CHAPTER 4

Inequality of outcomes

1. Introduction ([308])

Changes in the world of work offer new opportunities but also raise challenges that could increase inequality. As mentioned in Chapter 2, the European labour markets are evolving quickly as a result of the growth of the service-oriented and digitalised economy, of globalisation and of population ageing. All these factors and the way they interact with labour market institutions in turn affect the market distribution of earnings and the distribution of labour and capital. As discussed in Chapter 5, the rise of platform work and other forms of atypical work may also mean that fewer people pay social security contributions.

These changes create winners and losers. For some sectors they imply job destruction while for other sectors they create new employment opportunities. In particular, changes in skills and in routine-based technology can intensify inequality by favouring specific groups of the workforce while reducing the employability of others, particularly lower-skilled workers. ([309]) Changing forms of employment may also provide more flexibility for a better reconciliation of work and private life, notably by making the access of women to the labour market easier. Moreover, new forms of work have the potential to facilitate the employment of disadvantaged groups such as disabled or older workers.

Social disadvantages related to labour market outcomes tend to persist across generations and to perpetuate inequalities. Concerns over the inter-generational transmission of inequality, as discussed in Chapter 3, stem from the finding that inequality and social mobility are negatively correlated, generating an inter-temporal 'multiplier effect' that intensifies social divergences over time. In countries with a high level of inequality parental background is a central determinant of children's social outcomes. ([310]) From a social justice perspective, an increasingly uneven distribution of resources in the economy may threaten social cohesion.

Tackling new potential sources of inequalities and supporting fair and well-functioning labour markets is high on the EU's agenda. The European Pillar of Social Rights proclaimed in November 2017 aims to promote equality of opportunity and supportive social services, as well as the right to fair wages and minimum incomes which provide for a decent standard of living. Other dimensions of inequality tackled by the Pillar are the gender pay gap and the right of people with disabilities to a work environment adapted to their needs.

Changes in the organisation of labour are likely to affect the composition of the labour force and the extent of non-standard employment. Although standard employment remains by far the most prevalent employment type, firms have increasingly relied on certain types of non-standard contracts such as short-term temporary and part-time contracts. The proportion of permanent full-time employment, henceforth standard employment, has declined from 62% to 59% in the EU-28 over the

([308]) This chapter was written by Stefano Filauro and Gilles Thirion with contributions from Tim Van Rie. Valuable data support was provided by the European Central Bank and EUROSTAT.

([309]) OECD (2015).

([310]) Corak (2013).

period 2002-2016, although this proportion seems rather stable from 2010. ([311])

Non-standard forms of work have implications for workers' wellbeing. ([312]) Non-standard workers, in particular temporary employees and the self-employed, tend to experience higher income volatility and uncertainty. In addition, new forms of work challenge social protection models that were primarily designed to meet the needs of standard workers. Similarly, non-standard forms of work should take account of the need to reduce barriers to employment access for people with disabilities.

Against this background, this chapter intends to examine three dimensions of inequality:

- In view of the changes in the world of work described in Chapter 2, **to what extent are income inequalities increasingly determined by labour market forces, especially earnings and income from self-employment?** What is the role played by hourly wages and hours worked in the context of changing forms of employment?

- Shifts away from traditional forms of employment have various social consequences. Beyond challenges to income inequality and social protection, ([313]) **do material deprivation and income poverty vary significantly across different forms of employment?** If non-standard workers face a greater risk of income poverty, does household wealth tend to reinforce or reduce the risk of material deprivation?

- Even if there have been important improvements ensuring greater equality between women and men in education and labour market participation, gender differences remain a significant source of inequality today. As Chapter 3 demonstrates, equality of opportunities, notably in terms of improving educational achievement, does not necessarily translate into equal labour market outcomes and equal access to social protection. **How large is the gender pay gap and what have been the key drivers of this gap?** To what degree have recent changes in the world of work affected gender segregation in the labour market?

([311]) Standard work has declined from 62% to 59% of all work over the period 2002-2016 as more workers have flexible contractual arrangements - see Chapter 2 and European Commission (2017a, p.79) for an assessment over the last decade with LFS data.

([312]) Non-standard workers are broadly defined as temporary full-time employees, self-employed and part-time workers.

([313]) Challenges for social security schemes that will be discussed in Chapter 5.

2. INCOME INEQUALITY

2.1. How different income components shape income inequality

Addressing inequality is one of the priorities of the EU reform agenda and the European Pillar of Social Rights. Overall, the promotion of equality of opportunity and the right to decent wages affect inequality from the market side, while access to social services and the right to a minimum income tend to reduce inequality from the welfare side.

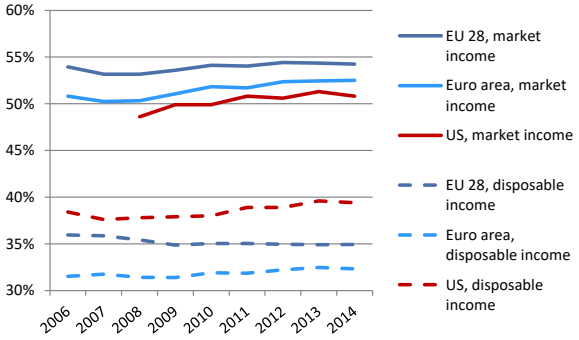
The income distribution is more unequal today than in the 1980s in almost all Member States, ([314]) although, on average, income inequalities in the EU as a whole in recent years have been lower than in other advanced economies and world regions, for example the US (see *Chart 4.1*). ([315]) From the most recent available data (2016), income inequality in the EU is stabilising, although at higher levels than before the crisis. ([316])

However, the recent evolution of inequalities observed across the Member States is the result of different structural and cyclical forces which have led to inequality trends differing from country to country in the aftermath of the crisis. ([317])

Chart 4.1

Disposable income inequality in the EU-28 is lower than in the US.

Income inequality in the EU-28, the euro area and the US. Gini index (%)



Note: Income distribution in the EU-28 and the euro area is considered among the EU-wide population, after applying purchasing power parities. Market income is considered without taxes and transfers, including public pensions. Equivalence scale: square root of the household size.

Source: Own calculations. EU-SILC data. US data from the OECD Social and Welfare Statistics. DOI: 10.1787/socwel-data-en

Click here to download chart.

([314]) European Commission (2018a).

([315]) See Filauro (2018) for an estimate of income inequality at the EU level. However, in the rest of the chapter inequality is examined at the country level given that most policy levers to reduce disposable income inequality are at the level of the Member States.

([316]) See also European Commission (2017b) and European Commission (2018b). More recently, S80/S20 reduced from 5.2 in 2015 to 5.1 in 2016 and the Gini index from 31.0 to 30.8, although the significance of these small changes should be further examined (ilc_di11 and ilc_di12).

([317]) See Chapter 1 for an assessment of income inequality changes in the period 2012-2016.

Box 4.1: Inequality decomposition by income components

The following analysis considers the contribution of different income components ([1]) to overall income inequality in order to investigate the impact of market components such as **earnings** and **self-employment income** as opposed to pensions and benefits.

According to Shorrocks (1982) there is a unique 'decomposition rule' by which overall income inequality may be expressed as the sum of inequality contributions from each of the income components. The components considered are: i) labour earnings; ii) self-employment incomes; iii) public pensions; iv) unemployment benefits and v) other benefits and social contributions. Capital income is not considered as its reliability differs significantly across countries. ([2]) The income concept used is therefore gross income because social contributions and personal income taxes are not available for all components and all countries in the EU-SILC data. ([3])

According to this rule the proportion of total income inequality contributed by component k can be computed as:

$$s_k = \frac{cov(Y_k, Y)}{\sigma^2(Y)}$$

That is, the covariance between income component *k* and overall gross income over the variance of gross income.

This decomposition rule has useful properties such as the independence of the choice of the inequality measure and a straightforward interpretation. Income components with a positive contribution to inequality ($s_k > 0$) have a "disequalising" impact and the converse is true for components with a negative contribution ($s_k < 0$). Intuitively, if an income component is positively correlated with overall household income, it contributes positively to income inequality, and conversely if this is negatively correlated (e.g. in the case of benefits: those who receive higher benefits are usually those with lower household income, thus the correlation with household income is negative and the effect of benefits on inequality is mitigating).

Inequality contributions are expressed in proportionate terms, normalised to 100%, or in absolute terms, as contributing to inequality as measured by the Gini index. In addition, the proportions of earnings and self-employment income are presented to assess how relevant they are to overall household gross income. Each income component is examined separately and no indirect effect is taken into account in the decomposition; indeed no intuitive counterfactual income distribution stems from the decomposition exercise. ([4])

This decomposition is different from the exercise in Section 4.2 of Chapter 1 as here the "true" income distribution is taken as it is and decomposed by income components, while Chapter 1 shows the reduction in inequality from a counterfactual income distribution without welfare benefits to the "true" income distribution with benefits.

([1]) Sources, components or factors are used interchangeably.

([2]) Countries which derive capital income from tax registers record it more accurately than countries with survey data.

([3]) Many countries in the EU-SILC report income sources recorded gross of personal income taxes and social contributions, therefore a decomposition of disposable household income may be biased (as the values for the income components are not net, some countries may record social contributions in the labour earnings, others in the personal income taxes).

([4]) See Shorrocks (1982): in the case of social transfers, the decomposition identifies the contribution of social transfers to disposable income, while a certain benefit system may also affect substantially the individual choices that shape market incomes – e.g. working more hours to earn more as opposed to being able to receive some benefits.

Changes in the labour market influence income inequality. Economic inequalities can be thought of as the result of different forces. First, the distribution of labour and capital income at the individual level results from market forces. Second, individuals pool and share resources into the household, so the household composition contributes to determine market income distribution. Third, the redistributive impact of the welfare state is delivered through taxes and benefits to shape disposable income inequality. ([318]) These three forces can be briefly summarised as: i) market outcomes, which are mainly the result of labour and capital income; ii) the household context and iii) the tax-and-transfer system. Clearly, all three forces interact in many ways.

([318]) Raitano (2016).

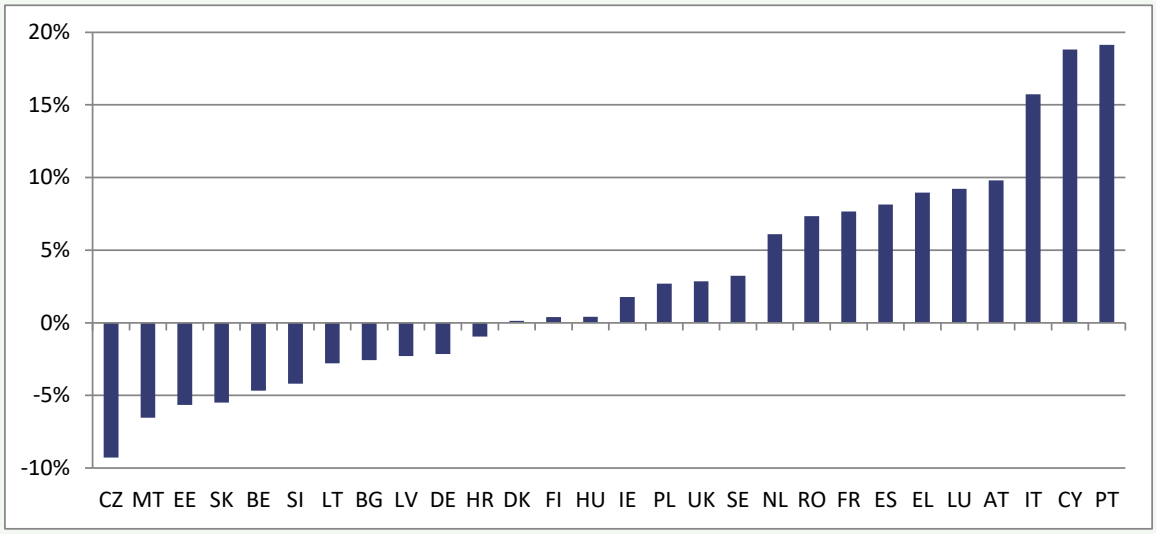
Box 4.2: Contribution of pensions to income inequality.

The contribution of public pensions to inequality has increased recently. At the same time, the pensions have generally increased as a proportion of gross incomes [1] for most countries and up to 17% for the EU in 2015.

Chart 1

Pensions contribute significantly to inequality in many EU countries

Pensions' contribution to inequality (%), 2015



Note: Proportionate contribution of pensions to inequality. Gross incomes. Reading example: in Ireland public pensions contribute to ca. 2% of the overall income inequality.
Source: Own calculations. EU-SILC data.

If pensions make a negative contribution to inequality it means they have an "equalising effect" while a positive contribution to inequality is to be interpreted as "disequalising". Whether public pensions have an equalising impact on inequality – or the reverse - on inequality depends on the link they have with the previous contributory history of the workers. The more the pension systems are linked to previous earnings, the more pensions are likely to reproduce the same inequalities as those created in the earnings distribution. Conversely, public pensions disconnected from previous working history can even be inequality-mitigating, if those who receive higher pensions are not those at the top of the income distribution.

Overall, the more pensions are correlated with gross incomes (i.e. high pensions go to high-income individuals and low pensions go to low-income individuals), the more they contribute to inequality. However, no clear-cut conclusions can be drawn on the redistributive impact of pensions from this analysis because it would be necessary to look within cohorts at the contributions made from and the replacement levels of initial market income (pre-retirement) and this is beyond the analysis presented here. Moreover, due to data limitations, the incomes considered in this analysis are gross of personal income taxes, so no inference on the contribution of pensions to post-tax income inequality can be made from this chart. Recent evidence on the redistributive impact of pensions is presented in the Report on Public Finances in the EMU 2017 (European Commission 2018a – see Part III).

[1] See also Chapter 1

Within this framework the forecast of future income inequalities is a complex exercise. Two distinct phenomena are emerging. First, the combination of new technologies and globalisation may lead to occupational polarisation accompanied by increasing wage inequality. Second, the shift in the balance between the inputs of labour and capital may result in greater income inequality between capital owners and workers. [319] However, these two phenomena could be either intensified or mitigated by the two forces mentioned above, household structure and composition and tax-and-benefit systems. While the trends in the labour market and in household composition seem to push in the direction of greater inequality, [320] tax-and-benefit systems may well exert a countervailing influence.

This section analyses the extent to which labour market forces have shaped and contributed to income inequality over the last decade. [321] To this end, a decomposition technique is applied to assess how far market income components, as opposed to welfare sources, contribute to determine

[319] See Chapter 2, Sections 3.4 and 4.2 respectively.

[320] Recent evidence as regards assortative mating, the fact that people choose their partner from the same socioeconomic group, seems to suggest that household formation exacerbates inequality in *some* EU countries (Eika *et al.* 2014).

[321] Labour market forces are intended as channel i) in the previous scheme. The income considered in the following analysis is gross household income as defined in the Box 4.1.

income inequality. ([322]) Market components are defined as earnings and income from self-employment, while pensions are considered mainly as deferred earnings. Welfare components consist of unemployment benefits and other benefits (grouped together). Income inequality thus depends on how equally distributed is the income from the different components and on how big they are, i.e. the effect of the income components on the overall income distribution depends on their size and progressivity (see *Box 4.1*).

Changes in the world of work shape income inequality via earnings from paid employment and income from self-employment. In view of the stabilisation of non-standard work over the last decade ([323]) it is instructive to observe how much the contributions to inequality of self-employment income and of earnings from paid employment have changed as a result.

In turn, labour market changes are likely to be accompanied by changes in benefit systems. The impact of the benefit systems on the income distribution can be assessed through the contribution that the welfare components make to income inequality. In the following analysis the results of the decomposition are presented with a particular focus on the contribution of labour earnings and income from self-employment to income inequality. These are complemented by an analysis of changes in their relative importance.

Labour earnings are quite stable after a decline in the crisis years (see *Table 4.1).* ([324]) The general trend in the EU-28 over the last decade ([325]) has been for labour earnings as a proportion of gross income to remain broadly stationary, while the contribution of self-employment income has fallen by 1.7 pp ([326]) and that of public pensions has increased by 2.6 pps.

([322]) Raitano (2016) has carried out a similar analysis for clusters of countries analysing changes in the period 2008-2011.

([323]) See Chapter 2 for an assessment of changing working relationships in the period 2002-2016.

([324]) EU-SILC years refer to the previous income year, e.g. 2012 refers to 2011 incomes, except for the UK and IE.

([325]) These figures refer to unweighted averages of country shares.

([326]) This is in line with Chapter 2's finding that the proportion of self-employed in the labour force is not increasing significantly, though there are country differences.

Table 4.1

Labour earnings have remained broadly unchanged as a proportion of disposable income since the crisis years

Income components as percentages of gross income. EU-28

	Earnings	Self-employment income	Public pensions	Unemployment benefits	Other benefits
2007	67.98%	9.15%	14.54%	1.55%	6.61%
2008	68.04%	8.94%	14.32%	1.45%	7.04%
2009	67.73%	8.48%	14.89%	1.44%	7.25%
2010	66.14%	8.33%	15.71%	1.92%	7.67%
2011	65.92%	8.04%	16.25%	1.93%	7.63%
2012	66.01%	7.95%	16.57%	1.79%	7.43%
2013	65.77%	7.76%	17.06%	1.82%	7.37%
2014	65.63%	7.84%	17.21%	1.86%	7.20%
2015	66.05%	7.98%	17.00%	1.75%	6.97%
2016	66.17%	7.83%	17.12%	1.61%	7.02%

Note: The components sum to 100%. Other benefits include sickness, disability benefits and educational allowances. Private pensions are not shown as they make up less than 1% of household income.

Source: Own calculations, EU-SILC data.

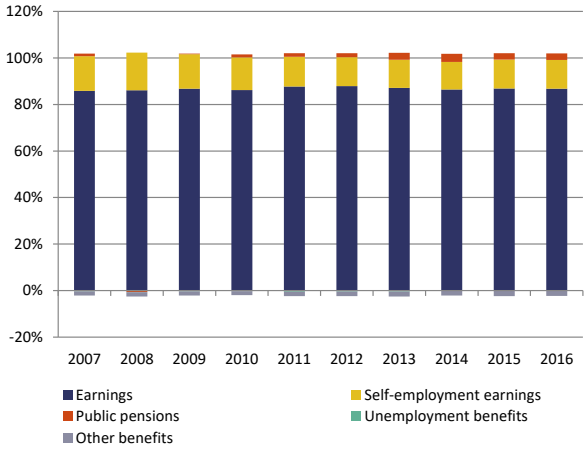
Click here to download table.

While labour earnings as a proportion of household income have been fairly constant, the contribution of earnings to inequality has increased slightly over the last decade. Labour earnings accounted for about 86% of income inequality in 2007 and about 88% in 2015. Meanwhile the impact of income from self-employment fell, from about 15% of income inequality in 2007 to about 12% in 2015. ([327]) Also the contribution of pensions increased slightly (from a neutral contribution in 2007 to approaching 3 pps in 2015) while that of social benefits has remained almost unaltered (see *Chart 4.2*).

Chart 4.2

Labour earnings' contribution to income inequality has increased slightly over time

Income components' contribution to income inequality (%). EU-28



Note: The sum of the proportionate contributions adds up to 100%. Gross income. Reading example: in 2015, 86.8% of inequality came from earnings, 12.4% from self-employment income, 2.7% from pension, while the inequality-reducing contribution of social benefits was around 2.3%. 2016 figure does not include Italy, Ireland, Luxembourg and Malta.

Source: Own calculations. EU-SILC data.

Click here to download chart.

Over the EU as a whole, labour earnings as a proportion of *total* household income tended to decrease during the crisis as unemployment

([327]) However, survey data may not be ideal for recording self-employment income. Indeed, it is not ideally recorded in EU-SILC in some countries and its volatile nature prevents it from being the best proxy for the wellbeing of the self-employed, as discussed in the next section.

rose. However there are important differences at country-level as indicated by the red cells in *Table 4.2*.

Table 4.2

Some countries have seen a significant reduction in labour earnings as a proportion of total household income (EL, ES, FI) while others have seen an increase (DE, HR, HU)

Earnings share over gross household income (%)

	2008	2009	2010	2011	2012	2013	2014	2015	2016
AT	64.1%	63.6%	62.1%	60.9%	61.4%	62.5%	62.2%	61.9%	62.5%
BE	68.8%	68.9%	68.6%	69.5%	69.5%	69.4%	69.5%	68.1%	67.5%
BG	69.0%	69.9%	67.0%	68.7%	66.4%	67.8%	63.0%	65.9%	66.8%
CY	68.7%	69.1%	69.2%	69.8%	70.2%	68.3%	65.2%	65.5%	65.4%
CZ	63.6%	64.1%	62.8%	62.9%	62.7%	62.5%	62.6%	63.1%	63.4%
DE	66.9%	68.6%	68.6%	68.4%	69.2%	68.9%	69.7%	69.5%	70.2%
DK	73.2%	73.8%	72.5%	71.4%	71.1%	70.3%	69.5%	69.5%	71.3%
EE	81.7%	79.3%	75.1%	75.1%	76.3%	77.3%	77.2%	79.7%	77.7%
EL	54.5%	54.1%	53.7%	51.8%	50.5%	48.2%	46.4%	46.2%	47.5%
ES	70.9%	71.0%	69.3%	68.0%	66.8%	64.4%	63.5%	64.3%	64.6%
FI	68.1%	68.7%	67.4%	66.7%	67.0%	66.9%	66.2%	65.8%	65.2%
FR	64.4%	64.5%	63.6%	63.1%	63.2%	63.1%	63.2%	63.4%	63.7%
HR			64.2%	65.3%	64.7%	65.5%	66.1%	66.9%	67.7%
HU	60.5%	59.1%	58.5%	57.8%	59.3%	60.6%	61.9%	62.9%	63.6%
IE	64.1%	61.6%	59.9%	62.4%	63.4%	63.3%	64.1%	65.0%	66.4%
IT	51.9%	51.8%	50.4%	51.6%	51.4%	51.7%	51.6%	52.0%	51.7%
LT	74.2%	72.4%	67.4%	65.1%	68.5%	66.6%	67.6%	68.3%	66.7%
LU	71.4%	69.2%	68.9%	68.3%	67.7%	67.1%	68.2%	68.1%	66.9%
LV	81.3%	80.0%	72.2%	69.5%	71.9%	73.3%	74.6%	75.8%	71.6%
MT	69.5%	69.6%	69.2%	70.6%	71.0%	71.4%	71.6%	72.4%	75.9%
NL	70.6%	70.8%	70.2%	69.2%	69.1%	69.1%	66.8%	66.1%	66.9%
PL	65.1%	65.9%	64.0%	64.2%	64.3%	63.1%	64.0%	63.7%	64.9%
PT	65.7%	66.3%	66.6%	67.6%	66.4%	64.5%	64.3%	64.7%	64.7%
RO	66.9%	65.3%	63.4%	62.2%	63.4%	64.4%	65.8%	67.2%	66.5%
SE	70.4%	71.0%	70.4%	70.0%	71.7%	71.3%	70.8%	70.5%	70.7%
SI	70.6%	70.6%	69.8%	69.4%	69.1%	69.9%	68.7%	69.3%	69.5%
SK	69.4%	69.8%	68.1%	67.1%	65.8%	63.4%	65.7%	66.7%	66.2%
UK	71.4%	69.3%	69.0%	69.3%	66.6%	66.6%	67.9%	67.1%	67.2%

Note: Bright green marks each country's peak year, when earnings as a % of gross household income were highest. Bright red marks each country's trough year, when earnings as a % of gross household income were lowest. E.g. DE had its trough in 2008 (earnings =66.9% of gross income) and its peak in 2016 (earnings =70.2% of gross income).

Source: Own calculations, EU-SILC data.

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To sum up, over the last decade in the EU:

- labour earnings as a proportion of gross income have stayed almost unchanged over the period 2008-2016
- but the contribution of labour earnings to income inequality has increased slightly (from 86% to 88%), while
- self-employment income, which made up less than 8% of gross income in 2016, accounted for around 12% of inequality in that year.

2.2. The role of hours worked in shaping earnings inequality

Inequality in annual earnings, which represent two thirds of gross household incomes, depends partly on the distribution of hours worked. In theory, if the hours worked are unequally distributed among workers with the same pay, this may significantly affect the earnings distribution and hence overall income inequality. ([328]) Recent evidence shows that hours of work have steadily declined over the last three decades: in the EU average weekly hours have fallen by one hour since 2008, both as a coping mechanism for firms facing a slump in demand during the crisis ([329]) and also as a result of a structural trend towards more part-time work and greater flexibility in the labour market. ([330])

Changes in the world of work that affect the distribution of hours among workers are likely to have an impact on earnings inequality. Hours of work may contribute to the overall earnings dispersion, depending on how unequally distributed they are among workers and how correlated they are with wages. In general, policies which are designed to provide incentives for those who earn little to work more hours tend to reduce earnings inequality. Conversely, policies that tend to reduce the working hours for those who earn less may increase inequality. ([331])

Hours and wages contribute significantly to inequality in Germany, France and the United Kingdom. *Table 4.3* illustrates the contributions of wages and hours and their correlation to overall earnings inequality in these three countries for which some evidence has recently come out. ([332]) In Germany and France the correlation between hours worked and hourly wage is becoming positive and larger, along the lines of what has been happening in the United Kingdom since the 1990s.

Table 4.3

Correlation between hours worked and hourly wage is increasing over time in DE and FR

Earnings inequality and its decomposition by hourly wage, hours worked and their correlation (%)

		Inequality	Hourly wage	Hours worked	Correlation
UK	1991	0.255	51.4%	37.0%	11.6%
	1995	0.260	52.4%	35.0%	12.6%
	2000	0.226	55.4%	34.3%	10.3%
	2007	0.227	59.2%	28.2%	12.6%
	2012	0.248	59.3%	29.4%	11.2%
DE	1991	0.174	68.0%	31.9%	0.1%
	1995	0.147	70.2%	40.9%	-11.1%
	2000	0.185	54.3%	36.7%	9.0%
	2007	0.230	53.5%	35.8%	10.7%
	2012	0.229	53.4%	33.7%	12.9%
FR	1991	0.118	81.8%	29.2%	-10.9%
	1995	0.133	75.9%	30.0%	-6.0%
	2000	0.131	70.7%	30.2%	-0.9%
	2007	0.119	66.4%	34.6%	-1.0%
	2012	0.137	62.6%	30.3%	7.1%

Note: Earnings inequality measured with the mean logarithmic deviation. Earnings inequality ranking: the UK is the most unequal country, followed by DE and then FR as the most equal one.

Source: Checchi, García-Peñalosa and Vivian (2016).

Click here to download table.

If non-standard forms of employment result in low paid workers working fewer hours, they may make the earnings distribution more unequal. In other words they fail to compensate for low earnings through more hours worked. ([333])

([328]) See Eurofound (2017) for an assessment of earnings inequality in the Member States.

([329]) European Commission (2017a), Part I.1.

([330]) See Chapter 2.

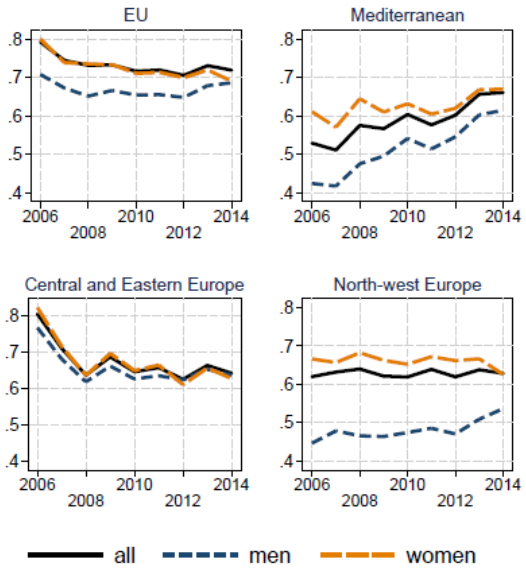
([331]) This is relevant in view of the increase in the proportion of temporary contracts which are of short duration, up to 56% in 2016 (European Commission 2017a – Part II).

([332]) Checchi *et al.* (2016).

([333]) Inequality in hours worked may derive from the increasing use of part-time work that may help reconcile work and private life, especially for women. However, Checchi *et al.* (2016) notice that this is just one driver of the greater role of hours inequality to explain earnings inequality.

Figure 4.1 shows country-level general trends over the last decade for the EU as a whole and for three specific clusters of countries: the North-Western (NW), Mediterranean (MED) and Central-Eastern European countries (CEE). ([334]) While for the EU as a whole ([335]) the earnings dispersion seems to have been stable over the last decade, it has followed different paths within the three clusters of countries. ([336])

Figure 4.1
Earnings inequality



Note: Inequality measured as variance of log earnings.
Source: Benczur P., Cseres-Gergely Z. and Harasztosi P. (2018). JRC publication using EU-SILC data.
Click here to download figure.

- In all regions, earnings inequality depends on the hourly wage in the first place, while in NW countries working hours play a relatively strong role in making earnings unequal. Also, the reduction of hours in NW countries tends to affect those whose earnings are already low, as the positive covariance implies, thus further increasing inequality. All in all, structural changes in the labour market have led to a reduction in hours because employment gains have occurred in sectors where greater proportions of non-standard jobs are concentrated. ([337]) On the other hand, it is likely that these changes have led to productivity gains. ([338])

Table 4.4
Earnings inequality decomposition by hourly wage, hours worked and their covariance (%)

Contributions to earnings inequality									
		Hourly wage	Hours worked	Covariance			Hourly wage	Hours worked	Covariance
EU	2006	84.7%	24.5%	-9.2%	NW	2006	61.4%	39.6%	-1.0%
	2007	83.9%	24.9%	-8.7%		2007	62.3%	37.5%	0.2%
	2008	82.7%	24.1%	-6.8%		2008	61.6%	35.7%	2.7%
	2009	83.0%	23.5%	-6.5%		2009	62.4%	35.3%	2.3%
	2010	81.4%	24.0%	-5.4%		2010	62.8%	34.2%	2.9%
	2011	80.0%	24.2%	-4.2%		2011	61.6%	34.4%	4.0%
	2012	80.1%	24.2%	-4.2%		2012	62.9%	33.0%	4.2%
	2013	80.3%	25.0%	-5.2%		2013	65.9%	33.9%	0.1%
	2014	80.5%	24.3%	-4.8%		2014	65.0%	33.3%	1.7%
MED	2006	86.8%	25.9%	-12.8%	CEE	2006	88.0%	14.2%	-2.2%
	2007	85.1%	25.3%	-10.4%		2007	89.1%	14.0%	-3.1%
	2008	85.9%	20.3%	-6.2%		2008	90.1%	13.7%	-3.8%
	2009	84.9%	22.0%	-6.9%		2009	89.0%	13.6%	-2.6%
	2010	84.5%	21.4%	-5.9%		2010	87.7%	15.2%	-2.8%
	2011	84.3%	20.8%	-5.1%		2011	88.0%	14.3%	-2.3%
	2012	80.7%	25.0%	-5.7%		2012	89.4%	14.1%	-3.5%
	2013	77.6%	25.7%	-3.4%		2013	87.6%	14.0%	-1.6%
	2014	80.1%	24.0%	-4.0%		2014	88.8%	12.9%	-1.8%

Note: Hours worked refer to the interview year, while wage data to the year before (except the UK and IE). The authors have checked the effect of this misalignment using panel data and found that its effect is likely to be small on the level of aggregation used here.
Source: Benczur P., Cseres-Gergely Z. and Harasztosi P. (2018). JRC publication using EU-SILC data.
Click here to download table.

New forms of work that imply fragmented careers and frequent periods of inactivity may lead to greater earnings inequality. In general, flexible contractual arrangements are useful tools for firms to cope with a slump in demand ([339]) and to reconcile work, private and family life. However, open-ended forms of employment are those that regularly lead to greater equality in hours worked. The European Pillar of Social Rights therefore provides policy guidance stating that "the transition towards open-ended forms of employment shall [be] fostered." ([340])

3. NON-STANDARD WORK AND INEQUALITY: A MULTIDIMENSIONAL VIEW

Tackling labour market segmentation and differences in living standards between standard and non-standard workers is a key priority of the EU reform agenda. ([341]) The Pillar states that every worker has the right to fair and equal treatment regarding working conditions regardless of the type and duration of the employment relationship. However, this objective must be reconciled with

([334]) This analysis is based on Benczur *et al.* (2017). This paper considers as North-Western countries: Austria, Belgium, Germany, Denmark, Finland, France, Ireland, Luxembourg, the Netherlands, Sweden and the United Kingdom; as Mediterranean countries: Cyprus, Greece, Spain, Italy, Malta and Portugal and as Eastern European countries: Bulgaria, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland, Romania, Slovenia and Slovakia.

([335]) Both EU-wide and cluster-wide figures result from making individual incomes comparable via purchasing power parities, so the meaning of the supranational figures is to be considered as if they were a single entity. NB.: This is not the praxis of averaging country-specific figures across the different countries.

([336]) The Structure of Earnings Survey (SES) is considered better suited than the EU-SILC for this decomposition. This is because earnings and the working status of the respondent are recorded for the current time in SES, while in the EU-SILC information on the working status refers to the current year but earnings usually refer to the previous year. However, SES is available only every four years (last wave 2014), while the EU-SILC is an annual data collection.

([337]) See Chapter 2.

([338]) European Commission (2017a), Part I.1.

([339]) Boeri and Jimeno (2016). Usually firms may decide to react to output shocks adjusting directly the total employment or acting on the intensive margins, i.e. the hours worked by the employees.

([340]) The European Pillar of Social Rights: Principle 5 (European Commission 2017c).

([341]) This section follows the International Labour Organisation's definition of "non-standard", and refers to non-standard work as temporary and part-time workers, as well as the solo self-employed.

another Pillar objective: providing the necessary flexibility for employers to make changes for economic reasons, while encouraging innovative forms of work such as entrepreneurship and self-employment.

Permanent full-time employment may continue to decrease in the future. While the extent of the impact of technological change and new forms of work on non-standard contracts is not yet clear, permanent full-time employment has decreased by 4 pps over the last 15 years (59% in 2016). As discussed in Chapter 2, the rise of new forms of employment reflects structural transformations in the world of work which have tended to lead to increasingly flexible work arrangements. These include changing trends in women's labour market participation, increasing competition from globalisation and technological change. The link between new technology and changing labour markets is particularly evident for platform workers, most of whom are solo self-employed. Solo self-employment has increased by 2 pps over the last 15 years and now accounts for 11% of total employment. There is a real possibility that this group will continue to increase with the advent of platform work, thus posing important challenges, notably in ensuring fair working conditions and adapting social protection systems. Another challenge is to ensure inclusive education and training for people with disabilities so that they can reap the potential benefits of new forms of work. ([342])

The standard of living of individuals working in new forms of employment requires close attention. In order to obtain an accurate picture of the standard of living across these different types of work, this section considers evidence on income poverty and material deprivation – two key indicators of the EU social inclusion targets in the EU 2020 strategy ([343]) - as well as wealth measures. Taking into account dimensions other than income is crucial for non-standard types of work, for the following reasons.

- Comparing the income poverty risk of the self-employed with that of other types of workers poses some challenges. One is the blurred distinction between personal and business income and assets, and the degree to which the self-employed may use physical assets that the enterprise owns - such as a car or electronic devices - as a coping strategy in hard times. Another issue is the reliability of income data for the self-employed collected in surveys, because of higher non-response rates and under-reporting of variations in income. ([344])

- Another challenge is the importance of wealth and precautionary saving behaviour as buffers in the face of higher income uncertainty. A divergence between income poverty and material deprivation measures may occur because some categories of non-standard workers may adjust their living standards during good times in order to cope with higher expected income volatility. Conversely, they may be able to accept such uncertainty because other household members have stable jobs or because they can draw on savings and wealth in case of hardship.

- There may also be important self-selection effects among the self-employed. It is possible that some people are more likely to become self-employed because their existing wealth and savings make this possible.

Against this background, income-based analyses may fail to capture relevant aspects of non-standard workers' wellbeing. In particular, an increase in non-standard forms of work may further distort the relationship between income-based indicators and material deprivation. Sections 3.1 and 3.2 take a multidimensional view of wellbeing by assessing the incidence of income poverty, material deprivation ([345]) and wealth distribution for workers on non-standard contracts (including part-time workers), comparing them with workers on 'standard' contracts (i.e. full-time permanent contracts). Section 3.3 considers the extent to which differences in wellbeing between non-standard and standard workers can be explained by socio-economic characteristics.

3.1. Living standards of non-standard workers: income poverty

Higher reliance on non-standard forms of work could increase living standard differences among workers. This could occur as a result of two types of distributive effects: the impact on the distribution of income between capital and labour (as discussed in Chapter 2) and the remuneration of labour across employment types. The impact on workers' wellbeing of a possible shift towards a dominance of non-standard forms will ultimately depend on the types of new non-standard jobs that are created or destroyed, and the policy response to these changes, such as investment in education, training and social security. ([346])

Non-standard workers are not a single homogenous group in terms of age, education, occupation and sector. While the likelihood of being in temporary employment is higher for younger and less educated workers and women, the solo self-employed tend to be older and are predominantly men. ([347]) Jobs in new forms of work related to

([342]) Young people and older workers with disabilities are over-represented among those who lack basic skills.

([343]) These indicators are computed on the basis of the EU Statistics on Income and Living Conditions (EU-SILC) data.

([344]) Hoeremans, and Marx (2017).

([345]) A few country-specific studies have raised this issue (Hoeremans and. Marx 2017), but a systematic treatment is still lacking. Seva and Larsson (2015) show that in Sweden, the self-employed tend to have a higher AROP compared with employees, but that the degree of material deprivation does not differ significantly.

([346]) See Chapter 2.

([347]) European Commission (2017a – part II).

technological change, such as platform work, tend to go to the well-educated. In particular, platform workers currently represent a relatively small, but growing, proportion of non-standard workers. Thus categorising non-standard workers as on part-time or full-time temporary contracts, or as self-employed with or without employees, does not fully reflect the increasing complexity of the different types of non-standard forms of work. For example, much of the rise in part-time work is related to labour market participation choices by women because it can be a way to reconcile work and family life, but part-time work can also be involuntary, imposed upon the worker by the employer and, in some instances, facilitated by in-work social benefits meant to increase labour market participation.

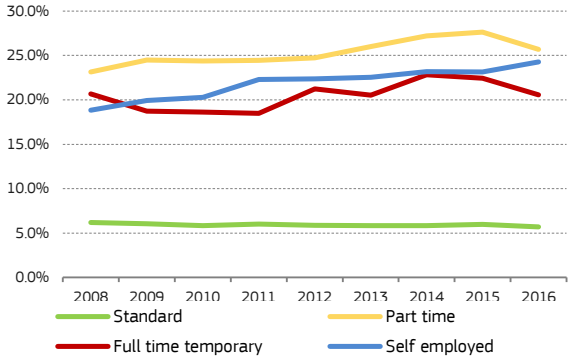
Standard workers face a much lower risk of income poverty than that of non-standard workers. *Chart 4.3* shows the risk of income poverty by employment type in the EU-28 from 2008 to 2016 ([348]), indicating that this risk is strongly related to the type of employment contract.. In 2016 poverty rates varied from just 5% for standard workers to 20% for full-time temporary employees, 24% for the self-employed and 26% for part-time workers.

Growing poverty rates among non-standard workers during the crisis are symptomatic of labour market segmentation, i.e. the existence of a persistent divide between workers holding different types of contracts. Whereas poverty rates among employees on open-ended contracts have remained stable at about 5 percent over the last decade, poverty increased among all types of non-standard workers in 2009-2014. This development coincided with the economic downturn, as labour markets adjustments and high economic uncertainty affected firm's willingness to hire workers on full-time open-ended contracts. The rise of in-work poverty among non-standard workers underlines the challenge of ensuring that flexible labour market arrangements do not disproportionately affect the most vulnerable workers. ([349]) This in turn emphasises the need to address in-work poverty, which is a core principle of the Pillar of Social Rights.

Chart 4.3

The risk of income poverty (AROP) for standard workers is substantially lower than for non-standard workers.

At-risk-of-poverty rates by contract type in the EU, 2008-2016



Note: The analysis is conducted on household's heads aged 18-69, which are identified as the individual with the highest income within the household.

Source: EU SILC, own calculations.

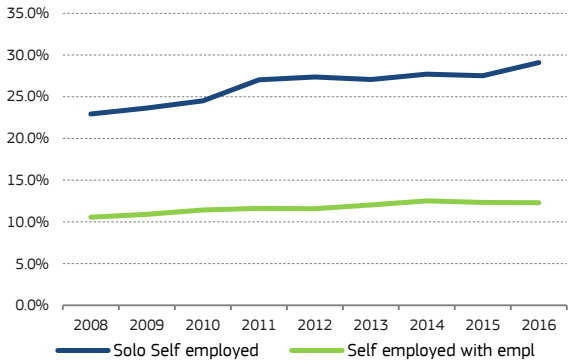
Click here to download chart.

The solo self-employed faces a higher risk of poverty than the self-employed with employees. *Chart 4.4* illustrates this sharp difference in the poverty risk of different categories of self-employed people. The solo self-employed, who, unlike the self-employed with employees, have increased in number in recent years, have been facing a growing risk of poverty since 2009. At the same time, the risk of poverty among the self-employed with employees has risen only moderately over the last decade.

Chart 4.4

Self-employed workers without employees face a substantially higher poverty risk (AROP) than self-employed worker with employees.

Poverty rates among the solo self-employed and self-employed with employees, 2008-2016.



Note: The analysis is conducted on household's heads aged 18-69, which are identified as the individuals with the highest income within the household.

Source: EU SILC. own calculations.

Click here to download chart.

Households headed by part-time workers face the highest risk of poverty, at 25% in 2016. It is important to note that this analysis focuses on heads of households, the individuals with the highest income within each household. Hence, by definition, households headed by part-time workers tend to feature a significantly higher risk of poverty than those headed by someone who works full-time. This is confirmed by additional analyses that reveal higher poverty rates for part-time workers in general. Poverty increased relatively steadily over the last decade among this group, which may reflect the rise in

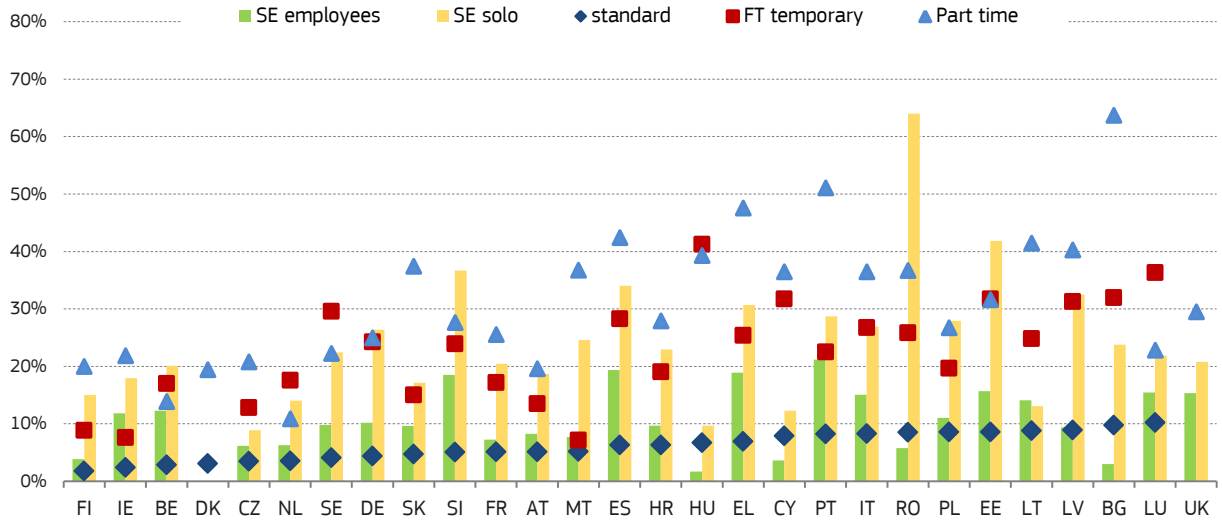
([348]) Individuals are deemed to be at risk of poverty (AROP) if their equivalised household income is below 60% of the median household income. This chapter refers to AROP using 'risk of poverty' and 'income poverty' interchangeably throughout the text. As the analytical focus of this chapter is on differences by employment type, it considers only the employment status of the head of household, i.e. the household member with the highest individual income.

([349]) Two examples are the risk of poverty for people with disabilities, which is much higher than that for people without disabilities (11.5% as against 9.1% in 2016 for the EU-28), and the risk of poverty for workers with a non-EU origin (26.9% in 2016 for the EU-28) (ilc_iw15).

Chart 4.5

The risk of poverty (AROP) among standard workers is generally very low across all Member States but the living standards of non-standard workers tend to display very large variations, across both countries and types of contract.

At-risk-of-poverty rates in the EU28 Member States, by type of contract



Note: Poverty rates are based on the on official Eurostat threshold, namely 60% of the national median income. They are based on the period 2014-2016 so to ensure sufficient observations for each contract type. Estimates are based on household's heads aged 18-69. The head of household is the individual with the highest income within the household.

Source: EU SILC, own calculations

Click here to download chart.

involuntary part-time work. This trend appears to have been reversed in 2016, possibly due to better cyclical conditions.

Poverty rates among non-standard workers vary deeply across Member States. *Chart 4.5* shows that while the risk of income poverty among full-time employees is below 10% in all Member States, it tends to be significantly higher for the solo self-employed and to vary widely across Member States. In most cases, poverty rates range between 10% and 40% for the self-employed and temporary employees. Despite the wide range of poverty risk across different contract types in many Member States, part-time employees face the highest risk of poverty in most of them.

3.2. Living standards of non-standard workers: material deprivation

Material deprivation is measured on the basis of whether households can afford certain material items that are typically needed to participate in society. According to Eurostat's definition, an individual is considered as materially deprived when living in a household that lacks 3 or more of 9 specific items. ([350])

The risk of material deprivation faced by non-standard workers remains above that of standard workers but the gap is less pronounced. *Chart 4.7* shows that the risks of poverty and material deprivation are similar for workers overall in the EU, at 10%. However, this masks important differences in the rates of material deprivation and poverty between different employment types. On the one hand, temporary workers face a high risk of both material deprivation and poverty (20%), which suggests that these two indicators lead to consistent conclusions. On the other hand, material deprivation among the self-employed and part-time workers is substantially lower than the poverty risk, while the opposite is true for standard workers who face a relatively higher risk of material deprivation (9%, against 5% for the poverty rate).

Chart 4.7

The risk of poverty (AROP) and material deprivation are similar for workers overall in the EU, at 10%, but this masks important differences in the rates of material deprivation and poverty between employment types.

At-risk-of-poverty (AROP) and material deprivation rate by employment type in the EU-28, 2015-2016.

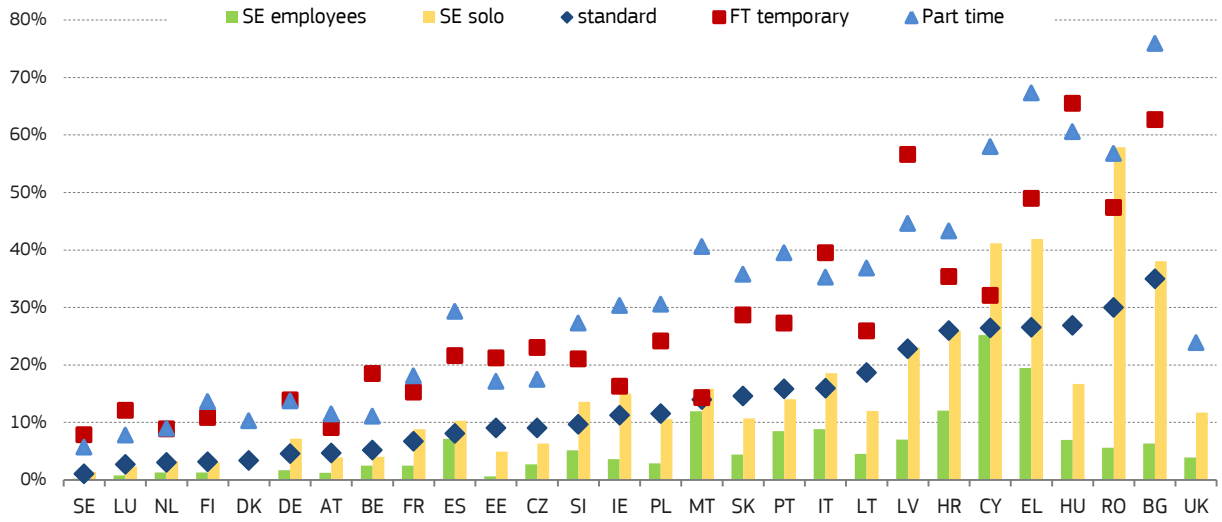
Note: The analysis is conducted on household's heads aged 18-69, which are identified as the individuals with the highest income within the household.

Source: EU SILC, own calculations

Click here to download chart.

([350]) The items a deprived household may not be able to afford include: a one week annual holiday away from home; face unexpected expenses; avoid arrears (mortgage or rent payments, utility bills or hire purchase instalments); afford a meal with meat, chicken or fish every second day; afford to keep the home warm; afford to have a car for personal use (if wanted); phone; washing machine; and colour TV.

Chart 4.6
Material deprivation rates by contract type, average 2014-2016



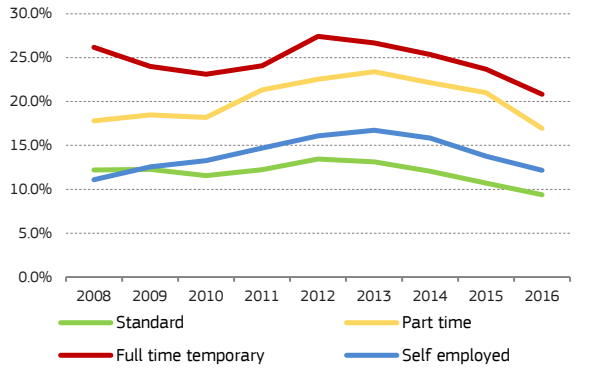
Note: Material deprivation rates are computed on the basis of the period 2014-2016 so to ensure sufficient observations for each contract type. Estimates are based on household's heads aged 18-69. The head of household is the individual with the highest income within the household.

Source: EU-SILC, own calculations

Click here to download chart.

Material deprivation is more sensitive than income poverty to the economic cycle, and this is true across all types of contract. Unlike poverty, there was a significant upturn in material deprivation rates during the crisis. However, material deprivation has decreased steadily across all forms of employment since the peak of the crisis, reaching an all-time low in 2016. The results displayed in *Chart 4.8* suggest that material deprivation rates among temporary employees decreased rapidly after the crisis and are now at a lower level than before 2008.

Chart 4.8
Households headed by a self-employed worker are significantly better off in relation to the risk of material deprivation than they are in relation to the income-based poverty risk (AROP)
Material deprivation rates by contract type, EU-28, 2008-2016



Note: Standard employee: full-time employees on permanent contract; Non-standard employee: Part-time workers and full-time employee on temporary contract; Self-employed.

Source: Own calculation, EU-SILC

Click here to download chart.

Chart 4.9
Solo self-employed face a higher risk of material deprivation
Material deprivation rates in the EU: solo self-employed vs self-employed with employees

Source: EU SILC, own calculations.

Click here to download chart.

Distinct developments across social indicators reflect the sensitivity of poverty rates to the income distribution. The different dynamics of the at-risk-of-poverty rate compared to material deprivation is explained by the nature of these two indicators. The risk of poverty is measured on the basis of a household's disposable income relative to (60% of) the national median disposable income. As a result, poverty rates over time are primarily driven by developments in the income distribution rather than living conditions per se. For instance, if all households experience an income contraction by 5 percent, poverty rates remain unchanged while material deprivation would most likely surge more or less rapidly depending on household's degree of financial resilience.

The EU-28 Member States exhibit a high degree of variation in material deprivation rates (see *Chart 4.6*). Material deprivation among the solo self-employed in the years 2014-16 was lower than for standard workers in 15 Member States. In most

Member States, with the exception of Cyprus and Greece, and more significantly Romania, where solo self-employment is prevalent in the farming and agriculture sectors, the disadvantage of the self-employed relative to standard workers is fairly limited.

3.3. Impact of socio-economic factors on risk of poverty and material deprivation of non-standard workers

The policy implications of inequality of outcomes across employment types depend crucially on the factors which are behind the risk of poverty and material deprivation. The socio-economic characteristics of non-standard workers may explain the differences in material deprivation and poverty across employment forms. Workers employed on non-standard contracts are more likely to be young or to have only low level education ([351]) and hence are more likely to be materially deprived or at risk of poverty. In turn, this could indicate that the socio-economic background of the individuals working under different types of contract is the main source of inequality across contract types rather than the type of employment itself. To reduce such risks, as discussed in Chapter 5, policy intervention could take the form of expanding the social protection coverage of non-standard workers.

Macroeconomic and labour market conditions as well as labour market regulations play a role in determining the standard of living across employment types. For instance, adverse macroeconomic conditions and high youth unemployment can result in a higher concentration of young overqualified non-standard workers. In contrast, decisions to work under non-standard contracts, in particular to become self-employed, may well depend on the availability of other financial resources, for instance on holding sufficient savings or other assets or on the income of other household members.

Taking into account socio-economic factors partly explains the living standard gap between standard and non-standard workers. Adjusted gaps between standard and non-standard workers are obtained by estimating a probit model that takes into account specific individual factors such as education, sector of activity, age, and household structure characteristics. *Chart 4.10* and *Chart 4.11* respectively compare the non-adjusted and adjusted gaps across employment types relative to standard employees. The difference between adjusted and non-adjusted gaps captures the higher risk of poverty or material deprivation incurred by workers under non-standard contracts everything else being equal (i.e. education, age, economics sector, gender, household structure). These estimates taking into account the different profile of non-standard workers confirm that these workers remain disadvantaged compared to standard full-time employees irrespective of key workers and household's characteristics. Nevertheless, the adjusted gaps are significantly lower for temporary employees, and solo self-employed workers.

Chart 4.10

The risk of poverty (AROP) and material deprivation are generally higher for non-standard workers.

Unadjusted gap in the risk of poverty (AROP) and material deprivation between non-standard and standard workers in the EU-28, pp (2014-2016)

Note: The bars refer to the difference in material deprivation and poverty rates between non-standard employment (i.e. temporary, part-time workers, and self-employed) and standard workers (full-time permanent employees).

Source: EU-SILC, own calculations.

Click here to download chart.

Chart 4.11

Taking into account socio-economic characteristics leads to a smaller but still non-trivial gap between temporary, part-time, solo self-employed and standard workers.

Adjusted gap in the risk of poverty and material deprivation between non-standard workers and standard employees, pp (2014-2016).

Note: The adjusted gap captures the likelihood of material deprivation among non-standard workers as compared to standard workers, controlling for individual and households' socio-economic characteristics. The adjusted gap is estimated using a probit model which estimates the effect on the probability of poverty and material deprivation of being under a certain form of employment, controlling for age, education, economic activity, and household structure. The reference group is standard workers.

Source: EU-SILC, own calculations.

Click here to download chart.

Solo self-employed have nearly the same likelihood of being materially deprived than standard workers once socio-economic characteristics are taken into account, but still face a higher risk of income poverty (*Chart 4.11*). While the risk of poverty and the material deprivation rate for the solo self-employed are respectively 23 pps and 5 pps higher than for standard employees, this gap reduces to 14 pps and 2 pps once the different socio-economic characteristics between these groups are taken into account (compare *Chart 4.10* with *Chart 4.11*). Comparing adjusted gaps with unadjusted gaps shows that the likelihood of being materially deprived or at risk of poverty is clearly linked with personal

([351]) European Commission (2017a).

characteristics such as the age or the education attainment.

The adjusted gap for non-standard workers with respect to standard employees remains larger in terms of income poverty than material deprivation. This trend is most visible in the case of the self-employed, where the two measures convey apparently contrasting messages even after correcting for socio-economic characteristics; the difference is significantly less pronounced for full-time temporary employees and part-time workers, especially after the adjustment.

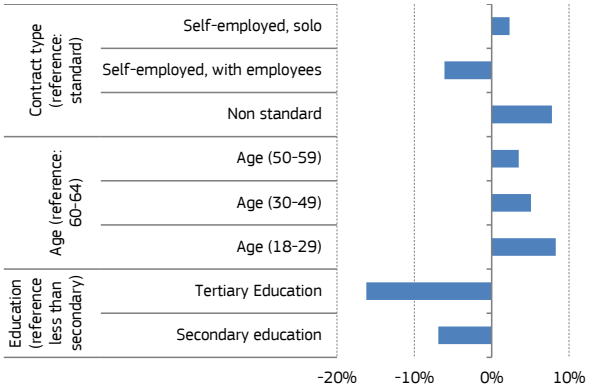
The implications of these findings are twofold. On the one hand, they suggest that workers' characteristics explain a substantial part of the lower living standards of the solo self-employed, in particular when it comes to the risk of material deprivation. On the other hand, the fact that the solo self-employed face a relatively high risk of income poverty but a low risk of material deprivation after controlling for socio-economic characteristics may reflect the difficulty of income measurement for these self-employed workers.

Beyond the role of different employment types, material deprivation is strongly associated with the level of education and age. As shown in *Chart 4.12* individuals who have benefited from secondary and tertiary education have, respectively, a 7 pp and a 16 pp lower probability of being materially deprived than individuals who have had only primary education. The risk of material deprivation decreases progressively over a worker's lifetime, reflecting the fact that, over time, incomes tend to increase and that households can draw upon a larger stock of assets. The results of the regression analysis of the determinants of poverty emphasise the crucial role of education.

Chart 4.12

The risk of material deprivation decreases with age and the level of education attainment.

Determinants of the likelihood of material deprivation, probit regression estimates, 2016



Note: Probit estimates of the determinants of material deprivation in the EU (2016), controlling for age, education, economic sectors, household structure. The reference group is standard workers.

Source: EU-SILC, own calculations.

Click here to download chart.

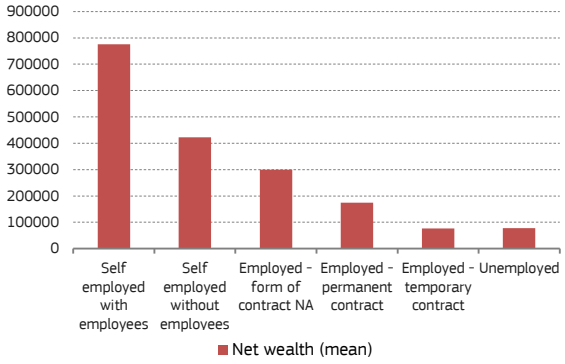
3.4. Wealth distribution across employment types

Differences between income poverty and deprivation rates among non-standard workers are related to household's savings and wealth. Thus, we further document the distribution of wealth by contract type. Data on net wealth distribution from the household finance and consumption survey (HFCS) compiled by the European Central Bank (ECB) reveal that the distribution of wealth varies strongly across employment types in the EU (see *Chart 4.13*)**.**

Chart 4.13

The self-employed have the highest average wealth in selected EU countries

Wealth distribution across types of contract, 2014-2016



Note: The countries available in the HFCS database are: Belgium, Germany, Estonia, Ireland, Greece, Spain, France, Italy, Cyprus, Latvia, Luxembourg, Hungary, Malta, the Netherlands, Austria, Poland, Portugal, Slovenia, Slovakia, Finland.

Source: European Central Bank, Household Financial Consumer Survey (HFCS).

Click here to download chart.

The self-employed are the group with the highest average wealth even though there are significant differences within this group. The self-employed with employees hold nearly twice as much net wealth as the solo self-employed, but there is evidence of much greater variation among the self-employed than among standard employees.

Employees on permanent contracts have higher average net wealth than those on temporary contracts. This is consistent with evidence of the extent to which young people are more likely to be on temporary contracts. ([352])

These findings underline the vast diversity of forms of non-standard work. On the one hand, they may partly reflect the difficulty of measuring the income of the self-employed mentioned above. On the other hand, the discrepancy between income poverty risk and material deprivation risks among the self-employed may to some extent result from the ability of the self-employed to draw on other assets in order to maintain their standard of living as their income fluctuates. However, given the wide variation among

([352]) Due to lack of information on contract types in certain countries (e.g. Finland), drawing a distinction between employees on permanent and temporary contracts is not always possible. Hence, certain employees are reported to as 'form of contract NA' (Not Available).

the self-employed, aggregate figures may well hide significant inequalities within this group.

4. GENDER

The EU and its Member States have a long-standing commitment to the principle of equal pay for male and female workers. ([353]) This principle is enshrined in the EU Treaties ([354]) and has been reaffirmed by the recast Directive on gender equality in the area of employment and occupation (2006/54/EC). Furthermore, the European Pillar of Social Rights states that women and men have the right to equal pay for equal work or work of equal value.

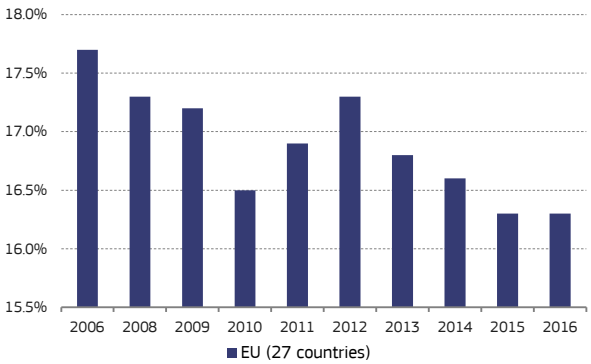
4.1. Recent developments and drivers of the gender pay gap

Despite significant improvements in gender equality in recent decades, the pay gap between men and women persists in the EU. The unadjusted gender pay gap, which measures the difference between average male and female earnings as a percentage of average male earnings amounted to 16.3% in 2016 in the EU (see *Chart 4.14*). ([355]) Although the pay gap has narrowed by nearly 1.5 pp since 2006 in the EU as a whole, the degree of improvement has varied across Member States, as shown by the large differences in the pay gap that continues to prevail in 2016 (*Chart 4.15*). At the same time, female employment continued to increase slowly but steadily, reaching 67% in 2017 from 63% in 2013 according to Eurostat figures.

Chart 4.14

The gender pay gap follows a declining trend, but remains substantial in the EU.

Unadjusted pay gap (% of average gross hourly earnings of men), EU-27, 2006-2016



Note: EU-27, data on the pay gaps in 2015 and 2016 are provisional.

Source: Eurostat based on the Structure of Earnings Survey (wave 2014).

Click here to download chart.

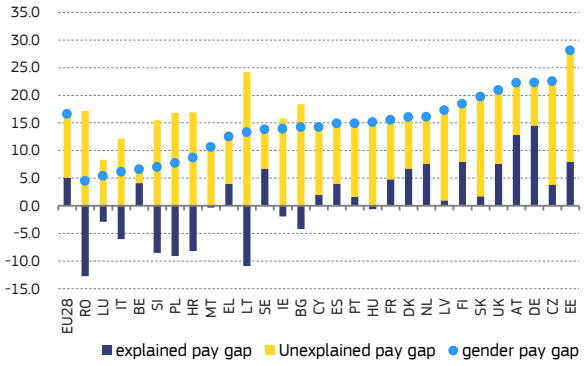
The unadjusted pay gap differs from the concept of 'equal pay for equal work'. Making the distinction between the different sources of the gender pay gap is crucial in order to design policies addressing it. The overall unadjusted gender pay gap includes differences in hourly wages for work of 'equal value' (unexplained gap) together with the effect of differences in the average (observable) labour market characteristics of men and women (explained gap). The unexplained pay gap is obtained by taking into account differences in the average socioeconomic characteristics of men and women in the labour market.

Women still earn 11.5% less than men once the pay gap is adjusted to account for average gender specific characteristics. *Chart 4.15* displays the results of a recent Eurostat study ([356]) which decomposes the difference in hourly earnings between men and women. Results show that, on average in the EU, 31% of the pay gap can be attributed to the difference in average characteristics between men and women such as age, educational attainment, occupation, sector, working hours, and other observable worker's attributes. The size of the 'corrected pay gap' (the 'unexplained' gap) varies however across Member States, ranging from 2.5% in Belgium and 7.8 in Germany to 24.2% for Lithuania.

Chart 4.15

Average socio-economic characteristics of women participating in the labour market do not account for a large portion of the pay gap in most Member States.

The gender pay decomposed: explained, unexplained and total pay gap (2014)



Source: The decomposition was performed by Eurostat (2018) based on data from the Structure of Earnings Survey (wave 2014).

Click here to download chart.

The explained part of the gender pay gap is the largest are Germany, Austria, the Netherlands, Finland, and Denmark. In these Member States a large portion of the overall gender pay gap is explained by differences in the characteristics of males and women in these labour markets (*Chart 4.15*). In contrast, taking into account the differences

([353]) In the Treaties since 1957 (today: TFEU art . 157).

([354]) The Principle 2 states: "Women and men have the right to equal pay for work of equal value."

([355]) Estimates of the gender gap are published by Eurostat [sdg_05_20]. Earnings are measured as average gross hourly earnings of paid employees based on data from the Structure of Earnings Survey.

([356]) Eurostat (2018). The explained part of the gender pay gap is the result of an Oaxaca-Blinder decomposition and is to be interpreted as the pay gap in place if the average woman had its observable characteristics such as occupation, years of experience, education remunerated at the same rate as the average man. Therefore, this is the component of the gap which stems from female and male workforce having, on average, different characteristics (average occupation, years of experience, education).

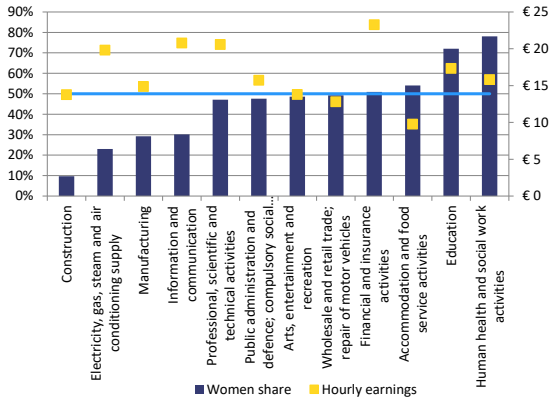
in the average characteristics of women and men in Italy, Poland, Bulgaria, Romania, Lithuania, Croatia, and Slovenia leads to a corrected pay gap that is higher than the overall pay gap.

Sectoral segregation is the key driver of the explained gender pay gap in the EU. Above 30% of the total gender pay gap is explained by the over-representation of women in relatively low paying sectors. As shown in *Chart 4.16*, labour market participation of women tends to be higher in low paying sectors such as primary education, health and social work activities as well accommodation and food services. On the other hand, women tend to be underrepresented in better paid sectors such as information and communication and electricity, gas, steam and air conditioning supply, which feature a strong male overrepresentation. Working time (full-time/part-time) accounts for an additional 11% of the gender pay gap, but education attainment, enterprise size, and occupation have a negative explanatory power, reducing the explained part of the gap.

Chart 4.16

Male workers are overrepresented in construction, manufacturing and certain utilities sectors; female workers in education, social and household services

Share of female workers (%) and mean hourly earnings (Euro) by economic sector, EU28, 2016



Note: Selected sample of sectors from NACE rev. 2 classification.

Source: Eurostat, Labour Force Survey [lfsa_egan2] and Structure of Earnings Survey [earn_ses14_47].

Click here to download chart.

The gender pay gap is also driven by segregation effects in the labour markets which are not captured by standard decomposition methods. This implies that a gender pay gap subsists within sectors, occupations, and education attainment groups. In terms of sectors, education is an example of a female-dominated domain in which the top-paying jobs are largely held by men. Indeed the share of female teachers is highest in early childhood education (over 85% for each of the Member States where data are available), which pays lower wages. Women also tend to represent a majority of secondary teachers in most Member States but the share of women teaching in tertiary education is typically below 50%. ([357])

([357]) Eurostat (2016).

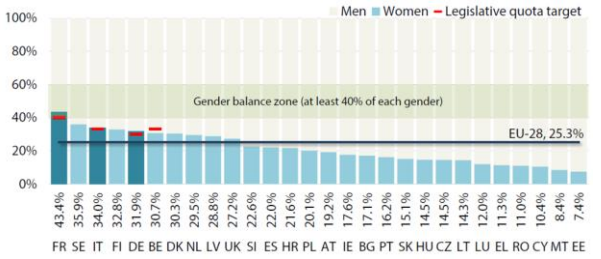
Women continue to be under-represented in economic and political decision-making positions

The Gender Equality index computed by the European Institute for Gender Equality (EIGE), reveals that, although the biggest gains for gender equality in the past 10 years have been in access to decision-making positions, the lack of access to power positions remains an outstanding form of gender inequality. ([358]) For instance, the share of female ministers in national governments across the EU amounted to 27.7% in November 2017, slightly below their representation in national parliaments (29.3%). As regards corporate leadership, women accounted for about a quarter (25.3%) of board members in the largest publicly listed companies in EU Member States in October 2017 (*Figure 4.2*). France (43.4%) is the only Member State featuring at least 40% of women (or men) in boards as legislative quota were introduced in 2011 to require companies to meet such 40% target. The only nine Member States with at least 25% women in corporate boards are mostly North-Western countries along with Italy and Lithuania.

Figure 4.2

Women account for 25.3% of board members in the largest publicly listed EU companies

Representation of women and men on the boards of the largest listed companies in the EU, October 2017



Source: European Institute for Gender Equality, Gender Statistics Database.

Click here to download figure.

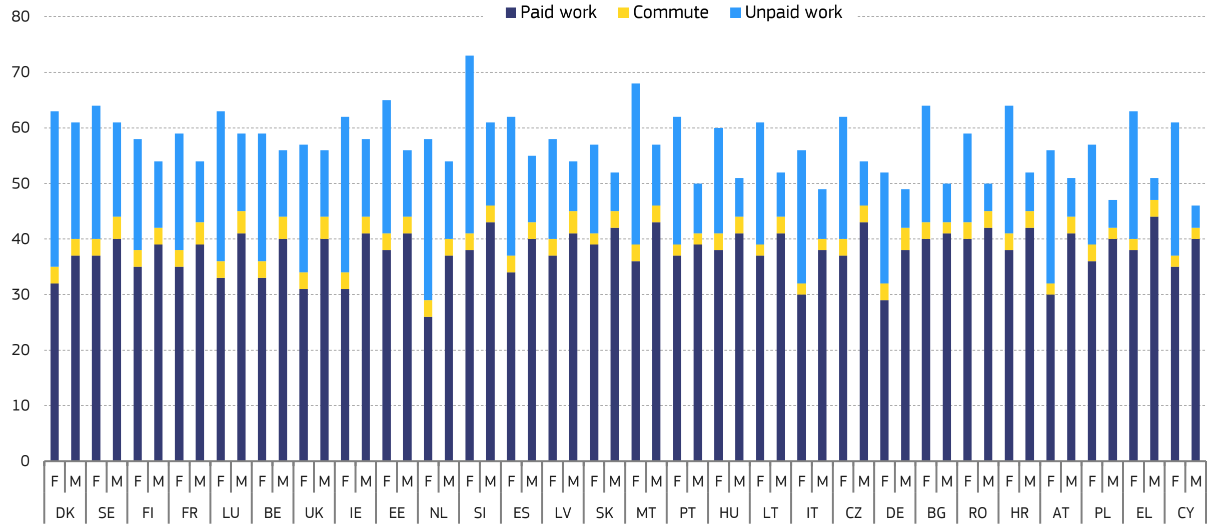
Institutional and wage-setting mechanisms are also likely to contribute to the pay gap in female-dominated sectors. This is especially the case in countries where women are concentrated in sectors such as health and social work activities services (see *Chart 4.16*) with limited collective bargaining. ([359])

The higher incidence of women employed in non-standard employment widens the pay gap. This phenomenon largely stems largely from the fact that women experience a higher risk of career interruption which makes them relatively less likely to be on permanent contracts. As discussed in the previous Section, temporary and part time workers tend to be disadvantaged compared to standard workers and translates into lower expected hourly wages. Temporary workers also tend to accumulate less job-specific human capital because employers are reluctant to grant access to training to employees with a higher likelihood of changing their jobs.

([358]) European Institute for Gender Equality (2017).

([359]) European Commission (2018c).

Chart 4.17
Women perform more hours of unpaid work in all EU Member States
Paid and unpaid working hours, by sex and by Member State



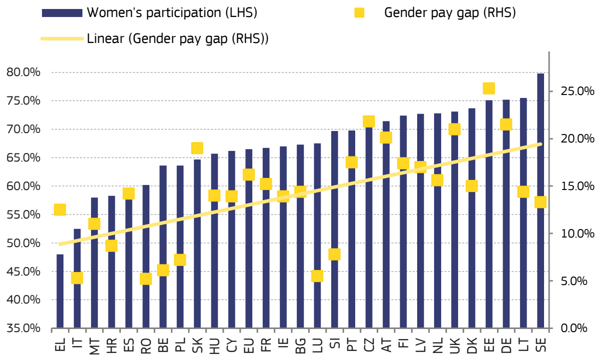
Note: Countries ranked by the size of the gap in unpaid working hours.
Source: Eurofound, 2015 European Working Condition Survey.
Click here to download chart.

The gender pay gap tends to translate into a pension gap. This is particularly the case in countries where pensions are based on contribution records. (360) Pension gaps and the risks that women may face in terms of lower unemployment entitlements due to their greater presence in part-time work will be further explored in Chapter 5.

Once unpaid work is included, women work more hours than men on average. (361) Considering only paid work, men work on average 39 hours per week as opposed to the 22 hours worked by women. However, women spend 22 hours in unpaid work compared with less than 10 hours for men. (362) Therefore, gender gaps in total hours worked tend to be larger in those countries where unpaid work among women is the highest. Nevertheless, there are Member States where men and women perform nearly similar hours of paid and unpaid work, e.g. Denmark and Sweden (see *Chart 4.17*). Another reason for the gender pay gap lies in women being more frequently employed in part-time and temporary employment which is associated with lower hourly wages.

Member States with low wage gaps tend to feature low female labour market participation. This suggests that the factors which explain women's decisions to enter the labour market, such as their expected earnings, are crucial in determining pay gaps. For instance, in countries with low pay gaps like Italy and Poland women tend to work in better-paid occupations, whereas lower-skilled women have low labour market participation rates. At the same time certain low-paid work such as nursing and cleaning is usually carried out within the household rather than delegated via formal work contracts. (363) The positive association between the gender pay gap and female employment shares suggests that the factors which explain women's decisions to enter the labour market, such as their expected earnings, are crucial in determining pay gaps.

Chart 4.18
There is a positive correlation between female labour market participation rates and the gender pay gap
Women's labour market participation and gender pay gap, 2016



Source: Eurostat, Labour Force Survey [lfsi_emp_a] and the Structure of Earnings Survey.
Click here to download chart.

In Member States that have achieved higher female employment rates, women still tend to face hurdles in accessing well-paying jobs. While family-compatible work arrangements may enable women to enter the labour market, this possibly comes at the cost of reduced access to high-paying jobs, promotions and skill development. Hours worked also tend to exacerbate the pay gap in Member States in which a significant proportion of women work part-time (e.g. Germany and the Netherlands).

(360) European Commission (2018d): In 2016, the gender gap in pensions (65+) stood at 36.6% in the EU.

(361) For instance, unpaid care or assistance (other than childcare) is mainly provided by women.

(362) Eurofound (2015).

(363) Boll *et al.* (2017).

5. Conclusions

Income inequality in the EU-28 has remained fairly constant over the last five years after a slight increase in the aftermath of the crisis. ([364]) In the context of a relatively small but potentially growing proportion of non-standard workers in the future labour force, the contribution of labour earnings to inequality has increased slightly. In parallel, labour earnings as a proportion of household income have returned to approximately pre-crisis levels, albeit with differences across countries. On the other hand, the impact of income from self-employment on income inequality seems be declining: it has fallen both as a proportion of household income (to less than 8%) and as a contribution to inequality.

Non-standard types of employment are likely to affect the way earnings inequality develops because of the distribution of working hours. This may be the case especially as a result of the increase in temporary contracts with a short duration. Hourly wages are the main source of earnings inequality in Eastern European countries, while in North-Western European countries earnings inequality depends on the distribution of working hours. Hours worked appear to be unequally distributed among workers and they are correlated with wages: those who earn higher hourly wages tend to work more. This pattern is becoming increasingly visible in Mediterranean countries. New types of work may often help to reconcile work and family life and they may be a key element of economic resilience in crisis times, but if they result in fragmented careers and frequent periods of inactivity, they may lead to greater earnings inequality through greater inequality in hours worked.

Inequality in the new world of work may also emerge from increased reliance on flexible work arrangements, such temporary work and self-employment, which in turn lead to higher income volatility. Since these flexible workers, especially the self-employed, may draw on accumulated wealth and savings to smoothen their consumption over time, it is important to consider their living standards from a multi-dimensional viewpoint.

The analysis in this chapter reveals the importance of complementing income-based assessments of wellbeing with material deprivation and wealth measures. While poverty rates are higher for the self-employed than for standard workers, the self-employed are not significantly more at risk of material deprivation than standard workers. Self-employment is however a very heterogeneous category of employment, encompassing business owners, the highly educated solo self-employed and more disadvantaged workers in, for instance, agriculture, retail and tourism sectors. Wealth distribution across employment types reflects this heterogeneity: the self-employed with employees hold nearly twice as much net wealth as the solo self-employed. Overall, despite the evidence of a non-standard contracts 'penalty', the welfare gap across employment types is partly explained by workers' individual socio-economic attributes. It is likely that the growth of non-standard types of employment will affect both the distribution of wealth and the risk of material deprivation.

Gender inequality has broader socio-economic dimensions. Despite major increases in female labour market participation and higher levels of educational attainment for recent female cohorts, certain obstacles to gender equality remain. Gender pay gaps persist, even after controlling for occupational and sectoral differences and women's generally shorter working hours. These inequalities for women of working age are likely to translate into gaps in social protection coverage, including pensions, as Chapter 5 will show.

The European Pillar of Social Rights identifies gender equality and the segmentation in the labour market as challenges and encourages Member States to promote actions that mitigate within-country inequality**.** The principles promoting fair wages and minimum income (Principles 6 and 14) address these issues as well as the recognition of gender equality in monetary terms.

([364]) European Commission (2018a); European Commission (2018b).

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