CHAPTER 3

# Inclusive growth and solidarity in the EU: challenges, policy levers and the way forward

## 1. INTRODUCTION ([157])

**Promoting people's well-being is a fundamental aim of the European Union and its social market economy ([158])**. This implies delivering high living standards for all, an ambitious goal which can be attained by adopting a model of development grounded in inclusive and sustainable growth. Delivering inclusive growth relies on the twin pillars of high potential growth and fairness (a fair distribution of the fruits of growth) and is expected to reinforce social cohesion ([159]). The balancing of competitiveness, social objectives and care in the use of the planet's scarce resources is established in the Treaty as an indispensable basis of sustainable development. Based on these founding principles, the European model of a social market economy has largely succeeded in delivering on this promise for decades. Through its commitment to the UN Sustainable Development Goals, the Europe 2020 strategy and the Green Deal, the EU has explicitly put inclusive and sustainable growth at the top of its agenda.

**Social fairness and solidarity have been a central focus of the Commission, including in response to the Covid-19 crisis.** Since its adoption in November 2017, the 20 principles of the European Pillar of Social Rights have been the EU's compass in the pursuit of upward convergence in economic and social outcomes. The preoccupation with social fairness and solidarity also resonates strongly in the Commission's headline ambition of "An economy that works for people and the planet" for the period until 2027 ([160]). One of its primary concerns is to enhance economic prosperity by reinforcing social fairness. To be sustainable and inclusive, the development model must ensure that the fruits of economic growth and the costs and benefits of transitions are broadly shared ([161]). The Recovery Plan of 27 May has reinforced this focus, stressing that 'solidarity, cohesion and convergence must drive Europe's recovery. No person, no region, no Member State should be left behind' ([162]).

**The EU aims to promote social fairness in the face of concurrent major structural shifts and the deepest recession in decades.** What scale of resources does this effort require? This section seeks to explore both the macro-economic benefits and the costs of strengthening fairness and solidarity so as to leave nobody behind. These considerations become ever more pressing in the wake of deep structural changes such as those linked to the digital and climate transitions, and under the burden of fighting a crisis as pronounced as the Covid-19 pandemic, with its severe socio-economic impacts.

([157]) This Chapter was written by Elizaveta Archanskaia, Stefano Filauro and Jörg Peschner. Petrica Badea, Thomas Blanchet, Anamaria Maftei, Maria Chiara Morandini, Giuseppe Piroli, Argyrios Pisiotis, Sara Riscado and Toon Vandyck provided contributions and analytical advice.

([158]) TEU, Articles 3 (1), 6 and 9 (consolidated version). The horizontal social clause in Article 9 requires in particular that the definition and implementation of all EU policies and actions must take into account social objectives, including the promotion of a high levels of employment, education, training and protection of human health as well as the guarantee of adequate social protection, the fight against social exclusion.

([159]) See OECD (2014).

([160]) See the President's Political guidelines for the European Commission (2019).

([161]) European Economic and Social Committee (2019).

([162]) European Commission (2020j).

The chapter explores this broad question in three steps, treated in separate sections. Section 2 analyses growth dynamics in the EU and its Member States. It assesses how inclusive the distribution of growth has been among different income groups, to ascertain whether growth has reduced or reinforced pre-existing income inequality. Section 3 explores policies that could strengthen fairness in the face of population ageing. The analysis focuses on policy levers such as closing the gender gaps in the labour market, supporting longer working lives and new working time arrangements, and promoting higher educational attainment in order to enhance fairness in the domain of employment and pension entitlements. Section 4 estimates the investment needed to promote fairness and solidarity at times of fast structural change or recession. Estimates focus on unemployment benefits, re-training and tools that can effectively mitigate employment decline, such as Short-Time Work Schemes (STW).

## 2. Leaving no one behind: Who benefits from growth?

This section analyses the strength of growth and its variability over the cycle in the EU and its Member States over the period 2007-2017. It then evaluates whether different income groups benefited equally from growth. The growth process is seen as inclusive when, in accordance with the Sustainable Development Goal on inequality, income growth for the bottom 40% of the population has been at least as high as income growth per capita. This definition echoes one of the common criteria by which Europeans assess the fairness of outcomes.

**The overarching goal of the European Union is to deliver high and sustainable living standards for all ([163]).** The evolution of aggregate production (GDP) and of national income (GNI) ([164]) gives *prima facie* evidence on the ability of the economy to produce goods and services and to generate income from which people live. However, it is not possible to gain a full understanding of the evolution of living standards by tracking developments in these macro-economic aggregates. The inclusiveness of growth must be evaluated as well as its strength ([165]). Also, these measures have only limited value when it comes to assessing whether a certain model of development is sustainable. Yet the strength of the growth in national incomes is an important indication of the ability of the European economy to generate income and reinforce citizens' purchasing power. It also helps to evaluate whether upward convergence is being achieved by EU Member States.

**Ensuring inclusive and sustainable growth matters not only for social cohesion but also for growth potential.** The bulk of income inequality in the EU is attributable to differences between individuals *within* countries (as opposed to differences *between* countries) ([166]). High income inequality tends to become entrenched and to be associated with increasing inequality of opportunity, contrasting with the spirit of the principles enshrined in the European Pillar of Social Rights ([167]). As discussed in Chapter 2, low social mobility reduces incentives to invest in human capital and results in lower potential growth, while putting into question the fairness of the growth model ([168]). Keeping track of how income growth is shared among different income groups helps us assess whether the growth process is inclusive. It also indicates the extent to which economic growth today not only increases aggregate income but also improves the welfare of those worst off. The caveat to this approach is that it does not track the ability of individuals to move up the income distribution over time ([169]).

### 2.1 Income convergence within the EU

**Recent growth trends in national income show some evidence of convergence among EU Member States.** Net national income (NNI) is a measure of the aggregate income in the economy. This indicator tracks most closely the evolution of income that is effectively attributable to domestic households. For most EU countries net national income evolves very similarly to the productive capacity of the economy, i.e. its GDP, but there are also cases where the two diverge because some of the domestic income is attributed to foreign households and vice versa (see **Annex 3.1a** for details and for a comparison between NNI and GDP)**.** *Chart 3.1* plots total growth in NNI over the period 2007-2017 (vertical axis) against NNI level in 2007 (horizontal axis) ([170]). The chart shows that countries with initially lower levels of national income grew more strongly than countries with initially higher levels of national income. Average income growth in the EU countries amounted to 9.4%, but less than half

([163]) This is both a political goal and a legal commitment of the EU to 'promote its peoples' well-being' and to 'work for the sustainable development of Europe based on balanced economic growth' (TEU, Article 3 (1) (consolidated version)).

([164]) Gross National Income (GNI) differs from GDP in that it takes into account the primary balance of income with the rest of the world. See **Annex 3.1a** for details.

([165]) Not least because per capita income growth does not inform on the distribution of growth in the population, but also because measured output does not suffice to track wellbeing. Outcomes in multiple areas of life contribute to determining living standards. See e.g. OECD (2018) as well as Boarini R., Murtin F. and Schreyer P. (2015).

([166]) See Filauro and Parolin (2019).

([167]) See the European Pillar of Social Rights, especially Chapter I https://ec.europa.eu/commission/priorities/deeper-and-fairer-economic-and-monetary-union/european-pillar-social-rights/european-pillar-social-rights-20-principles_en

([168]) See Chapter 2 for a more extensive discussion of 'fairness'.

([169]) Therefore the distribution of growth across income groups needs to be complemented with the evaluation of intra-generational income mobility, i.e. how mobility across income groups changed over time.

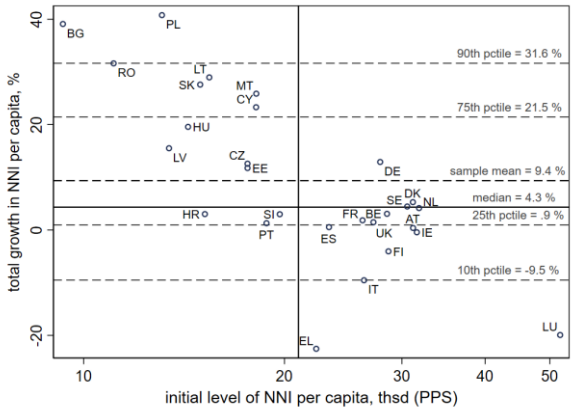
([170]) NNI measures total income generated by all sectors of the economy in a year. It differs from GNI in that it subtracts the consumption of fixed capital from GNI. See **Annex 3.1a** for details.

of all countries achieved this level of income growth: the median country (Sweden) saw net national income grow by only 4.3% ([171]).

Chart 3.1

**Countries with initially lower levels of net national income (NNI) tended to experience stronger growth**

Total growth in net national income (NNI), 2007-2017, plotted against its initial level in 2007 (in thousand PPS)




*Source:* Authors' calculations based on AMECO data.

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**But there are significant differences in the strength of growth among countries with a similar initial level of income.** Countries with initially comparable levels of net national income saw differences of up to 30 percentage points in total income growth. Net national income growth was below 1% in seven countries (Greece, Luxembourg, Italy, Finland, Ireland, Spain, Austria), with some countries experiencing 10-20% losses in income, indicating stagnation or deterioration in living standards.

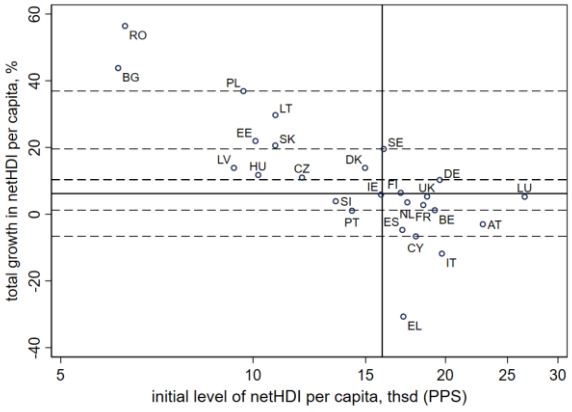
**Income convergence in the EU is also evident if one looks at the evolution of household disposable income.** Net household disposable income (HDI) is a complementary and useful indicator for tracking income developments, as it focuses on income that is effectively pocketed by households and thus available for consumption ([172]). For most EU countries, the evolution of primary income (NNI) and of disposable income (HDI) are closely aligned. Yet they may differ, because the former does not incorporate remittances while the latter disregards income that is not effectively distributed, such as imputed rents or retained earnings, thereby tending to underestimate total household income, in particular that of better-off households. On average, growth in household disposable income exceeded growth in net national income in the EU over the period 2007-2017 ([173]). *Chart 3.2* plots total growth in **net household disposable income** (HDI) over this period (vertical axis) against its initial level in 2007 (horizontal axis). The finding of intra-European income convergence holds under this income concept as well.

**In a number of countries, household purchasing power failed to improve between 2007 and 2017.** Growth in net household disposable income has been low, nil or negative in a quarter of all EU countries. Hence, regardless of the income concept on which analysis of the growth process is based, income growth has been disappointing in several countries (e.g. Greece, Italy, Cyprus, Spain, Austria). In half of all EU countries, total growth over this 10-year period did not exceed 6.2%. In seven countries, total growth was at most 1.2%.

Chart 3.2

**Net household disposable income (HDI) growth in a quarter of Member States has been nil or negative**

Total growth in net household disposable income (HDI), 2007-2017, plotted against the initial level of net household disposable income in 2007 (in thousand PPS)




*Source:* Authors' calculations based on AMECO data.

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**Most EU countries experienced either an abrupt or a prolonged negative growth period over the period 2007-2017.** *Chart 3.3* groups EU Member States according to growth in national income during the low-growth period 2007-2012 (horizontal axis) and the subsequent recovery (2012-2017, vertical axis). Only seven countries (Bulgaria, Cyprus, Germany, Lithuania, Poland, Slovakia, Romania) have experienced positive income growth in both periods. All others have seen negative growth in at least one of the two five-year periods. These income fluctuations are likely to have affected the perceived inclusiveness of growth in the EU.

**Strong fluctuations in income growth over the business cycle may reduce the effective and perceived inclusiveness of growth.** First, low-income households suffer a stronger reduction in welfare from any given loss of income. This is because lower levels of income tend to be associated with higher values attached to income, in particular in terms of constrained consumption. Secondly, low-income earners may be relatively more exposed to negative income shocks over the cycle while also having lower savings to cushion such shocks. By contrast, low-income households tend to have low or

([171]) See Eurofound (2018).

([172]) Net disposable income takes into account the redistribution of income that occurs in the national economy but also between countries (e.g. remittances). Net *household* disposable income focusses on the primary income that effectively arrives in the pockets of households. See **Annex 3.1a** for details.

([173]) European Commission (2016) investigated reasons behind divergence in NNI and HDI growth. See **Annex 3.1a** for details.

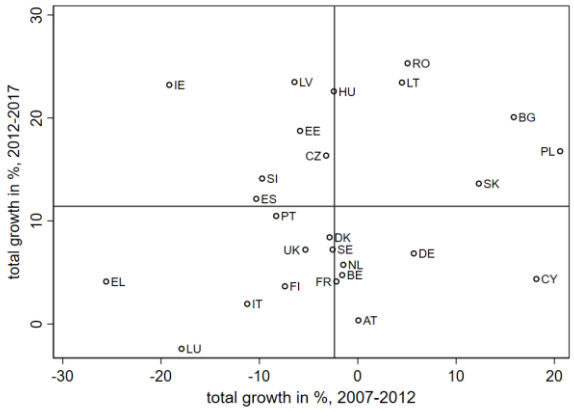
negative levels of net wealth ([174]). Abrupt or protracted negative growth episodes tend to impact such households more strongly, because they cannot smooth their consumption by reducing savings.

**During recessions, low-income households tend to experience negative income shocks that are only partially resorbed in the subsequent rebound ([175]).** An increased sense of insecurity may reduce the willingness and ability of such households to invest - not only in durable goods but also in human capital - including because they are less able to get credit, or can get it only on unfavourable conditions. Such underinvestment may translate into a less favourable trajectory of future earnings and, in turn, higher exposure to negative income shocks.

Chart 3.3

**Income growth in the recession and during recovery: only 7 Member States did not experience a negative growth episode**

Total growth in net national income (NNI) 2012-2017, plotted against total growth in NNI 2007-2012 (in %)




*Source:* Authors' calculations based on AMECO data.

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## 2.2 The distribution of growth between income groups

**Investigating whether low- and high-income households benefit from growth to the same extent helps to assess the inclusiveness of economic growth.** An important data collection and harmonisation effort has been recently carried out by the World Inequality Lab to reconcile aggregate income figures available from National Accounts with information about the income distribution stemming from income surveys and income declarations to tax authorities ([176]). The resulting Distributional National Accounts (DINA) allow analysts to assign economic growth to individuals as a function of their position in the income distribution ([177]). This is because the sum of the total income that goes to different income groups equals the total aggregate income of the economy. Thus it is possible to track whether the income growth of a particular income group has been higher or lower than income growth per capita. **Annex 3.1b** explains DINA in more detail.

**This section analyses the distribution of total growth in the period 2007-2017 between different income groups**. The analysis revolves around the proportion of total growth that goes to different income groups. The distribution of total growth depends on the income growth rates specific to each income group as well as on the initial distribution of income among income quintiles. *Chart 3.4* shows how total income growth in each country was distributed among income quintiles by computing the contribution of each income quintile to total growth. Summing the numbers of the five income groups gives total income growth in the country over the period 2007-2017. Total income growth is adjusted for population growth, so the numbers correspond to income growth *per capita* ([178]).

**In Europe taken as a single entity ([179]), low-income groups received a larger share of total income growth over 2000-2017 than over 1980-2000.** For each given percentage point of total income growth, the bottom 50% of the European income distribution absorbed a higher share of it over 2007-2017 than in 2000-2007, and a higher share of it in 2000-2007 than in the preceding decade (*Figure 3.1*). For example, 49% of aggregate post-tax income growth went to the bottom 50% over 2007-2017, as opposed to 23.4% over 2000-2007 and 13.3% over 1990-2000.

([174]) OECD (2020, forthcoming).

([175]) See European Commission (2019a) for a discussion of the scarring effects of recessions on low-income households: they are hit hardest and recovery provides incomplete resorption.

([176]) This work has been carried out by the World Inequality Lab and is made available through the World Inequality Database (see Alvaredo et al. (2016) for an in-depth explanation of methods and concepts). Recent efforts to produce distributional national accounts have been conducted in parallel by the OECD and EUROSTAT.

([177]) The analysis in this section makes use of the World Inequality Database (WID) to explore how income growth is distributed between income quantiles and socio-economic groups in the EU Member States. It has been made possible with data generously provided from the World Inequality Lab for analytical purposes..

([178]) Sensitivity analyses carried out to smooth the effect of year-specific aggregate NNI and the income quintile shares (averaging them over three years: 2007-2009 and 2015-2017) show a very similar distribution of growth by income quintile as in *Chart 3.4*

([179]) Europe does not coincide with the European Union in Blanchet et al. (2019) as they also include non-EU European countries such as Albania, Bosnia-Herzegovina, Iceland, Kosovo, Macedonia, Montenegro, Norway, Serbia and Switzerland.

Figure 3.1

**The bottom 50% in Europe have benefited more from growth than the top 10% in recent years**

Share (%) of aggregate economic growth captured by different income groups

| | Share of growth captured (%) | | | | |
|---|---|---|---|---|---|
| | 1980-2017 | 1980-1990 | 1990-2000 | 2000-2007 | 2007-2017 |
| **Pre-tax income** | | | | | |
| Bottom 50 % | 17.6 % | 12.0 % | 9.8 % | 22.5 % | 41.2 % |
| Middle 40 % | 39.8 % | 41.1 % | 41.3 % | 33.6 % | 49.7 % |
| Top 10 % | 42.7 % | 46.9 % | 48.9 % | 43.9 % | 9.1 % |
| *incl. Top 1 %* | 16.1 % | 17.0 % | 20.0 % | 18.5 % | -4.3 % |
| *incl. Top 0.1 %* | 5.9 % | 7.0 % | 7.6 % | 7.6 % | -6.5 % |
| *incl. Top 0.01 %* | 2.2 % | 3.0 % | 2.7 % | 3.2 % | -4.7 % |
| *incl. Top 0.001 %* | 0.8 % | 1.2 % | 0.9 % | 1.5 % | -2.9 % |
| Full population | 100.0 % | 100.0 % | 100.0 % | 100.0 % | 100.0 % |
| **Post-tax income** | | | | | |
| Bottom 50 % | 20.9 % | 15.9 % | 13.3 % | 23.4 % | 49.5 % |
| Middle 40 % | 41.9 % | 45.7 % | 44.9 % | 31.2 % | 53.6 % |
| Top 10 % | 37.2 % | 38.4 % | 41.8 % | 45.4 % | -3.1 % |
| *incl. Top 1 %* | 13.6 % | 11.4 % | 15.4 % | 23.4 % | -14.0 % |
| *incl. Top 0.1 %* | 5.0 % | 3.8 % | 6.1 % | 10.8 % | -11.4 % |
| *incl. Top 0.01 %* | 1.8 % | 1.5 % | 2.5 % | 4.6 % | -6.8 % |
| *incl. Top 0.001 %* | 0.7 % | 0.5 % | 1.1 % | 1.9 % | -3.8 % |
| Full population | 100.0 % | 100.0 % | 100.0 % | 100.0 % | 100.0 % |

*Note:* Europe includes also non-EU countries (Albania, Bosnia-Herzegovina, Iceland, Kosovo, Macedonia, Montenegro, Norway, Serbia, Switzerland)

*Source:* Blanchet, Chancel and Gethin (2019)

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This finding echoes the results on income convergence in the EU discussed at the beginning of the section. Specifically, the increasing share of aggregate growth for the bottom 50% of the EU distribution is probably due to the country composition of the income distribution in Europe. Central and Eastern European households were disproportionately represented in the bottom 50% of the European income distribution over this period ([180]). Those households experienced the most marked improvements in their income conditions over the period 2000-2017 ([181]). The national distribution of growth in recent years shows high heterogeneity across EU Member States, as shown in *Chart 3.4*.

**In Member States where income growth was sustained, upper income groups tended to absorb a relatively higher share of total growth.** As illustrated in *Chart 3.4* (top panel), high-growth Member States, mainly Eastern and North-Western ones, saw increases in total income being mostly perceived by the upper income groups. Extreme cases are Bulgaria and Poland, where income growth accrued especially to the top 20% income group. However, this finding may hide differences in the distribution of actual income growth over this period to different income groups, because it is contingent on the income share of each group in 2007. Specifically, income inequality remained relatively stable in Poland ([182]) over this period, meaning that the significant share of total growth accruing to the top 20% was due to a relatively unequal initial income distribution. Inequality increased in Bulgaria, meaning that the significant share of total growth accruing to the top 20% is due both to relatively high initial inequality and to a skewed distribution of the fruits of growth.

**In Member States where economic growth was sluggish or negative, it tended to be distributed more equally across income groups**. With the exception of Spain and Ireland, Member States that experienced a reduction in national income over 2007-2017 saw a relatively equal distribution of income losses among income groups. In Greece and in Luxembourg, the top quintile contributed most to the total loss of income ([183]). As regards Member States that experienced sluggish growth, middle income groups contributed more to total growth than the top income quintile, indicating that the fruits of growth were distributed relatively widely in these countries (Belgium, France, Croatia, Portugal, the UK and the Netherlands).

## 2.3 Relative income growth of the top 10% and bottom 40% over 2007-2017

**The fruits of growth were not evenly distributed among income groups over 2007-2017**. To evaluate the inclusiveness of growth, one needs to establish the extent to which individuals belonging to different income groups benefit from growth. The analysis achieves this quantification by comparing income growth of groups at the bottom and the top of the income distribution to per capita income growth in the economy.

([180]) In countries such as Romania and Bulgaria, almost the entire population was in the bottom 50% of the European income distribution in 2007 as documented in European Commission (2019b, Chapter 1, Section 4.5). Thus, the high income growth recorded in those countries definitely contributed to the increasing shares of aggregate EU growth absorbed by the bottom 50%.

([181]) See Chapter 2, Section 4.1 for an assessment of the income improvements for low-income households in the Central and Eastern Member States.

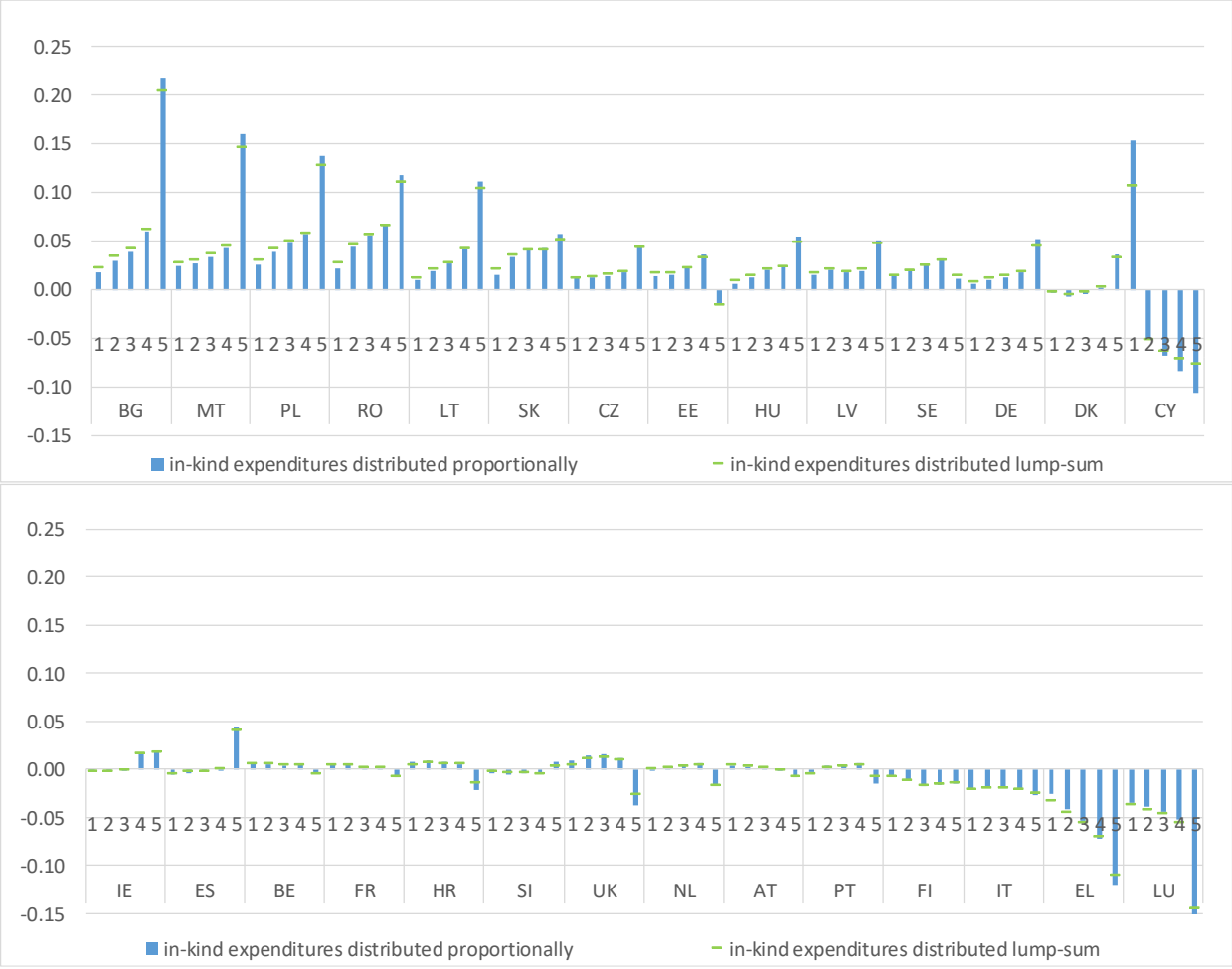
([182]) See Brzezinski et al. (2019) for a deeper analysis of income inequality in Poland with combined household surveys and tax return data.

([183]) The distribution of growth depends on the initial distribution of income as well as on income growth rates specific to each income quintile.

Chart 3.4

**Upper income groups tend to absorb a relatively high share of total growth because they weigh more in the initial income distribution: they 'win' in high-growth countries (top panel), but 'lose' in countries where growth is sluggish or negative (bottom panel).**

Aggregate national income growth (%) per capita by income quintile, 2007-2017




*Note:* Blue bar: in-kind transfers including collective expenditures are distributed proportionally to the adult population except health expenditure that is distributed lump-sum. Green bar: all in-kind transfers distributed lump-sum. Aggregate national income is split across all adult household members. Sensitivity analyses carried out to smooth the effect of year-specific NNI and the income shares (averaging them over three years) show a very similar distribution of national income growth by income quintile. Countries sorted by national income growth per capita.

*Source:* World Inequality Lab (WID) data. Kindly provided for analytical purposes.

Click here to download chart.

**Only in a few countries has the income growth of the bottom 40% exceeded per capita income growth in the economy.** A desirable economic outcome from the point of view of inequality reduction would be that the bottom 40% of the population see their income grow faster than that of the economy as a whole over the medium run ([184]). As illustrated in *Chart 3.5*, this was the case in a few Member States which are in the process of catching up after their accession to the EU (notably Estonia, Latvia, Romania and Croatia). In many other countries, growth for the bottom 40% was below average. National income growth in these countries thus favoured the upper income groups. And in several EU countries, the income of the top 10% grew more strongly or declined less (Greece) than the economy as a whole over the period 2007-2017.

**During the crisis years from 2007 to 2012, the bottom 40% suffered disproportionately from the reduction of incomes in several countries.** As shown in *Chart 3.6*, Spain, Italy, Slovenia and Hungary saw significant income reductions for the bottom 40% of the population, while the top 10% experienced moderate income decline (Spain). Conversely, some Eastern Member States such as Poland and Bulgaria did not experience a recession, but their growth benefited the upper income groups such as the top 10% relatively more ([185]). This evidence points to very different income dynamics for the different EU countries, not only in the strength of total income growth, but also in its distribution among income groups in the period 2007-2012. Moreover, it highlights the risk that lower income groups will be disproportionately affected by income loss in times of crisis, such as the current recession triggered by the Covid-19 pandemic.

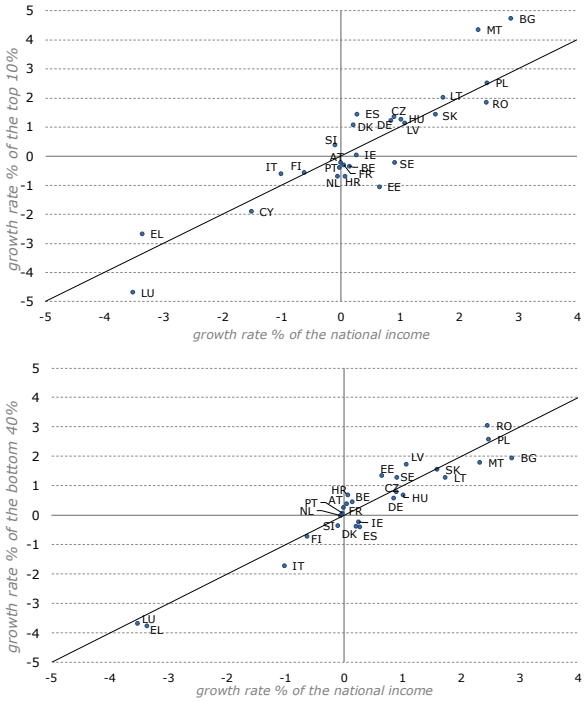
([184]) This is in line with the target of Sustainable Development Goal 10 'Reduce inequalities'. The target aims at achieving income growth for the bottom 40 per cent at a rate higher than the national average by 2030.

([185]) Malta is an outlier as the growth rate of the top 10% was relatively high while NNI stagnated.

Chart 3.5

**In a few countries, the income of the bottom 40% grew more than average income, which would have favoured inequality reduction.**

Compound annual growth of net national income (NNI), for the whole economy, the bottom 40% and the top 10% income group. 2007-2017




*Note:* Member States under the 45 degree line experienced higher growth in NNI (or a smaller reduction) in the economy as a whole than in the top 10% (bottom 40%). Member States above the 45 degree line experienced higher growth (or a smaller reduction) in the specific income group than in the economy as a whole. Net national income at market exchange rates.

*Source:* World Inequality Lab (WID) data. Kindly provided for analytical purposes.

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**In the recovery years 2012-2017, Member States with the most sustained income growth witnessed the largest relative gains for the top income group.** In four out of the five Member States with the highest national income growth (Malta, Romania, Bulgaria, and Ireland, see *Chart 3.7*), the income of the top 10% grew more than the economy as a whole.

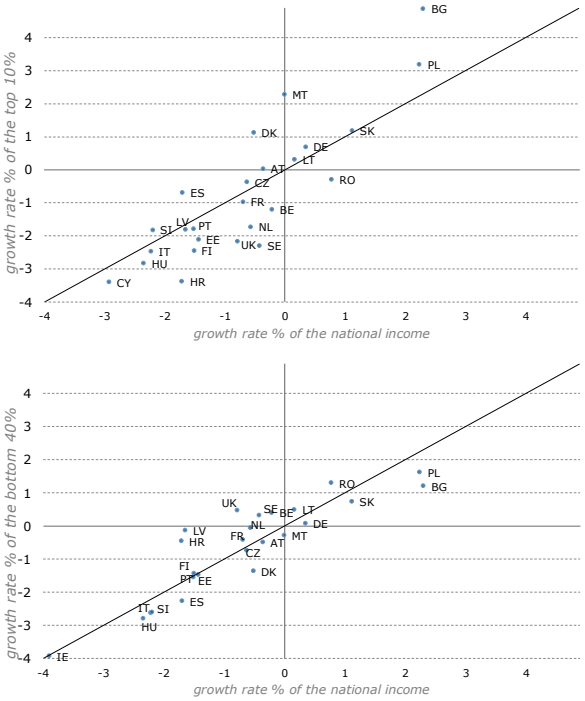
**However, in some Member States, it was the bottom 40% that experienced a larger income growth than the top 10%.** Several Member States that experienced relatively high income growth in 2012-2017 (Poland, Estonia, Slovakia and Portugal) saw a reduction in inequality ([186]) as the income growth of the bottom 40% exceeded income growth for the average person.

**Overall, growth can be considered as inclusive when it benefits all income groups over the medium run.** The sluggish growth observed in many Member States over the period 2007-2017 tended to benefit all income groups and inequality remained stable. Conversely, a number of countries experienced strong and sustained growth, mainly as a result of income convergence as their economies were in a process of catching up with the richer EU economies. However, income growth in those countries accrued relatively more to high income groups (although in some countries inequality, as estimated through income surveys, has reduced).

Chart 3.6

**In the previous crisis, the bottom 40% suffered disproportionately from the reduction of incomes in several countries**

Compound annual growth of net national income (NNI), for the whole economy, bottom 40% and top 10% income group. 2007-2012




*Note:* Member States under the 45 degree line experienced higher growth in NNI (or a smaller reduction) in the economy as a whole than in the top 10% (bottom 40%). Member States above the 45 degree line experienced higher growth (or a smaller reduction) in the specific income group than in the economy as a whole. Net national income at market exchange rates.

*Source:* World Inequality Lab (WID) data. Kindly provided for analytical purposes.

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## 2.4 Conclusion

This section highlights that in the period 2007 to 2017:

There was some cross-country convergence within the EU in terms of income growth, whether measured as Net National Income or Household Disposable Income. To a large extent this is due to Eastern European Member States catching up since accession to the EU.

However, high-income households have benefited the most from overall national income growth in countries where growth was above the EU average.

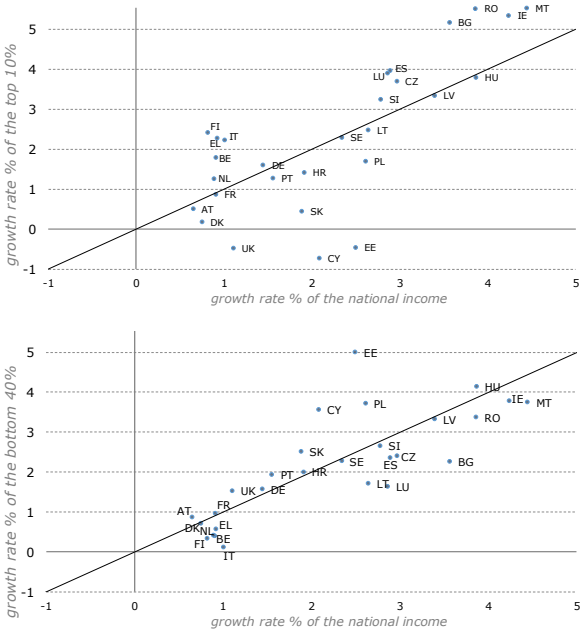
Conversely, in countries where national income growth was low or negative, it was at least more equally distributed between income groups over the decade.

([186]) See Chapter 1, Section 4.2, where income inequality is estimated through income surveys (EU-SILC).

Chart 3.7

**During recovery, the top 10% grew more than the average in countries where growth was more sustained.**

Compound annual growth of net national income (NNI), for the whole economy, bottom 40% and top 10% income group. 2013-2017







*Note:* Member States under the 45 degree line experienced higher growth in NNI (or a smaller reduction) in the economy as a whole than in the top 10% (bottom 40%). Member States above the 45 degree line experienced higher growth (or a smaller reduction) in the specific income group than in the economy as a whole. Net national income at market exchange rates.

*Source:* World Inequality Lab (WID) data. Kindly provided for analytical purposes.

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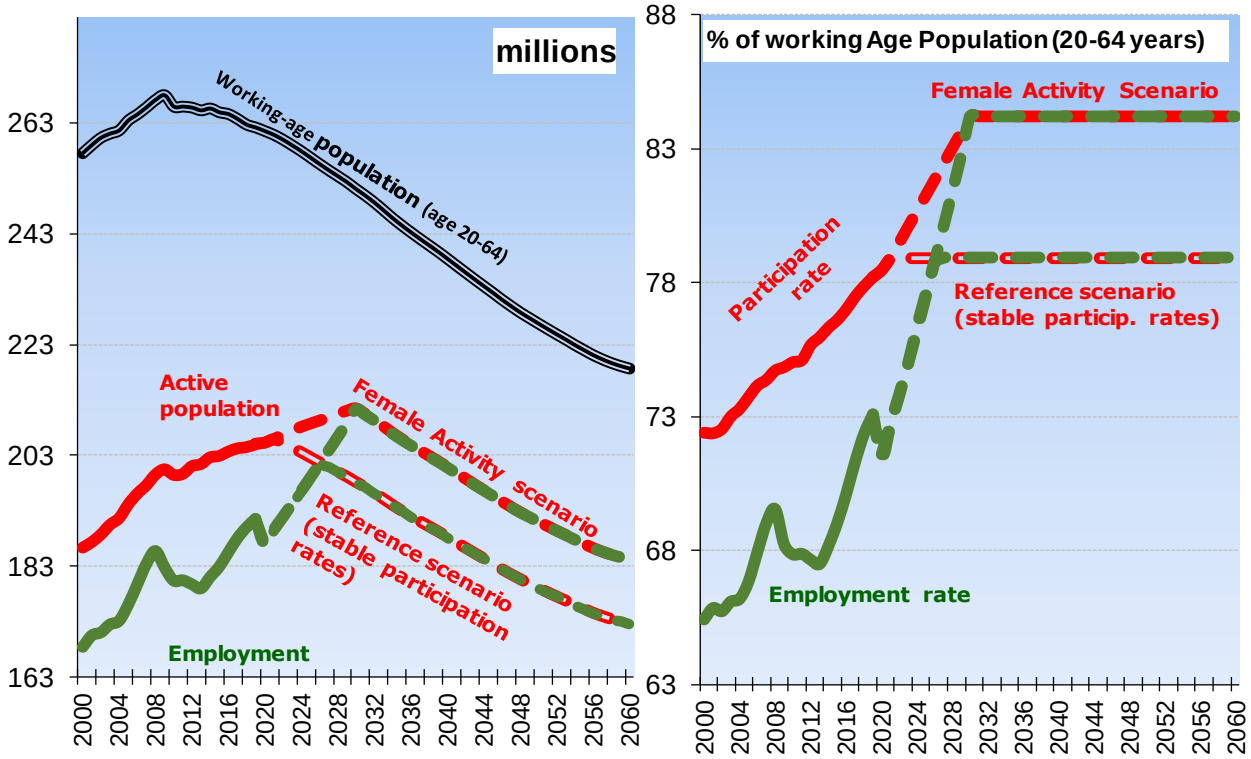
**These findings have important implications for policy-making.** The EU needs socio-economic policies that promote stronger and more inclusive growth. The European Pillar of Social Rights can be a compass in this respect. Principle 4 on active support to employment, as well as the entire chapter on social protection and inclusion (principles 11-20), provide relevant policy guidance. In line with these principles, higher labour market participation and a well-functioning welfare system are crucial to delivering inclusive growth. Higher labour market participation not only increases labour supply so that more people contribute to growth, it also allows more people to receive primary income from work, i.e. to take a direct share of growth rather than receiving it via transfers. Section 3 tries to quantify the benefits of policies that promote participation in the labour market and fairness across all population groups and generations.

**In times of economic transition, people need to be able to rely on the effective functioning of the welfare state**. Achieving inclusive growth is a challenge in both high-growth or low-growth periods. It is equally a challenge to ensure that low (or even negative) growth does not unduly affect the most vulnerable in the short run. It is also challenging in times of economic catching up as well as during structural transformations such as digitalisation or the transition towards carbon-free economies, when some groups are at risk of (temporarily) losing out. Finally, as the current Covid-19 crisis shows, sudden adverse economic shocks can affect people's lives suddenly and substantially. In all these cases, significant investments are needed in social security and a functioning welfare system. Section 4 estimates the EU-wide investment that would be necessary.

Chart 3.8

**Employment growth depends on female activation (EU-27)**

Working-age population, activity and employment in the EU




*Source:* Commission services, based on Eurostat Europop 2019 Population Projection (baseline), and Eurostat EU-LFS, and the European Commission's Spring 2020 Economic Forecast (for 2020 and 2021)

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# 3. INCLUSIVE GROWTH: ITS BENEFITS IN TIMES OF DEMOGRAPHIC CHANGE

**Given projected demographic trends and irrespective of the Covid-19 crisis, over the next 20 years the EU will experience significant labour and skill shortages.** Demographic ageing has already started, but its full impact on labour supply has yet to be felt. Likewise, economic megatrends such as digitalisation and the 'green transition' of our economy will increase skill requirements and render skilled workers an ever scarcer resource. Maintaining and increasing labour supply will therefore remain a major policy challenge during the coming decades.

**Sustainable employment growth will depend on further labour market activation.** *Chart 3.8* shows employment and the active population in the EU, both in absolute numbers (lhs) and in percentage of the population aged between 20 and 64. ([187]) The Commission's Spring Economic Forecast ([188]) notes that the Covid-19 crisis will drag down employment in 2020. However, labour scarcities already exist. Unless labour market participation rates increase further, the EU's long-term 1.2% employment growth path ([189]) will cease to be possible from 2024 as the working-age population will decline. ESDE 2017 concluded that as employment growth slows down, generating GDP growth will increasingly depend on higher labour productivity growth.

**By reducing gender gaps, the EU social market economy can help ensure continued employment growth.** Against this demographic background, the only major sources of future employment growth are (1) reducing gender-related gaps on the labour market, (2) longer working lives and possibly alternative working time arrangements, and (3) higher investment in workers' skills and qualifications (as better qualifications correlate with higher labour force participation). This section examines the impact these policies can have on labour force participation and wages, and looks at the benefits of higher labour market participation for future pension entitlements.

## 3.1. Closing gender-related gaps on the labour market

**It is assumed that existing gender gaps in the labour market will narrow until 2030**. This will be referred to as the **'Female Activity scenario'**, where

([187]) The methodology used in the Chart was developed in Peschner and Fotakis (2013) and was also used in ESDE 2017, Chapter 2.

([188]) European Commission (2020b).

([189]) The EU's average annual employment growth between 1995 and 2019 was 1.2% if one excludes the crisis-period between 2008 and 2013.

today's situation in Sweden is used as a benchmark. The gender-related gaps are ([190]):

- **the gender participation gap:** in 2019, the female participation rate for the 20-64 age group stood at 72% in the EU, still 12 percentage points below the rate for men. At around 84% in 2019, Sweden's female participation rate was the highest in the EU and equal to the average EU male participation rate. To close the gap, it is assumed that by 2030 women's participation rate will increase to 84% in the EU as a whole, matching Sweden's current rate. Under this assumption, overall employment could continue on its 1.2% annual growth path for longer (*Chart 3.8*) and start declining only after 2030, as a result of the projected fall in the working-age population. By 2030, employment would be 6.7% higher than if the gender participation gap was not closed (the reference scenario).

- **the working-time gap:** today, almost 30% of 20-64 year-old women in the EU work part-time (a quarter of them involuntarily), compared with just 7% of men. As a result, the average number of hours worked per week is much lower for women than for men (35.2 and 40.5 hours respectively). In Sweden, by contrast, women work 37 hours per week on average. ([191]) To close the gap, it is assumed that better family policy allows women across the EU to work 37 hours per week on average, thereby increasing overall working hours in the economy by 2.3% by 2030. In the reference scenario, the working-time gap remains unchanged.

- **the wage gap**: according to EU-SILC data, average hourly wages in 2018 were lower for women (EUR 14.20) than for men (EUR 16.60). This produces the well-known 14% gender pay gap in the EU. In Sweden, by contrast, the gap is lower (10.9%). We assume that the gap be reduced to 10.9% in the EU overall, equivalent to an average wage increase (for men and women) of 1.8% by 2030. In the reference scenario, wages remain constant.

**All else being equal, reducing *all* gender-related gaps on the labour market would trigger a 11% rise in total labour compensation.** Increasing total employment by 6.7%, working time by 2.3% and wages by 1.8% would in the long run raise total labour compensation by 11% ([192]). As pension rights are usually linked to labour compensation, this would also have direct repercussions for pension entitlements and the sustainability of the pension system ([193]). With government making an effort to keep contribution rates stable (see *Box 3.1* for details), by how much would pensions increase in the long run in the Female Activity scenario, compared with the reference scenario where activity rates, wages and working time remain as now?

*Box 3.1*

*Funding higher pensions through additional contributions*

The pension contribution rate is assumed stable in principle. As a result, the level of pensions reflect only demographic ageing and the effects of policy changes that narrow the gender gaps. This assumption is in line with policy developments and the pension reforms already adopted in EU Member States. The Commission's 2018 Ageing Report reckons that contributions to the public pension funds paid by workers and their employers remain largely stable as a share of the EU's GDP ([194]), despite demographic ageing. This analysis therefore assumes that governments try to keep contribution rates stable in order to contain labour costs and maintain competitiveness.

There is one important exception: as workers work more or receive higher wages, their future pension increases. These **work-history-related increases** of pensions (linked to individual biographies) are financed through higher contributions. This assumption is necessary in order to avoid the situation where work-history-related pension increases (for some pensioners) need to be financed by lowering the general pension level (for all pensioners). See further explanation in **Annex 3.2** where it is also shown that lifting this assumption had consequences for intergenerational fairness.

**In the long term, demographic ageing will lower pension levels significantly.** This is true for both scenarios, see *Chart 3.9 (lhs).* This is because there will be more pensioners, less contributors to the pension systems. In the scenario without a policy change the ratio of pension benefits and the average wage (in the following: the pensions-to-wage ratio) would be reduced to 26.7% by 2070, down from 43.3% today.

**Narrowing gender-related gaps on the labour market would cushion the lowering of pension levels significantly**. In the Female Activity scenario, more people would be in employment. Moreover, workers would receive higher wages and work longer hours than in the reference scenario without a policy change. As a result, more contributions would be paid into the pension systems which, in turn, were able to grant higher pensions. By narrowing these gender gaps on the labour market, the decline in the pension-to-

([190]) Data sources for the following: Eurostat EU-LFS (2019) and Eurostat EU-SILC (2018).

([191]) Eurostat EU-SILC.

([192]) (1+0.067)*(1+0.023)*(1+0.018) = 1+0.11. This assumes that the compensation of self-employed workers increases in parallel to the wages of employees.

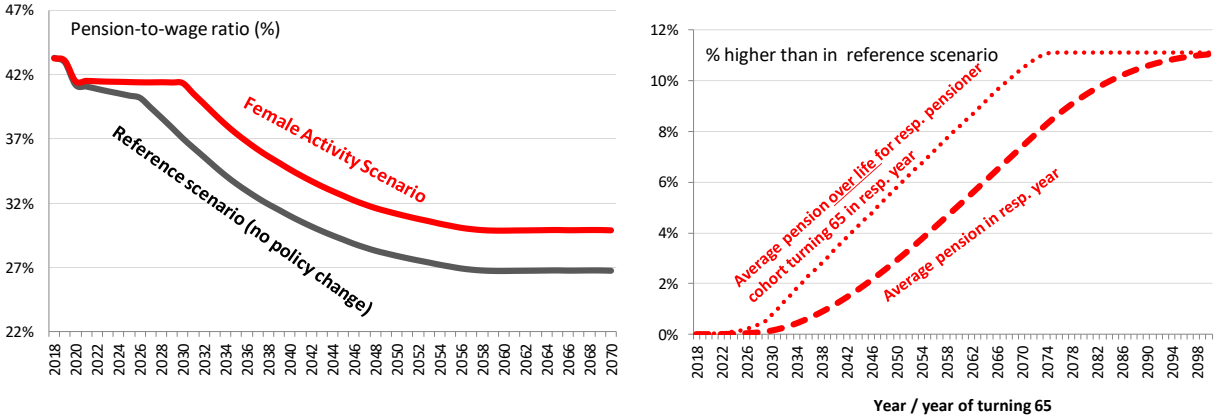
([193]) The compensation (wage) is the assessment base for pensions. The higher wages are, the higher will be the level of future pensions, everything else being equal.

([194]) European Commission (2018b), esp. p. 370.

Chart 3.9

**Narrowing gender gaps on the labour market would increase pensions significantly. Future cohorts take the profit from higher pension entitlements**

Pension-to-wage ratio (left) and pension increase (right) in the Female Activity scenario compared with a baseline with stable/constant participation rates, working time, and wages.




*Source:* Commission services based on Eurostat Europop 2019 Population Projection (baseline), Eurostat EU-LFS and the European Commission's Spring 2020 Economic Forecast

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wage ratio would thus be less pronounced: it would go down to 29.9% by 2070, as opposed to 26.7% in the reference scenario, as shown in *Chart 3.9 (lhs)*. The 3.1 percentage point difference corresponds to almost EUR 400 billion every year in today's values ([195]). This amount could be interpreted as a reduction in the cost of ageing (in the form of higher pensions).

**Through higher pension levels, narrowing gender gaps strengthens intergenerational fairness.** *Chart 3.9 (rhs, dashed curve)* shows that, in absolute terms, average pensions in the long term will be higher by 11% in the Female Activity scenario, compared with the reference situation. The dotted curve in *Chart 3.9 (rhs)* shows the **generational account** of better female labour market performance, better wages and higher working time. It shows, for each cohort of pensioners, the increase in the average pension that workers would have **throughout their lives,** ([196]), starting with the cohort turning 65 years in 2018. Future pensioner cohorts are benefiting from reducing the cost of ageing. They will have, on average, a higher pension than they would if gender gaps were not narrowed.

## 3.2. Promoting longer working lives and new working-time arrangements.

**To reap the benefits of ageing societies while promoting inter-generational fairness, 'active ageing' has long been an EU policy priority.** It helps people to stay in charge of their own lives for as long as possible as they age, and to participate in and contribute to the economy and society. Correspondingly, the Commission's 2020 proposal for new Employment Guidelines for the Member States suggests that to ensure the adequacy and sustainability of pension systems, Member States should take 'measures that extend working lives, such as by raising the effective retirement age, and be framed within active ageing strategies' ([197]).

**One core element of these strategies is to create good and healthy working conditions** for workers of *all* ages to increase incentives for older people to participate in the labour market. It takes engagement of social partners and substantial investment to achieve higher labour market participation of older workers and help develop skills and working-time arrangements. This section shows that for society as a whole, such investment yields a high return. It helps increase the labour force and reduce the cost of ageing for workers and their employers.

**Pension reforms have led to longer working lives.** In the course of the last 20 years, almost all Member States have reformed their public pension schemes so as to increase statutory retirement ages, partly by linking them to the (increasing) life-expectancy ([198]). Those reforms have contributed to significant increases in older workers' employment rates. The employment rate for the age group 55-64 stood at an all-time high of 60% in the EU in 2019. In the future, reforms already implemented are expected to increase labour supply. This is necessary for improving the financial base of pension funds and bringing them financial relief ([199]).

([195]) First, in the Female Activity Scenario wages would increase by 1.8% due to the reduction in the wage gap. This wage-increase lowers the pension-to-wage ratio (which relates average pension to average wage). Controlling for this effect, the 3.1 pp difference in the pension-to-wage ratio corresponds to 5% of labour compensation in the reference scenario. Secondly, the adjusted wage-share in GDP includes imputed wages for self-employed workers. In 2019 it stood at 55.4% for EU-27. This corresponds to total labour compensation of EUR 7.8 trillion – of which 5% is EUR 390 billion.

([196]) It is assumed that workers receive a pension for 20 years if they retire today. This corresponds to the life expectancy of 65-year-olds (average for men and women in EU-27).

([197]) European Commission (2020d), p. 5.

([198]) In eight Member States such reforms happened between 2014 and 2017 alone. See the Commission's 2018 Pension Adequacy Report (European Commission, 2018c), p. 100.

([199]) Ibid. The 2018 Adequacy Report makes the direct link between safeguarding labour supply and the sustainability of pension systems (p. 172).

**However, raising the official retirement age does not necessarily lead to longer working lives across the board.** Postponing statutory retirement ages from, say, 65 to 66 years will not induce all workers to actually postpone retirement by one year. Many older workers today do not change their retirement plans but instead accept new actuarial deductions applied for retiring before reaching the statutory retirement age ([200]). The opportunity of prolonging one's working life depends on a number of factors, including the sector, occupation and job tasks, but also on flanking policies designed to raise incentives for older workers to stay in the labour market for longer.

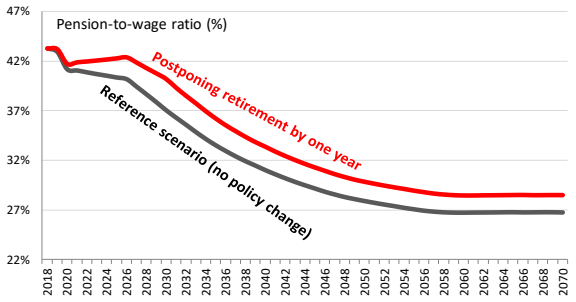
**Increasing the effective retirement age by one year by 2030 would increase employment by more than 2%.** The simple framework presented in the previous section has also been used to estimate the benefits of actually working for one more year, i.e. of workers postponing their retirement by one year on average. The approach uses as a baseline scenario the above 'stable activity rate scenario' where working age was defined as 20 to 64 years, while people aged 65 and older were considered pensioners, provided they had a prior employment record. EU governments may decide to increase statutory retirement age so that average effective retirement shifts by one year, with possible support from firm- or sector-level working-time arrangements or other measures. The process of postponing would start today and be fully phased for those turning 65 years in 2030 (it would be unrealistic to perform such a significant reform step without a transition that allows people to adjust to the new situation). In the long run (by 2060), this would represent a potential additional employment pool of around 4 million people (+2.2%) as more older people remain in the labour market ([201]).

**Working longer increases pension levels.** More workers would pay contributions. The financial position of the pension funds would thus improve so that higher pensions could be granted to pensioners. The pension level, expressed as the pension-to-wage ratio, would decline less pronouncedly than if effective retirement age were not increased: from 43.3% today to 28.5% in 2070 (instead of 26.7%), see *Chart 3.10* (red curve). In the long run, the cost of ageing is thus reduced by 1.7 pp of the assessment base (the sum over all wages), equivalent to more than EUR 130 billion every year in today's values ([202]). This relief could materialise for every further year by which workers prolong their working lives on average.

Chart 3.10

**Increasing the effective retirement age increases the level of pensions in the long run.**

Impact on total pension-to-wage ratio of staying in employment for one more year (% of average wage), EU-27




*Source:* Commission services based on Eurostat 2019 Population Projection (baseline) and Eurostat EU-LFS, European Commission Spring 2020 Economic Forecast

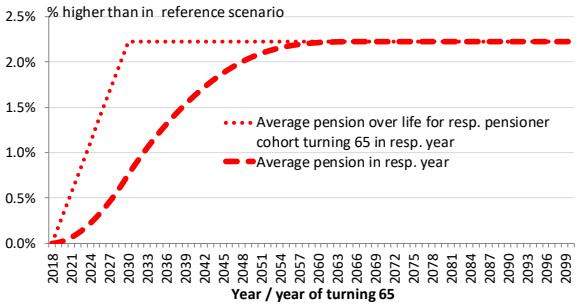
Click here to download chart.

**In the very long run, pension levels would be higher by 2.2% if workers postponed their retirement by one year on average**. The increase would be stronger for future cohorts who otherwise would have to bear the cost of ageing in the form of lower pensions (*Chart 3.11*). Working longer and making all workers contribute to increasing the effective retirement age is an expression of intergenerational fairness. **Annex 3.2** reveals that the extent to which different cohorts will be able to profit of longer working lives through higher pensions depends on how these higher pensions are financed.

Chart 3.11

**Future pensioner cohorts benefit from higher pension entitlements**

Difference between total pensions when prolonging working live by one more year, and the reference scenario, EU-27




*Source:* Source: Commission services based on Eurostat 2019 Population Projection (baseline) and Eurostat EU-LFS, European Commission Spring 2020 Economic Forecast

Click here to download chart.

## 3.3. Raising the level of education

**Labour market participation, wages and pension levels tend to increase with higher education.** In the recent past, educational progress in the EU has contributed to increasing labour market participation and employment. Participation rates increased strongly as people attained higher education levels, as shown in

([200]) On the other hand, such a shift of the official retirement age would not only affect people between 65 and 66. In many EU countries retirement is possible before the age of 65. Shifting the official retirement age from 65 to 66 would also make early retirement less attractive for workers younger than 65 who, in the case of early retirement, would have to accept higher actuarial deductions from their pensions. This is because the reference age for the calculation of the deduction increases.

([201]) Considering a 45-year employment record (between 20 and 64 years), prolonging by 1 year would increase this record by 2.2% (=1/45).

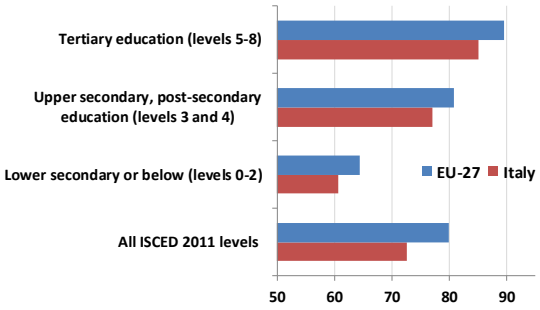
([202]) 1.7% of a wage sum of EUR 7.8 billion is equal to EUR 136 billion per year (see further explanation in footnote 195).

*Chart 3.12*. Further upskilling of the population can contribute to maintaining labour supply in the future.

Chart 3.12

**Higher education contributes to higher labour market participation**

Participation (Activity) rate by educational attainment level, EU-27 and Italy




*Source:* Eurostat EU-LFS (2019, 3rd quarter)

Click here to download chart.

**Higher education levels also support increasing labour productivity.** This section seeks to quantify the impact of continuous educational progress on labour supply and pensions, using the same actuarial accounting method as above. As education levels also have important implications for labour productivity, a model simulation has been added to provide a more comprehensive picture of the expected long-term impact of better education on both the economy and the labour market. This simulation is based on the European Commission's labour market model (LMM). ([203]) LMM is a general equilibrium model with a particular focus on the labour market and its institutions. The current model version covers 15 EU countries. It is not possible to run simulations for the EU aggregate. To demonstrate the long-term impact of better education, the analysis focuses on one specific country, Italy.

**Despite recent progress, education remains a major challenge for Italy.** In the process of the European Semester, Italy has repeatedly received country-specific recommendations for the reform of its education system. The 2020 European Semester Country Report confirms that education remains a major challenge. ([204]) One in five people between 15 and 24 years are not in employment, education or training – the highest proportion in the EU. School dropouts remain high and the percentage of people aged 30-34 who have completed higher education remains low (27%), despite considerable progress in recent years.

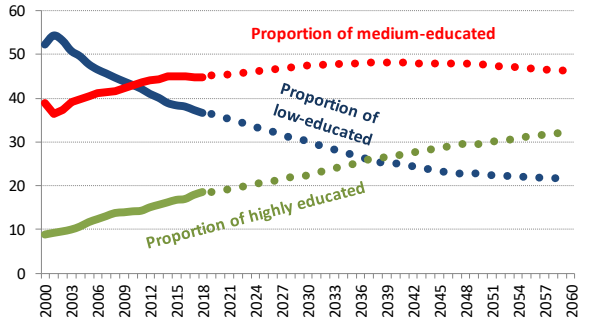
### *3.3.1. More workers with better education: the composition effect*

**Further educational progress is likely in the future.** In Italy, as in all EU countries, young people's educational performance has improved. The proportion of low-educated workers of working age (20-64) declined to 36% in 2018, down from above 50% at the turn of the century, while the proportion of highly-educated workers doubled during that period. The trend of educational progress amongst young people (25-34 years) can be extrapolated as done in earlier analyses ([205]), producing the results shown in *Chart 3.13* ([206]). The trend towards higher education would thus continue, albeit at lower speed.

Chart 3.13

**Education is projected to improve in Italy.**

Projection of percentages of the active population (age 20-64) who have attained low, medium and high education in Italy, 2019-2060




*Source:* Commission services based on Eurostat EU-LFS; Note: Low: Less than primary, primary and lower secondary education (ISCED levels 0-2); medium: Upper secondary and post-secondary education (levels 3 and 4); high: tertiary education (levels 5-8).

Click here to download chart.

**Composition effect of better qualification leads to higher labour market participation.** What is the impact on employment and on growth if the workforce's educational composition changes as indicated in *Chart 3.13*? Assuming that labour market participation rates continue to increase as education improves, Italy's labour market participation rate would improve from today's 70% to almost 75% in the long run. By 2060, 1.3 million (+6.7%) more people would be participating in the labour market than would have been the case without educational progress (*Chart 3.14*).

**The structural change towards better educated workers also generates wage increases.** In the increased education scenario, the average wage would gradually increase due to the continuous improvement in the education levels of the workforce. The changing educational composition of the workforce as described in *Chart 3.13* leads to average wages to increase by 10.4% between now and 2060 because the proportion

([203]) The model is run by the European Commission (DG EMPL). It was developed by Berger et al (2009).

([204]) The report confirms that 'low average educational attainment [and] skill mismatches… limit employment growth.' (European Commission (2020a), p. 4).

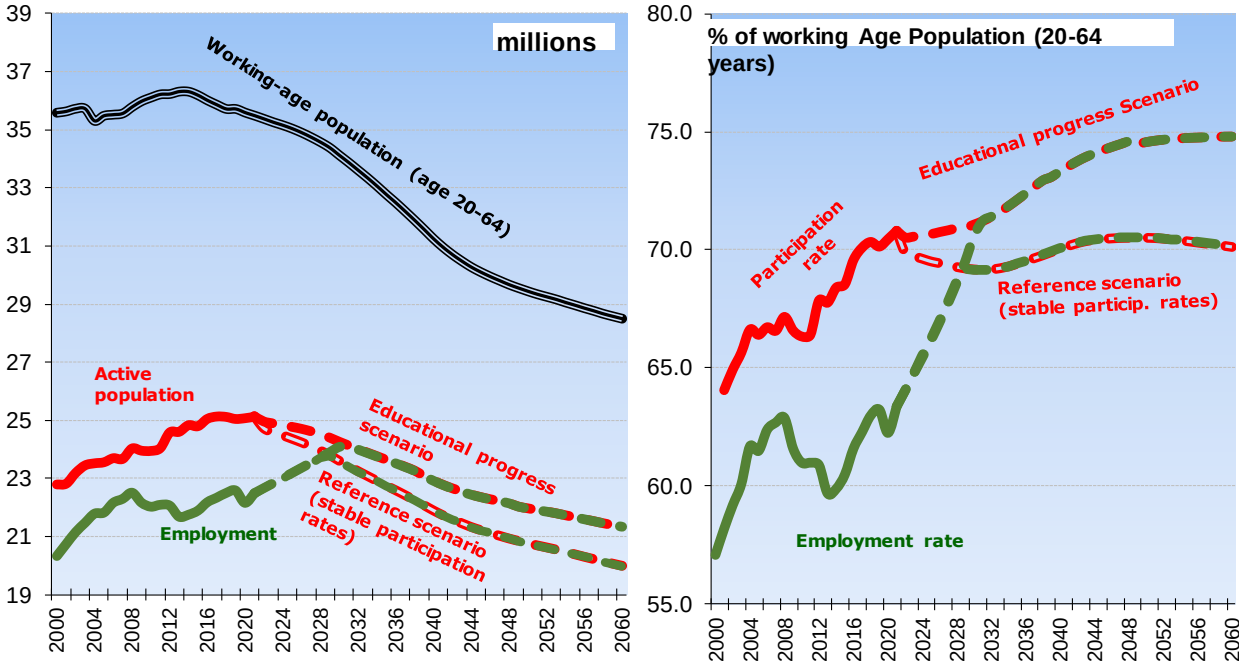
([205]) See ESDE 2017, esp. p. 59; Peschner and Fotakis (2013), esp. section 3. A log-linear trend-extrapolation is used. The procedure assumes that the recent 20-year trend will continue in the future, but slow sown.

([206]) It is assumed that people make progress in education only in the age-range between 25 and 34 years (no further progress after the age of 34). The trend of the percentage of low- and highly-educated workers is prolonged using log-linear trend-extrapolation, medium-educated being the residual. See Peschner and Fotakis (2013), esp. pp. 10, 11.

Chart 3.14

**Employment growth depends on future educational progress (Italy)**

Working-age population, activity and employment in Italy, 2000-2060




*Source:* Commission services based on Eurostat Europop 2019 Population Projection (baseline), Eurostat EU-LFS and the European Commission's Spring 2020 Economic Forecast (for 2020 and 2021)

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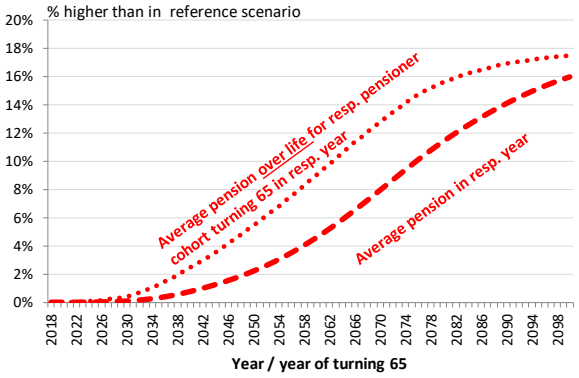
of better-educated workers (with their higher wages) will increase. ([207])

**Higher labour market participation rates and higher wages support the future level of pensions.** With pension contribution rates stable, ([208]) the average pension in 2100 would be 16% higher in the case of continued educational progress, compared with the reference scenario (stable participation rates, no wage-effect), see *Chart 3.15.* There is therefore a strong positive impact on intergenerational fairness, as future cohorts benefit from higher pensions through their better education. The chart shows that there will be a fast increase of lifetime average pension levels for those drawing on an old-age pension in the future.

Chart 3.15

**As people get better educated, future cohorts of pensioners will have significantly higher pensions.**

Impact of educational progress in Italy on the level of pensions




*Source:* Commission services based on Eurostat 2019 Population Projection (baseline) and Eurostat EU-LFS, European Commission Spring 2020 Economic Forecast

Click here to download chart.

**The pensions-to-wage ratio increases.** Today, at 58% of the average wage, the average pension-benefit ratio in Italy is much higher than the EU average (43%). Under the assumptions of a pay-as-you go pension system, contributors have to pay 36% from their wages in order to fund pension payments to those aged 65 and over. With the government making an effort to keep this contribution rate stable over time ([209]), this would imply a strong decline in the pension-to-wage ratio in Italy, down to 38% in the long run without any further improvement in activity rates or wages, see the black curve in *Chart 3.16.* However, with educational progress ongoing, labour

([207]) Low-educated workers have an average hourly wage of 11.7 EUR, some way below the wage of medium-educated workers (EUR 14.6) and just half the wage level of highly educated workers (EUR 21.2).

([208]) The government is assumed to keep the contribution rate stable in the future – with one exception, as explained in the previous sections: Pension increases related to increases in wages and participation rates are financed through lifting the pension contribution rate. See Box 3.1 above and Annex 3.2 for details.

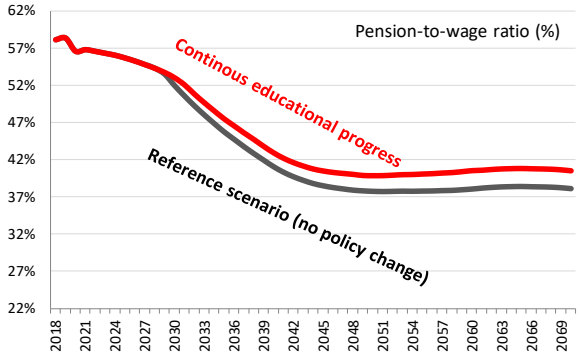
([209]) See the previous footnote. The 2070 contribution rate in the Educational Progress scenario for Italy would be 1.6 pp higher than in the reference scenario (with constant participation rates and constant wages).

market participation and wages will increase. As a consequence, more people will pay contributions to the pension system, allowing the level of pensions to increase. The pension-to-wage ratio in 2070 could thus be higher and reach 40.5% (*Chart 3.16*, red curve). This increase in the pension-to-wage ratio may look modest. However, this is due to the denominator effect of higher wages.

Chart 3.16

**As people are better educated the employment rate increases. This increases pension entitlements.**

Impact of educational progress on the pension-to-wage ratio (expressed as percentage of average wage), 2020-2070, Italy




*Source:* Commission services based on Eurostat 2018 Population Projection (baseline) and Eurostat EU-LFS, European Commission Spring 2020 Economic Forecast

Click here to download chart.

## 3.3.2. Macro-economic impact of educational progress

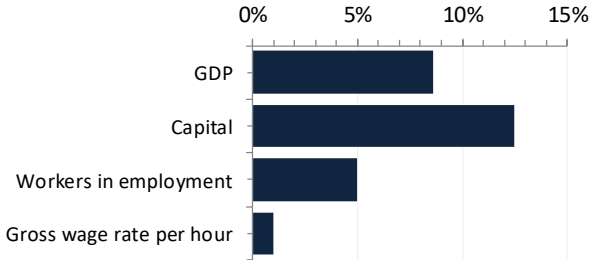
The previous sections have modelled the structural effects of progress in female labour market participation, longer working lives and education progress by comparing the resulting activity rate scenarios with a stable activity rate baseline scenario, applying the usual 'everything-else-equal' assumption. This approach is usually taken when the aim of the analysis is to show the isolated, primary impact of structural changes within the workforce in terms of gender (section 3.1), age (3.2) or education (3.3.1). So far the analysis did not consider any macro-economic feedback to these structural changes. This section provides evidence taking feedback into account (and hence lifting the 'everything-else-equal' assumption) in relation to educational progress. It thus reflects the fact that structural changes in the educational composition of the workforce may have strong macro-economic implications for productivity and wages.

**Higher productivity attracts investment, driving up employment and GDP.** In the Labour Market Model (LMM), educational progress can be modelled as an exogenous policy shock in the form of a changed educational composition of the workforce (as projected in *Chart 3.13*) between now and 2030. ([210]) What impact will this change have on GDP, employment and wages in the long run? *Chart 3.17* shows that GDP will be 9% higher, triggered mainly by additional capital investment. Firms are motivated to invest more in physical capital because better-educated workers and more innovative capital complement each other. Both the new capital and the better-educated workers increase labour productivity. Employment increases as higher labour productivity induces firms to hire more workers. The effect on wages is significantly more moderate than suggested by the structural effect shown in the previous section. This is because a higher supply of highly educated workers would exercise downward pressure on their wages, so that the structural increase in the average wage is neutralised to some extent.

Chart 3.17

**Better-qualified workers trigger investment in innovative capital**

Long-term impact of an exogenous change in workforce composition with respect to educational attainment, Italy




*Source:* Commission services based on LMM

Click here to download chart.

## 3.3.3. Conclusions

**Increasing labour market participation can increase social and intergenerational fairness.** Given the long-term demographic projections for the EU, removing gender-related gaps and allowing people to prolong their working lives brings a high economic return and can help address the economic costs of ageing. The same holds true for improving the educational composition of the workforce as better-educated workers tend to have higher activity rates and contribute to increasing productivity. All policies that empower people to become part of the workforce, accede to high quality jobs and develop their skills contribute directly to sustainable economic growth. In the longer run, they contribute to higher pension levels and fairer pension systems. Other policies not discussed in this section, such as working time and migration policies, could sustain these positive effects.

**During the Covid-19 crisis, activation and investment has become more important to support long-term improvements in education and the labour market.** Various programmes co-funded through EU cohesion policy are targeted at investing in workers' employability and further increasing labour market participation. However, the Covid-19 pandemic is putting long-term structural improvements in employment and education at risk and would - in the absence of determined policy action

([210]) The share of low-educated workers (age 20-64 years) decreases from 37% in 2018 to 30% in 2030; medium-educated workers: from 45% up to 47%; highly educated workers: from 19% to 23%. See *Chart 3.9* above.

- undermine further structural improvements in the future ([211]).

**In the shadow of the Covid-19 pandemic, the Commission has taken a series of measures to avoid a surge in unemployment and to protect incomes and livelihoods.** In particular, it proposed a massive increase of investment in its 27 May Recovery Package ([212]), within a revamped and strengthened 2021-27 EU budget, with the aim of saving jobs today and paving the way for a sustainable, even, inclusive and fair recovery in the years to come. It further proposed setting up a new instrument for temporary Support to mitigate Unemployment Risks in an Emergency (SURE) ([213]), which will provide financial assistance of up to EUR 100 billion to Member States to enable them to finance national STW schemes and similar measures for the self-employed. Earlier in the process, the Commission had set up a dedicated Coronavirus Response Investment Initiative (CRII, CRII+) ([214]) to allow all unused support from the European Structural and Investment Funds to be mobilised to the fullest. Furthermore, as part of its annual work programme, the Commission is preparing a legislative initiative for a European framework for fair minimum wages.

**Promoting educational attainment is key to avoiding longer-term scarring effects**, notably for younger generations, while improving productivity and growth potential. Young people find themselves particularly exposed to immediate adverse effects of the pandemic such as disruptions to their education and training curricula, ([215]) higher risks of dismissal for workers on temporary contracts and with lower levels of education, and the generally lower coverage of young people in unemployment and STW schemes. Maintaining their schooling and improving their education levels and skills will be crucial to enabling them to whether the longer-term impacts of the crisis and enhance their future employment prospects. Higher education levels will increase wages, trigger physical investment and support employment and GDP in the longer run. This is why the Commission is stimulating investment in better skills and higher education through its various funds. For example, the Renewed Agenda for Higher Education supports better outcomes through different strands of the Erasmus+ and Horizon 2020 programmes. One core objective is to increase labour productivity by triggering innovation, promoting excellence and tackling future skills mismatches.

([211]) According to the Commission's Spring Forecast, unemployment in the EU is expected to increase sharply, to 9% in 2020, up from 6.7% in 2019.

([212]) European Commission (2020e).

([213]) Council Regulation (EU) 2020/672 of 19 May 2020 on the establishment of a European instrument for temporary support to mitigate unemployment risks in an emergency (SURE) following the COVID-19 outbreak.

([214]) Regulation (EU) 2020/460 of the European Parliament and of the Council of 30 March 2020 amending Regulations (EU) No 1301/2013, (EU) No 1303/2013 and (EU) No 508/2014, as regards specific measures to mobilise investment in healthcare and in other sectors in response to the COVID-19 outbreak (Coronavirus Response Investment Initiative).

([215]) Those disruptions affect disadvantage pupils disproportionately who cannot rely of family support.

# 4. LEAVING NO ONE BEHIND: WHAT INVESTMENT IS NECESSARY TO FINANCE FUTURE SOCIAL WELFARE AND JUST TRANSITIONS?

This section attempts to estimate the needs for social investment in a time of major changes in the economy and in the labour market. These changes are mainly structural, given the well-recognised need for deep transformations of the economy such as digitalisation (section 4.1) and the transition towards climate neutrality (section 4.2). Further structural changes may also be provoked by large-scale adverse economic shocks that hit the economy unexpectedly. The Financial Crisis of 2008-2009 has taught us that such downturns may disrupt the labour market severely. The Covid-19 pandemic is likely to put the EU to an even bigger test (section 4.3) and may have longer-lasting impacts, not least through structural changes in production patterns and consumption behaviour, but also caused by interruptions in schooling and training during the crisis. ([216]) Many of these changes put workers at higher risk of unemployment and temporary income loss. As a matter of both social fairness and economic efficiency, these workers must be able to rely on a functioning welfare state, protecting their incomes throughout the transition and investing in their employability through training.

## 4.1. Digitalisation: new challenges for social security

**Over the last few decades, technology has changed the way people learn, work and live.** Today, spurred by the Covid-19 crisis, change is happening faster than ever before. Communication systems are changing, from delivering messages and information to transmitting highly complex content. New technologies are making labour supply and demand more transparent, thereby facilitating matches on the labour market. Technological progress is leading to changes in wages, working conditions, the bargaining power of workers and firms and social protection. Since the outbreak of the Covid-19 pandemic, technologies have not only helped to support remote schooling and maintain productivity. They have also enabled social life and participation (at times with imposed social distancing), promoted digital skills and made it possible to use remote communication tools at unprecedented speed.

([216]) Moreover, increasing disasters and climate change impacts may have severe and regressive consequences for economies and societies, if no additional action is taken to prepare and enhance ability to respond.

**Telework has absorbed large parts of the adverse economic schock inflicted by Covid-19.** Jobs may be saved as workers have the possibility to work from home at times when physical presence and meetings become difficult or impossible, as during the current Covid-19 crisis. Early evidence on the prevalence of telework during the crisis suggests that almost 40% of workers in the EU have started working from home during the pandemic ([217]), many times higher than before ([218]); and that more teleworking may save at least as many jobs as short-time work schemes, which reduce labour productivity as workers reduce working hours (see section 4.3 below).

**Digitalisation, despite its evident benefits, may provoke major social challenges in the short run.** The 2018 ESDE review ([219]) discussed in depth the challenges and opportunities that more digitalised economies entail. Evidence on whether new technologies create or destroy jobs is still mixed. There may be significant job destruction in the short term as new technologies become available and can replace low-skill or routine cognitive-manual tasks ([220]).

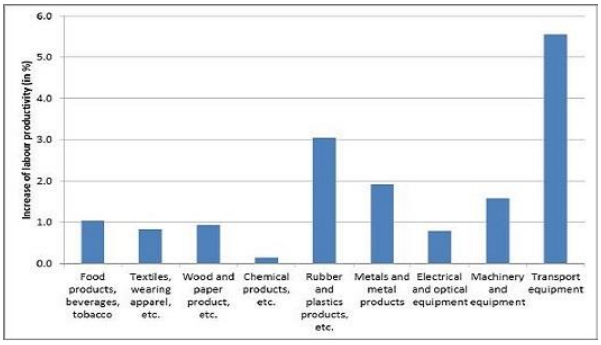
**In the long run, both firms and workers adjust to new technologies, but digital transformation requires upskilling.** As demonstrated in ESDE 2018, workers and their employers do not just watch as skills become outdated, accepting the negative consequences in the form of lower productivity, lower wages and worsening labour market prospects. They react by investing in workers' skills to make them complementary to the new technology. Better-skilled workers attract new, innovative capital. As a result, labour productivity increases and new jobs are created. ([221]) New technologies therefore require fast development of new skills: policy-makers need to ensure that everyone has access to this important resource ([222]). Jobs may become more complex as they require more skill-intensive tasks. As tasks become more skill-intensive and more complementary to physical capital, the risk of automation decreases.

**Recent studies confirm that automation and telework can increase productivity growth.** Econometric analyses, using data for nine manufacturing industries in 12 EU countries, provide evidence that industrial robots pushed labour productivity growth in the period from 1995 to 2015 ([223]). Increasing the density of industrial robots by one standard deviation increases labour productivity by more than 1% in four industries (see *Chart 3.18*).

Chart 3.18

**Robots tend to increase labour productivity**

The impact of a one standard deviation increase in the density of industrial robots on labour productivity (% increase between 1995 and 2015)




*Source:* Jungmittag and Pesole (2019), p. 15

Click here to download chart.

**New technologies can go hand in hand with job creation.** A European Commission study ([224]) has found that the use of industrial robots is positively correlated with employment (*Chart 3.19*). More robots can lead to more jobs, but the positive correlation depends crucially on workers' (digital) skills and qualifications being complementary to new forms of innovative capital ([225]). In the service sector, another recent study found no sign of industrial robots having significant employment effects. One reason is that there are limits with respect to the tasks industrial robots can perform, especially when it comes to work autonomously. ([226])

**Yet the digital transformation is changing the way work is performed.** An outcome of digitalisation is the increasing prevalence of work performed on collaborative, mostly digital, platforms. On these platforms, individuals 'match themselves with customers, in order to provide [a diverse range of services] in return for money.' ([227]) Workers on collaborative platforms often perform specialised tasks, and are often self-employed. Rather than a classical employer-employee relationship, there is a business relationship between an independent service provider and a purchaser of the service ([228]). Digital platforms are often used by firms for outsource tasks. The programming of IT-applications by skilled specialists or the delivery of restaurants by bikers are examples.

([217]) Sostero et al (forthcoming, draft p. 17).

([218]) Ibid., p. 5. Among employees, the 2019 share of workers who did telework at least sometimes was at 11%.

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

([220]) Routine tasks involve repetitive physical activities. They are not necessarily performed by low-skilled workers. Assemblers and machine operators, but also clerical and administrative occupations are often middle-skilled activities (ESDE 2016, Chapter 4).

([221]) See, in particular, Chapter 2 in ESDE 2018.

([222]) ESDE 2018, Chapter 3, finds a strong link between qualifications/skills and socio-economic background.

([223]) Jungmittag and Pesole (2019).

([224]) Klenert et al (2020). The study was carried out by the Commission's Joint Research Centre (JRC). Manufacturing sectors are taken into account. The density of industrial robots is calculated by dividing the number of industrial robots in a given country-sector-cluster by employment in the same country-sector in 1995. Countries included in the analysis are 13 EU countries plus the United Kingdom.

([225]) ESDE 2018, Chapter 2.

([226]) Sostero (forthcoming).

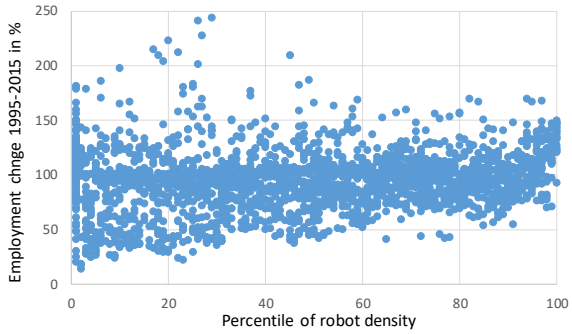
([227]) OECD (2019), p. 1.

([228]) ESDE 2018, Chapters 2 and 5.

Chart 3.19

**No clear evidence for robots being job destroyers**

Robot density percentile and change in total employment in manufacturing (1995–2016)




*Note:* The analysis is based on the World Robotics database and Eurostat EU-LFS. Manufacturing sectors in 14 countries are included.

*Source:* Klenert et al. (2020), p. 20.

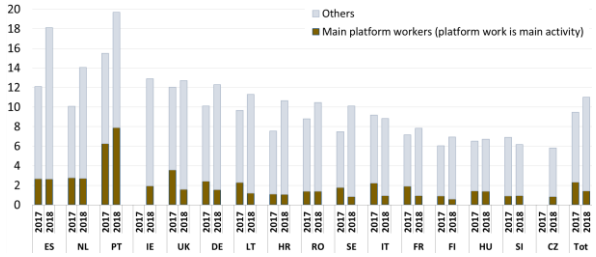
Click here to download chart.

**Only a few workers make a living from platform work, but the numbers are increasing.** The latest Commission COLLEEM study (second wave) ([229]) has collected data on the prevalence of platform work through surveys in several Member States. It suggests that the quantity of tasks performed over platforms is still small. In 2018, platform work was considered workers' main activity ([230]) for only 1.4% of the adult population. Other sources confirm this finding. ([231]) However, adopting a wider definition, the proportion of workers who perform platform work more than sporadically is much higher and has also increased recently (*Chart 3.20*) ([232]).

Chart 3.20

**A significant and increasing proportion of people have experience in working on platforms.**

Platform workers by Member State in 2017 and 2018 (%) – estimates combining information on income and hours worked




*Note:* Based on COLLEEM data. The group 'others' contains workers classified as 'secondary', 'sporadic' and 'marginal' platform workers.

*Source:* Source: Urzì Brancati et al., (2020), p. 16.

Click here to download chart.

**These findings put the policy focus on working conditions of platform workers and their access to social protection.** Data suggest that, despite the advantage of flexibility, platform workers often consider their work monotonous and stressful, not least because their activities are often constantly monitored. Studies highlight that very few platform workers benefit from collective agreements and their level of social protection is very low. ([233]) Many other problems are thought to be left unsolved by national legislation: these include the lower access to social security of the self-employed, conditions being non-transparent and disadvantageous, a lack of dispute resolution and problems related to non-payment. ([234])

**Low access to social protection incurs a cost, not only for the workers themselves but also for social security systems.** Earlier analysis has shown that if the percentage of self-employed people in the EU's workforce increased, social security systems will be put under stress. If these newly self-employed people fall out of statutory social security schemes, the schemes will become more expensive for those who remain statutorily insured: in the case of doubling the share of self-employed in total employment by 2030, the difference could amount to 5% of wages by 2060, equivalent to over EUR 300 billion per year EU-wide. ([235])

**Social security system coverage needs to broaden.** These concerns regarding platform workers are also recalled in the Commission Communication on Shaping Europe's Digital Future, which recognises that online platforms represent an economic opportunity for many people, but may also leave them vulnerable due to the lack of a clear work status with full legal and social protection. In 2021, the Commission will therefore propose an enhanced legal framework for platform workers in order to improve their working conditions ([236]).

**In the long run, accelerating digitalisation is likely to trigger permanent changes in our lives, with important implications for social fairness.** As highlighted in the Commission's Recovery Plan of 27 May, the pandemic and its socio-economic consequences have highlighted the importance of digitalisation across all areas of the EU economy and society. New technologies have kept businesses and public services running. They have helped people to stay connected, to work remotely and to support children's learning. In the long term, this is likely to trigger permanent and structural changes, including more teleworking, e-learning, e-commerce and e-government. From the social fairness viewpoint, this underlines the need for equitable access to digital tools and skills, to connectivity for all and to data access for SMEs.

([229]) 'Collaborative Economy and Employment'. See https://ec.europa.eu/jrc/en/colleem.

([230]) The COLLEEM study classifies platform workers into four categories according to working time and income earned through platforms: main, secondary, marginal and sporadic. See Urzì Brancati et al., (2020), for details (p. 15).

([231]) A 2018 Eurobarometer survey finds that while 6% of people in the EU have ever offered a service via collaborative platforms, only 1% have done this at least once per month (Flash EB 467).

([232]) Urzì Brancati et al. (2020).

([233]) See ESDE 2018, Chapter 5.

([234]) Kilhoffer, et al (2020).

([235]) This is demonstrated in a hypothetical thought-experiment laid out in ESDE 2018 (pp. 147-148), which developed a baseline scenario for the labour market and then assumed that the share of self-employed workers (15%) would double by 2060.

([236]) European Commission (2020f).

## 4.2. Future investment needs in times of major structural change: the Green transition

**The EU has set itself ambitious environmental targets.** As the EU's new growth strategy, the 'Green Deal' addresses the current environmental crisis by tackling climate change, loss of biodiversity, depletion of resources and pollution. With its transition towards a resource-efficient, climate neutral economy (green transition), the Green Deal has implications for workers who need support on the way (section 4.2.1). In addition, from the perspective of household disposable incomes, energy taxation and the impacts of climate change may affect low-income households disproportionately. For those households it is important to consider how to alleviate and/or compensate for such impacts (4.2.2).

### *4.2.1. The green transition: social security spending for helping those in need of support*

**Current global commitments under the Paris Agreement are not sufficient to meet the temperature goal of the Paris Agreement. More ambitious action is needed.** In 2015 the leaders of 190 nations agreed in Paris on an ambitious set of objectives: the reduction of Greenhouse gas emissions (GHG) to contain global warming to well below 2°C until the end of the century while pursuing efforts to limit it to 1.5°C ([237]) and Nationally Determined Contributions (NDC) to achieve this goal. They also established, for the first time, a global goal on the adaptation of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change. Yet further research suggests that current NDCs are not sufficient to achieve the agreed aims. Collectively, they would lead to a temperature rise of around 3°C, thus not avoiding the most dangerous impacts of climate change ([238]).

**The 'Green Deal' is the new roadmap for the EU to achieve climate neutrality by 2050.** In the context of taking more ambitious action, the EU submitted its long-term climate strategy to the UN Framework Convention on Climate Change (UNFCCC) in March 2020, aiming for net zero greenhouse gas emissions by 2050. The Commission proposed to enshrine this EU climate neutrality objective in legislation. Moreover, in order to be more consistent with the objective for 2050, the Commission has scheduled, for September 2020, more ambitious greenhouse gas reduction targets for 2030 ([239]).

**The recovery from COVID-19 will reinforce the Green Deal.** In the face of the COVID-19 pandemic, and in order to ensure that the EU remains on track towards its climate neutrality target, the European Green Deal proposed by the Commission in December 2019 has become the centrepiece of the new recovery package to address the current Covid-19 economic crisis and enable green growth. It foresees massive investment in renewable energy projects, climate adaptation, renovation of buildings, cleaner transport logistics and a Just Transition Fund to support re-skilling and create new economic opportunities. The Green Deal thus ensures that no worker, household, region or country is left behind in the transition to climate neutrality. Model simulations by the European Commission ([240]) have assessed the impact of achieving climate neutrality in the EU by 2050, whereby GHG emissions are gradually reduced and remaining emissions are balanced out by removals ([241]).

**The green transition requires social investment**. This section quantifies the need for social investment in the context of a structural change dominated by the greening of our economy, on two scenarios**.** The **baseline scenario** is designed to implement the legally binding policies the EU and its Member States had adopted by the end of 2014, assuming that those will be implemented until 2030. The more ambitious **climate neutrality scenario** is designed to achieve net zero greenhouse gas emissions by 2050. For both scenarios, the following analysis tries to identify the scope for necessary additional social investment in workers who lose their jobs in the course of major labour market transformations. This social investment includes (1) training of workers to re-skill them to take up tasks in new sectors; and (2) income-replacing benefits for workers who become unemployed.

([237]) The increase should 'preferably' be limited to 1.5°C.

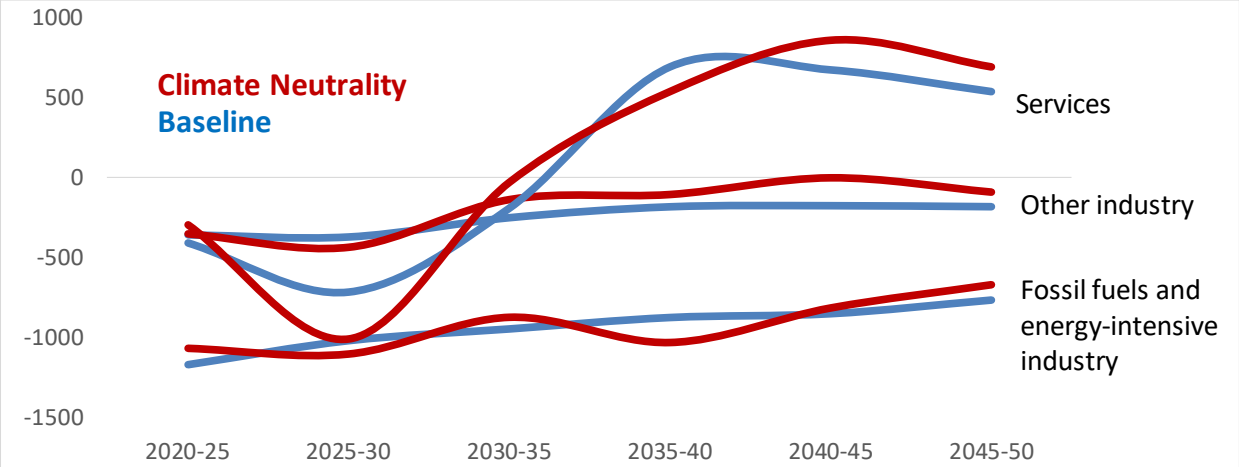
([238]) European Commission (2018d), p. 14.

([239]) In March 2020, the Commission adopted a proposal for a first European Climate Law (European Commission, 2020g) which would make the 2050 target of climate-neutrality legally binding for all actors - while also outlining the necessary steps to achieve the target. After an impact assessment scheduled for release in September 2020, the Commission will propose a new EU target for 2030 greenhouse gas emissions reductions. The Commission also proposes the adoption of a 2030-2050 EU-wide trajectory for GHG emission reductions, to measure progress and give predictability to public authorities, businesses and citizens.

([240]) The simulations were done by the Commission's Joint Research Centre (JRC). The GEM-E3 model is used. It is a General Equilibrium Model for Economy-Energy-Environment, see https://ec.europa.eu/jrc/en/gem-e3/model. For the labour market impact of low-carbon transition see European Commission (2018d), esp. pp. 226 to 230. For details on the Long Term Strategy scenarios see also Keramidas et al (2018).

([241]) Remaining greenhouse gas emissions would be balanced e.g. through the use of carbon sinks. This is consistent with the EU contribution to the Paris agreement objectives of 1.5°C. See ESDE 2019, p. 177.

Chart 3.21
**Structural change will bring new jobs in services. Job losses will concentrate on 'non-green' industries.**
Employment trends under NDC and Climate Neutrality, 1000 persons, EU-27 plus UK




*Source:* Based on JRC-GEM-E3 (European Commission).
Click here to download chart.

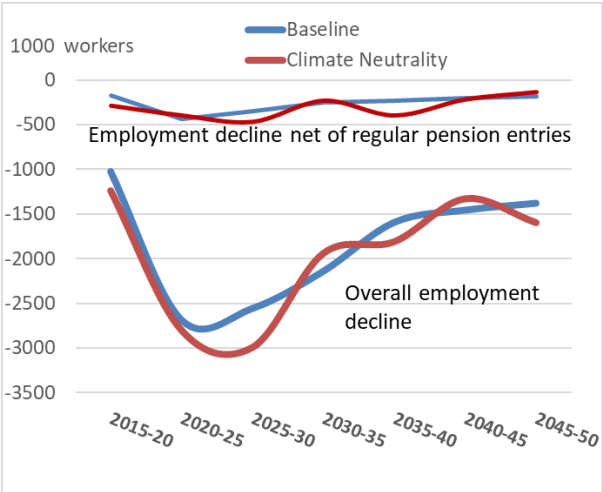
The analysis uses the Commission's Joint Research Centre's (JRC) modelling results on the employment effects for both scenarios, looking at **sectors where employment is projected to decline**. Based on these employment effects, the new part of the analysis includes an estimation of public expenditure for social benefits that become necessary as jobs in traditional sectors change or even disappear.

### *Employment effects*

**Ambitious GHG reduction can bring positive labour market effects overall.** By 2050, the Climate Neutrality scenario would lead to employment gains in the EU ([242]) of about 1.3 million, compared with the baseline. New jobs would be created in industrial sectors, mainly those involved in renewable energy and energy efficiency. There is also a policy component in the overall employment gains through the green transition: the tax revenue gained through the auctioning of EU Emission Trading System allowances is recycled. It means that it may be re-invested by governments in the reduction of labour costs, thus stimulating both labour demand (lower labour costs) and supply (higher take-home pay). The green transition would therefore produce a double dividend for the planet, the economy and the labour market.

**GHG reduction could lead to job losses concentrated on energy-intensive and fossil fuel-related industries.** Both the baseline and the Climate Neutrality scenario incorporate structural change in general. That is, not all of the job losses that happen in both scenarios are necessarily linked to GHG reduction. However, *Chart 3.21* shows that job losses in both scenarios concentrate on fossil fuels and energy-intensive sectors – the latter including metalworking and chemical industries. The difference in the employment effect between the two setups is relatively limited. One reason is that employment in fossil-based sectors (extraction, mining) and power generation will decline faster under Climate Neutrality policy as GHG reduction targets are more ambitious.

Chart 3.22
**Sectoral shrinkage can take a considerable number of jobs**
Employment changes (if negative), EU-27 plus UK




*Source:* DG EMPL calculation based JRC-GEM-E3 modes simulation (DG JRC)
Click here to download chart.

### *Future social investment needs*

**Among the workers who worked in sectors that were shrinking without the green transition, not all are expected to be unemployed.** *Chart 3.22* shows, for five-year periods, the sum of projected changes in employment in shrinking sectors. Only negative changes over time are taken into account, as the aim of the analysis is to estimate the necessary social investment in the case of job losses. When leaving a given shrinking sector, where do workers go? The following assumptions are discussed in detail in **Annex 3.3**.

([242]) GEM-E3 model calculations for the EU still include the United Kingdom. Therefore, 'EU' in this section refers to EU-28.

**Structural change comes at an initial cost.** The cost includes income-replacing benefits and expenses for (re-) skilling workers. Every year, around 1% of all workers are expected to reach regular pensionable age and therefore call for a pension (average across sectors). For the calculation of cost induced by the structural change, regular retirees are not taken into account. Of the remaining workers, some find a new job immediately, others move into early retirement. The remaining workers represent new unemployment. *Box 3.2* describes the key assumptions (for details, see Annex 3.3).

*Box 3.2: modelling assumptions*

- 20% of the remaining workers are able to find a new job in other sectors within three months and without any further training.
- 1.3% move into early retirement. Early retirees should be taken into account for the cost analysis as their decision to leave the labour market may be linked to the sectoral shrinkage. They receive an income-replacing benefit of EUR 10 700 per year, which is thus counted as a cost until they reach regular retirement age ([243]). Early retirees will not have any training cost.
- 78.7% will not, or not immediately, transit into a new job but become unemployed. They receive income-replacing benefits (EUR 10 700 per year) and re-training (cost: EUR 8 700 per year).

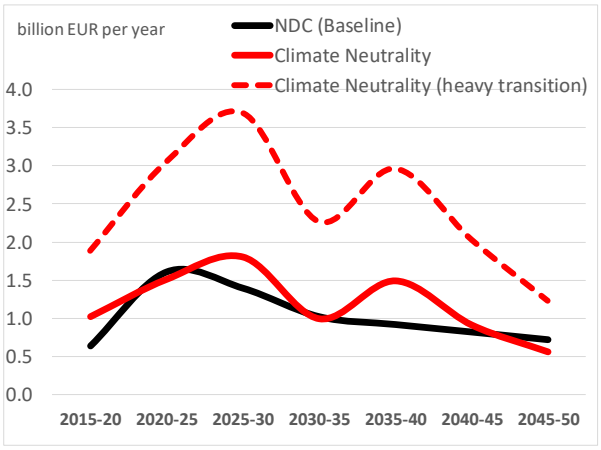
With these assumptions, the baseline and the Climate Neutrality scenario will incur the following cost to national social security schemes for income-replacing benefits and for training offered to unemployed people (*Chart 3.23*).

**The EU-wide cost of the structural transition could amount to EUR 20 billion by 2030**. Between 2015 - the start of the Climate Strategy - and 2030, the cumulative costs incurred in the baseline scenario would amount to EUR 18 billion (EUR 36 million by 2050). In the more ambitious Climate Neutrality scenario the cost would cumulate to EUR 22 billion by 2030 (EUR 41 billion by 2050) if one assumes no change in the main parameters concerning the risk and the duration of unemployment, retirement-behaviour and training intensity. In both scenarios, 86% of the cost falls on unemployment benefits, 11% on re-training and 3% on early retirement expenses.

Chart 3.23

**A more ambitious green transition calls for higher social investment**

Annual cost for income replacement and training, EU-27 plus UK




*Source:* EMPL calculation based JRC-GEM-E3 modes simulation (DG JRC)

Click here to download chart.

**The initial social investment needed by the green transition may be much higher than these amounts.** The transition towards greener sectors may become more challenging if people face more difficulties in finding new jobs in other sectors than assumed in the Climate Neutrality scenario. For example:

- more workers could become unemployed as other sectors are less able to absorb the employment decline in shrinking sectors immediately (10% immediate transition instead of 20%).
- as it may be more difficult to find new employment if dismissed, the duration of unemployment could be higher than in the NDC scenario (three instead of two years).
- a successful transition could require more training. Half of all unemployed people may participate in training (instead of 31%), and/or workers would enrol for training not just once after becoming unemployed, but several times during their unemployment (lasting three years on average).
- the proportion of discouraged early retirees in total employment could be twice that assumed in the reference scenario (2.5% instead of 1.3%).

Note the dashed line in *Chart 3.23* which depicts social investment needs under these (more difficult) circumstances. The expenses for social benefits, training and early pensions would almost double, relative to the Baseline Scenario. For the EU, the necessary cumulative social investment would reach EUR 43 billion between 2015 and 2030, of which almost EUR 30 billion (69%) would fall on unemployment benefits, EUR 1.3 billion (3%) on early retirement and EUR 12 billion (28%) on re-training. Thus a socially responsible transition towards a climate neutral economy would require substantial social investment if the green transition or the labour market in general becomes more challenging. This is

([243]) In the long run, actuarial deductions should level out the additional expenses for premature pensions. This effect is not taken into account here. In a number of Member States these deductions do not render early pensions actuarially neutral (they are too low).

why the Commission has proposed to strengthen the Just Transition Fund with up to EUR 40 billion. The aim is to assist Member States in accelerating the transition towards climate neutrality, with a particular focus on the re-skilling of workers ([244]).

### 4.2.2. The distributive impact of energy taxation

**Polluting the environment needs to have a price – yet it may affect poorer households.** The 'Green Deal' calls for broad-based tax reforms, removing subsidies for fossil fuels, shifting the tax burden from labour to pollution, and taking into account social considerations. The 'polluter-pays principle', enshrined in the EU Treaty, calls for assigning a price to be paid for negative externalities caused by the pollution of the environment. Environmental taxes thus help provide the right price signals and incentives to encourage less polluting production and consumption. ([245]) However, as indirect taxes, they may affect the poorer households relatively more, since these show a higher marginal propensity to consume relative to richer ones. This may raise equity issues, which should be weighed against efficiency considerations. It is thus crucial to mitigate the impact of energy taxes on low-income households. ([246])

**Compensation measures are designed to restore progressivity.** To this end, the distributional impact of increasing the tax rates on energy goods is assessed below. The introduction of a lump-sum benefit to compensate for certain households' additional expenses on energy taxes is evaluated ([247]). The analysis is based on the EUROMOD ([248]) microsimulation model and uses data from the EU Survey on Income and Living Conditions (EU-SILC). The analysis also includes information about households' consumption expenditure estimated from the Household Budget Survey (HBS). Simulations refer to the 2016 tax and benefit systems.

**VAT increases and excise duties are being simulated.** Three energy tax increase scenarios (low, medium and high) are considered for the Czech Republic, Germany, Greece and France ([249]). These scenarios are purely hypothetical and do not relate to any current policy proposal. ([250]) The tax increases are two-fold:

- upscaling VAT on heating and transport fuels, from reduced to standard rates (where applicable)
- levying higher excise duties on these energy goods.

The new excise duties are set as a floor level that the selected countries would need to consider. This is in line with the definition of the energy tax rates of the current European Commission Energy Tax Directive (ETD). *Table 3.1* presents the excise duties applied in three purely theoretical reform scenarios for different types of fuels. The tax rates are distinguished according to each fuel's carbon and energy content. For heating fuels, the scenarios differ strongly as regards the tax burden on households.

Table 3.1
Minimum tax rates – simulated scenarios

| | Minimum tax rates (EUR) | | | | |
|---|---|---|---|---|---|
| | Current | Low | Medium | High | *Unit* |
| **Motor fuels** | | | | | |
| **Petrol** | 359 | 396.2 | 801.6 | 939.6 | *1000 l* |
| **Diesel** | 330 | 433.6 | 877.8 | 1037.4 | *1000 l* |
| **Heating fuels** | | | | | |
| **Gas oil** | 21 | 85.3 | 518.7 | 678.3 | *1000 l* |
| **LPG** | 0 | 97.6 | 652.3 | 831.1 | *1000 kg* |
| **Natural gas** | 0.3 | 2 | 13.6 | 17.2 | *GJ* |
| **Electricity** | 1 | 1.1 | 35.7 | 35.7 | *MWh* |

*Source:* : European Commission, Joint Research Centre
Click here to download table.

**Lump-sum transfers compensate for costs related to energy taxes.** The analysis includes a fourth scenario that addresses social fairness. A lump-sum benefit, which fully exhausts the extra tax revenues obtained in the medium scenario, was designed to mitigate the negative shocks to families' income ([251]). *Chart 3.24* shows the budgetary impact (in percent of GDP) for each of the selected countries ([252]). We observe that the impact of increasing energy taxes is non-negligible and that it is mainly driven by the energy component factored in the excise duty rates. The results differ significantly across the Member States analysed, depending on the tax systems in place.

([244]) European Commission (2020h).

([245]) European Commission (2020i), p. 2.

([246]) In this context, it needs to be kept in mind that the poorest households will benefit from lower energy costs expected from the transition, through cheaper energy and better insulation of homes. In line with the 'Green Deal', the energy taxation is therefore only one element to be considered in a context of much broader tax reforms, which are necessary for shifting from taxation from labour to pollution.

([247]) European Commission (Joint Research Centre).

([248]) Microsimulation exercises typically ask: What if certain taxes were different than they actually are? The analysis has no time dimension in the sense that reactions of individuals to the changes are not taken into account. For further methodological details on the EUROMOD and the underlying assumptions see Sutherland and Figari (2013) and De Agostini et al (2017).

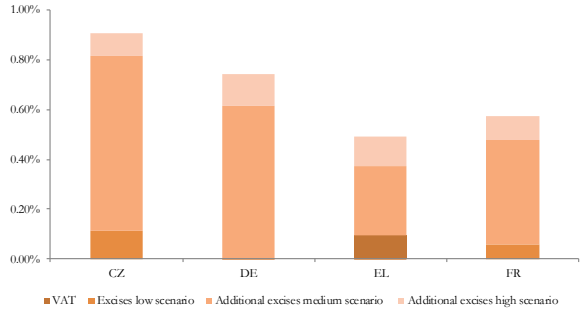
([249]) The countries have been selected based on the modelling restrictions encountered when the analysis was conducted.

([250]) Nor do they refer to the ongoing Energy Tax Directive impact assessment and revision.

([251]) The scenarios were implemented in EUROMOD under the assumption that households maintain constant the consumption shares of the different categories of goods. No further behavioral effects are considered. The distributional, equity and poverty impacts were then assessed.

([252]) The low scenario does not apply to DE, since it already levies tax rates substantially above the existing minimum thresholds.

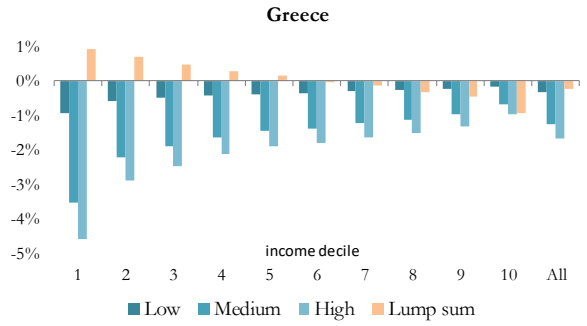
Chart 3.24
Cost of the reform in % of GDP




*Source:* Joint research Centre, European Commission, based on EUROMOD.
Click here to download chart.

*Chart 3.25* illustrates the distributional ([253]) impact of all four reform options on household income (net of direct and indirect taxes). It shows the example of Greece, but all countries considered show the strongly regressive impact of the energy taxation. Nevertheless, the fallout on inequality and poverty can be cushioned if a lump-sum benefit is granted. This benefit, albeit granted across-the-board, provides more support to poorer households than to rich ones. In all the selected countries, the additional tax revenues generate an increase in the disposable income of the lowest income decile.

Chart 3.25
**The lump-sum tax cushions the regressive impact of energy taxation. It helps low-income households in particular.**
Impact of the reform on disposable income, by decile




*Source:* Joint research Centre, European Commission, based on EUROMOD.
Click here to download chart.

**Transferring the energy tax revenue back to households will decrease both inequality and poverty.** *Table 3.2* shows an increase on the Gini index and on the at-risk-of-poverty rates when moving from the low to the high energy tax scenario, for all the selected countries. As expected, the increase in energy taxes has a negative impact in terms of both inequality and poverty. This negative impact may nevertheless be cushioned through transferring the tax revenue back to households (as opposed to keeping the tax revenue in the general government budget). This could happen through a number of schemes, for example: renovation and renewable energy subsidies targeting low-income families. ([254]) Here it is assumed that the transfer happens through the lump sum benefit granted to households across the board. In this compensation scenario, the Gini index and the poverty rates revert even slightly below their baseline values. The risk of energy poverty could thus be addressed for households that cannot afford key energy services to ensure a basic standard of living.

Table 3.2
**Transferring the energy tax revenue back to households will decrease both inequality and poverty**
Impact of the reform scenarios on the GINI coefficient and poverty rates

| | Gini index | | | | |
|---|---|---|---|---|---|
| | Baseline | Low | Medium | High | Lump sum |
| CZ | 0.2562 | 0.2571 | 0.2626 | 0.2633 | 0.2555 |
| DE | 0.2843 | n/a | 0.2868 | 0.2873 | 0.2833 |
| EL | 0.3242 | 0.325 | 0.3272 | 0.3281 | 0.3215 |
| FR | 0.3084 | 0.3088 | 0.3112 | 0.3117 | 0.3073 |
| | **At-risk-of-poverty rates** | | | | |
| | Baseline | Low | Medium | High | Lump sum |
| CZ | 10.4% | 10.6% | 12.5% | 12.8% | 10.4% |
| DE | 15.7% | n/a | 16.7% | 16.9% | 15.4% |
| EL | 20.7% | 20.9% | 21.8% | 22.1% | 20.3% |
| FR | 14.3% | 14.3% | 15.3% | 15.5% | 14.0% |

*Source:* Joint research Centre, European Commission, based on EUROMOD.
Click here to download table.

## 4.3. Social protection in the event of pronounced cyclical downturns

**Beyond structural changes affecting the labour market and social security systems, severe downturns may also significantly challenge social security systems.** The current Covid-19 pandemic is a serious threat to public health and human lives. It has also triggered economic shutdowns in all EU countries, albeit to a different extent. The resulting economic crisis has only just started to unfold its full impact on world and EU economies. Yet it is clear that this is the most severe global economic downturn since World War II, with the Commission's Spring Economic Forecast foreseeing a drop in the EU's GDP in 2020 of 7.4%. Even this projection was corrected downwards in the summer (-8.3%). ([255]) That is a much more pronounced drop than at the beginning of the Financial Crisis in 2009 (-4.3%).

**Severe economic crises tend to lower GDP by more than they lower employment.** For the EU-27, *Table 3.3* compares the GDP declines in 2009 and 2020 as projected in the Commission's Spring Forecast. ([256]) In 2009, employment declined by 1.8% (unemployment increased by 1.7 pp ([257])), making the shock to the labour market 2.5 pp milder than the GDP

([253]) Households are ordered along deciles according to their equivalised disposable income, obtained by weighting total household income using the OECD scale for household composition (a weight of 1 is allocated to the head, 0.5 to other members above 14 years old and 0.3 to children younger than 14 years old).

([254]) Such policies are regularly used by local authorities in the EU, especially for renovation of social housing estates.

([255]) Summer 2020 interim Forecast by the European Commission (2020c).

([256]) The more detailed statistics of Chart 3.30 are not available for the Summer Interim Forecast.

([257]) This effect on the unemployment rate is calculated at given activity rate. This is necessary to isolate the effect of the dismissals due to the GDP decline.

decline. In other words, part of the decline in GDP was absorbed at the intensive margin of the labour market, i.e. without reducing employment. In 2020, intensive absorption could be twice as significant (5 pp) as in 2009.

Table 3.3

**Part of the adverse GDP shock is absorbed by cutting working time and lower productivity per hour worked.**

Change in GDP and other magnitudes, EU-27, 2009 and 2020 (Commission Spring Forecast 2020)

| | 2009 | 2020* |
|---|---|---|
| 1 GDP | -4.3% | -7.4% |
| 2 - Hours worked per worker | -1.3% | -3.9% |
| 3 - Labour Productivity per hour worked | -1.2% | -1.1% |
| 4 Employment | -1.8% | -2.4% |
| -> Hours worked (volume, = 2+4) | -3.1% | -6.3% |
| -> Labour productivity per person employed (=1-4) | -2.5% | -3.2% |

* European Commission Spring Forecast 2020

*Source:* EMPL calculations based on Eurostat and AMECO (National Accounts); * European Commission Spring Forecast 2020

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**People work fewer hours, capacities stay idle.** Intensive absorption implies that workers remaining in employment in times of a GDP decline

– reduce working hours and

– produce less per hour worked (i.e. labour productivity per hour worked declines). This is because the use of capital and other inputs into production are also reduced. In the Covid-19 crisis, social distancing also plays a role.

**Cutting working time thus helps reduce the immediate pressure to dismiss workers resulting from the fall in production**. However, there are differences across Member States as regards the capacity to absorb adverse economic shocks this way.

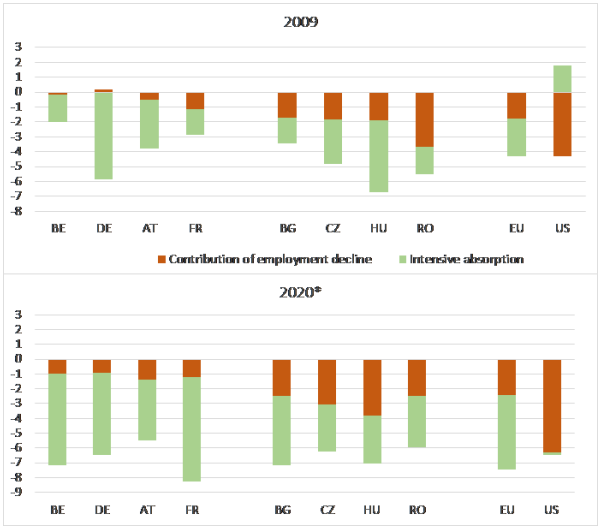
**The EU labour market is more protected from the adverse effects of economic crises than the US.** *Chart 3.26* shows how GDP collapsed in 2009, and what is currently forecast for 2020. The red part of the bars shows the decline of employment. The remaining green part is thus the GDP decline that is absorbed at the intensive margin, without cutting jobs. This part is substantially higher in the EU than it is in the US. Both in 2009 and in 2020 there were (are) massive job cuts in the US without any intensive absorption. ([258]) Within the EU, the situation differs from country to country.

([258]) In 2009, the decline in employment was even more pronounced than the fall in GDP, as labour productivity per hour worked increased. In other words, instead of absorbing part of the GDP decline, the intensive margin *added* to the fall in employment.

Chart 3.26

**Adverse economic shocks affect labour markets to a very different extent**

GDP decline (%) and its components during the 2009 Financial Crisis and as forecast for 2020




*Source:* EMPL calculations based on Eurostat National Accounts and (*) European Commission's Spring Economic Forecast for 2020.

Click here to download chart.

**Employment declines are milder in countries that rely strongly on publicly-subsidised short time work (STW) schemes** in order to reduce the working hours of employees (and capital). They include Germany, France or Austria, where workers reduce their working time, fully or partly, while remaining employed and - despite the hours reduction - receiving a certain share of their wage through a public subsidy. These countries tend to be more successful in preserving employment during times of adverse economic shocks. For example, in Germany the decline in GDP in 2009 was as pronounced as -5.6%. Yet the country managed to emerge from the crisis with no employment decline at all. Current projections for 2020 also see these countries' labour markets better protected against job losses. In countries with a less prominent role for STW schemes, the impact of the 2009 economic downturn on the labour market was much less well-cushioned.

### *4.3.1. The use of STW schemes during the Covid-19 crisis*

**In the Covid-19 crisis, short-term work is saving millions of jobs.** Administrative data for Germany suggest that short-term work will play an even more important role in saving workers from being dismissed than was the case in 2009. Monthly figures on firms which apply for *Kurzarbeit* indicate that applications peaked in April 2020 with more than 8 million workers, i.e., more than three times the number of registered unemployed (*Chart 3.27*). These figures have been declining since. ([259]) Current projections suggest that the number of people in *Kurzarbeit* (i.e., the stock) has been between 5 and 6 million between April and June

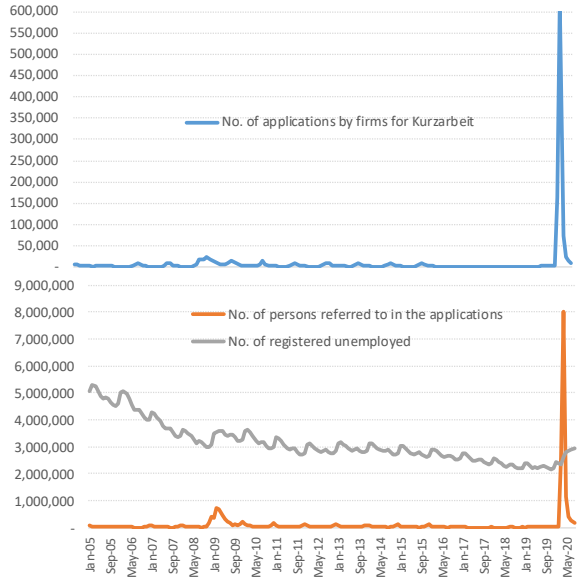
([259]) May: 1.1 million, June: 389 000 million, July: 257 000, August: 172 000 (Bundesagentur für Arbeit (2020e).

2020. ([260]) In 'normal' times, this figure is below 50 000. On the other hand, the number of registered unemployed increased by a relatively moderate 620 000 between March and August 2020 ([261]). Already these figures give an indication about the extent to which the Covid-19 crisis could push unemployment if the STW scheme was not in place.

Chart 3.27

**Massive increase of STW in Germany during the Covid-19 crisis**

Applications for Kurzarbeit and number of workers covered by these applications




*Source:* Bundesagentur für Arbeit (August 2020)

Click here to download chart.

**EU-wide, Member States are making massive use of STW during the Covid-19 crisis.** A number of other Member States show sharply increasing numbers of short-term workers. In the EU as a whole, around 42 million workers (more than one in five) had applied for STW or similar schemes at the end of April 2020 ([262]). This situation is clearly contributing to the significant intensive absorption of the massive GDP decline forecast for the EU in 2020 (shown earlier). The country-specific analysis to follow shows that STW is very efficient in cushioning increases in unemployment in times of adverse economic shocks.

### 4.3.2. *The impact of STW schemes on the labour market: country-specific analysis*

**In times of declining production, a major part of the adverse effect on unemployment can be absorbed through STW.** A regression analysis is carried out which uses monthly official labour market data from **Germany**. Data ([263]) covers the period between January 2005 and May 2020. The results for Germany show that in months when industrial production declined, the number of workers who enter into receipt of unemployment benefits ([264]) tended to go up by more than 31 000 (*Table 3.4*). However, if the production decline *coincides* with an increase in the number of workers covered by new applications for STW ([265]), the increase in the number of entries tends to be significantly lower: 9 000 ([266]). The biggest part of the negative shock on unemployment is hence absorbed by STW.

Table 3.4

**Germany: Shrinking production pulls up calls for unemployment benefit by much less if take-up of STW increases.**

Linear regression: coefficients. Dependent variable: monthly entries into unemployment benefits in Germany (Jan 2005-Oct 2019)

| | |
|---|---|
| Constant | 144,686 ** |
| Dummy: Declining industrial production | 31,348 ** |
| Dummy: Declining industrial production **AND** increasing STW | -22,037 * |
| Entries, prev. month (lag) | 0.231 ** |

*Note:* **: significant < 1%, *: significant at 5%; R2_ad=0.103; ANOVA: p<1%j, N=172

*Source:* EMPL calculations based on statistics of Bundesagentur für Arbeit and Eurostat series 'sts_inpr_m' (industrial production)

Click here to download table.

**Moderate increases in STW can cushion unemployment significantly.** During the current Covid-19 crisis, STW in Germany has so far absorbed the major part of the adverse shock on the labour market (see *Chart 3.27*). However, by far the most of the period taken into account for the analysis was not characterized by major economic shocks but by 'normal' times in which the number of applications for the take-up of STW was lower than the fluctuation in unemployment. Still the regression finds that major parts of these fluctuations were cushioned by STW. In other words: there is evidence that on the labour market, relatively low increases STW can absorb more significant declines in economic activity.

**A similar effect can be found for 'temporary unemployment' in Belgium.** A similar regression is carried out for Belgium. The Belgian system of temporary unemployment (chômage temporaire) is comparable with *Kurzarbeit* in Germany. Temporarily unemployed are workers whose employment contract is totally or partially suspended and who may receive a compensation. ([267]) The number of temporarily unemployed in Belgium literally exploded during the Corona-crisis, to around one million workers between

([260]) Statistics about 'realised' *Kurzarbeit* end in February 2020. From March on there is a projection. Source: Bundesagentur für Arbeit (2020f).

([261]) Bundesagentur für Arbeit (2020g).

([262]) Müller and Schulten (2020) have collected this data from national employment agencies and ministries. The proportion of workers participating in STW or similar schemes exceeds 20% in 11 Member States.

([263]) Sources: Bundesagentur für Arbeit (2020c), Bundesagentur für Arbeit (2020d).

([264]) The variable used here are the monthly entries into 'eligibility for receipt of unemployment benefits'. Those eligible (Anspruchsberechtigte) include people receiving unemployment benefits and those in a blocking period (see Bundesagentur für Arbeit, 2020b, p. 5)

([265]) Those workers are considered here who are covered by firms' application for STW which were sent and registered/processed in the respective month (Angezeigte Kurzarbeit), see Bundesagentur für Arbeit (2020h), p. 9.

([266]) Namely: 31 348 – 22 037.

([267]) See https://www.onem.be/fr/glossaire#anchor_c.

March and May 2020, an unprecedented situation. ([268]) The regression uses monthly regional statistics about temporary unemployment, issued by the Belgian National Employment Office (ONEM). ([269]) The dependent variable is the monthly change in the number of job-seekers (demandeurs d'emploi inoccupés) ([270]) registered at the ONEM. In *Table 3.5*, STW denotes the number of monthly payments made for people on temporary unemployment ([271]). The results are in line with those for Germany. As production declines, the number of job-seekers goes up. If STW increases in parallel to the declining production, two thirds of the increase in job-seekers gets neutralised.

Table 3.5

**Similar picture in Belgium: STW helps cushion unemployment as production declines**

Linear regression: coefficients. Dependent variable: monthly change in the number of job-seekers in Belgium (Jan 2011-Feb 2020)

| | |
|---|---|
| Constant | -1,727 ** |
| Dummy declining industrial production | 6,263 ** |
| Dummy declining industrial production **AND** increasing STW | -4,795 ** |
| Previous month's change in the number of job-seekers (lag) | 0.281 ** |

*Note:* **: significant < 1%, R2_ad=0.2; ANOVA: p<1%j, N=336; Controlled for Region (Flanders, Wallonia, Brussels)

*Source:* EMPL calculations based on statistics of Office National de l'Emploi, StatBel (Production dans l'industrie)

Click here to download table.

For **Austria**, data is available about the monthly inflow of short-term workers from January 2007 to December 2019 ([272]). A similar regression model confirms that declines in industrial production increase unemployment and that STW tends to cushion the impact on unemployment, though the effect remains below statistical significance.

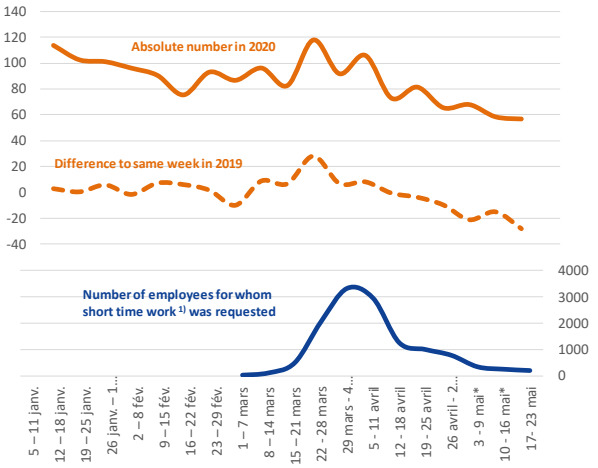
**These findings confirm earlier EU-wide analysis.** Arpaia et al (2010) ([273]) had analysed a panel of 27 EU Member States (quarterly data). It was found that in those countries where there were STW schemes in place the impact of the Financial Crisis 2008/09 on the variability of employment was significantly lower.

**One job being subsidised by STW saves more than this one job. There is a multiplier effect.** The strong cushioning impact of STW on unemployment both in 'normal' times and during shocks, has strong political implications. It suggests that there is a **multiplier effect** linked to STW. The opportunity to have one more job covered by a STW scheme could be decisive for an entire firm during an economic downturn. It could affect whether the firm remains optimistic enough not to dismiss staff. Data for countries other than those illustrated are (still) too limited to allow for in-depth econometric analyses, but do confirm the notion of STW as an absorber of adverse shocks and a job multiplier on the labour market.

Chart 3.28

**France: With massive investment in STW, the number of new unemployment registrations actually declines during the Covid-19 crisis**

Number of workers registering for unemployment and number of employees for whom STW was requested 1), 1000 persons, France




*Note:* 1) Demandes d'activité partielles

*Source:* Pôle emploi, Fance

Click here to download chart.

For example, with the Covid-19-related shutdown coming into effect, the number of *new* short-time workers in **France** increased from literally zero in the beginning of March to almost 3.3 million per week at the beginning of April, an all-time high. During this period of economic shutdown, the number of people who registered themselves unemployed with *Pôle emploi*, the French employment agency, actually declined - which would not have been possible without the massive take-up of STW (*Chart 3.28*).

### *4.3.3. The immediate budgetary cost of higher unemployment*

**These findings render the availability of STW in all Member States a political priority.** The Commission has proposed a new instrument for temporary support to mitigate unemployment risks in an emergency (SURE). It allows for financial assistance of up to EUR 100 billion in the form of loans from the EU to affected Member States. Given that STW is a very efficient tool to reduce that risk, the purpose is to make sure that **all** Member States are in a position to invest in STW as an instrument to prevent massive job cuts in the course of pronounced economic crises. What is the EU-wide cost of such an instrument, and what would be the cost of not having it in place in times of crisis?

([268]) Office National de l'Emploi, see https://www.onem.be/fr/documentation/statistiques/chomage-temporaire-suite-au-coronavirus-covid-19/info

([269]) https://www.onem.be/fr/documentation/statistiques/chiffres

([270]) These are people without paid work registered with a public employment service as job seekers.

([271]) The Office National de l'Emploi (ONEM) reports on the 'physical units', i.e., number of payments made for people on temporary unemployment (chômage temporaire). Workers in temporary unemployment remain in employment, with payment of their remuneration being suspended. Those workers can claim benefits as temporarily unemployed. See https://www.onem.be/fr/documentation/feuille-info/t2

([272]) Data provided by AMS Arbeitsmarktdaten Österreich.

([273]) Arpaia et al (2010) p. 40.

Table 3.6

**Each percentage point of unemployment costs EU countries a total of 31 billion EUR per year for unemployment benefits**

Average net wages, unemployment benefits' net replacement rates and expenditure for unemployment benefits in the EU (2018)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Country | Avg. wage (compensation per employee) 1) | Average tax wedge 2) | Computed net wages | Net replace- ment rate of unemployment benefits 3) | Computed benefit per worker | Unemployment rate 4) | No. of unemployed 4) | Unemployed per ppt of unemployment rate | Expenditure per ppt of unemployment rate | |
| | *EUR per pers.* | *% of compens.* | *EUR per pers.* | *% of net wages* | *EUR per pers.* | *% of lab. force* | *1000 persons* | *1000 persons* | *billion EUR* | *% of GDP* |
| | | | (=2-3) | | (=4x5) | | | (=8/7) | (=6x9) | |
| BE | 56277 | 46% | 30333 | 66% | 19911 | 6% | 301 | 50 | 1.00 | 0.22% |
| BG | 9124 | 35% | 5940 | 82% | 4899 | 5% | 173 | 33 | 0.16 | 0.29% |
| CZ | 19135 | 41% | 11213 | 31% | 3452 | 2% | 122 | 55 | 0.19 | 0.09% |
| DK | 56001 | 33% | 37409 | 71% | 26481 | 5% | 153 | 30 | 0.80 | 0.26% |
| DE | 42962 | 45% | 23457 | 71% | 16690 | 3% | 1468 | 432 | 7.21 | 0.22% |
| EE | 21500 | 33% | 14426 | 56% | 8130 | 5% | 38 | 7 | 0.06 | 0.22% |
| IE | 49382 | 24% | 37431 | 44% | 16635 | 6% | 138 | 24 | 0.39 | 0.12% |
| EL | 21723 | 37% | 13707 | 48% | 6537 | 19% | 915 | 47 | 0.31 | 0.17% |
| ES | 35518 | 36% | 22767 | 64% | 14483 | 15% | 3479 | 227 | 3.29 | 0.27% |
| FR | 52185 | 43% | 29693 | 73% | 21563 | 9% | 2702 | 297 | 6.40 | 0.27% |
| HR | 16212 | 34% | 10749 | 52% | 5545 | 9% | 152 | 18 | 0.10 | 0.19% |
| IT | 41265 | 41% | 24388 | 63% | 15330 | 11% | 2756 | 260 | 3.99 | 0.23% |
| CY | 24249 | 17% | 20054 | 42% | 8376 | 8% | 37 | 4 | 0.04 | 0.17% |
| LV | 17561 | 39% | 10765 | 28% | 3016 | 7% | 73 | 10 | 0.03 | 0.10% |
| LT | 16690 | 37% | 10498 | 39% | 4080 | 6% | 90 | 15 | 0.06 | 0.13% |
| LU | 70046 | 30% | 48752 | 89% | 43367 | 6% | 17 | 3 | 0.13 | 0.21% |
| HU | 13714 | 45% | 7543 | 25% | 1912 | 4% | 172 | 47 | 0.09 | 0.07% |
| MT | 24112 | 20% | 19290 | 41% | 7958 | 4% | 9 | 2 | 0.02 | 0.16% |
| NL | 59348 | 31% | 41069 | 73% | 30110 | 4% | 350 | 92 | 2.78 | 0.36% |
| AT | 46664 | 43% | 26458 | 55% | 14638 | 5% | 220 | 45 | 0.66 | 0.17% |
| PL | 14861 | 35% | 9645 | 47% | 4521 | 4% | 659 | 169 | 0.76 | 0.15% |
| PT | 21380 | 37% | 13576 | 76% | 10275 | 7% | 366 | 52 | 0.53 | 0.26% |
| RO | 12288 | 37% | 7766 | 50% | 3852 | 4% | 380 | 90 | 0.35 | 0.17% |
| SI | 27625 | 40% | 16575 | 47% | 7848 | 5% | 53 | 10 | 0.08 | 0.18% |
| SK | 17675 | 40% | 10694 | 29% | 3111 | 7% | 180 | 28 | 0.09 | 0.10% |
| FI | 47133 | 36% | 30118 | 63% | 19105 | 7% | 202 | 27 | 0.52 | 0.22% |
| SE | 45261 | 41% | 26704 | 55% | 14614 | 6% | 346 | 55 | 0.80 | 0.17% |
| EU-27 | | | | 65% | | | | | 30.82 | 0.23% |

*Source:* EMPL calculation based 1) Eurostat National Accounts, 2) and 3) OECD-statistics, 4) Eurostat EU-LFS. Average replacement rates are given by family status (single with or without children, couple with or without children). The respective weights are taken into account when calculating the average replacement rate.

Click here to download table.

**Each percentage point of unemployment costs EU social security schemes EUR 31 billion per year (0.23% of GDP).** Obviously, the cost depends on the generosity of a country's unemployment benefit scheme, i.e. what percentage of a worker's (last) net wage is being replaced, on average, by unemployment benefits (net replacement rate) ([274]). Based on OECD data, column 5 of *Table 3.6* shows that the generosity of unemployment benefit schemes varies greatly across Member States (see *Box 3.3* for details). The EU-27 spends 0.23% of GDP for each percentage point of unemployment (EUR 31 billion) per year.

*Box 3.3: The cost of unemployment*

Each percentage point of unemployment imposes a certain cost on public budgets. *Table 3.1* uses information on the average level of compensation (wages) in the EU and the tax wedge to calculate average net wages for each country (columns 2 to 4). The OECD's net replacement rates of unemployment benefits are applied to these net wages in order to calculate the average unemployment benefit per (newly-unemployed) worker (columns 5 and 6). This amount is multiplied by the number of unemployed people per percentage point of the unemployment rate (columns 7 to 9). The last column then gives the resulting amount of unemployment benefits for each percentage point of unemployment.

This information will be used to calculate the financial investment public employment authorities will have to make in order to cover unemployment benefits if no hours reduction takes place. **Annex 3.4** shows the details. The additional expenses for unemployment benefits are estimated *per percentage point of a decline in GDP*.

**With no reduction in hours, each percentage point of GDP decline could push the cost of unemployment benefits up to EUR 29 billion.** The full GDP decline would hit the labour market. In that case, 1% lower GDP would engender 1% lower employment (almost 2 million jobs EU-wide). The unemployment rate would rise by 0.93%. Portugal and Latvia experienced situations like this in 2009. In Ireland and Spain the employment decline was even more pronounced than the fall in GDP. In the case of no absorption, the total costs for the EU-27 amounted to EUR 29 billion per year (i.e. 0.93 times EUR 31 billion) for every percentage point of GDP decline. **Annex 3.4** shows the details and breaks these costs down per Member State.

### 4.3.4. Perfect absorption of the adverse shock through STW

**Every percentage point of GDP-reduction could trigger expenditure for STW of up to EUR 33 billion per year (upper ceiling).** The other extreme would be to consider that all Member States make full use STW schemes. All EU governments subsidise STW, paying a certain percentage of workers' net wages, discharging firms from these labour costs during the crisis. Currently available information about STW net wage replacement rates EU Member States show that those tend to be higher than the unemployment benefit replacement rates shown in *Table 3.6*. Taking this difference into account, **Annex 3.5** demonstrates that the annual amount to be paid by Member States

([274]) Source: OECD statistics. (https://stats.oecd.org/Index.aspx?DataSetCode=NRR). These net replacement rates depend on the family context and are taken into account as weighted averages.

for STW schemes could be a **maximum** of EUR 33 billion per year **for every percentage point of GDP decline**.

**Multiplier effects reduce the cost for STW.** However, in order to absorb the decline in GDP without dismissals, the calculation implicitly assumes that each working hour reduced needed to be funded by the government through STW schemes. In reality, the findings above suggest that an STW subsidy paid for one worker may put firms in the position to reduce working hours of more colleagues, and to lower the usage of capital, without cutting jobs. In other words: not every working hour being reduced needs to be paid for through STW.

**One percentage point of GDP decline may trigger EUR 16 billion per year for STW schemes.** The cost for STW schemes per year and percentage point of a GDP decline would therefore be much lower than EUR 33 billion. For an estimation, take the experience of Germany during the 2009 crisis. In that year, GDP collapsed by -5.7%, but employment remained almost unchanged. In other words, the intensive margin on the labour market absorbed the full impact. The number of short-time workers went up from close to nil to 1.1 million (2009 annual average) ([275]). In other words, 3% of employment were sent into STW (*Kurzarbeit*). These 3% were thus sufficient to absorb a 5.7% GDP decline. This is equivalent to 0.5% of employment being sent to STW per percentage point of the 2009 GDP decline. This would be an equivalent of almost 1 million people for the EU-27. The EU's cost would amount to EUR 16 billion (0.12% of GDP) per year for every percentage of GDP decline. This amount is way below the potential cost of higher unemployment in the case of no absorption.

### *4.3.5. Summary*

**STW schemes help secure employment in times of pronounced adverse economic shocks.** During the global 2009 Financial Crisis one third of the shock to GDP could be absorbed in the labour market through reduction of working hours to which STW schemes made a decisive contribution. According to recent estimates, the absorption rate during the current Covid-19 crisis could be higher than that. The immediate budgetary cost of STW schemes for all EU countries are way below the cost of the higher unemployment that would occur without any STW scheme in place or any intensive absorption of the GDP shock.

**Investment in STW schemes would pay off in the short run.** Regression analyses using official (national) labour market statistics in selected Member States confirm that STW schemes have effectively protected the labour market from the impact of an output decline in the past. In other words, unemployment (the take-up of unemployment benefits) increased less if STW increased in parallel to the output decline.

**This finding implies that there is a positive immediate multiplier effect in investing in STW schemes.** Subsidising one job can save more than this one job during the economic downturn. In the medium term, as the economy recovers, STW has further advantages which have not been taken into account in this short-term cost analysis. It reduces the risk that workers, once dismissed during a crisis, will be unable to find a job again. And it keeps firms from having to re-recruit workers that were dismissed.

**The new SURE instrument could thus provide valuable financial assistance to Member States.** It would make sure that **all** Member States could make full use of STW schemes. Moreover, current national STW schemes are usually designed to save the jobs of employees. As many Southern European countries have high percentages of self-employed workers ([276]), it is important to extend the scope of these schemes to embrace the self-employed. The new SURE instrument provides resources to all Member States to enable them to protect existing jobs from adverse economic shocks through STW, and to ensure that all workers are protected against the risk of unemployment and loss of income.

## 5. CONCLUSIONS

This chapter identifies three conditions for inclusive economic growth:

### 5.1. Everybody should be able to benefit from sustainable economic growth.

**Growth can be considered as fair if it benefits all income groups.** Over the period between 2007 and 2017, in Member States where total income grew above average, high-income households benefited more from growth. Therefore, positive growth does not seem to be fairly distributed. Conversely, high-income households benefited the least or lost the most in countries where overall income growth was low or negative. Thus low (or nil) income growth was more equally distributed in those countries. Extending the time horizon to the last 40 years, the trend has been positive. Bottom and middle-income groups, mainly located in poorer EU countries, have captured an increasing share of income growth in Europe.

These findings have far-reaching implications for the degree of inclusiveness of (positive or negative) economic growth in the future. The EU has to make sure that growth is equally shared, and that in the absence of growth households would be effectively protected by functioning social welfare systems.

([275]) Statistik der Bundesagentur für Arbeit zum Kurzarbeitergeld.

([276]) The EU average proportion of self-employed is 13%. This proportion is much higher in Greece (28%) and Italy (20%).

## 5.2. Everyone should have the opportunity to contribute to growth.

In a time of skill shortages and shrinking labour supply, everyone able to join the labour market should have the opportunity to do so, contributing to personal wellbeing and future growth. Apart from higher economic growth, empowering people to be part of the workforce bears a high *social* return:

- **Closing gender-related gaps:** Women's labour market participation is lower than men's. In addition, they earn less and work fewer hours. These gender gaps have an impact not only on the labour market but also on future social security benefits, pensions in particular. In the very long run, reducing these gender-related gaps in the EU to the levels seen in Sweden today could increase the overall level of pensions EU-wide by 11%. As more women join the labour market, earn more and work more hours, their actuarial pension assessment base will increase.

- **Prolonging working lives**: Enabling workers in the EU to prolong their working lives by **one** year on average could, in the long term, bring another 4 million people into the labour market. The average EU pension level could be 2.2% higher.

- **Improving skills and qualifications**: Changing the structural composition of the workforce towards better qualifications would increase both average wages and average labour market participation, thus leading to higher employment. Model simulations for Italy show that better-qualified workers trigger higher labour productivity, thereby incentivising capital investment and leading to higher GDP growth.

## 5.3. Everyone should be able to rely on a functioning welfare state in times of structural change or economic shocks.

**Digitalisation can go hand in hand with job creation and increased productivity. Yet it also brings about more non-standard work.** There is evidence that digitalisation and robotisation are job creators in the long run. However, they are accompanied by changes in the way people work, the emergence of so-called platform work being a prominent example. While today platform worker numbers are still limited, but their numbers increase. The trend could lead to more non-standard forms of employment, self-employment in particular. If this is the case then there will be significant pressure on social insurance. As previously insured workers become self-employed, social insurance schemes may suffer significant losses of contribution revenue.

**While nations make their commitments to the Paris Agreement, the EU wants more.** Following the 2015 Paris Agreement, the EU and other parties to the convention have developed their Nationally Defined Contributions (NDC) by outlining their ambitions to reduce greenhouse gas emissions and, in some cases, to adapt to climate change. As of August 2020, 186 parties have submitted their first NDC, and four parties have already submitted a second, updated NDC. However, the EU has since committed to a more ambitious target of reaching Climate Neutrality by 2050.

**The green transition requires social investment.** Both baseline and Climate Neutrality scenario will create new jobs, mainly in the service sector, while other jobs will change or even disappear, especially in fossil fuels and energy-intensive manufacturing sectors. This transition needs to be coupled with measures that help people access such new jobs. For those leaving shrinking sectors, measures are needed to support those who become unemployed and stay unemployed for longer: social benefits need to replace foregone earnings, workers need to prepare for future tasks through (re-)training. Other workers may be discouraged about their future job prospects and decide to move into an early pension, if possible. The resulting costs for social security could cumulate to EUR 20 billion or more until 2030. They depend on how difficult transition becomes.

**Transferring part of the revenue from energy taxes back to households can cushion the impact on poverty and inequality.** To achieve GHG reduction, governments may consider increasing taxes on energy-intensive goods. In relative terms, these taxes affect poorer households more. To alleviate the impact of energy taxation on the regressivity of the tax system, governments may consider re-investing tax revenue through special schemes such as renovation and/or renewable energy subsidies to reduce energy poverty among vulnerable populations. The analysis explores the impact of another option: lump-sum transfers for households. Those transfers would help people who otherwise were affected disproportionally by higher energy taxes. Microsimulations show that such re-investment reduces both income inequality and poverty.

**The world sees an unprecedented economic shock.** In many parts of the world, economic activity was brought to a complete halt by the containment measures required by the Covid-19 pandemic. The expected result, according to the Summer Economic Forecast of the European Commission, is an unprecedented GDP decline of 8.3% in the EU in 2020 – almost double the fall seen in 2009 (-4.3%).

**Investment in STW schemes pays off in times of adverse economic shocks.** While there are still many uncertainties as to the length of the pandemic and its impact on output in 2020, the *immediate* impact on the labour market crucially depends on the extent to which the reduction of working hours can absorb the massive GDP shock. The analysis shows that in the past, STW schemes have effective in protecting the labour market from the impact of adverse economic

shocks: Claims for unemployment benefits increase by much less if there is a parallel increase in STW. Firms are thus less likely to dismiss workers if they can rely on STW schemes. This finding suggests that supporting one job through STW may save more than this one job (the multiplier effect).

**During the Covid-19 crisis the EU's priority is to protect the labour market from greater disruptions.** The analysis demonstrates that STW schemes are costly, and several Member States will need support. Yet, even in the very short term such support costs less than allowing unemployment to increase. Each percentage point by which GDP falls may costs 2 million jobs across the EU if the decline is not cushioned by working-time reductions. It is therefore important to encourage all Member States to have STW schemes in place. In this context, the new SURE instrument is a political priority. Its financial assistance will support Member States in providing STW schemes. The support is especially necessary for countries which would either be unable to finance STW schemes themselves, or would have to borrow on the financial market under unfavourable conditions.

# ANNEX 3.1A – THE CHOICE OF NET NATIONAL INCOME (NNI) TO ASSESS THE INCLUSIVENESS OF ECONOMIC GROWTH

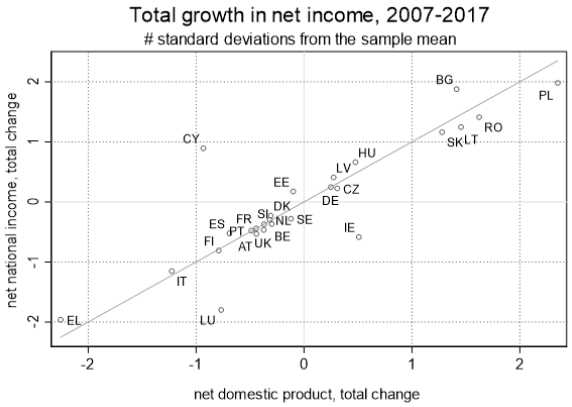
Economic growth is usually tracked through the evolution of the productive capacity of the economy, as captured by the Gross Domestic Product (GDP). AS is well known, GDP is the sum of gross value added produced in the domestic economy. However, the total income received by domestic residents generally does not coincide with the GDP. First, as the national economies are interlinked, some of the value added (VA) produced domestically may correspond to income attributed to foreign residents while domestic residents may receive part of their income from abroad. Second, part of the VA corresponds to the consumption of fixed capital, i.e. the decline in value of fixed assets as a result of normal wear and tear and obsolescence. This part of value added is not distributed as income. Net national income (NNI) is obtained by taking these two features into account: (1) GDP is adjusted for the consumption of fixed capital, resulting in the Net Domestic Product (NDP); (2) it is further adjusted for the primary balance of income with the rest of the world.

This chapter's objective is to assess the strength and the inclusiveness of growth over the period 2007-2017. The NNI is thus the indicator of choice as it tracks most closely the evolution of income that is effectively attributable to domestic households. For most EU countries, NNI evolves very similarly to the productive capacity of the economy, i.e. its GDP. However, there the countries in which the two diverge because some of the *domestic* income is attributed to *foreign* households and vice versa.

*Chart 3.29* plots growth of NNI against growth in NDP. It looks at countries' growth between 2007 and 2017 in terms of both indicators, showing by how many standard deviations countries are away from the respective mean growth. On average, NDP increased by 7.8% over 2007-2017, with a standard deviation of 14.6%. Over the same period, NNI increased by 9% on average, with a standard deviation of 16.1%. Most countries perform similarly in both series. The biggest discrepancies are observed for Luxembourg, Cyprus, Ireland and Bulgaria.

In the chart, both series are expressed in real terms. To remove the effects of price changes, a price index for a basket of goods needs to be used. The question of which deflator to apply is important. For consistency, both NNI and NDP are deflated by the GDP deflator. Yet, it could be argued that for the purpose of evaluating the evolution of purchasing power, NNI series should be deflated with the consumer price index (CPI) instead.

Chart 3.29
Total growth in net national income vs net domestic product




*Source:* Commission service4s base on Eurostat data.
Click here to download chart.

NNI measures the primary distribution of income and may not coincide with net household disposable income (HDI), which measures income that households are able to spend (NNI does not take into account redistribution of income such as remittances). However, HDI disregards imputed rents as well as retained earnings (because households actually do not have this money to spend). By doing so, HDI underestimates the effective income of residential property owners and of households that invest in firms. Hence, the HDI measure may underestimate the extent of income inequality.

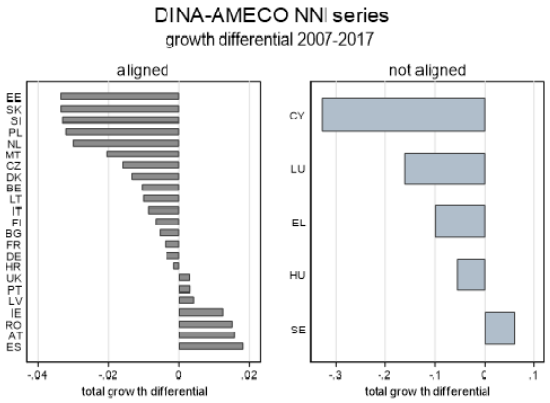
# ANNEX 3.1B – NET NATIONAL INCOME SERIES IN DINA AND IN EUROSTAT

In the section 2.1, Eurostat data is used to characterise total growth in the net national income (NNI) over the period 2007-2017. Section 2.2 uses *distributional* national accounts (DINA) in each EU Member State. DINA has been made available by the World Inequality Lab (WIL) to better capture the process of growth and judge on whether growth has been broad-based. For consistency, in Section 2.2 we rely on DINA numbers for total growth when distributing it among individuals.

As explained in Blanchet et al (2019), DINA-information on total growth is expected to be in line with Eurostat's NNI data. However, there may still be discrepancies – either due to data vintages or due to data smoothing implemented by the DINA research team for data deemed implausible. Furthermore, the DINA approach of treating all foreign ownership as portfolio investment may have an impact on the NNI series ([277]).

([277]) By contrast, in the National Accounts, profits from corporations owned by foreigners are subtracted from the net primary income of corporations if foreign ownership takes the form of foreign direct investment. See footnote 9 in Blanchet et al (2019).

Chart 3.30
Total income growth in DINA and in Eurostat NNI series




*Note:* The growth differential is constructed as the log difference between total growth in DINA and in Eurostat over 2007-2017. Countries for which the differential is smaller than 5% are plotted on the left-hand side of the chart while those with the differential in excess of 5% are on the right-hand side.

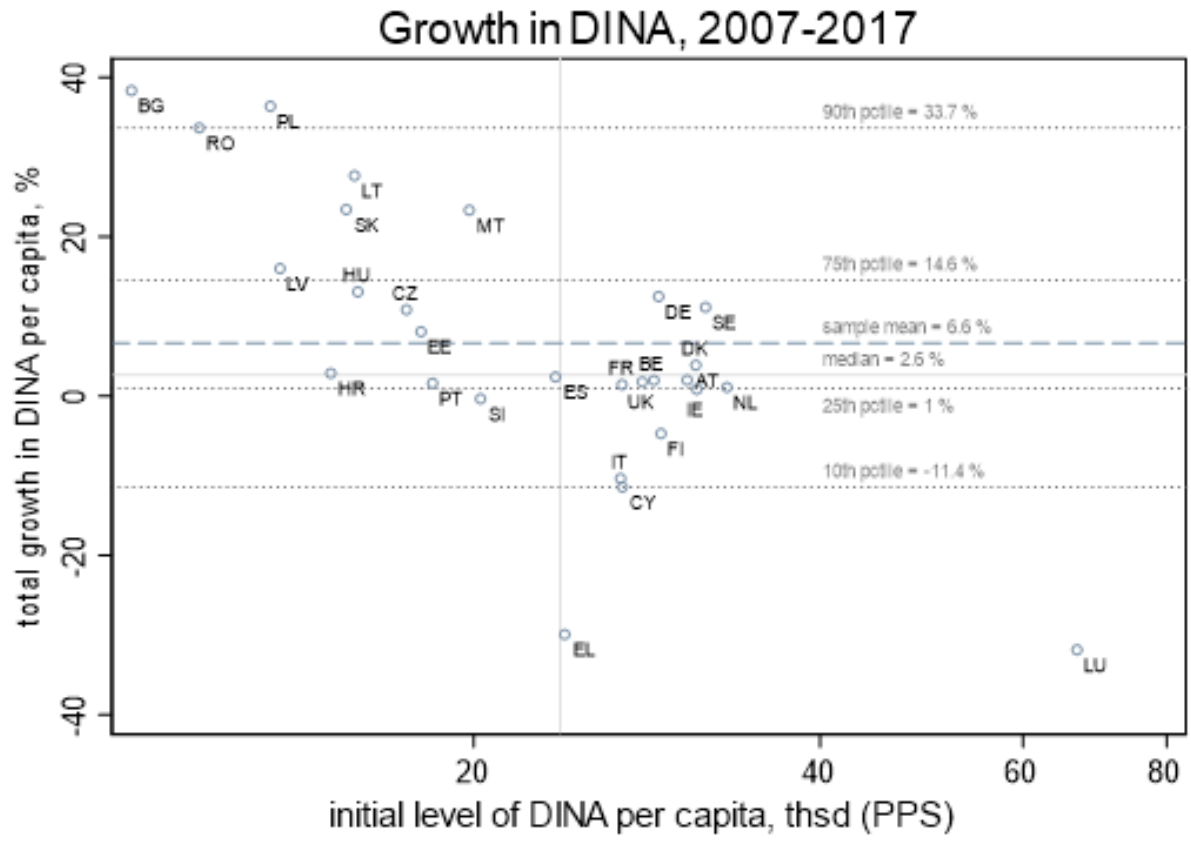
*Source:* Commission services based on DINA data

Click here to download chart.

*Chart 3.30* plots the growth differential between the DINA-based and Eurostat NNI series. For most countries, DINA-based NNI series are largely in line with Eurostat NNI series. However, for a subset of EU Member States the discrepancies are more pronounced. In particular, for Cyprus and Luxembourg the difference exceeds 10%. The discrepancy is mainly due to the fact that the ratio of Eurostat's NNI to DINA NNI increases over 2007-9, i.e. the initial level of NNI is lower in Eurostat than in DINA. A somewhat similar pattern is observed for Greece over 2007-2012, where NNI growth reported in DINA is 10% lower.

*Chart 3.31* plots total growth in DINA-based NNI over the period 2007-2017 (y-axis) against the initial level of DINA-based NNI in 2007 (x-axis). On average, DINA-based NNI growth is lower than the corresponding Eurostat NNI growth (6.6% against 9.4%). There is also more variability in the DINA-based series (10-90th percentiles between -11.4% and 33.7% in DINA vs. -9.5% and 31.6% in Eurostat).

Chart 3.31
**DINA-based NNI series: total growth in NNI over 2007-2017 (in %) plotted against initial NNI in 2007 (in thousand PPS)**




*Source:* Commission services based on DINA data

Click here to download chart.

# ANNEX 3.2 – FUNDING PENSIONS FROM THE PERSPECTIVE OF INTERGENERATIONAL FAIRNESS

Following the basic actuarial principle of pension systems in almost all Member States, the **total level** of a person's future pension is assumed to be the product of two components.

- **The number of *individual* pension points linked to a person's labour market history (biography).** A worker's future pension increases in parallel with their current assessment base. That is, the level of benefits increases as more workers become employed, earn higher wages or work longer hours.

- **The *general* pension value is the value of one pension point.** It is independent of a person's labour market record. It reflects the generosity of a pension system. Only the general pension value can be directly manipulated by policy.

Section 3 above looks at the total level of pensions. The actuarial model used in section 3 assumes, in principle, that contribution rates to the pension system are constant and remain at today's level. This is in order to demonstrate what demographic change and the policy measures discussed could imply for the (total) level of pensions if governments try to keep contribution rates stable to prevent labour costs from rising.

In order to be more realistic, there is one deviation from the principle of constant contribution rates. The policies discussed would all lead to higher individual pension rights (through working longer, higher wages and/or higher labour market participation). These **work-history-related** pension increases are funded through **higher contributions** which could be paid by workers and their employers.

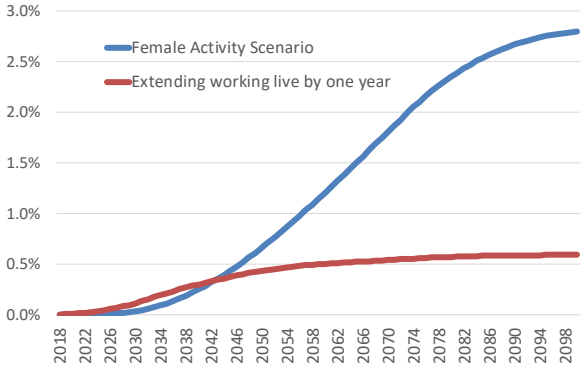
More realistically, these expenses would be paid by governments in order to prevent higher pension rights for some workers from causing a decline in the pensions for others. This is because in a pay-as-you-go pension system, without allowing for contributions to increase, the work-history-linked pension increases would need to be financed by lowering the **general** pension value (i.e. the generosity of the pension system which is not linked to individual work histories).

*Chart 3.32* shows the increase necessary in the contribution rate (in % of wages) to cover the costs for higher pension entitlements that emerge from closing gender-related gaps on the labour market (section 3.1) and working for one year longer (section 3.2). These figures also tell us the extent of the resulting pension increase. In the case of reducing female labour market gaps it amounts to 2.8% of wages in the EU by the year 2100, equivalent to more than EUR 200 billion every year in today's values. In the case of working one more year, the higher pensions would lead to contribution rates to increase by 0.6% (equivalent to almost EUR 50 billion per year).

Chart 3.32

**In the long run, closing gender-related gaps on the labour market is worth 3% of the wage sum**

Increase in the pension contribution rate (pps of wages), relative to the (reference) situation with stable gender gaps, EU-27




*Source:* EMPL calculations based on Eurostat 2019 Population Projection and Eurostat EU-LFS, European Commission Spring 2020 Economic Forecast.

Click here to download chart.

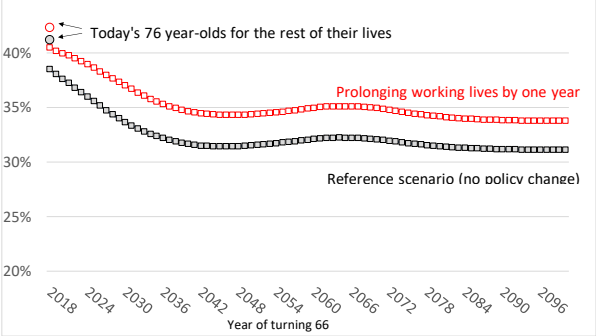
If one dropped the assumption of contribution-funded higher pension rights, this would imply that work-history-related pension increases were funded through lowering the **general** pension level, that is: making the pension scheme less generous. It would have consequences for intergenerational fairness.

One could demonstrate this on the above example of **prolonging working lives by one year**, a policy designed specifically for increasing intergenerational fairness. In section 3.2 above it was shown that pensions would increase by 2.2% in the long run as workers pay contributions for longer. *Chart 3.33* shows the pension-to-wage ratio for the above case where workers prolong working lives by one year, with the resulting higher pensions being paid through higher contributions. The difference to *Chart 3.10* above is that the pension-to-wage ratio is shown as a **lifetime average** for different cohorts, starting with workers turning 66 years today (who would receive a pension until the age of 84, on average).

Chart 3.33

**Prolonging working lives by one year**

Pension-to-wage ratio, average over life (age 66-84), by age (today), EU-27, assuming that biography-related pension increases be paid through higher contributions




*Source:* EMPL calculations based on Eurostat 2019 Population Projection (baseline) and Eurostat EU-LFS, European Commission Spring 2020 Economic Forecast

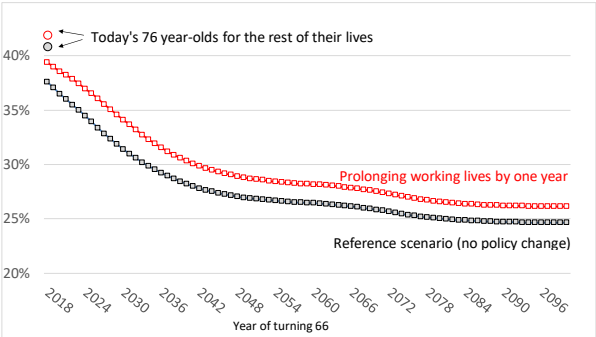
Click here to download chart.

The average pension-to-wage ratio for workers turning 66 in 2018 would be 40% today. The ratio would decline, down to 31%, for those who move into pension by the end of the century, see black curve. However, prolonging working lives by one year will add another 2.7 percentage points to the lifetime pension-to-wage ratio in the long run (red curve).

Chart 3.34

**Prolonging working lives by one year**

Pension-to-wage ratio, average over life (age 66-84), by age (today), EU-27, assuming that biography-related pension increases be paid through lowering the general pension value




*Source:* EMPL calculations based on Eurostat 2019 Population Projection (baseline) and Eurostat EU-LFS, European Commission Spring 2020 Economic Forecast

Click here to download chart.

*Chart 3.34* drops the assumption of financing biography-related pension increases through higher contributions: **Contributions rates are thus held constant** at today's level. As a result, the **general** pension value will decline much more pronouncedly, compared with the situation where contributions could be increased. In the baseline scenario (without prolonging working lives) the pension-to-wage ratio would decline fast, down to 25% by the end of the century. This is because already the baseline scenario takes into account increasing employment rates: today's workers (future pensioners) have already higher employment rates than today's pensioners had when they were workers. The better employment record will increase their future pensions. However, without contribution rates increasing, these higher pensions would have to be financed through lowering the **general** pension value.

What is more: the increase of pensions 'gained' through working longer (the difference between the red and the black curves) becomes less significant: only 1.5 percentage points in the long run. In other words: **some** workers earn higher pensions by working longer. Their pension increases. **All** pensioners will have to finance this increase by accepting the general pension value to be lowered.

Not allowing for contribution rates to increase in the future would thus aggravate the **disadvantage of today's younger generations**, compared with **today's pensioners**, in terms of the level of their future pension. Their return from working longer or improving their employment record would be lower than is the return of today's pensioners. To avoid this situation, higher contributions would have to be paid **by future contributors**. In other words: Those not yet born today would pay higher pension contributions from their labour income in order to safeguard the return on pension contributions of today's young people (who will then be pensioners). In order not to run into new problems of intergenerational fairness, governments may therefore consider subsidising the pension system in order to finance future biography-linked pension increases, thereby **de-coupling those contributions from labour income**.

# ANNEX 3.3 – EMPLOYMENT DECLINE IN SHRINKING SECTORS: WHERE DO WORKERS GO?

If, in a certain sector, employment declines over time, this can have several reasons.

- **Regular retirement:** Most of the gradual job decline in shrinking sectors happens as older people leave and are not replaced by young workers, who instead decide to enter growing sectors at the start of their careers. As a result, by far the biggest share of the employment decline in shrinking sectors is absorbed through retirement. Workers may have reached an age that allows them to retire without a deduction from their pension. Sector-specific retirement probabilities are taken into account. Overall, it is estimated that around 1% of all employed workers aged between 15 and 64 move into regular retirement every year, see ***Box 3.4*** below for details. Regular retirees will not impose any additional cost on unemployment benefit schemes. They are therefore not taken into account in the cost analysis below. The vast majority of the remaining job losses happen in fossil fuels and energy-intensive industries ([278]).

- **Immediate transition into a new job:** Some will be able to find a new job in other sectors within three months and without any further training. For those workers, the transition would not incur any cost. In 2018, the average probability of a quarterly transition from unemployment into employment is around 20% in the EU ([279]). It is thus assumed that 20% of the decline in shrinking sectors is absorbed immediately through higher labour demand in growing sectors. For a sensitivity analysis this parameter will be decreased in the course of the analysis.

- **Employment decline:** 80% of the workers represent a decline in employment. They will not immediately work in a new job. For the employment decline in a given sector, the following two groups are distinguished:

  - **Early retirement:** Today, around 19% of non-employed workers aged between 55 and 64 years have left the labour market for early retirement, i.e. before reaching official retirement age ([280]). Based on this information, it is estimated that around 1.3% of the EU's employed workers (aged 15-64) leave the labour market as early retirees every year (see *Box 3.4* below for details). It is assumed that these workers receive an income-replacing benefit from social security for five years ([281]). They will not undergo training.

  - **Unemployment:** Workers not moving into retirement are assumed to become unemployed, in the sense that they receive some income-replacing benefit from social security. This affects 78.7% of the EU's employed workers. The longer the duration of unemployment the higher would be the cost incurred to national social security schemes. In 2018, the average duration of unemployment for those workers who did not manage an immediate transition to a new job ([282]) was around two years. Workers in unemployment may be entitled to training courses to upgrade their skills. According to the Labour Force Survey, 31% of today's unemployed workers in the EU participate in such training. The training will also be funded by the social security system.

What are the costs per jobless worker for income-replacing benefits and for training?

- Workers losing their job because of the structural change towards low-carbon economies (structural job losses) are assumed to receive EUR 10 700 per year as a replacement for market income foregone.

- In parallel, these workers receive some kind of training as part of a social investment package aimed at facilitating re-integration in the labour market. Workers undergoing training incur a training cost of EUR 8 700 per person per year.

These amounts are estimated on the basis of the Commission's Labour Market Policy database (LMP). It holds information about the efforts Member States make in terms of passive ([283]) and active ([284]) LMP. The database contains both the expenditure and the number of beneficiaries in EU countries. This information is used to calculate the EU average amount paid per beneficiary of both income-replacing benefits and training. In 2017, this average amounted to EUR 10 700 per year in the case of 'income maintenance and support'. This LMP category mainly includes unemployment benefits. In the case of training, an average amount of EUR 8 700 per year was paid.

([278]) This is the case for more than three quarters of total job losses until 2050 in both scenarios.

([279]) It is the weighted average over 25 EU countries, see Eurostat series [lfsi_long_e01].

([280]) Labour Force Survey (2018).

([281]) The average official retirement age in the EU is around 64 years. Together with LFS-information about early retirees and the age profile of older workers one can estimate the average time-span of early retirees until reaching official retirement age.

([282]) 'Immediate transition' in this context means a duration of unemployment of three months or less.

([283]) Passive LMPs include out-of-work income maintenance and early retirement (LMP categories 8 and 9). (https://ec.europa.eu/employment_social/employment_analysis/lmp/lmp_esms.htm)

([284]) Active LMPs consist of training and other measures to improve employability: employment incentives, sheltered and supported employment and rehabilitation, direct job creation and start-up incentives (LMP categories 2-7). See previous footnote.

*Box 3.4 estimating regular/early retirement*

The table shows 2019 employment in the EU-27 plus the United Kingdom, by age. For example, it is assumed that 4.6% of total employment will leave the labour market during the next five years to draw on a pension if they are between 55 and 59 years in 2019. This is the difference between 11.1% of total employment (aged 55-59) and 6.4% (60-64). As these workers are below 60 in 2019, it is assumed that all of them retire early as most Member States have already increases statutory retirement ages to 65 or beyond. On the other hand, those aged 65 and older in 2019 are assumed to move into a regular pension (after reaching official retirement age). Those between 60 and 64 years are assumed to split into two groups: 60% will draw on a regular pension during the next five years, 40% will retire early. This information stems from the Labour Force Survey, see *Table 3.7* which describes the procedure at aggregate level. However, for the model used in section 4.2.3 above, the number of early and regular retirees is calculated *per sector*.

Table 3.7

**1.3% of total employment may retire drawing on an early pension every year.**

Rough estimation of the extent of early and regular retirement, EU-27 plus UK, 2019

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Age | All (15+) | 50-54 | 55-59 | 60-64 | 65-74 |
| Million workers in employment (million | 232,650 | 29,893 | 25,718 | 14,907 | 5,699 |
| Percent of total employment (15+) | | 12.8% | 11.1% | 6.4% | 2.4% |
| | | Age | 55-59 | 60-64 | 65+ |
| Estimated % of workers leaving during the next **5 years, of which** | | | -4.6% | -4.0% | -2.4% |
| … early retirement [1)] | | | 100% | 40% | 0% |
| … regular retirement | | | 0% | 60% | 100% |
| | | | per 5 years | per year | |
| Resulting proportion of early retirees | | | -6% | -1.3% | of total empl. |
| Resulting proportion of regular retirees | | | -5% | -1.0% | |

*Note:* For age 60-64: Share of early retirees amongst old-age pensioners according to LFS 2012 (Eurostat series lfso_12earlyret), Assumption for age below 60: not eligible for regular pension; 65+: all regular pension

*Source:* EMPL calculations based on Eurostat EU-LFS

Click here to download table.

Table 3.8

**During economic crises, each percentage point decline in GDP may cause additional unemployment benefit expenditure of up to 29 billion EUR per year in the EU, with no intensive absorption**

Changing employment, unemployment; cost of unemployment benefits caused by a 1% decline in GDP during a crisis

| | 1 | 2 | 3 | 4 | | 5 | |
|---|---|---|---|---|---|---|---|
| | Change of employment | Change of hours worked per worker and/or hourly labour productivity | Change of unemployment rates | Cost of unemployment benefits per ppt of unemployment rate (see *Table 3.6*) | | Total (=3 x 4) | |
| | % | % | ppts | bn EUR | % of GDP | bn EUR | % of GDP |
| EU-27 | -1 | 0 | +0.93 | 30.8 | 0.2 | 28.6 | 0.21 |
| BE | -1 | 0 | +0.94 | 1.0 | 0.2 | 0.9 | 0.20 |
| BG | -1 | 0 | +0.95 | 0.2 | 0.3 | 0.2 | 0.28 |
| CZ | -1 | 0 | +0.98 | 0.2 | 0.1 | 0.2 | 0.09 |
| DK | -1 | 0 | +0.95 | 0.8 | 0.3 | 0.8 | 0.25 |
| DE | -1 | 0 | +0.97 | 7.2 | 0.2 | 7.0 | 0.21 |
| EE | -1 | 0 | +0.95 | 0.1 | 0.2 | 0.1 | 0.21 |
| IE | -1 | 0 | +0.94 | 0.4 | 0.1 | 0.4 | 0.11 |
| EL | -1 | 0 | +0.81 | 0.3 | 0.2 | 0.3 | 0.14 |
| ES | -1 | 0 | +0.85 | 3.3 | 0.3 | 2.8 | 0.23 |
| FR | -1 | 0 | +0.91 | 6.4 | 0.3 | 5.8 | 0.25 |
| HR | -1 | 0 | +0.92 | 0.1 | 0.2 | 0.1 | 0.18 |
| IT | -1 | 0 | +0.89 | 4.0 | 0.2 | 3.6 | 0.20 |
| CY | -1 | 0 | +0.92 | 0.0 | 0.2 | 0.0 | 0.16 |
| LV | -1 | 0 | +0.93 | 0.0 | 0.1 | 0.0 | 0.09 |
| LT | -1 | 0 | +0.94 | 0.1 | 0.1 | 0.1 | 0.12 |
| LU | -1 | 0 | +0.94 | 0.1 | 0.2 | 0.1 | 0.20 |
| HU | -1 | 0 | +0.96 | 0.1 | 0.1 | 0.1 | 0.06 |
| MT | -1 | 0 | +0.96 | 0.0 | 0.2 | 0.0 | 0.15 |
| NL | -1 | 0 | +0.96 | 2.8 | 0.4 | 2.7 | 0.34 |
| AT | -1 | 0 | +0.95 | 0.7 | 0.2 | 0.6 | 0.16 |
| PL | -1 | 0 | +0.96 | 0.8 | 0.2 | 0.7 | 0.15 |
| PT | -1 | 0 | +0.93 | 0.5 | 0.3 | 0.5 | 0.24 |
| RO | -1 | 0 | +0.96 | 0.3 | 0.2 | 0.3 | 0.16 |
| SI | -1 | 0 | +0.95 | 0.1 | 0.2 | 0.1 | 0.17 |
| SK | -1 | 0 | +0.93 | 0.1 | 0.1 | 0.1 | 0.09 |
| FI | -1 | 0 | +0.93 | 0.5 | 0.2 | 0.5 | 0.21 |
| SE | -1 | 0 | +0.94 | 0.8 | 0.2 | 0.8 | 0.16 |

*Source:* EMPL calculation based on Eurostat National Accounts, Eurostat EU-LFS; OECD.

Click here to download table.

## ANNEX 3.4 – POTENTIAL IMMEDIATE COST OF UNEMPLOYMENT BENEFITS

It is assumed here that there is no intensive absorption of the GDP decline on the labour market (see column 2 in *Table 3.8*). In this case, each percentage point of a GDP decline would reduce employment by one percent (see column 1). The corresponding impact on the unemployment rate is shown in column 3. ([285]) Column 4 shows the cost of unemployment per percentage point of the unemployment rate as calculated above in *Table 3.6*. By simple multiplication, column 5 finally calculates the cost of unemployment benefits caused by each percentage point of GDP decline.

([285]) In absolute terms, the impact on the unemployment rate is lower than the impact on employment because the unemployment rate is a percentage of the active population (employment plus unemployment).

Table 3.9

**During economic crises, each percentage point decline in GDP may cause additional expenditure of up to 33 billion EUR per year in the EU, assuming full absorption of the shock through subsidies for hours reduction**

Potential cost of STW schemes, upper bound

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Change of employment | Change of hours worked per worker, fully subsided through STW | No. of workers (employment 2018) | No. of workers not dismissed due to hours reduction = (-2 x 3) | Estimated average net wage [1] | Net replacement rate unemployment benefits [2] | Estimated STW replacement rates [3] | STWA-expenses per worker (= 5 x 7) | STWA-expenses (=4 x 8) | |
| | % | % | millions | millions | EUR/year | % of net wage | % of net wage | EUR/worker/year | bn EUR | % of GDP |
| **EU-27** | ***0*** | ***-1*** | ***198.0*** | ***1.98*** | | ***65%*** | ***75%*** | | ***33.0*** | ***0.24*** |
| BE | 0 | -1 | 4.8 | 0.05 | 30333 | 66% | 100% | 30333 | 1.44 | 0.31 |
| BG | 0 | -1 | 3.2 | 0.03 | 5940 | 82% | | | | |
| CZ | 0 | -1 | 5.3 | 0.05 | 11213 | 31% | | | | |
| DK | 0 | -1 | 2.8 | 0.03 | 37409 | 71% | 100% | 37409 | 1.06 | 0.35 |
| DE | 0 | -1 | 41.9 | 0.42 | 23457 | 71% | 60% | 14074 | 5.90 | 0.18 |
| EE | 0 | -1 | 0.7 | 0.01 | 14426 | 56% | | | | |
| IE | 0 | -1 | 2.3 | 0.02 | 37431 | 44% | 100% | 37431 | 0.85 | 0.26 |
| EL | 0 | -1 | 3.8 | 0.04 | 13707 | 48% | | | | |
| ES | 0 | -1 | 19.3 | 0.19 | 22767 | 64% | 70% | 15937 | 3.08 | 0.26 |
| FR | 0 | -1 | 27.1 | 0.27 | 29693 | 73% | 84% | 24942 | 6.75 | 0.29 |
| HR | 0 | -1 | 1.7 | 0.02 | 10749 | 52% | | | | |
| IT | 0 | -1 | 23.2 | 0.23 | 24388 | 63% | 100% | 24388 | 5.66 | 0.32 |
| CY | 0 | -1 | 0.4 | 0.00 | 20054 | 42% | | | | |
| LV | 0 | -1 | 0.9 | 0.01 | 10765 | 28% | | | | |
| LT | 0 | -1 | 1.4 | 0.01 | 10498 | 39% | | | | |
| LU | 0 | -1 | 0.3 | 0.00 | 48752 | 89% | | | | |
| HU | 0 | -1 | 4.5 | 0.04 | 7543 | 25% | | | | |
| MT | 0 | -1 | 0.2 | 0.00 | 19290 | 41% | | | | |
| NL | 0 | -1 | 8.8 | 0.09 | 41069 | 73% | 100% | 41069 | 3.61 | 0.47 |
| AT | 0 | -1 | 4.3 | 0.04 | 26458 | 55% | 90% | 23812 | 1.03 | 0.27 |
| PL | 0 | -1 | 16.5 | 0.16 | 9645 | 47% | | | | |
| PT | 0 | -1 | 4.9 | 0.05 | 13576 | 76% | 100% | 13576 | 0.66 | 0.32 |
| RO | 0 | -1 | 8.7 | 0.09 | 7766 | 50% | | | | |
| SI | 0 | -1 | 1.0 | 0.01 | 16575 | 47% | 100% | 16575 | 0.16 | 0.36 |
| SK | 0 | -1 | 2.6 | 0.03 | 10694 | 29% | | | | |
| FI | 0 | -1 | 2.5 | 0.03 | 30118 | 63% | | | | |
| SE | 0 | -1 | 5.1 | 0.05 | 26704 | 55% | 100% | 26704 | 1.36 | 0.29 |

*Note:* 1) Based on national accounts and OECD tax wedge, see Table 3.6 above; 2) Based on OECD net replacement rates, see Table 1 above; 3) Schulten and Müller (2020), partly recalculated; collection of national sources.

*Source:* EMPL calculations based on the sources indicated in the note.

Click here to download table.

# ANNEX 3.5 – POTENTIAL COST OF STW – UPPER LIMIT

This section provides a rough estimate of the maximum cost of STW benefits induced by a decline of GDP by one percentage point. It is assumed that this decline in GDP is fully absorbed through the reduction of working time per worker by 1% (almost 2 million workers) so that employment stays constant, see columns 1 and 2 in *Table 3.9*. In addition, this hours-reduction is fully reflected in the accounts of state-subsidised STW. In other words, in order to estimate the **maximum** annual cost for STW schemes, **each reduced hour is assumed to be subsidised by governments**. Two million workers are thus protected from being dismissed (column 4). On average they are projected to receive **75%** of their last net compensation through STW schemes.

This replacement rate is based on two sources. First, Schulten and Müller (2020) have collected information about STW replacement rates in 13 EU Member States (and other countries) as a percentage of workers' gross or net salaries. *Table 3.9* gives this information in column 7, see also *Box 3.5*. The weighted average of STW net replacement rates across all 13 EU countries would be **77%**.

*Box 3.5*

Gross (as opposed to net) replacement rates are given for seven countries.([286]) For these countries, the replacement rate was re-calculated to net replacement rates, using the tax wedges on wages as given in *Table 3.6* above. With STW benefits assumed tax-free, the level of these tax wedges imply that 100% of net wages would be replaced by STW benefits in these countries (by red figures in column 7 of *Table 3.9*).

A second set of data collected within the European Commission uses qualitative information from national sources. Using this data would yield an estimated STW replacement rate of **72%** for 20 countries. Therefore, the cost calculation assumes that for the EU as a whole, the average net replacement rate for STW (or equivalent) benefits is 75%. It is thus 10 percentage points higher than the average unemployment benefit replacement rate given in *Table 3.6* above. **This would be equivalent to an annual maximum cost of EUR 33 billion per year for STW schemes for each percentage point of GDP decline.** ([287])

([286]) Schulten and Müller (2020), p. 8.

([287]) The volume of net salaries of affected workers is given by multiplying columns 4 and 5 in *Table 3.9* : EUR 44 billion for the EU, of which 75% make EUR 33 billion.

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