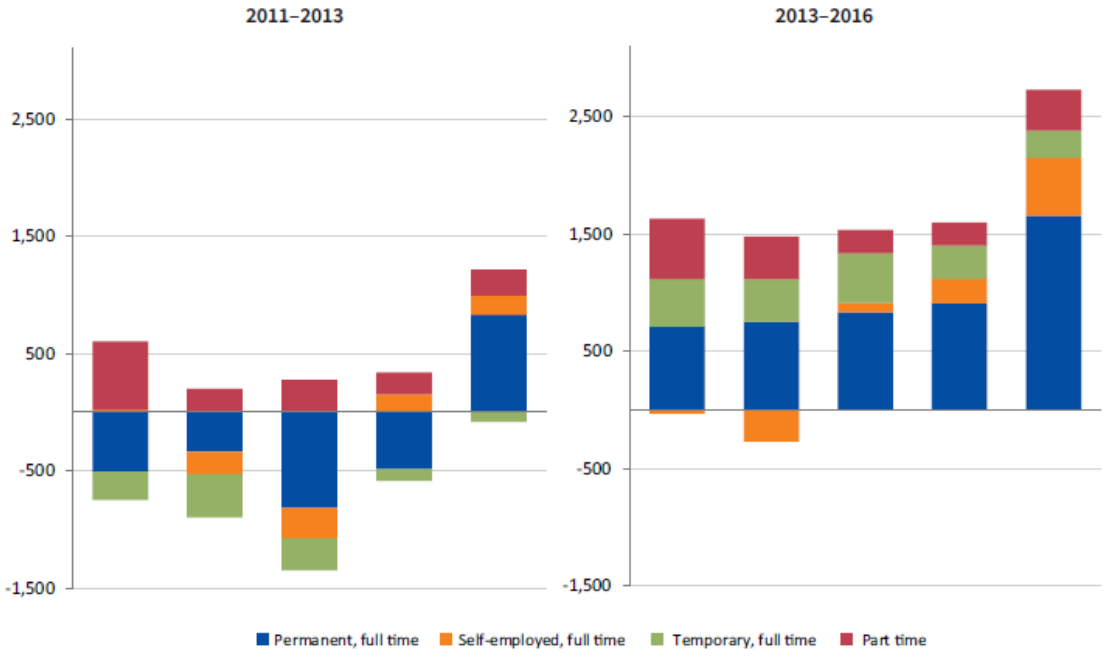
2. Wages and recent trends in non-standard employment

This chapter looks at recent employment change by grouping all jobs in the EU into five equal-sized classes according to hourly earnings (quintiles), as calculated in Eurofound's European Jobs Monitor (Eurofound, 2017b). Earnings are obviously a highly relevant aspect of any job. In the context of this report, the relevance is in terms of the capacity for those in these jobs to be able to both parry shocks (such as ill-health or unemployment) in the short term and to contribute to social protection (pensions) in the longer term.

The first panel in Figure 8 shows that, between 2011 and 2013, the only wage quintile with a net increase in open-ended contracts was at the very top end of the distribution. It also indicates that the widespread growth in part-time work mentioned in the previous chapter with respect to personal characteristics, occupations, sectors and so on also applied to wages, in that it grew in all quintiles but with more growth at the bottom. Overall self-employment declined slightly in this initial period of the recovery but with notable growth in the top two wage quintiles.

With the stronger recovery since 2013, the second panel shows net job growth for open-ended contracts in all quintiles. The growth of part-time work is still apparent in all quintiles but, as before, more so in the bottom. Perhaps the most striking result is the continued, but now even stronger, growth of self-employment in the top quintiles, with the largest increase in the top quintile.

Figure 8: Net employment change (in thousands) by wage quintile and contractual status, 2011–2013 and 2013–2016

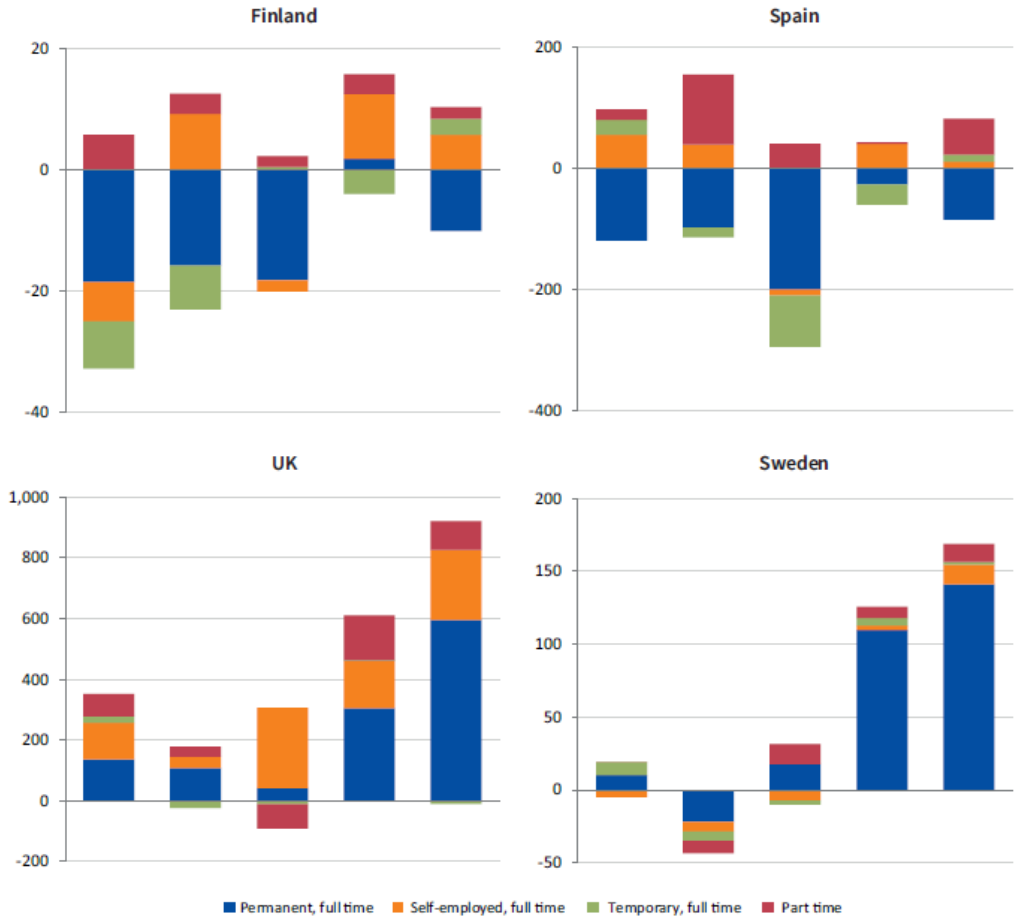


Source: Eurofound (2017b) based on EU-LFS and SES data

Figure 9 shows these developments in four Member States with quite different recent labour market performances. The figure indicates that much of the top wage growth in self-employment, seen in Figure 8, is attributable to the strong growth in the UK (this was also clear from the national-level analysis in Box 1 earlier). Self-employment (and part-time)

growth in Sweden is also strongest at the top. Finland also shows strong growth of self-employment in the top two quintiles, while in Spain it is at the bottom.

Figure 9: Net employment change (in thousands) by wage quintile and contractual status, 2011 Q2 –2016 Q2 in Finland, Spain, the UK and Sweden



Source: Eurofound (2017b) based on EU-LFS and SES data

The recent growth of non-standard work?

The only main category of non-standard employment that has grown since the recession is part-time work. This is a continuation of a long-term trend, and it is evident across most sectors and occupations. It is quite clear, however, that at aggregate EU level, the last decade has not seen an increase in two of the main non-standard forms of employment in labour law and in conventional labour force statistical categories, namely temporary contracts and self-employment. Both did, however, increase in earlier decades, not least during the long boom up to the onset of the recession in 2007. Similarly, while temporary agency work did grow up to a maximum of 3% of all employed in Europe around the turn of the century, its growth has slowed down appreciably and has even declined somewhat since the recession. How then to square this evidence with perceptions in the public debate of an increased problem as regards non-standard employment, not least as regards social protection?

The most obvious resolution of this apparent paradox is that job security and social insurance are of most relevance in bad times. The pre-recession growth in non-standard employment coincided with a uniquely long and strong period of economic growth that may have masked

the emerging fragility of the various forms of worker protection that are an integral part of a social market economy. The recession revealed this inadequacy. Moreover, perceptions of security are strongly influenced by recent experiences. Thus, while in principle a worker may know that the job is insecure, *de jure*, the widespread loss of temporary jobs that occurred during the recession revealed in most concrete fashion their *de facto* insecurity. These recent concrete experiences of insecurity may then have impacted on current perceptions and expectations.

A further possibility is that the nature of non-standard work has changed; in other words, while the numbers in the standard labour force statistics have not changed, these jobs have in fact become more precarious. The rise in involuntary part-time, particularly as it occurred most rapidly in those Member States where unemployment rose most rapidly, may be part of such a story. The rapid rise of the most casual of temporary contracts, i.e. zero-hours contacts in the UK, is a further example of such a tendency.

Finally, there is little doubt that emerging technologies have raised concerns among many Europeans concerning their job security. The Special Eurobarometer 460 (European Commission, 2017) finds that 74% of the respondents to the survey believe that that digitalisation replaces more jobs than it creates. There are many means by which digitalisation may impact both positively and negatively on the world of work. The next section takes up the most relevant aspect of digitalisation in this context, namely work meditated by digital platforms.

3. Digital platform work

Possibly the most salient future development in the world of work is the impact of digitalisation. The effects may range from a massive change in the number and sectoral composition of jobs to a radical reorientation of how work is organised in the workplace. This section focuses on the emerging digital platforms that enable not only the *matching* of service providers and customers, through a highly efficient labour market intermediary, but also some degree of *management* of the transacted economic activity. It has relevance to this report as digital platforms can have significant implications for the distinction between what may legally be considered to be an employment relationship and a commercial exchange between independent contractors.

The phenomenon of digital platforms

The rapid technological development of digital information processing and wide take-up of digital communication devices provides the technological opportunity for something new or, at least, to enable previously seldom-occurring forms of employment to grow significantly. The essence of digitalisation in this context is a highly efficient means, a digital platform, to facilitate the exchange of products and services. From a purely technical perspective, digital platforms can relatively easily reach a very large number of digitally equipped agents. This can be done with greater cost efficiency compared to human intermediaries. As well as the cost savings of the search and matching technology, digital payment systems have greatly enhanced both the feasibility and the security of payments. Moreover, there are means to ex-ante assess quality (and reliability) by both parties. The transparency of ratings and reviews linked to user accounts can address the issue of trust that otherwise might be low between anonymous agents. An important implication of this is that potential exchanges of low economic value relative to the transaction cost that previously were not economically viable have become so. Thus, one of the more meaningful characterisations of this phenomenon is the **'**gig' economy, i.e. trade in low-value, one-off exchanges. However, digital platforms are not just search and matching machines, they can also manage (also digitally, with management by algorithms) the exchanges on the platform, including, for example, price-setting.

The 'sharing economy' is something quite different, and is something of a misnomer. In its original digital form, this facilitated real sharing (often lending), i.e. without barter or payment. This is probably a rather limited activity (most obviously so in monetary terms), but it does occur, most prominently perhaps in online peer-to-peer file and code sharing. See, for example, Freecycle.org, which is a digital platform that enables true sharing of goods and services. However, 'sharing' in this context has come to mean, and to gain monetary significance, through the marketisation of unused personal resources such as a spare room in a personal dwelling or an underutilised car. Indeed, two of the biggest players, Airbnb and Uber, have capitalised on the highest-value physical assets of individuals by 'sharing' their homes and cars.

The rapid rise of global companies like Airbnb and Uber suggests that there are huge economies of scale in platforms. Indeed, the primary competitive advantage of a platform is its size as, for both buyers and sellers, the size of the market is crucial. The importance of size has been very apparent in the corporate strategies of platform companies, where initially growth is highly prioritised over short-term profitability. Moreover, once a platform is established, not only are the marginal costs very low but the acquisition of information on customer transactions and other 'big data' enhances marketing potential and further rewards the big incumbent player. This places the market leader in a very strong competitive position and creates significant barriers to entry. Moreover, with such a generic technology, data and

business model, there is potential for huge economies of scope where dominance in one market leads to dominance in others.

The structure of the market of digital platforms has potentially very important implications for pay and working conditions. Monopsony in the labour market will tend to lead to relatively lower wages and employ fewer people than in a more competitive labour market. However, it is almost impossible to assess the market structure in these activities. The business models are developing rapidly, and one could envisage situations where the low monetary start-up cost for platforms becomes more relevant than the above-mentioned other barriers to entry.

Cramer and Krueger (2016) provide some empirical evidence of the efficiency of digital platforms in a study of the capacity utilisation rate of Uber compared to conventional taxi services. Capacity utilisation is a key element of efficiency in such services. It is measured as the fraction of time a driver has a fare-paying passenger in the car while working, and by the share of total miles that drivers log in which a passenger is in their car. Based on data from various cities in the USA, they find much better scores on both measures for Uber drivers. They suggest that this is due to four reasons: Uber's driver–passenger matching technology; the larger scale of Uber than taxi companies; taxi regulations; and Uber's flexible labour-supply model and surge pricing, which more closely match supply with demand.

Very few of the digital platform companies currently make profits, but the very high market capitalisation of these companies obviously means that the stock market believes that they will do so sometime in the future. Accenture (2016) estimates that the 15 highest-ranked platform-based companies have a $2.6 trillion market capitalisation worldwide. The source of these potential profits is partly related to the efficiency of the technology and business model as outlined above. But it is also due to relatively favourable tax and social security environments that these companies have, or are trying to create. For example, a Financial Times (2017) cover story reported that around 'a third of the $100 saving you make over the price of an average hotel room is due to tax advantages that favour Airbnb's business model'. This is mainly related to preferential property and VAT taxation. This calculation did not even take account of social security contributions or of the extreme flexibility that this employment model provides to the digital platform 'employer'.

Measuring the extent of digital platform work

Conventional statistical definitions may not capture many relevant aspects of emerging types of work. Essentially, it is only the contractual classification of temporary versus permanent contracts, the status of self-employment versus having an employment contract, and part time versus full time that can currently be used to capture various types of non-standard employment, as in, for example, the EU-LFS. It is far from clear how digital platform work as an 'employment status' can be captured in this framework. Digital platforms enhance the economic viability of low-value exchanges. One can conceive that an individual could engage with several platforms to earn a living, or that individuals do platform work while holding another job or some other labour market status such as home-maker or student. While this was always possible to a limited degree, it is the potential scale of these activities mediated by digital platforms that make the accounting of this work in labour market statistics especially problematic.

Highly marginal activity, with short weekly working hours and short employment duration, is by its nature very difficult to capture statistically. Meaningful measures of employment levels should be at a single point in time or weighted to correspond to an annual average, as is the case, for example, in the EU-LFS. Most surveys of platform work, however, ask whether the interviewee has performed some type of work at any time in the previous year. This will be in

excess of that which would be recorded at a single point in time, particularly when the work is of short duration. Furthermore, as will be seen below, platform work is still such a relatively small phenomenon that sample sizes are small, making statistical inference limited or with high margins of error. Indeed, it is almost certainly the case that this is the reason why many of the studies on the gig economy ask about activities in the recent year as opposed to at a single point in time – in order to boost sample sizes.

As the main European and national labour market surveys have yet to pose questions on platform work, the available statistical evidence is largely based on various ad-hoc surveys, and not carried out by statistical authorities. These surveys are seldom based on random samples. Non-random samples of the population or of platform workers can provide useful information on the circumstances and conditions of platform work (if we can assume some degree of representativeness of the survey), but they cannot provide much useful information on the extent of this work.

It should also be underlined that digital platform work is in many respects very heterogeneous. The services that dominated the early platforms were relatively high-skilled IT tasks, where the tasks were not only matched but also delivered online, for example, through Upwork. However, not all digitally provided work is high skilled as it includes lower-skilled repetitive online 'click work', for example, Clickworker. Platform work also includes work that is matched on the platform, but the services provided require physical and localised delivery, for example, Taskrabbit. This also includes various delivery services such as Deliveroo and Uber. This is hardly an exclusive categorisation, and the range of activities appears to be expanding.

Empirical estimates of extent of work on digital platforms

To our knowledge, the only attempt to capture gig or platform work in terms of a labour market status at a single point in time and based on a random sample is from the USA, by Katz and Krueger (2016). The table below shows the main categories of alternative work arrangements in 2005 and 2015.

Table 5: Alternative work arrangements in the USA – percentage of all employed

	2005	2015
Independent contractors	6.9	8.4
On-call workers	1.7	2.6
Temporary help agency workers	0.9	1.6
Workers provided by contract firms	1.4	3.1
Total	10.7	15.8

Source: US Bureau of Labor Statistics (2005) and Katz and Krueger (2016)

The increase of alternative work arrangements from 10.7% to 15.8% of all employment represents a very significant increase and means that all of the net increase in employment in the US in this period has been in these alternative forms, mainly temporary agency workers and workers provided by contract firms. Given the quite different regulation of employment contracts in the USA, with its strong emphasis on the principle of 'employment-at-will', these developments may be of limited relevance for Europe. The main interest for this report was the attempt to provide, to our knowledge, the only nationally representative survey-based estimates of workers working on digital platforms in any country in the world. The study identifies this group by examining workers who identify customers through an online intermediary. The authors' best estimate, which they underline 'requires many caveats', is

0.5% of all workers. They do note that this is very close to other figures generated by other methods.

Based on the frequency of Google searches for terms related to online intermediaries, Harris and Krueger (2015) estimate that 0.4% of the employed work with an online intermediary. A similar figure, 0.6% of the working-age population, is found by Farrell and Greig (2016), based on the frequency of bank deposits from online work platforms in the USA. Citing other research they do conclude, though, that 'it is growing very rapidly'. Given that the still-recent origin of most of the firms providing digital platforms is the USA, one might postulate that the figure of around 0.5% of all employed is an upper-bound estimate of the percentage of employment in Europe with such an 'employment status'.

Possibly the methodologically soundest study from Europe is CIPD (2017), which in December 2016 interviewed a nationally representative sample of 5,019 employed people in the UK. It states that 'the survey was sent out to a nationally representative sample of UK adults aged 18 to 70'. The survey asked about the use of online platforms in the previous 12 months. These 'gig workers' amounted to 4% of the employed (it excluded pure selling activities such as eBay and Airbnb). Note that this is not comparable to the 'single point in time' measurement that yielded the 0.5% figure in the USA.

Only 25% of this 4% reported that this was their main job, and 58% of the gig workers reported that they are 'permanent employees' (in other jobs) and engage in the gig economy to supplement their income. If one were to assume the 25% figure as a basis for calculating something approximating a 'gig employment status', then one would arrive at a figure of 1% of the employed, i.e. 1% of employed people in the UK had an employment status of gig employed *at some time* in 2016.

Huws et al (2016) report results of a survey on crowd work implemented in the UK, Sweden, Germany, Austria and the Netherlands in the first two quarters of 2016. The survey was directed at the 'entire online adult population', and the authors state that the results 'cannot be generalised with complete confidence' to the entire population. The sample was ex-post weighted to be representative of the national population as regards age, gender, region and working status.

They find that that 5%–9% of the online population were engaged in some type of crowd work. It was usually a small supplement to total income. For 45% (from 58% in Austria to 33% in Sweden), it made up only 10% or less of all income. However, it accounted for more than half of all income for 2.4% of respondents in Austria, 2.6% in Germany, 1.7% in the Netherlands, and 2.8% in both the UK and Sweden. The study also finds that around 90% of crowd workers were using online job search sites, which was almost double that of non-crowd workers.

McKinsey Global Institute (2016) conducted another online survey in the USA, UK, France, Sweden, Germany and Spain (and extrapolated to EU15!) between June and July 2016. This study finds that 20%–30% of the working-age population were 'independent earners' (a quite intricate and non-conventional definition). Half of these used the work as a complement to other income sources. It finds that 15% of the independent earners used online platforms, i.e. corresponding to between 3% and 4.5% of the working-age population. It is difficult to arrive at a figure comparable to the Katz and Krueger (in principle the most appropriate one) estimate, but it is highly unlikely that it would amount to more than 1% of the employed population, measured at a single point in time.

To sum up the patchy evidence, the CIPD (2017) study of the UK is probably the best estimate in Europe, citing the number of 4% *at any time* in previous year, with 1% stating it as the main source of income. The findings of Huws et al (2016) for five European countries are not irreconcilable with the CIPD (2017) estimates. If one were to assume that the 1% figure corresponds to 0.5% measured at *a single point in time*, then 0.5% cited in Katz and Krueger (2016) may be a reasonable upper-bound estimate for most countries in Europe.

Ideas on possible future growth in this new form of work are, of course, highly speculative. Undoubtedly, digital platform work has grown appreciably in recent years. While most of the well-known platforms do not make profits (Airbnb is an exception), the stock market believes that it will grow appreciably. As outlined above, the economic case for digital platforms in theory appears strong. There are, however, also some factors that may hamper their growth. One is that as many provide relatively simple tasks, there is considerable potential for the introduction of labour-saving technology – Uber, for example, is experimenting with driverless cars. Interviews with CEOs of digital platforms show that these companies are acutely aware of this possibility and predict that future growth of their platforms will be in more complex, skill-demanding tasks. It may also be the case that as some platform profits are due to tax arbitrage, one might expect a more difficult regulatory regime for these companies as tax authorities become better aware of and react to the tax issues, especially if they continue to grow significantly. Finally, while the economic model may indeed be highly efficient, the platform model could increasingly become part of the internal work organisation of the firm. The digital capability to deconstruct work down to single tasks, coordinate these tasks through algorithms and then reconstruct them into products and services may lead to an internalisation of digital platforms, not least as the potential of such work organisation becomes better known to more traditional firms. There is, indeed, some evidence that this is happening. While the digitally enabled management of tasks may have huge implications for work organisation within the firm, it will have less significant implications for employment contracts and social protection.

Who works via digital platforms and why?

In the few surveys available, it appears that the attitudes to platforms from those doing the work are rather positive. However, one very striking feature of platform work was mentioned in the previous section, namely that it is often a very marginal or occasional activity. Thus it may be important in this context to differentiate between ‘workers’ whose activity with digital platforms is their only or main source of income and the many who perform occasional tasks in addition to their main labour market status, such as employee with another job, student, home-maker, or pensioner.

The recent CIPD (2017) study from the UK provides perhaps the most reliable results for a single European country. Among all the interviewed people working via platforms, 46% reported that they are very satisfied or satisfied with their work, and 17% reported that they are dissatisfied or very dissatisfied. The corresponding satisfaction figure is higher for those for whom the gig work is their main job (68% satisfied and 11% dissatisfied) and for those for whom it is not their main job, it is 41% satisfied compared to 19% dissatisfied. Table 6 gives a flavour of the range of opinions expressed by gig workers in the CIPD (2017) study.

Table 6: Proportion of gig-economy workers who agree with the following statements about why they are working in the gig economy (%)

	Gig economy workers (n=417)	Men (n=239)	Women (n=189)	18–29 (n=168)	30–39 (n=130)	40–49 (n=61)	50–59 (n=41)	60–70 (n=28)
Working in the gig economy allows me to boost my overall income	32	32	33	30	28	46	34	35
Working in the gig economy is a short-term solution to help me achieve my end goal (for example buying a car, going on holiday)	25	21	29	35	19	18	10	26
Working in the gig economy provides me with a back-up so that I don't have to worry about not having the security of a regular income	21	25	17	29	14	22	19	12
Working in the gig economy keeps me active/busy	19	19	19	15	16	23	22	42
Working in the gig economy is a conscious choice for me	18	20	16	16	16	20	21	32
Working in the gig economy is a stop gap	15	15	16	13	14	19	18	24
I am only working in the gig economy because I couldn't find a traditional job with an employer	14	16	12	14	11	18	17	18
Having fewer rights and benefits is a fair deal in exchange for the independence I enjoy by working in the gig economy	13	14	13	16	11	9	14	19
I prefer working in the gig economy as I don't like the office politics that come with traditional jobs	13	12	14	9	12	19	17	14
I don't want to work for a traditional company in case I lose the flexibility I have	12	11	13	11	11	16	10	17
I have young children and the gig economy allows me to work and look after my children	10	12	9	12	9	14	11	0
Gig economy work was recommended to me by a friend	10	11	9	8	12	14	7	9
My partner doesn't work so a job in the gig economy helps me earn a second income	7	7	7	8	8	4	5	8
Don't know	8	6	11	4	12	11	10	6
None of the above	12	13	12	14	15	4	14	6

Source: CIPD (2017)

There appears to be little difference in the frequency of men and women working via digital platforms. Huws et al (2016) place much focus on various aspects of gender, in terms of, for example, frequency and intensity and find that platform work is more common among men in Germany, Sweden, Austria and the Netherlands but not in the UK. Other studies such as CIPD (2017) find that workers are marginally more likely to be male (56%) in the UK than the other workers in the survey overall (53%). A Eurobarometer online survey in all Member

States finds that among those who had visited 'collaborative platforms', the majority providing services on these platforms were men (35% compared to 26% women) (European Commission, 2016a).

Huws et al (2016) find a slight overrepresentation of the young (compared to their participation in the labour market) in the five European Member States in the study and that the young constitute around half of those workers who do this work intensively, i.e. at least weekly. The CIPD study, which unlike most other studies also asks the same questions to non-platform workers, shows that platform workers are overrepresented among the young and, to a lesser extent, the over-60s compared to the other groups.

Table 7: Age profile of the survey respondents

Age	Platform workers (%)	Other workers (%)
18–29 years	39	21
30–39 years	30	23
40–49 years	14	29
50–59 years	10	21
60–70 years	6	5

Source: CIPD (2017)

CIPD finds only a very marginal difference in the education levels of platform workers compared with other workers. However, they have a broader range of ethnic backgrounds than other workers. Only 68% describe themselves as white British compared to 85% of other workers.

Social protection of digital platform workers

There is only limited mention of digital platform work in the ESPN (2017) report for the European Commission. The French and German experts underline that digitalisation of the economy makes it increasingly difficult to determine the boundaries between dependent employment and self-employment. They report that several governments are aware of the issue. For example, in Germany a white paper entitled *Work 4.0*, published by the Minister of Labour and Social Affairs, contains a range of suggestions and proposals for the shaping of working conditions and the provision of adequate financial and social protection in this context of change. These proposals include old-age provision for all groups of self-employed, shaping transitions between dependent employment and self-employment. See also Eurofound, 2017a.

ESIP, which represents national statutory social insurance organisations, recently conducted a study on statutory pension insurance of digital platform workers (ESIP, 2017). In order to examine a reasonably distinct form of digital platform activity, it focuses on the use of digital platforms in the provision of virtual services. It excluded the use of digital platforms to supply goods and services in the local economy. This excluded, for example, both Uber and Airbnb. The types of virtual services were, for example, design (graphic, webpage), software development, translation, review checking. Examples of the platforms are Mechanical Turk, Upwork, CoContest, ggdesign, Unbabel, Fiverr, Fivesquid, Youtube content creators and Clickworker. The report appears to assume that the platform acts only as an intermediary without influence on price, quality or the execution of the tasks.

In the surveyed countries (Austria, Belgium, Finland, Germany, Luxembourg, the Netherlands, Norway, Poland and Norway), the providers (those doing the work) fall mainly into the category of self-employment. (This appears to be a legal assessment by the national experts, not the result of an empirical investigation.) In only about half of the countries is there compulsory inclusion in pension systems, though in some of the others voluntary access is possible. However, coverage is generally subject to income thresholds. Contribution rates are often different compared to employees. The survey also provides information on which party is to pay the contributions and the basis for their calculation. The report does not address compliance issues, which might be considerable in the global and digital context in which much of this work is performed. The report concludes, however, that the results indicate 'we do not have to reinvent social security. There are good practices in some Member States'. ESIP will conduct further studies to examine other aspects of social security.

Box 3: Belgium introduces a tax regime for work on digital platforms

The Programme law of 1 July 2016 provides for some adaptation to the circumstances of some income on digital platforms with a tax withholding at source by the platform. The law adds a new type of income in the category of 'miscellaneous income' to be taxed at 20% after deduction of a 50% allowance. This corresponds to an effective income tax rate of 10%. It applies to income up to €5,000 per year. Furthermore, the income must have been earned by way of services by an individual to another individual and not be seen as a professional activity.

The 10% tax is to be withheld at source by the digital platform and paid to the tax authorities. The law requires that the platform company registers with the tax administration. All transactions are to be paid electronically and so be traceable. The types of activity are rather limited as the supply of goods (e.g. delivery services) falls outside the scope of this legislation as does the letting of property. The law envisages that the person will not be required to pay social security contributions or fulfil registration with the Enterprises' Database. The income is exempt from VAT, as the VAT threshold is €25,000. These rules applied from 1 July 2016, and for 2016 the limit is set at €2,500 instead of €5,000.
Source: De Broeck, Van Laere and Partners (2017)

Obviously, one of the main social protection issues is whether people working via digital platforms are or employees not. The main other possibility is self-employment. An important aspect of this particular form of a recurrent legal issue is the degree of control that the platform exerts on the execution of the work – 'matching or management?'

Huws et al (2016) report a few cases where workers appear to be considered as employees, based on information on the platform website. In the UK, the legal service platform Axiom describes its legal staff as 'employees', while other sites state very clearly that that workers should comply with the legal requirements of self-employment. The authors point out that the French Freelancer platform underlines that it is a 'marketplace' that 'puts employers and contractors in direct contact with each other', and informs users about the documents that must be provided to comply with freelance status under French law.

There are several court rulings on digital platforms, not least with respect to Uber. Where Uber activities have been curtailed, it has mainly been related to the requirement for professional taxi driver qualifications and licensing, for example, in Germany. An important ongoing European Court of Justice (C-434/15) case is to decide whether Uber should be considered a transport company or a digital service provider. If the latter is the case, this will

limit the application of restrictive national legislation as it may impinge upon the right of the company to offer services throughout Europe, as stipulated in EU legislation.

While much of the debate and controversy about work mediated by digital platforms has appropriately focused on the avoidance of social security contributions, these platforms could also have a positive impact on compliance. Some platform work, particularly that of the 'sharing economy', are activities closely related to the domestic or private sphere, such as domestic and repair services, ride sharing, etc. Such work is often paid for in cash (or kind) and is undeclared. The marketisation of such work with digital payment systems does provide the opportunity to bring such undeclared work into a regulated social security regime.

4. Social protection issues: Casual work, strategic employee sharing and voucher-based work

The report from the ESPN *Access to social protection for people working in non-standard contracts and as self-employed in Europe* provides an account of the social protection issues for the 'standard' non-standard types of work, focusing mainly on self-employment, temporary employment and part-time employment, with some mention of temporary agency work. The key issues with regard to the actual coverage of non-standard employment contracts are the thresholds related to contribution periods, working hours and earnings. For the self-employed, many of the issues are simply a lack of legal entitlement and also difficulties in meeting the eligibility conditions and poor contribution records. Some issues of social protection relating to digital platforms were mentioned in Chapter 3.

This chapter provides some other examples of social protection issues, largely as found in Eurofound's *New forms of employment* report (2015b) and subsequent, related Eurofound research. This research provided an analysis of various forms of employment that Eurofound's Network of European Correspondents considered new in their national contexts. These were:

- employee sharing
- job sharing
- interim management
- casual work
- ICT-based mobile work
- voucher-based work
- portfolio work
- crowd employment
- collaborative employment

Further, more in-depth Eurofound research was conducted on employee sharing (Eurofound, 2016b) and ICT-based mobile work (Eurofound and the International Labour Office, 2017).

While it was often not possible to quantify the number of these forms of employment in Member States, some aspects of most of these employment forms should be picked up by labour force surveys. For example, casual work should be reflected in the number of temporary contracts as measured in the EU-LFS. In practice, this may not always be the case due to the very short duration of some of these employment forms and to low response rates, due to the often marginal attachment of these workers to the labour force. Whether employee sharing or job sharing is picked up as part-time work is an open question. Specific aspects of some of the forms, such as the use of ICT and voucher work, are not measured in any of the major European labour market datasets.

Nevertheless, from a social protection perspective, they are relevant in at least two respects. Some of these employment forms are undoubtedly highly problematic from a social protection perspective (not least casual work), while others have been specifically initiated to address social protection issues, such as voucher-based work. It should be underlined that there are many other policy issues related to these forms of employment in terms of employment security, work organisation and industrial relations that are not taken up in this report

Casual work

Casual work, which includes in Eurofound (2015b) either intermittent work (very short fixed-term work) or on-call work (employed but with very few guaranteed hours), is arguably the most problematic in a social protection context, as the thresholds of contribution periods, working hours and earnings will often not be met. Moreover, in some cases it is specifically stipulated in law that the jobs preclude social protection. This is the case with the casual work performed by day labourers in Romania (*activităţi cu caracter ocazional desfăşurate de zilieri*) as regulated by the Day Labourer Act from 2011 (Law No. 52/2011), and as amended and supplemented in 2013 (Law No. 277/2013). It aims to provide daily employment opportunities outside a regular employment contract, creating a small amount of income for unskilled workers who have difficulty finding permanent jobs, particularly in rural areas. The law states expressly that no social contributions are due from either the worker or the employer, so day labourers are not covered by the public social insurance system.

There are, however, examples of the state specifically subsidising the social rights of casual workers. In Belgium, intermittent work (*gelegenheidsarbeid/travail occasionel*) covers specific short-term contracts (two consecutive days) that clearly define the work to be done, to cover peak periods in the tourism sector. It was established by the government in 2007 as part of the revitalisation plan for the sector and revised in 2013. An employer may make use of such contracts for up to 100 days per year and is required to pay €7.50 per hour (up to €45 per day) in social security contributions (rather than linking the contributions to the actual wage). The workers earn full social security rights, which means that this employment form is heavily subsidised by the government and benefits from the standard labour regulations for the sector. Each worker may work for up to 50 days per year in this system. There are between 10,000 and 13,000 of these contracts in the sector, corresponding to between 2,000 and 2,600 full-time equivalents.

Similarly, French intermittent workers in the entertainment industry (*intermittents du spectacle*) often hold a 'custom short-term contract' (*CDD d'usage*), which is generally of a very short duration but can be renewed over many years. Welfare entitlements for such workers are favourable; for example, workers employed for four months receive eight months' unemployment benefit rights.

Strategic employee sharing

With strategic employee sharing, the participating companies establish an 'employer group', which becomes the formal employer of one or more shared workers and coordinates their assignments to the participating firms. Although the shared workers work in several different companies, this provides permanent full-time employment with a single employer. The companies have a joint responsibility and liability towards the shared workers, who are ensured 'equal pay, equal treatment' with the core staff of the participating companies. This employment form provides security to workers who otherwise might have to accept more precarious employment forms. Strategic employee sharing is, so far, only marginally used in Europe.

The national models studied in Eurofound research were:

Austria:	Arbeitgeberzusammenschluss (AGZ)
Belgium:	Groupement d'employeurs (GE)/Werkgeversgroeperingen
France:	Groupement d'employeurs (GE)
Germany:	Arbeitgeberzusammenschluss (AGZ)
Hungary:	Több munkáltató által létesitett munkaviszony

Voucher-based work

This occurs when an employer buys a voucher from, for example, a government authority, which can be used only for some specific task. When the task is completed, the worker receives the voucher, which can then be exchanged for money. At the voucher exchange, the social contribution is automatically transferred to the social insurance authority to the benefit of the worker. It is precisely the non-payment of social contributions that is the main target of this system. It usually applies to specific tasks, often limited to certain sectors or occupations that are characterised by high levels of undeclared work. Examples are domestic services in the Belgian *dienstencheque/titres-services*, the French c*hèque emploi service universel (CESU)* and the Austrian *Dienstleistungsscheck (DLS)*, certain agricultural and forestry activities in the Lithuanian *Žemė sūkio ir miškininkystės paslaugųkvitų sistema* or promotion activities (next to other specified tasks) in the Greek *εργόσημο.* The Belgian and the French voucher systems entitle workers to the same social protection as all employees in the domestic services sector.

The Austrian voucher system covers accident insurance, and if workers earn more than a certain threshold through vouchers from a single employer, they are automatically also covered by health and pension insurance. The same holds true if the worker combines voucher-based work with other employment and the total pay received exceeds the income threshold. Workers below the threshold may voluntarily opt in to health and pension insurance with a flat-rate contribution.

In the Lithuanian system, the client is obliged to pay standard statutory health insurance contributions for the worker. Since accident insurance is covered in labour law, and not in the civil law that regulates the voucher system, it was proposed to impose mandatory civil liability insurance for employers. However, this was rejected to avoid distorting the market and raising insurance prices. Payment received for services provided under the voucher system does not entitle the worker to unemployment benefits either.

In the Greek system, social insurance contributions are lower than for standard employment and cover pension contributions, sickness benefits, supplementary social insurance, and social housing contributions. To have access to the benefits, the workers must have worked for certain minimum numbers of insurance days (these vary, depending on the type of benefit). This implies that, even though voucher workers have to pay for their social insurance contributions, they may not get the corresponding social benefits if they do not manage to accumulate the minimum required workdays.

The Italian experience with vouchers has been controversial and the system is to be abolished. As in other countries, it aimed to regulate and protect forms of occasional work provision which otherwise often are undeclared, a typical example being domestic services, such as repair and cleaning. However, in Italy, and probably as a reflection of the scope of undeclared work there, they came to be used in all economic sectors (except agriculture), all categories of workers and all kinds of activities (except when being carried out within subcontracting arrangements). Moreover, there was no limit to their overall use by clients. Vouchers entailed

a €7.50 net hourly payment, which may have frequently been below wages as covered by collective agreements. Since at least 2016, trade unions have voiced their concerns and the central union organisation CGIL filed a referendum petition for their abolition. On 19 April 2017, the Italian Senate adopted a law to abolish the voucher system.

References

Accenture (2016), *People first: The primacy of people in a digital age*, Accenture Technology Vision 2016.

Bank of England (2015), 'Self-employment: What can we learn from recent developments?', *Quarterly Bulletin 2015 Q1*, Vol. 55, No. 1.

Berg, J. (2016), *Income security in the on-demand economy: Findings and policy lessons from a survey of crowdworkers*, Conditions of Work and Employment Series No. 74, International Labour Office, Geneva.

CIETT (International Confederation of Private Employment Services) (2015), *Economic report*, CIETT, Brussels.

CIPD (Chartered Institute of Personnel and Development) (2017), *To gig or not to gig? Stories from the modern economy*, CIPD, London.

Conen, W., Schippers, J. and Schulze Buschoff, K. (2016), *Self-employed without personnel: Between freedom and insecurity*, Study No. 05, Hans-Boeckler-Foundation, Düsseldorf.

Cramer, J. and Krueger, A. B. (2016), *Disruptive change in the taxi business: The case of Uber*, NBER Working Paper No. 22083, National Bureau of Economic Research, Cambridge, MA.

De Broeck, Van Laere and Partners (2016), 'Belgium introduces a tax regime for the sharing ecomony', web page, accessed 23 June 2017.

ESIP (European Social Insurance Platform) (2017), *Statutory pension insurance of digital platform workers: A comparative perspective*, technical paper, ESIP, Brussels.

ESPN (European Social Policy Network) (2017), *Access to social protection for people working on non-standard contracts and as self-employed in Europe: A study of national policies*, European Commission, Brussels.

Eurofound (2002), *Temporary agency work in the European Union*, Publications Office of the European Union, Luxembourg.

Eurofound (2015a), *Recent developments in temporary employment: Employment growth, wages and transitions*, Publications Office of the European Union, Luxembourg.

Eurofound (2015b), *New forms of employment*, Publications Office of the European Union, Luxembourg.

Eurofound (2016a), *Representativeness of the European social partner organisations: Temporary agency work sector*, Dublin.

Eurofound (2016b), *New forms of employment: Developing the potential of strategic employee sharing*, Publications Office of the European Union, Luxembourg.

Eurofound (2017a), *Germany: Labour Minister launches White Paper on the future of work*, Dublin.

Eurofound (2017b), *Occupational change and wage inequality: European Jobs Monitor 2017*, Publications Office of the European Union, Luxembourg.

Eurofound (forthcoming a), *Estimating labour market slack in the European Union*, Publications Office of the European Union, Luxembourg.

Eurofound (forthcoming b), *Exploring self-employment in the European Union*, Publications Office of the European Union, Luxembourg.

Eurofound and the International Labour Office (2017), *Working anytime, anywhere: The effects on the world of work*, Publications Office of the European Union, Luxembourg, and the International Labour Office, Geneva.

European Commission (2016a), *Flash Eurobarometer 438: The use of collaborative platforms*, Directorate-General for Communication, Brussels.

European Commission (2016b), *European agenda for the collaborative economy – supporting analysis*, SWD(2016) 184 final, Brussels.

European Commission (2017), *Special Eurobarometer 460: Attitudes towards the impact of digitisation and automation on daily life*, Directorate-General for Communication, Brussels.

European Parliament (2016), *Precarious employment in Europe. Part 1: Patterns, trends and policy strategy*, Policy Department A: Economic and Scientific Policy, European Parliament, Brussels.

European Parliament (2017), *Risk of precariousness: Results from the European Working Conditions Survey 2010 and 2015*, Policy Department A: Economic and Scientific Policy, European Parliament, Brussels.

Farrell, D. and Greig, F. (2016), *Paychecks, paydays, and the online platform economy: Big data on income volatility*, JPMorgan Chase Institute, New York.

Financial Times (2017), 'Airbnb's edge on room prices depends on tax advantages', 2 January.

Harris, S. D. and Kreuger, A. B. (2015), *A proposal for modernizing labor laws for twenty-first-century work: The 'independent worker'*, Discussion Paper 2015-10, Hamilton Project, Brookings Institution, Washington DC.

Houseman, S. (2014), *Temporary agency work*, IZA World of Labor No. 27, doi: 10.15185/izawol.27.

Huws, U., Spencer, N. H. and Joyce, S. (2016), *Crowd work in Europe: Preliminary results from a survey in the UK, Sweden, Germany, Austria and the Netherlands*, Foundation for European Progressive Studies (FEPS), December, Brussels.

Katz, L. F. and Krueger, A. B. (2016), *The rise and nature of alternative work arrangements in the United States, 1995–2015*, NBER Working Paper No 22667, National Bureau of Economic Research, Cambridge, MA.

Kenney, M. and Zysman, J. (2016), 'The rise of the platform economy', *Issues Science and Technology*, Vol. 17, No. 3.

Manos, M., Özdemir, E., Ward, T. and Zavakou, A. (2016), *Non-standard employment and access to social security benefits*, Research Note 8/2015, European Commission, Brussels.

McKinsey Global Institute (2016), *Independent work: Choice, necessity, and the gig economy*.

Meager, N. (2007), *Self-employment dynamics and 'transitional labour markets': Some more UK evidence*, Institute for Employment Studies, Brighton, UK.

OECD (Organisation for Economic Co-operation and Development)(2000), 'The partial renaissance of self-employment', in *OECD employment outlook 2000*, OECD, Paris, pp. 155–199.

Resolution Foundation (2017), 'A tough gig? The nature of self-employment in 21st Century Britain and policy implications', web page, accessed 23 June 2017.

Skatteverket (2016), *Kartläggning och analys av delningsekonomins påverkan på skattesystemet*, Solna, Sweden.

Stone, K.V. W. (2006), 'Legal protections for atypical employees: Employment law for workers without workplaces and employees without employers', *Berkeley Journal of Employment & Labour Law*, Vol. 27, No. 2, pp. 251–286.

Tomlinson, D. and Corlett, A. (2017), *A tough gig? The nature of self-employment in 21st century Britain and policy implications*, Resolution Foundation, London.

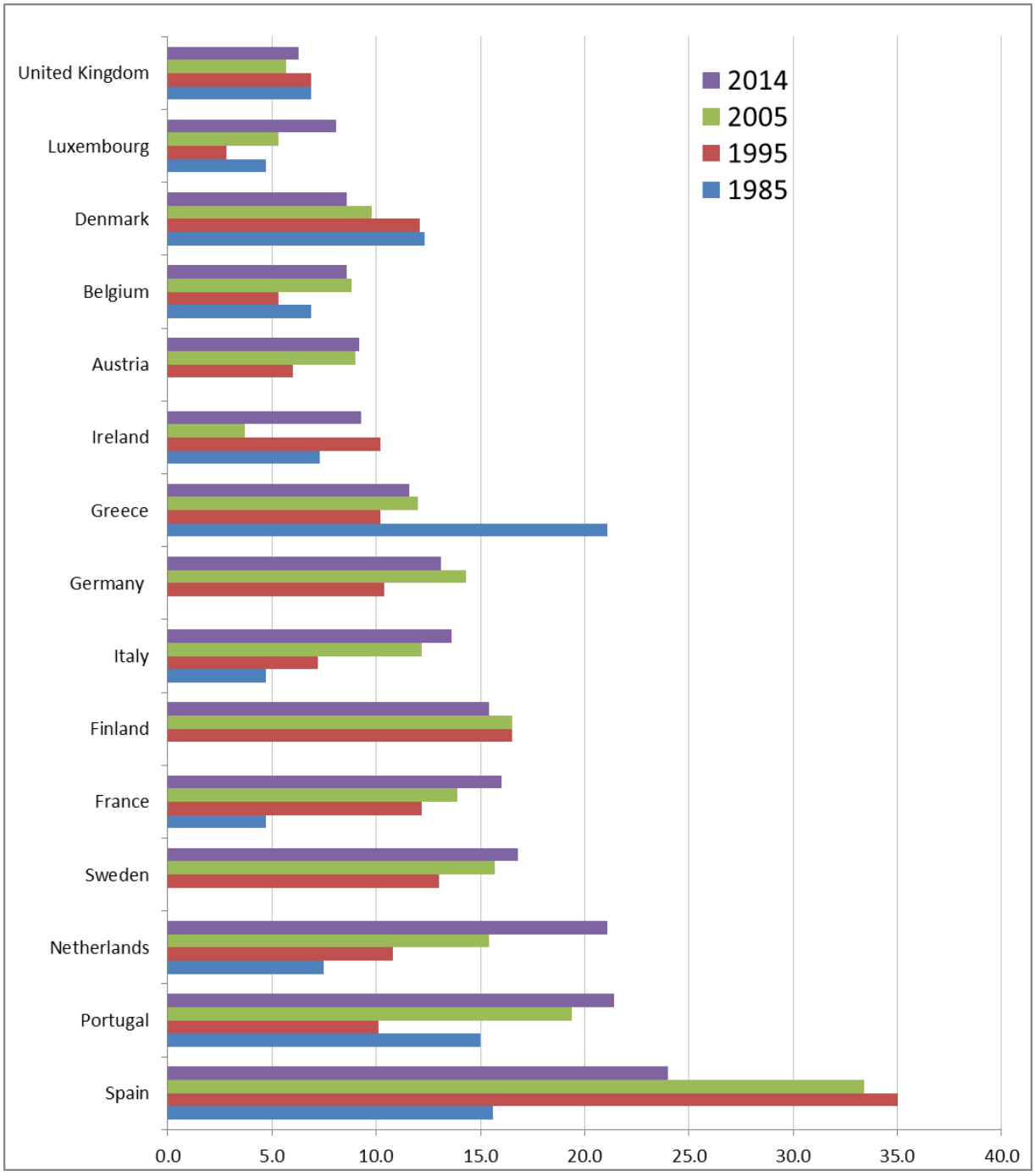
Van Dalen, H. P., Henkens, K., and Hershey, D. A. (2010), 'Perceptions and expectations of pension savings adequacy: A comparative study of Dutch and American workers', *Ageing and Society*, Vol. 30, No. 5, pp. 731–754.

Westerveld, M. (2012), 'The "new" self-employed: An issue for social policy?,' *European Journal of Social Security*, Vol. 14, No. 3, pp. 156–173.

World Employment Confederation (2017), *Economic Report –2017 Edition*, Brussels.

Annex: Temporary employment rates in the EU15

Figure A1: Temporary employment rates, EU15 Member States, 1985–2014



Source: EU-LFS

EF1724