Chapter 6

Efficiency and effectiveness of social expenditure in the crisis[1]

1. Introduction

This chapter reviews developments in social expenditure during the crisis (since 2008–09) and provides an assessment of potential changes in their stabilisation capacity (until 2012) as well as of their effectiveness and efficiency (until 2010). It reviews the evidence in the light of Musgrave's (1959) classical framework[2], which defines the three main functions of public intervention in the economy as stabilisation (aimed at securing economic stabilisation, in particular of GDP but also of employment and price levels), distribution (aimed at securing adjustments in the distribution of income and wealth, not least an equitable distribution of incomes) and resource allocation (aimed at securing adjustments in the allocation of resources and in particular the efficient use of resources). Social policies can indeed be considered on the basis of these three functions: social investment (primarily linked to the allocation function), social protection (primarily linked to the distribution function, understood as including the distribution of incomes over the life course) and the stabilisation of the economy.

Indeed, with ongoing strong pressure on welfare budgets, it appears important not only to review the economic stabilisation impact of social policies, but also, as highlighted in the Communication on social investment[3], to ensure that expenditure does indeed deliver the best outcomes (effectiveness), at the lowest cost and with maximised spillovers on employment and growth (efficiency)[4].

The chapter provides evidence on the timing and nature of changes in real expenditure levels up until 2012 before focusing on the effectiveness and efficiency of social protection spending and the extent to which this may have been affected by the crisis until 2010. As regards the latter, while an in-depth analysis of Member States' overall efficiency of social protection systems would go beyond the scope of this chapter, a stylised framework allows for the identification of key strengths and weaknesses of Member States' performance, in relation to expenditure levels and their trend in the early phase of the crisis.

2. Trends in social protection expenditure and financing in the crisis

The analysis covers recent developments in social protection expenditure up until 2012 and receipts up until 2010 (for an overview of data sources used, see annex), focusing notably on expenditure growth during the current crisis in comparison to past episodes of recession or low growth[5].

2.1. Social protection expenditure in the EU

At EU level, social protection expenditure accounted for a little under 30% of GDP in 2010. The size of social protection spending varies greatly between EU Member States (see Chart 1).

Expenditure is the lowest relative to GDP in new Member States such as Latvia, Romania and Bulgaria (around 17% in 2010) and the highest in Denmark, France, Sweden and the Netherlands (around or above 30% in 2010).

On average at EU level, almost 13% of GDP, or nearly 40% of social protection expenditure, is spent on the old age and survivors functions. This varies a great deal, however, between Member States. In Ireland and Luxembourg, less

(1) By Olivier Bontout, Terezie Lokajickova and Virginia Maestri.

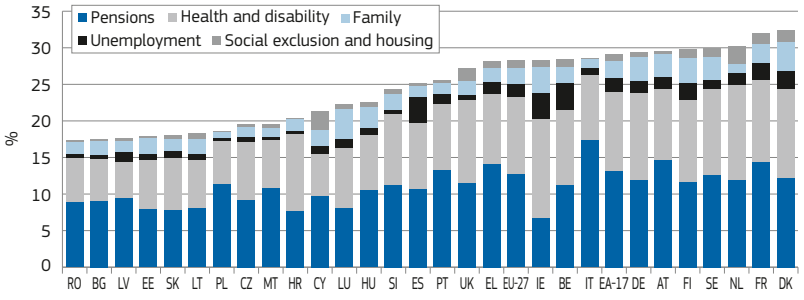
(2) More recent textbooks include 'Intermediate Public Economics' (2006) from Hindriks and Myles, and 'Public finance: a contemporary application of theory to policy' (2007) from Hyman.

(3) (COM(2013) 83).

(4) It can be noted that high levels of social expenditure are not necessarily detrimental to the sustainability of public finance; see for instance European Commission (2013).

(5) In doing so, it does however not fully address the issue of the consistency between observed trends in social expenditures and possible reductions in potential GDP and economic growth. The analysis leaves aside the hypothetical question of what might have to change on structural expenditure levels if economic growth weakens permanently and significantly in the Union. Output-gap estimates suggest that much of the lost growth since the beginning of the crisis may not be recovered. Furthermore, it is still a matter of debate as to whether or not potential growth will be affected in the medium and long term. For instance, European Commission (2009) estimates a downward revision of the average annual GDP growth by 0.4 pps per year over the period 2007–60 for the EU-27 in a 'permanent shock' scenario and a full recovery by 2020 in a 'rebound' scenario.

Chart 1: Social expenditure in 2010 (as % of GDP)



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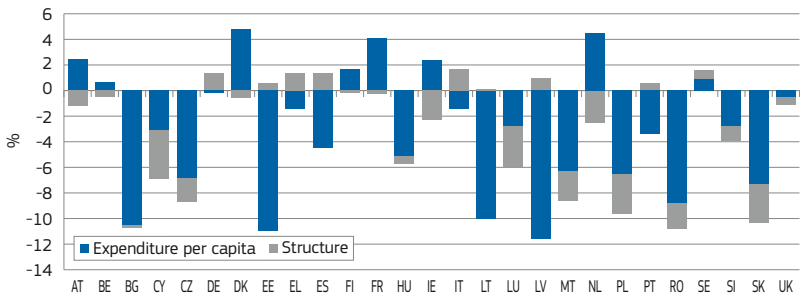
Source: ESSPROS.

Chart 2: Impact of social expenditure levels per capita and of differences in socio-demographic structures on expenditure levels compared to EU average in 2010 (as % of GDP)



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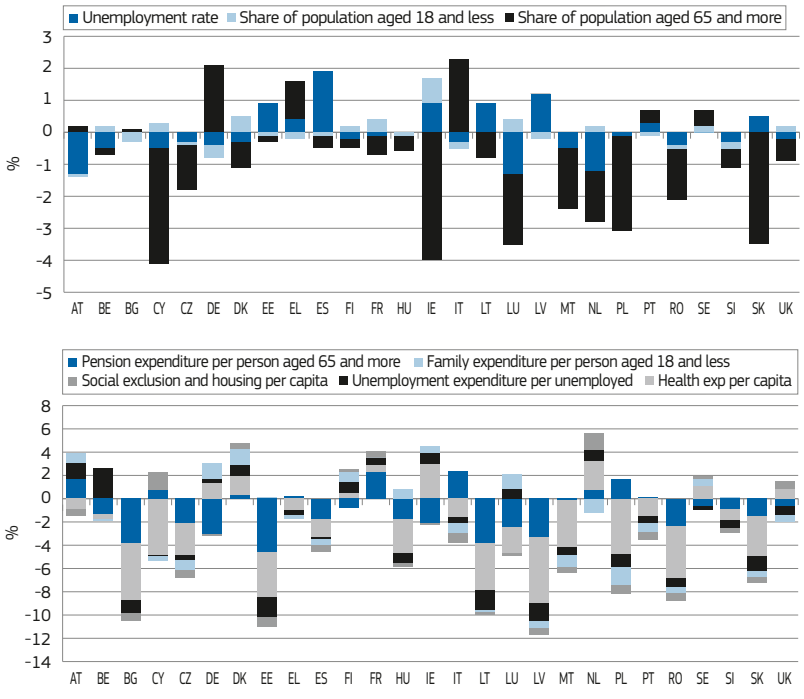
Source: ESSPROS, DG EMPL calculations.

Note: impact on the difference to EU-27 average of structure effects and levels of expenditure per capita or per potential beneficiary.

Chart 3: Impact of differences in socio-demographic structures and of social expenditure levels per capita on expenditure levels compared to EU average in 2010 (as % of GDP)



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Source: ESSPROS, DG EMPL calculations.

Note: Impact on the difference to EU-27 average of structure effects.

than 8% of GDP is spent on this function, while in Italy it amounts to nearly 17% of GDP. Differences in expenditure levels can also be significant for other functions and part, but not all, of these expenditure differences are explained by differences in socio-economic structures, such as unemployment rates and share of population aged over 65 or under 18.

A decomposition of differences in social protection expenditures allows one to distinguish between different socio-demographic structures (based on the shares of people aged 65 or older and under 18, as well as on unemployment rates), and differences in the size of expenditures standardised by the relative levels of the potential population of beneficiaries (see also Box 5).

The difference in expenditure-to-GDP ratios appears to be mainly driven by expenditure levels, though in some Member States socio-economic structures also contribute significantly by either keeping expenditure levels lower (AT, CY, CZ, IE, MT, NL, PL, RO, SI, SK) or making them higher (DE, EL, ES, IT). For instance, while IT and IE have comparable expenditure-to-GDP ratios, it appears that after correcting for differences in socio-economic structures, IE spends more per beneficiary than IT (Chart 2). The impact of socio-economic structures on spending levels (Chart 3a) appears to be mainly driven by differences in the share of the population aged 65 or older, either keeping expenditure levels low (notably in CY, CZ, IE, LU, MT, NL, PL, SE, SK) or sometimes making them higher (in DE, EL, IT).

Nevertheless, the bulk of differences appear to reflect actual differences in expenditure per capita levels, mainly from old age and survivor expenditure and health and disability expenditure (Chart 3b), and to a lesser extent from family or unemployment or social exclusion and housing expenditure.

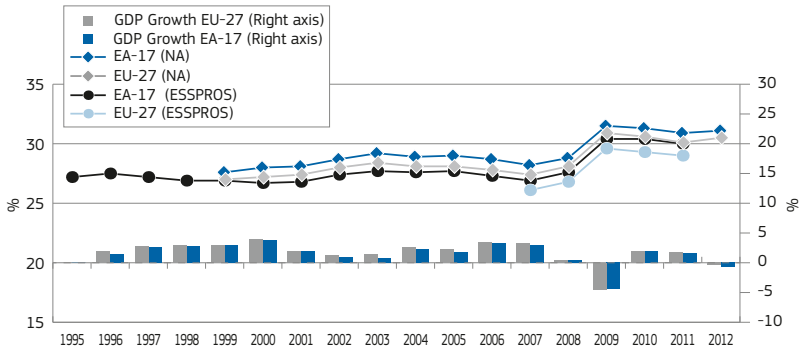
2.2. Social expenditure growth in the crisis: increase in the first years (2008–10) and decline since 2011

The share of social expenditure in GDP (which reflects developments in nominal social expenditure and nominal GDP) increased in 2008 (a year of very weak growth) and even more significantly in 2009 when real GDP declined by 4.5% in the EU-27 and 4.4% in the EA-17. In 2010 and 2011, the share of social expenditure in GDP declined slightly, in a context of mild economic growth. In 2012, in a context of contraction of real GDP, the share of social expenditure increased slightly in the EU-27 and the EA-17, but the increase was lower in the EA-17, where the decline in real GDP was stronger (Chart 4).

Most recent trends show declines in real terms in 2011 and 2012

Data for the years 2011 and 2012 only allows one to track developments in expenditure on benefits in cash and in kind. In 2011, social expenditures declined on average in Europe and in 2012 in most countries (Chart 5) ([6]). In 2011, declines affected both in-kind and cash benefits. In 2012, in a weaker economic environment ([7]), most Member States registered declines of in-kind expenditure, but relatively stable cash expenditure. While declines in cash benefits are reflected in the gross household disposable income, those in in-kind benefits are not (directly) ([8]). However, falling in-kind benefits are likely to have a negative impact on the access to and the provision of a number of services, such as healthcare or childcare.

Chart 4: Share of social expenditure in GDP and real GDP growth in the EU-27 and EA-17 (1995–2012)



Source: National Accounts and ESSPROS.

Note: When data not available in National Accounts (annual), it was complemented based on either National Accounts (quarterly) or the AMECO database (for the latter usually applying calculated growth rates to the data available from National Accounts (annual).

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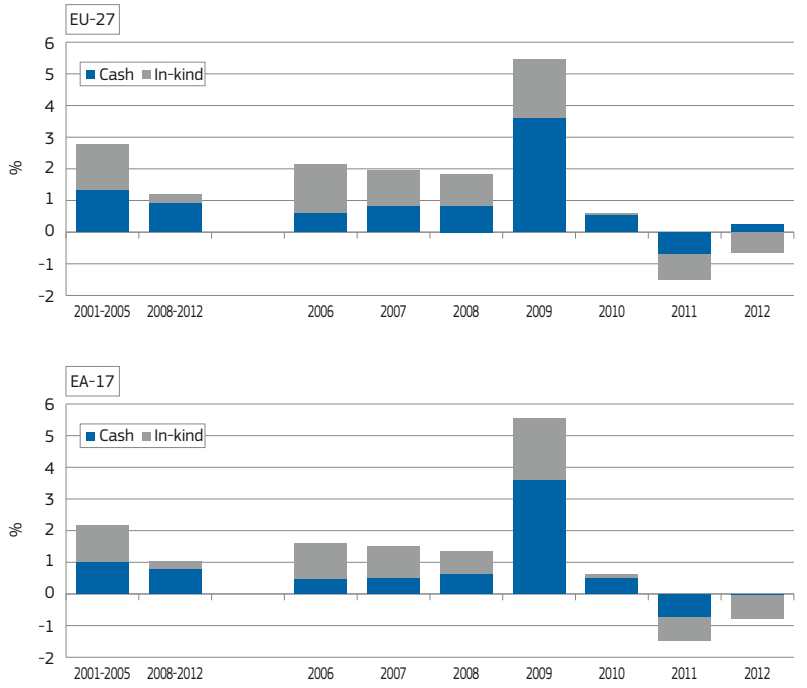
Chart 5: Breakdown of the annual change in real public social expenditure between the contributions from in-cash and in-kind benefits (2001–2012) in the EU-27 and EA-17



Source: National Accounts, DG EMPL calculations.

Note: When data not available in National Accounts (annual), it was complemented either based on National Accounts (quarterly) or AMECO database (for the latter usually applying calculated growth rates to the data available from National Accounts (annual).

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([6]) For 2012, the annual growth rate reflects an estimate based on quarterly National Accounts (see Box 1).

([7]) In 2011, average GDP growth was 1.7% in the EU (with declines only in EL and PT), while in 2012, GDP declined by 0.4% on average in the EU (with positive developments in BG, DE, EE, IE, LV, LT, MT, AT, PL, RO, SK, SE and the UK).

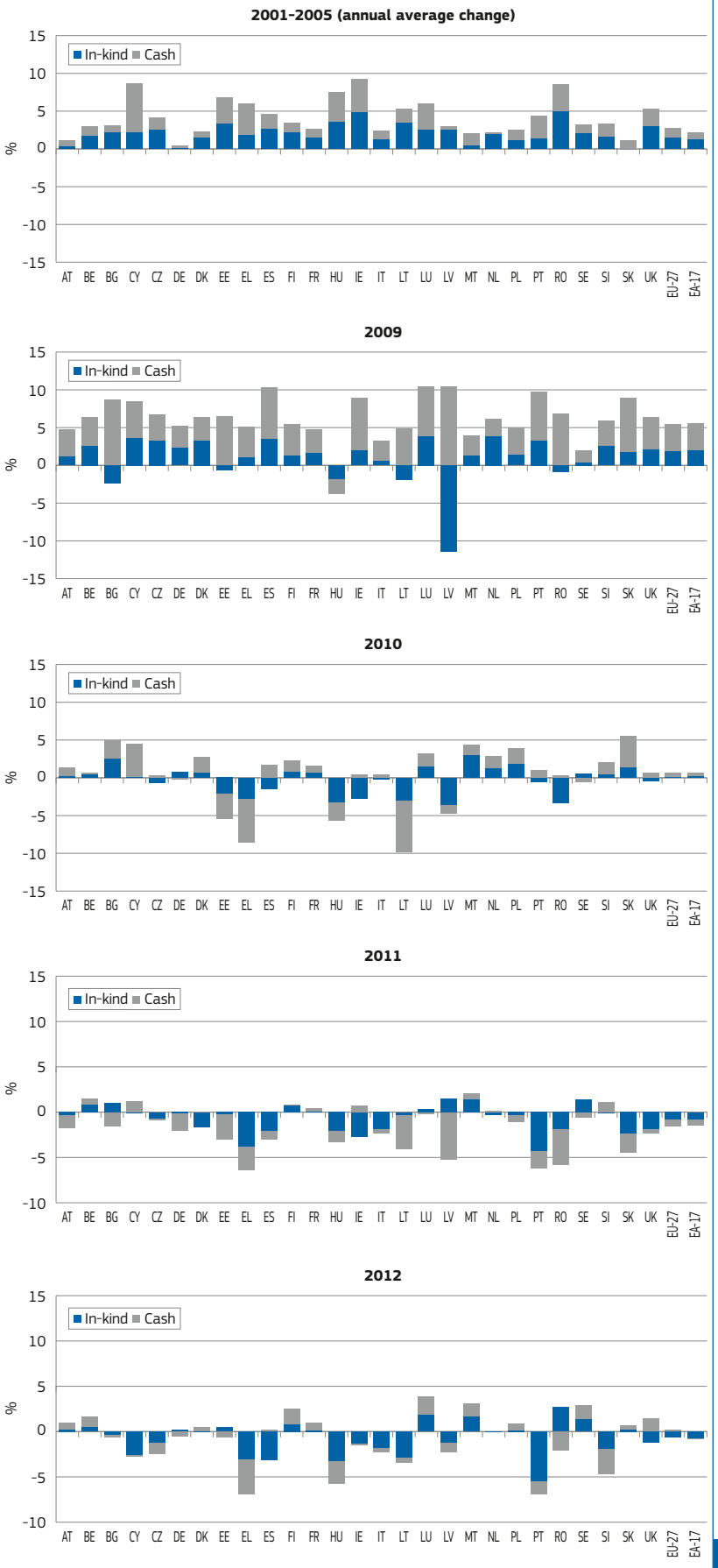
([8]) They are reflected in the adjusted household gross disposable income, while reduction in public service provision can lead to increases in private expenditure and thus weight on disposable income.

In 2011, most Member States reduced in-kind and in-cash expenditure. Declines were particularly significant (around 5 % or more) in EL, LV, PT and RO and were below 1 % in most other Member States (Chart 6). In 2012, the declines were in general less pronounced, but still very significant in a few Member States (EL, HU, PT and SI), while being higher than one percentage point (in real terms) in other Member States (CY, CZ, ES, IE, IT, LT, LV). Cash benefits actually recorded real increases in around half of the Member States. Overall, while expenditure growth had been very dynamic in 2009, these developments in 2011 and 2012 translated into an overall relatively weak pattern of social expenditure growth in the EU and EA (see Chart 6), notably in comparison to the 2001–05 period which was a period of relatively moderate growth ([9]).

A strong increase of social protection expenditure in 2009 — reflecting automatic stabilisation

In 2009 overall increases compared to 2007 ranged between 5 % and 10 % in the EU, while average increase exceeded 10 % in the OECD and reached 15 % in the USA (see OECD 2012a) ([10]). Between 2008 and 2009, real social protection expenditure increased by around 7 % on average across EU-27 and EA-17 countries, an acceleration mainly driven by increases in unemployment expenditure, but also in health and disability as well as in old-age and survivors (referred to as 'pensions' in this chapter). There was also to a lesser extent an increase in family and social exclusion and housing expenditure (see Chart 7). The increase in unemployment expenditure mainly

Chart 6: Trend in real public social expenditure in EU (2001–2012)



Source: National Accounts, DG EMPL calculations.

Notes: When data not available in National Accounts (annual), it was complemented either based on National Accounts (quarterly) or AMECO database (for the latter usually applying calculated growth rates to the data available from National Accounts (annual).
The 2001–05 is used as reference since it corresponds to a recent period of average growth.

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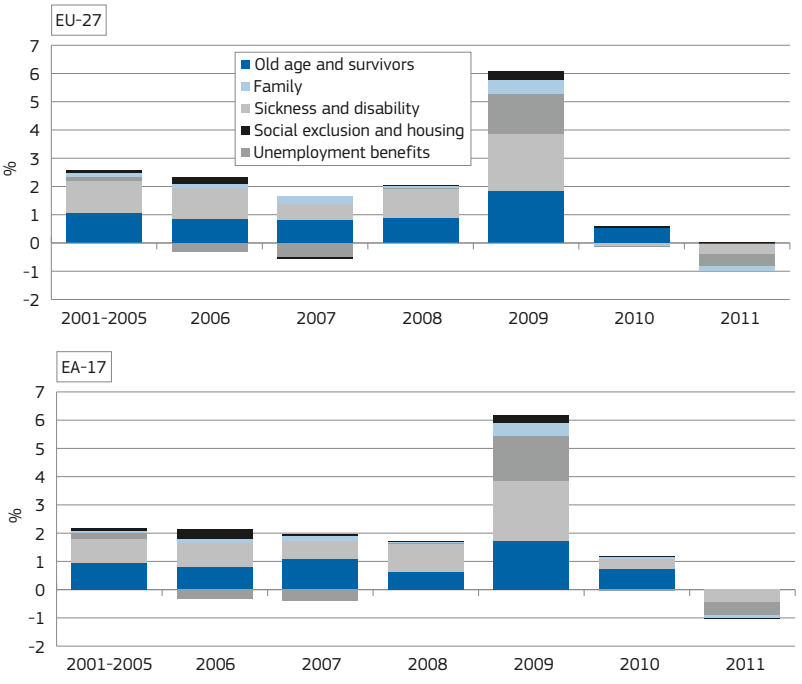
([9]) In the rest of this section, the period 2001–05 is used as a reference for comparison of growth rates of social protection expenditure in recent years. The choice of this period stems from the fact that this was a period of relatively modest GDP growth on average in the EU (since the early 90s for which information is available), with annual economic growth of +1.5 % for the EA-17 and +1.9 % for the EU-27. In 2008 economic growth was 0.4 % in the EU and EA, in 2009 economic growth was -4.5 % in the EU and -4.4 % in the EA, in 2010 economic growth was 2.0 % in the EU and EA, and in 2011 respectively 1.7 % and 1.6 %, while in 2012 it was respectively -0.4 % and -0.7 %.

([10]) The rise in social protection expenditure in the USA was mainly driven by spending on healthcare, old age and unemployment. However, the highest relative increase between 2007 and 2009 was seen in expenditure on unemployment and on active labour market programmes.

Chart 7: Annual real growth of social expenditure in the EU-27 and EA-17 (2001–2011) and contributions from different functions



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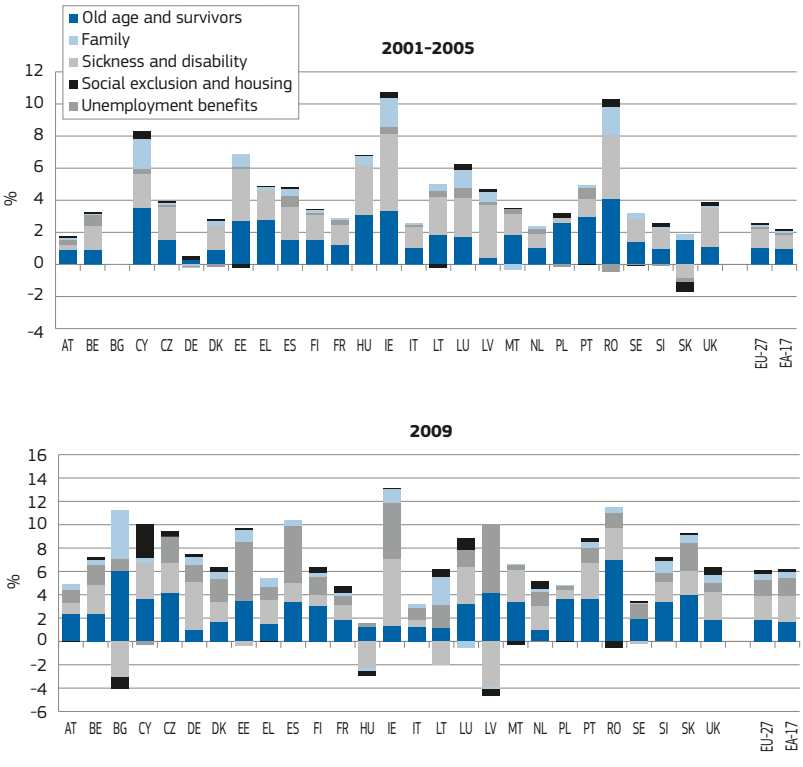
Source: ESSPROS and DG EMPL calculations.

Note: For EU-27, 2001–05 actually refers to EU-25 since EU-27 not available and 2001–05 refers to the average annual growth rate.

Chart 8: Annual real growth of social expenditure in Europe 2001–2005, 2009, 2010 and 2011 — contribution of different functions



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Source: ESSPROS and DG EMPL calculations.

Note: Compounded average growth rates 2001–05.

reflects increases in the number of unemployed persons (see below).

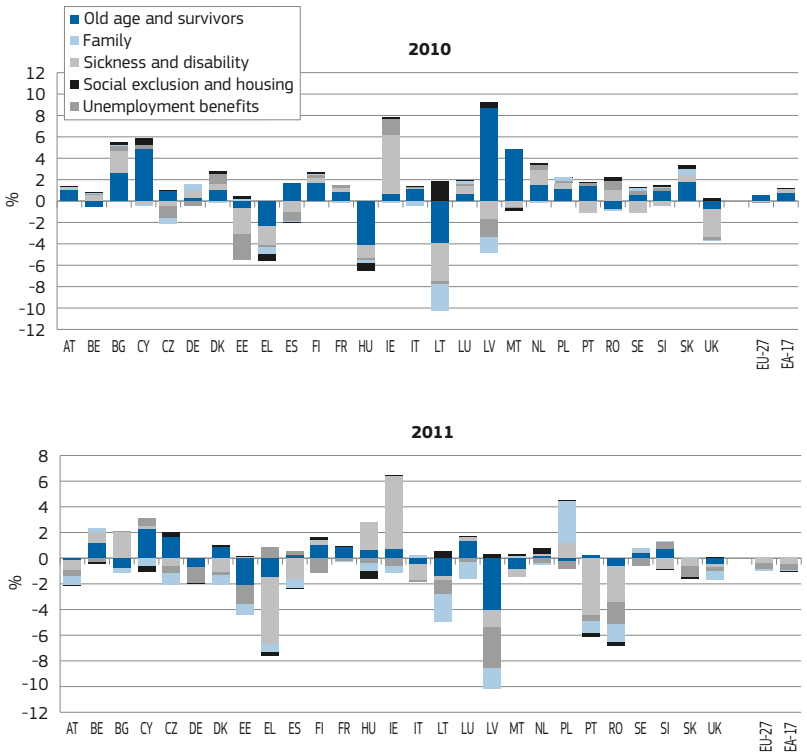
In 2010, annual expenditure growth was modest, with an overall stabilisation in unemployment expenditure, very modest increases in health and disability, and increased spending on pensions (Chart 8). The growth in health and disability expenditures in the EU in 2010 appears very modest, in line with OECD-wide developments (see OECD 2012b). Changes in unemployment expenditure were mainly driven by the increasing number of unemployed, but also (to a lesser extent) offset by declines in average benefits paid out (as measured by the average expenditure per unemployed, see below). In 2011, expenditure declined in real levels, reflecting mainly a further decline in health and disability expenditure, as well as negative contributions from unemployment and family expenditure, while real pension expenditure growth was very low.

Expenditure on unemployment benefits increased in all countries in 2009, and in most countries in 2010, but it started declining in a few countries, including those where unemployment kept rising (ES, EL, HU, SK and UK).

In 2010, health and disability expenditure showed a modest increase, with declines in some countries. Pension expenditure grew at a slow pace, also with declines in some Member States (EE, EL, LT, RO and UK). In a few countries (CZ, EL, HU, IT, LT, LV, RO), expenditure on family benefits and on social exclusion and housing (EL, HU) declined.

In 2011, expenditure showed a significant decline in some countries for health and disability expenditure (DK, EL, ES, IT, PT, RO and UK), for unemployment expenditure in some Member States (DE, DK, EE, FI, LV, RO), for family expenditure in some others (LT, LU, LV, PT and RO), while pension expenditure declined significantly in EE, EL, LT, LV and increased significantly in CY, CZ, DK and PL.

Chart 8: Annual real growth of social expenditure in Europe 2001–2005, 2009, 2010 and 2011 — contribution of different functions (cont.)



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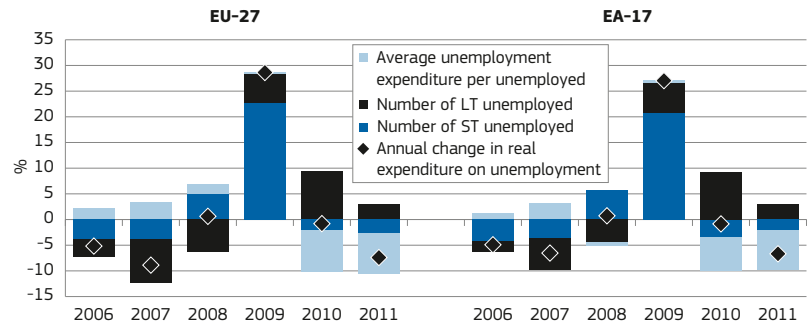
Source: ESSPROS and DG EMPL calculations.

Note: Compounded average growth rates 2001–05.

Chart 9: Contributions to the annual change in real unemployment expenditure (2006–2011) — EU-27 and EA-17



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Source: ESSPROS, LFS, DG EMPL calculations.

Note: This graph shows the annual change in real expenditure on unemployment benefits (in %) and the main factors that influence it: the average expenditure per unemployed and the number of short-term (ST) and long-term (LT, i.e. for more than one year) unemployed. The contributions of these factors are expressed in percentage points.

2.3. Trends in social expenditure: potential beneficiaries vs. expenditure levels?

This section provides a more in-depth analysis of trends until 2010 for unemployment, old-age and family expenditure ([11]), breaking down changes in total expenditure between the numbers of (total potential) beneficiaries and per (total potential) beneficiary expenditure ([12]). The number of total beneficiaries are proxied using estimates of the population that is potentially eligible for these types of expenditure (referred to as potential beneficiaries): unemployed people (for unemployment expenditure), the number of persons aged 65 and more (for pension expenditure), and people younger than 18 (for family expenditure).

Development in unemployment expenditure can be decomposed into effects of changes in the numbers of unemployed (the total number of potential beneficiaries) and changes in average per potential beneficiary expenditure (see Chart 9).

In 2009, the increase in unemployment expenditure in Europe was driven nearly exclusively by changes in the number of unemployed persons. The impact of the increase of the number of unemployed on unemployment expenditure dynamics then lessened in 2010 and 2011. In 2010 and 2011, there was a decrease in the average expenditure per unemployed. This decline in the average expenditure per unemployed person may reflect a number of factors, which can have different weights depending on countries, such as the erosion of the eligibility of unemployed people (of short-term unemployed but also of long-term unemployed people), the increase in the number of long-term unemployed people and decline of the number of short-term unemployed, as well as the impact of indexation rules in the context of the specific sequence of inflation during this crisis (see below) or also some tightening of benefit calculation rules in some countries.

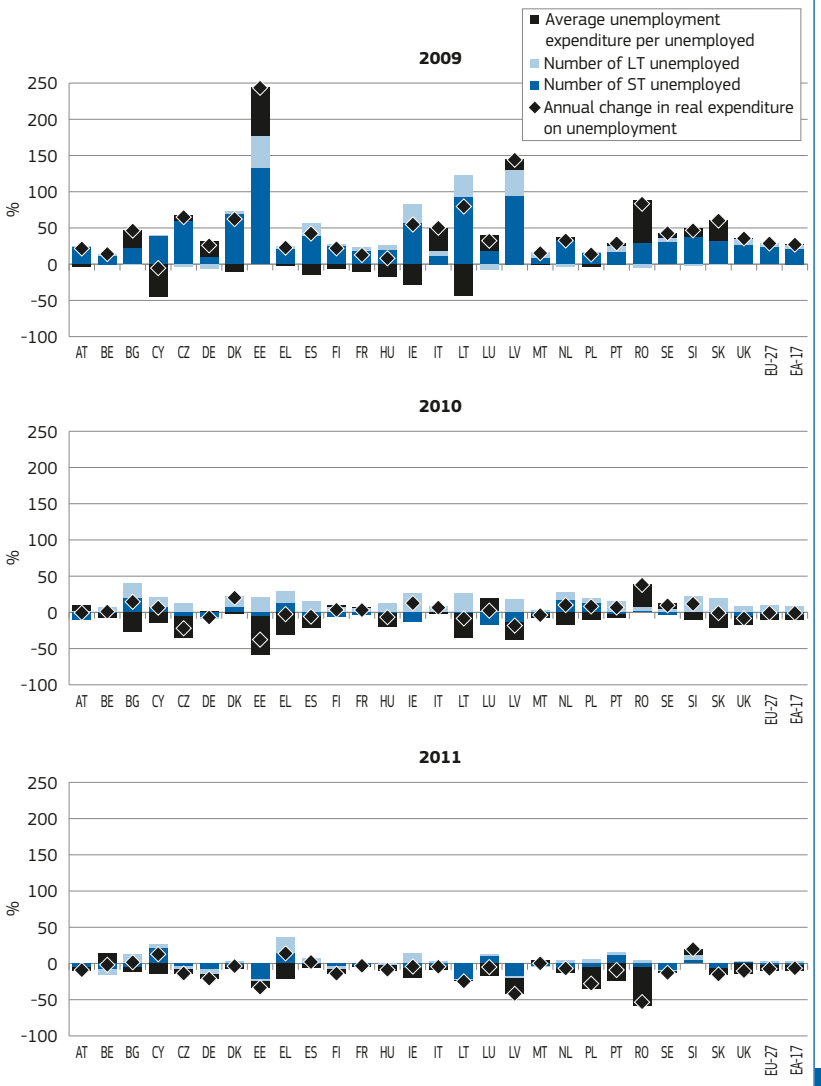
([11]) Based on ESSPROS.

([12]) It should be noted that the section refers to the number of potential beneficiaries and not the number of actual beneficiaries or of claimants. In this respect it focuses more on the overall orientation of social protection expenditure by risks or functions than on the average benefits as such.

Developments have been particularly marked in some Member States (Chart 10). In some countries, the average unemployment expenditure per unemployed also increased in 2009 (BG, EE, IT, RO and SK), though significant declines took place in CY, DK, IE and LT. In 2010, the average unemployment expenditure per unemployed person increased in only a few countries (LU, RO), while it declined on average in the EU and more significantly in countries with increases in the number of unemployed persons. In 2011, average unemployment expenditure per unemployed person declined in most Member States and, most strongly, in Romania.

As regards family and, to a lesser extent, pension expenditure, unsurprisingly, changes in expenditure dynamics have been mainly driven by changes in the average expenditure per (potential) beneficiary (population aged under 18 and older than 65 respectively). It is however striking that the acceleration in expenditure growth in 2009 was strong for both types of expenditure. This reflects the price indexation mechanisms usually attached to these benefits, which generally work with a lag of one year (inflation from year N-1 is used to index benefits in year N). Indeed, the relative high inflation observed in 2008 was only translated into benefit levels in 2009, where inflation was in general relatively low ([13]). This design of indexation mechanisms with a lag of one year, together with the specific sequence of indexation over 2008–11 translated into an acceleration of the real growth of benefits in 2009 and a relatively low pace of real growth in 2010 and especially in 2011, while real family expenditure actually declined in 2011.

Chart 10: Annual change in real unemployment expenditure in 2009, 2010 and 2011 — contributions



Source: ESSPROS, LFS, DG EMPL calculations.

Note: This graph shows the annual change in real expenditure on unemployment benefits (in %) and the main factors that influence it: the average benefit per unemployed and the number of short-term (ST) and long-term (LT) unemployed. The contributions of these factors are expressed in percentage points.

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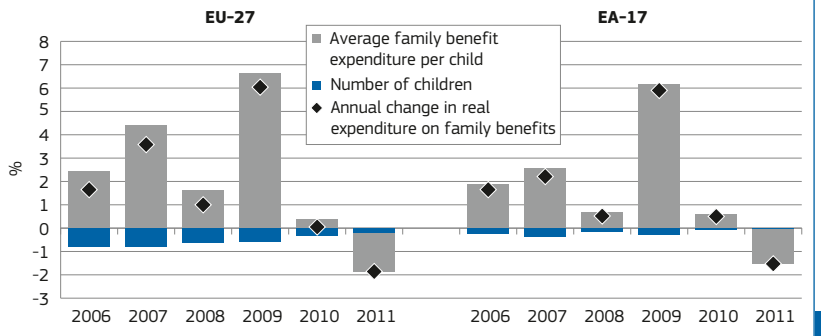
Chart 11: Annual change in real family expenditure (2006–2011) — EU-27 and EA-17



Source: ESSPROS, Demo, DG EMPL calculations.

Note: This graph shows the annual change in real expenditure on family benefits (in %) and the main factors that influence it: the average expenditure per child and the number of children. The contributions of these factors are expressed in percentage points. Children correspond to persons aged 18 and less.

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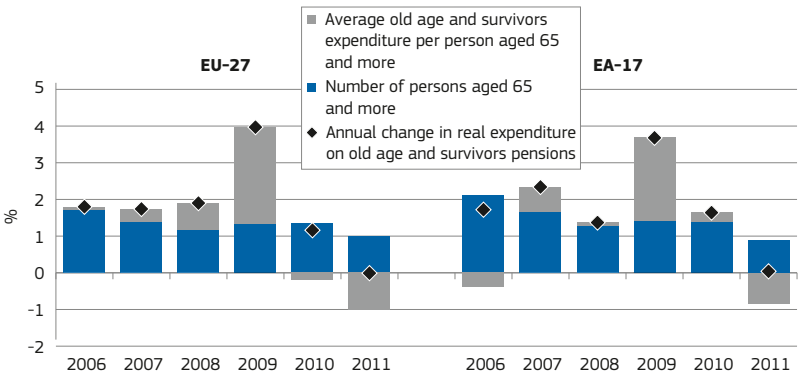
([13]) This impact can account for an increase in the growth rate of expenditure which was adjusted based on inflation of around 2 percentage points in 2009 (since inflation had been particularly strong in 2008, 3.7% for the EU, and was actually weak in 2009 at 1%), while it can contribute by around 1 percentage point to the lower growth rate observed in 2010 and 2011 (inflation further resumed in 2010 and more strongly in 2011, at 2.1% and 3.1%, respectively, for the EU). Inflation was respectively 3.3%, 0.3%, 1.6% and 2.7% for the EA-17.

Chart 12: Annual change in real pensions expenditure (2006–2011) — EU-27 and EA-17



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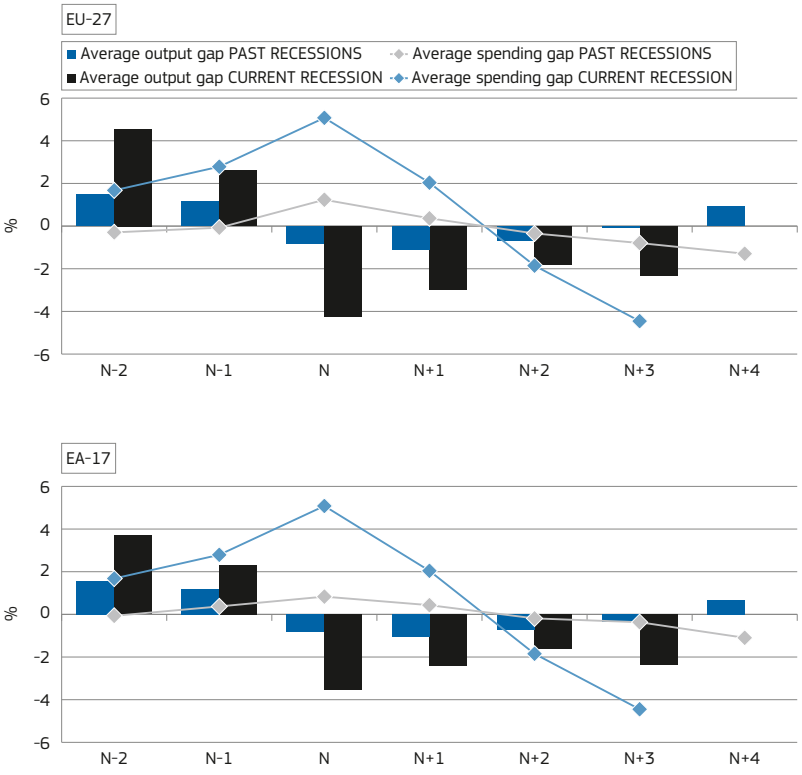
Source: ESSPROS, DG EMPL calculations.

Note: This graph shows the annual change in real expenditure on pensions (in %) and the main factors that influence it: the average expenditure per person aged 65 and more and the number of persons aged 65 and more. The contributions of these factors are expressed in percentage points. Ciem ex mantiam pra, cepotil icentemus. Postimum, que poerdis,

Chart 13: Deviations of public social expenditure and GDP from their trends in slowdown/recession periods in the EU-27 and the EA-17



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Source: National Accounts, AMECO, DG EMPL calculations.

Note: In the current crisis, N is year 2009 in most countries. In the initial year of below-par performance in the current crisis, social expenditures were around 5% above their trend in Europe, while the GDP was about 4% below its potential (output gap of -4%). Averages are unweighted country averages (since countries do not always experience a negative output gap the same year).

2.4. Weakening of the stabilisation function of social expenditures

This section reviews evidence of the evolution of the stabilisation function of social systems in this crisis and focuses first on the expenditure and secondly on the receipt side (see Box 2 on automatic stabilisers). Compared with previous episodes, the 2008–09 great recession was triggered by a financial crisis, whose unfolding led more recently to a sovereign debt crisis in a number of EU Member States, requiring budget consolidation there.

Social expenditure

The deviation from trends in social protection expenditure following the initial phase of the Great Recession of 2008–09 and subsequent years of recovery (2010) and slow (2011) or negative growth (2012) can be compared with several past episodes in the 1990s and 2000s (Chart 13) ([14]).

In its initial year (hereafter called year N, corresponding to 2009 in most countries) the recession was much stronger in this crisis compared to past ones, as reflected by sharp falls in GDP and larger negative output gaps (around -4% on average, see Chart 14), and saw relatively higher positive deviations of social expenditure from trends (around +5). In past periods of economic downturn or recession for which information is available ([15]), the negative output gap was smaller (1–1.5%) and the positive deviation from trend social expenditure was lower (around 1%). This suggests that social expenditure reacted in the first year of this crisis slightly more strongly to economic developments than during previous episodes, for instance due to stimulus measures taken in the early phase of the crisis or due to the specific pattern of inflation in this crisis (with low inflation in year N and high inflation in year N-1 translating into higher real growth of expenditure in year N, see above).

([14]) Deviations from trend are calculated using a standard Hodrick-Prescott decomposition (see Box 2).

([15]) Year N, 1993 and 2003 in most countries and 1999 in half of the countries of the 2004 and 2007 enlargement (see Bontout and Lokajickova, 2013).

The year after the onset of the Great Recession (year N+1, corresponding to 2010 in most countries) showed a relatively faster reduction of the output gap compared to past episodes of economic slowdown or recession, together with a decline in the positive deviation of actual expenditure of social protection relative to its trend. These developments seem broadly in line with past trends with an improvement in the output gap and a reduction in the deviation of social expenditure from its trend.

Two years after the onset of the crisis (year N+2, corresponding to 2011 in most countries) the output gap showed a comparable improvement as in the year before, though it remained negative. In this context, the deviation of social protection expenditure from its trend went on reducing at a similar pace as in the preceding year (N+1) and went below its trend on average. These developments seem overall in line with past developments, but may have been slightly diverging as in former below-par periods; the adjustment of the social expenditure relative to its trend slowed in N+2, while in this crisis the downward adjustment pace appears to have been broadly constant.

Three years after the onset of the crisis (year N+3, corresponding to 2012 in most countries) the output gap worsened. However, in this context, social protection expenditure further declined compared to their trend, at broadly the same pace as in previous years. These developments seem to be diverging from past trends, since a deterioration in the output gap was usually accompanied by an upwards deviation of social protection expenditure from its trend, while in this second phase of the crisis, it continued adjusting downwards at a comparable pace as in former years. This profile of social protection expenditure in year N+3 provides an indication that social protection expenditures have been pro-cyclical in 2012([16]).

([16]) These developments appear to have happened in various Member States all around Europe (see Bontout and Lokajickova 2013), and notably in Southern euro area Member States, as well as in Northern ones (though to a less significant extent, see below).

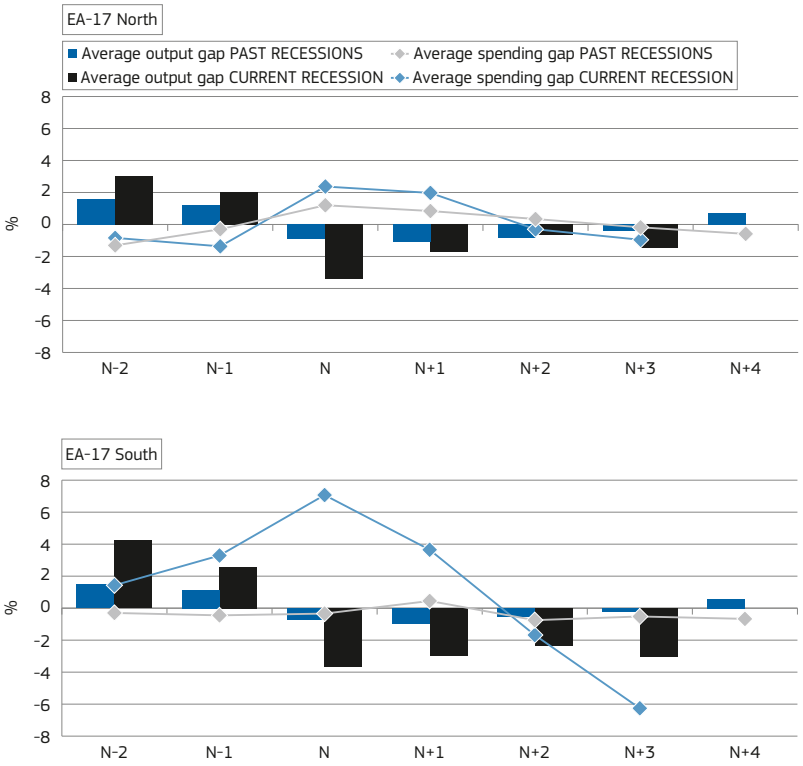
Box 1: What are automatic stabilisers?

Automatic stabilisers are usually considered as those elements of the public sector in an economy that automatically help balance the business cycle, especially in downturns. They function as a means of adjusting governmental revenues and expenditures according to the business cycle: for example, in downturns, public revenues decrease while public expenditure increases, in particular unemployment benefits or social benefits.

Automatic stabilisers are part of the fiscal and economic structure of a country and do not need any discretionary action to be taken in case of need, avoiding the delay that may occur for discretionary spending. The response by automatic stabilisers is timely and helps to directly sustain demand in the economy.

While automatic stabilisers are an established concept in the fiscal policy literature, there is no overall consensus about their actual nature and their effectiveness. Debrun *et al.* (2010) underline that fiscal stabilisation operates mainly through automatic stabilisers and suggest that more work is needed to improve measures of automatic stabilisers, particularly to better grasp the role of expenditure composition. In't Veld *et al.* (2012) argue that differences in the final assessment of the working of automatic stabilisers reflect different underlying assumptions over how the budget would look without automatic stabilisers (constant absolute revenues and spending, or constant deficit-to-GDP ratio, etc.). Estimates from the literature show that, despite different estimation methods and benchmarks used, the estimations generally lie around 10–20% (see European Commission 2013).

Chart 14: Deviation of public social expenditure and GDP from their trend in current crisis and past periods of below-par performance in the EA-17 North and South



Source: National Accounts, AMECO, DG EMPL calculations.

Note: In the current crisis, N is year 2009 in most countries. In the initial year of below-par performance in the current crisis, social expenditures were around 2% above their trend in the EA-17 North, while the GDP was nearly 4% below its potential (output gap of -4%). In the EA-17 South, social expenditures were around 7% above their trend, while GDP was nearly 4% below its potential. Averages are unweighted country averages (since countries do not always experience a negative output gap the same year).

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Box 2: Estimating the cyclical and trend component of GDP and social protection expenditures

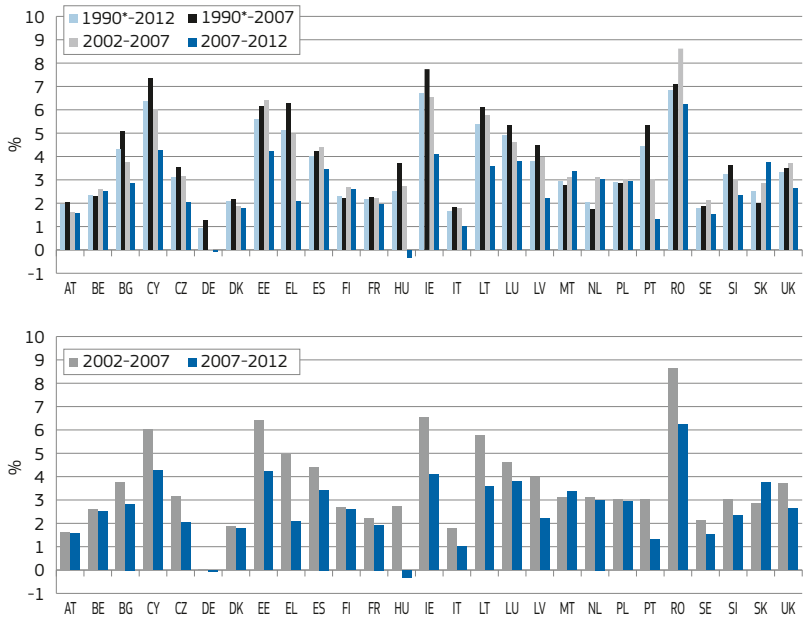
The cyclical component of social protection expenditure has been estimated as the gap between actual levels and the trend in social protection expenditure, and expressed as a percentage of the trend of social protection expenditure. The trend of social protection expenditure is estimated using the Hodrick-Prescott filter (over the period 1990–2012 or shorter periods for some Member States due to data availability issues), which is a standard method used for identifying trends and cycles in time series (like other purely statistical methods, this type of trend-cycle decomposition can be sensitive to the addition of the latest points in the series). It is based on the following formula, with y the initial series and τ the estimated trend (the standard value of λ for annual data has been used, i.e. 100):

$$\min \sum_{1}^{T} (y_t - \tau_t)^2 + \lambda \sum_{2}^{T-1} [(\tau_{t+1} - \tau_t) - (\tau_t - \tau_{t-1})]^2$$

This method produces estimates of the cyclical and trend component of social expenditure and it is useful to reflect on the developments of the trend of social expenditure in the crisis, as a complement to the analysis of the cyclical component. It appears that the growth of social expenditure trends has generally been lower over the period 2007–12 than in periods before, whether one takes a longer period as reference (1990 or earliest available to 2007), or a more recent period for the comparison (2002–07). This suggests that the downward adjustment in the cyclical components, displayed in the text, in 2012 is not the result of an acceleration of the trend since the beginning of the crisis, but that the trend itself may have actually also adjusted downwards in a number of Member States (see Chart 15).

More specifically, when comparing 2007–12 to 1990 (or earliest available)–2007, a few countries show similar growth levels to the trend (BE, DK, FR, PL, RO, SE) and some a higher level (FI, MT, NL, SK) while growth levels are lower for all other Member States. When comparing 2007–12 to 2002–07, 18 countries show similar growth levels to the trend and one a higher level (SK) while growth levels are lower for all other Member States.

Chart 15: Comparison of the growth in the trend of public social expenditure in 2007–2012 with earlier periods



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Source: National Accounts, AMECO, DG EMPL calculations.

The cyclical component of GDP corresponds to the European Commission estimates, as provided in AMECO (AVGDGP, or the gap between actual GDP and potential GDP, percentage of potential GDP). In this methodology, the potential GDP is estimated based on a Cobb-Douglas production function and not through a statistical method.

Years labelled as 'periods of below-par performance' are defined as those years when the cyclical component of GDP (or output gap) was negative, i.e. when actual GDP was below its potential. The years of below-par performance (N) in each Member State correspond to: 1991 in Finland, Sweden, Slovak Republic and United Kingdom; 1992 in Spain and Ireland; 1993 in EU-15 Member States except Denmark, Spain, Finland, Sweden and United Kingdom; 1995 in Malta; 1996 in Bulgaria, Germany and Poland; 1997 in Cyprus and Estonia; 1998 in Belgium, Czech Republic and Malta; 1999 in Hungary, Lithuania, Latvia and Romania; 2001 in Malta and Poland; 2002; Greece, Finland, Netherlands and Sweden; 2003 in Austria, Belgium, Cyprus, Germany, Denmark, Luxembourg, Malta and Portugal; 2004 in Ireland; 2005 in Greece; 2009 in all EU-27 Member States except Cyprus, Poland and Romania; 2010 in Romania.

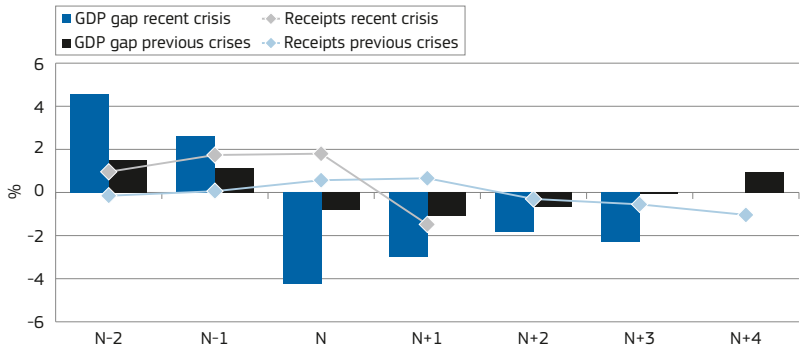
Overall, the growth in real social expenditure appeared somehow more marked in 2009 (year N) than in former recession and the developments observed in 2010 (year N+1) and 2011 (year N+2) appear broadly in line with past trends, though in 2012 (year N+3), social expenditure dynamics appear to have been pro-cyclical in comparison to past trends. As a result, in year N+3, while the output gap was negative (at around -2%), the deviation of social expenditure from its trend was also negative (at around -5%). This can be seen as a cyclical correction of social protection expenditure in this crisis, but can also partly reflect a more permanent adjustment of social expenditure growth during this crisis (since the growth pace of the trend of social expenditure has slowed down during the crisis, see Box 2). It also partly reflects the exceptional scale of the fiscal adjustment needed in the context of the euro crisis, as reflected notably by a more persistent contraction of GDP and a context of reduced fiscal space.

It can be noted that while developments in years N+2 and N+3 do not substantially differ in the EA-17 and EU-27 on average, while in both Southern and Northern EA countries social protection played a strong role in economic stabilisation in year N, the downwards adjustment of social protection expenditure in N+2 and N+3 appears to have been lower in Northern EA-17 Member States than in Southern ones (see Chart 14). In the pre-crisis phase however, expenditure was above its trend in Southern EA-17 Member States (probably reflecting a catching-up trend), and below it in Northern ones.

Social receipts

Furthermore, in this crisis, up to 2010 (as estimated based on ESSPROS) the gap in social protection receipts reacted to a comparable extent in year N, with no significant additional stabilisation impact compared to previous episodes of below-par economic performance. However, the reduction observed in N+1 appears stronger than usual in past episodes of below-par economic performance (Chart 16), which reinforced the stabilisation impact through receipts in year N+1 (compared to previous episodes of below-par growth) since they fell below their trend to a greater extent than usual.

Chart 16: Deviation of social protection receipts and GDP from their trend in current crisis and past periods of below-par performance in the EU-27



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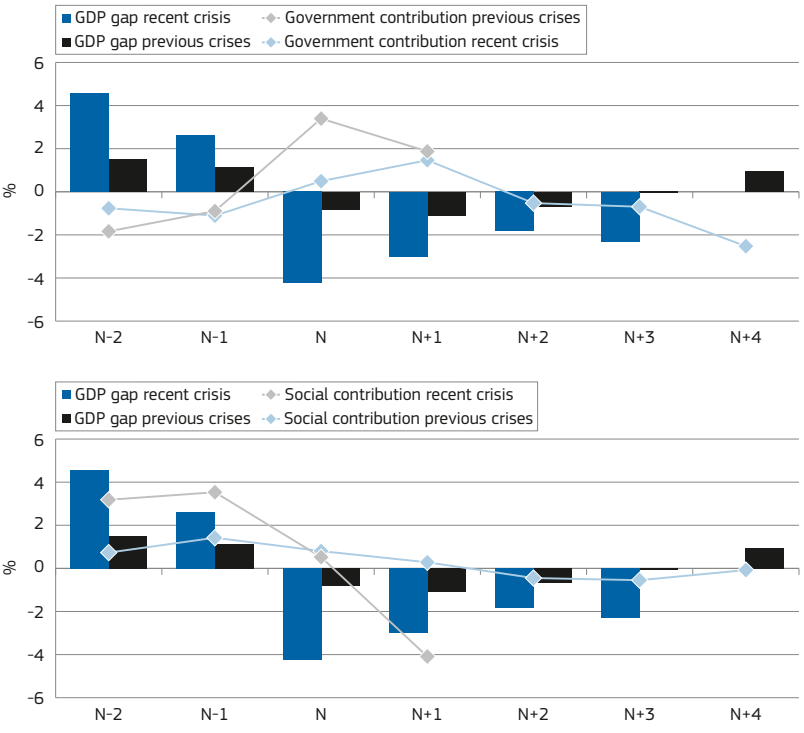
Source: ESSPROS, AMECO, DG EMPL calculations.

Note: Averages are unweighted country averages (since countries do not always experience a negative output gap the same year).

Chart 17: Deviation of receipts and GDP from their trend in current crisis and past periods of below-par performance in the EU-27 general government and social contributions



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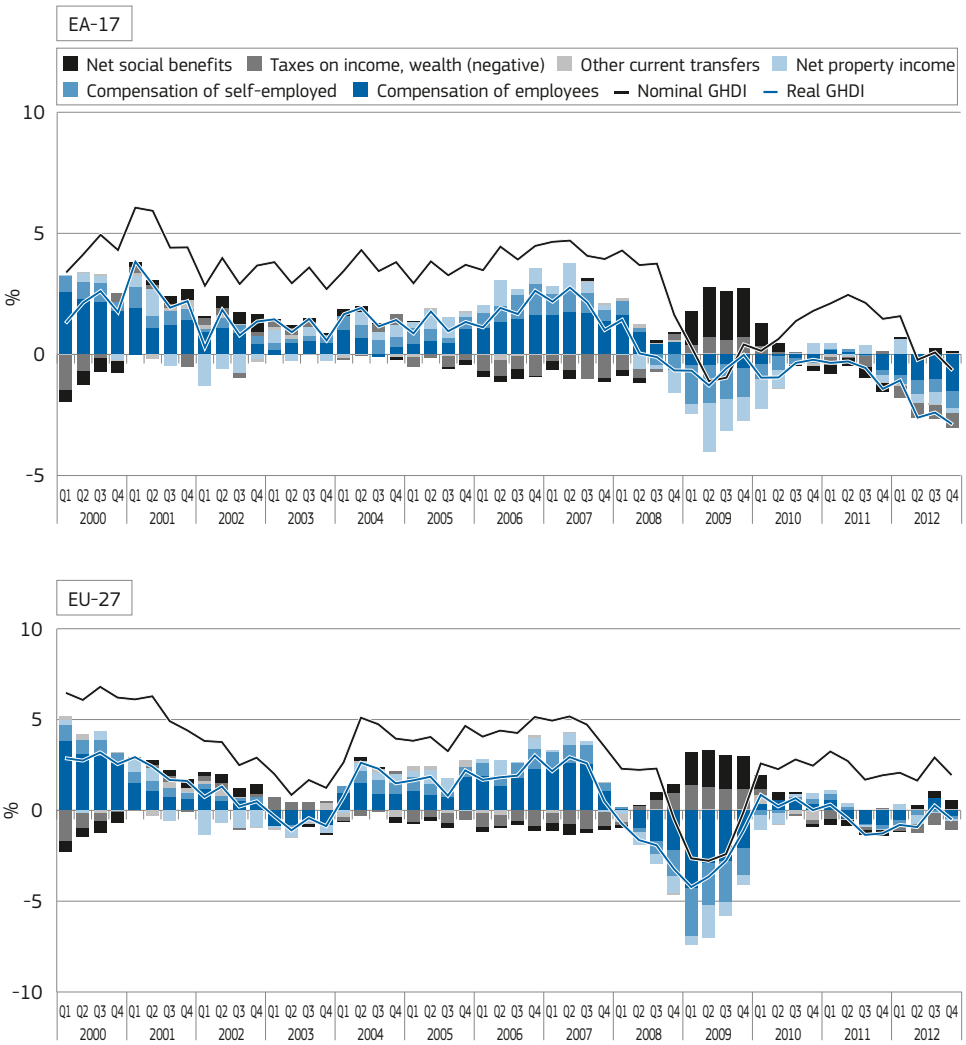
Source: ESSPROS, AMECO, DG EMPL calculations.

Note: Averages are unweighted country averages (since countries do not always experience a negative output gap the same year).

Chart 18: **Breakdown of real GHDI growth into its main components for the EA-17 and EU-27 (2000–2012)**



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Source: National Accounts.

Note: GHDI year-on-year changes (expressed in percentage) and contributions of the various components to this change.

This stronger impact in N+1, is mainly linked to social contributions (Chart 17) but also somehow to general government contributions (though their stabilising impact in year N appears lower than usual).

2.5. Developments of households incomes

The analysis of the components of Gross Household Disposable Income (GHDI) shows that while social benefits clearly played their role of sustaining households' incomes in the early phase of the crisis in the EA and EU, their contribution to households' incomes lessened after mid-2010, in particular in the euro area (Chart 18, see detailed charts on quarterly data per Member State in the Annex).

Jenkins *et al.* (2011) have looked at the impact of the 2008–09 crisis on household income and concluded that although GDP fell, gross household disposable income rose in most Member States between 2007 and 2009. In effect, the household sector was protected from the impact of the downturn by additional support of governments through their tax and benefit system. In this Section, the same type of analysis is performed for three periods: 2007–09, 2009–11 and 2011–12 with a special focus on the role of social transfers.

Table 1 shows the role of the tax-benefit system during the first part of the crisis, driven mostly by the working of automatic stabilisers and fiscal stimulus, and also in the three years afterwards, when negative developments in social expenditure were taking place in many countries (see the Annex for detailed data on quarterly development in some Member States). The table is split in three parts: 2007–09 and 2009–11 and 2011–12 to allow for identifying the developments in the latest year available. The first columns show how GHDI changed in these three periods, while the following ones show separately the role played by social transfers and taxes respectively.

In the first period of the crisis in some EU Member States the real GHDI dropped (e.g. in Latvia, Estonia and Hungary) while in others it kept rising (e.g. Bulgaria, Romania, Slovakia, Poland, Cyprus). In the period 2007–09, the tax-benefit system had a positive impact on GHDI in all Member States. On average, the positive effect of social transfers was three times higher than

the effect of taxes ([17]). Social transfers raised GHDI throughout the EU (particularly in Bulgaria, the Baltic States, Ireland and Romania), while taxes also contributed positively to the GHDI, except in Portugal, Luxembourg, Greece, Slovenia, Romania and the Netherlands.

In the period 2009–11, in a context of relatively weak recovery, the total impact of changed tax and benefit levels on the GHDI was mixed: in eleven Member States it contributed negatively to the change in GHDI. Among these countries, in Germany and Sweden the GHDI increased in spite of this. In other countries such as Estonia and the Czech Republic, the GHDI would have decreased even without the negative influence of the tax-benefit system. Looking at the effect of social transfers and taxes separately, in this period on average in the EU the effect of social transfers was only slightly higher than that of taxes (which was null). While the positive effect of benefits was the highest in Denmark, Cyprus, Ireland and Slovenia, social transfers decreased significantly both in countries which acknowledged economic recovery (such as Germany, Estonia or Lithuania), but also in some where economic growth was weak (such as in Romania) or negative (such as Greece).

In the period 2011–12, while the economic situation was actually deteriorating in many countries, the impact of the tax-benefit system on GHDI was actually mixed: in ten Member States (where data is available) it contributed negatively to the change in GHDI. Looking at the effect of social transfers and taxes separately, the contribution was negative in seven Member States (where data is available). While the positive effect of transfers was the highest in Latvia, Spain and the UK, social transfers decreased the most in some countries where economic growth was positive (Estonia) or negative (Greece, the Netherlands and Slovenia).

Table 1: Impact of social transfers and taxes on GHDI in 2007–2012

	2007–09			2009–11			2011–12		
	Actual change	Contribution of		Actual change	Contribution of		Actual change	Contribution of	
		social transfers	taxes		social transfers	taxes		social transfers	taxes
BG*	8.6%	4.3%	0.2%	-0.8%	0.4%	0.1%	n.a.	n.a.	n.a.
LV	-7.3%	3.9%	2.0%	-1.5%	-2.1%	-0.6%	5.4%	4.0%	-0.8%
EE	-4.1%	3.6%	1.5%	-2.2%	-1.1%	-0.1%	1.3%	-1.8%	0.0%
IE	-1.4%	2.7%	2.1%	-3.4%	1.0%	-1.2%	4.9%	2.3%	-1.2%
RO*	4.1%	2.6%	-0.4%	-4.9%	-2.0%	0.0%	n.a.	n.a.	n.a.
LT*	-2.7%	2.6%	2.7%	-1.3%	-1.0%	0.1%	n.a.	n.a.	n.a.
ES	1.7%	2.4%	1.0%	-4.1%	0.5%	-0.1%	-5.1%	1.3%	0.1%
SE	2.1%	2.3%	1.8%	2.3%	-0.4%	0.0%	2.7%	0.3%	-0.5%
CZ	1.7%	2.3%	0.7%	-1.3%	-0.4%	0.0%	-1.0%	0.2%	0.1%
UK	0.6%	2.1%	0.8%	0.0%	-0.4%	0.4%	1.9%	1.1%	0.7%
EL	-1.5%	2.1%	-0.2%	-10.1%	-0.8%	0.7%	-11.0%	-1.0%	-1.0%
LU*	4.4%	1.8%	-0.6%	-0.7%	-0.4%	-1.0%	n.a.	n.a.	n.a.
FI	1.7%	1.7%	0.8%	1.4%	0.4%	-0.1%	-0.2%	0.4%	0.0%
DK	0.6%	1.6%	0.4%	1.2%	2.3%	-0.1%	-0.8%	1.1%	-0.4%
NL	-1.7%	1.3%	-1.0%	-0.2%	0.1%	0.4%	-3.6%	-1.7%	1.3%
PT	1.1%	1.1%	-0.1%	-1.6%	0.1%	-0.2%	-3.6%	0.8%	0.8%
BE	1.5%	0.9%	0.4%	-1.3%	0.0%	-0.5%	-0.3%	0.1%	0.0%
SK	3.0%	0.8%	0.4%	1.1%	0.3%	-0.1%	-2.0%	0.0%	-0.1%
FR	0.3%	0.8%	0.2%	0.3%	0.1%	-0.3%	-0.7%	0.4%	-0.9%
IT	-2.5%	0.8%	0.2%	-0.7%	0.1%	0.1%	-5.1%	0.3%	-0.4%
HU	-3.2%	0.7%	0.3%	0.0%	0.5%	2.1%	-3.7%	0.0%	-0.4%
AT	0.1%	0.6%	0.2%	-0.6%	-0.2%	-0.1%	1.6%	-0.3%	-0.6%
SI	0.7%	0.6%	-0.2%	-0.8%	0.9%	0.2%	-4.4%	-0.6%	0.1%
PL	3.6%	0.5%	0.2%	1.5%	0.1%	0.0%	0.3%	1.2%	-0.2%
DE	-0.3%	0.5%	0.0%	1.3%	-0.9%	0.1%	0.1%	-0.3%	-0.9%
CY	2.8%	0.3%	0.2%	-1.5%	0.7%	-0.5%	-7.6%	-0.4%	0.2%
EU-27*	-2.5%	1.0%	0.8%	0.0%	-0.1%	0.0%	n.a.	n.a.	n.a.
EA-17*	-0.4%	1.0%	0.2%	-0.4%	-0.1%	0.0%	n.a.	n.a.	n.a.

Source: National Accounts, DG EMPL calculations.

Note: * Data is only available until 2011. Actual change in GHDI: GHDI in the last year of the given period is compared with GHDI in the first year of the given period (change is expressed in percentage). Contribution of social transfers to change in GHDI: the change in social transfers between the first and last year of the given period is calculated and its contribution to GHDI change is computed. Contribution of taxes to change in GHDI: the change in taxes between the first and last year of the given period is calculated and its contribution to GHDI change is computed. Countries are sorted based on the importance of the contribution of social transfers on GHDI change in 2007–09.

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([17]) A micro-simulation study in Dolls (2012) confirms that social transfers had a key role for stabilization of income in the EU.

3. Effectiveness and efficiency of social protection spending in the crisis

Both the analysis of the orientation of social protection expenditure across its main functions (old age and survivors, health and disability, unemployment, family and social exclusion and housing) and the analysis of effectiveness and efficiency of social protection expenditure in a stylised framework allow for a discussion of whether social expenditure developments in the first part of the crisis (2007–10) have been oriented towards functions with relatively higher (vs. lower) initial spending levels and/or higher (vs. lower) performance (as reflected by the stylised framework used).

3.1. A stylised framework for measuring effectiveness and efficiency of social protection spending

A stylised framework for the measurement of the effectiveness and efficiency of social protection expenditure allows for an assessment of how much Member States depart from the EU average, for various key outcomes per main social protection function, in relation to their expenditure patterns. For this purpose, five key functions are considered (regrouping ESSPROS functions): old age and survivors; sickness/healthcare and disability; unemployment; family/children; social exclusion and housing. This allows for comparing the performance of systems and assessing potential differences in efficiency, when putting in relation their performance with the relative expenditure levels.

While acknowledging that this does not provide for an extensive discussion of the channels enabling effectiveness or efficiency to be achieved, this framework allows for the identification of better performing Member States and of potential inefficiencies in a consistent manner. This approach helps identify the main policy challenges, which for further in-depth analysis should be complemented by additional comparisons and analysis related to the specificities of the issues dealt with and by related country-specific evidence. Such a framework is similar to the one developed by Joumard *et al.* (2010), where the focus is put on health expenditure (and the overall performance is also reflected through a DEA analysis) or by Lefebvre and Pestieau (2012) when they focus on specific functions of the welfare states ([18]).

The effectiveness of welfare systems can be defined as the achievement of social outcomes, which in turn implies identifying the relevant outcomes or objectives. In the EU context, common objectives are the Europe 2020 targets for employment and poverty and exclusion, as well as those relating to the Open Method of Coordination (OMC). Key related outcomes can be identified through the adopted Europe 2020 targets and related indicators (employment rates and at-risk-of-poverty and exclusion rate), as well as through available monitoring frameworks. As a consequence, poverty outcomes (such as reflected by indicators of poverty rates and poverty reduction) as well as employment outcomes appear of key importance to assess effectiveness of social protection systems in the European context. Other dimensions of social protection systems also need to be taken into account, such as the function of income smoothing (particularly in relation to pension and unemployment expenditures) as well as employment friendliness (notably measured by employment incentives, but also childcare access), as well as health outcomes and housing conditions. The definition of effectiveness used in this chapter relates to the general objectives of providing effective protection against social risks, covering not only protection against poverty, but also employment friendliness, as well as income smoothing in situations of weaker labour market attachment (pensions, unemployment, employment interruption due to childcare) and provision of services (or financial support for), such as health, childcare or housing. The assessment of effectiveness relies on relevant indicators, in particular agreed jointly by the Commission and the Council, which cover a wealth of related dimensions ([19]), although this chapter focuses on a restricted number of key outcomes.

Efficiency can be defined as achieving better outcomes (or objectives) at the lowest cost and with maximised positive spillovers on employment and economic growth. While other definitions are possible, this also raises a number of measurement issues (see Box 3 and the Annex). The stylised framework used here remains thus more modest about the measurement of efficiency, since it directly relates the overall (gross) expenditure levels by strand to the main outcomes.

Due to the difficulty in measuring effectiveness (see Box 3) and reflecting the multidisciplinary nature of the dimensions and their interactions, the approach followed here however does not propose any aggregate/synthetic measure of either effectiveness or efficiency, but instead focuses on five main social protection functions.

([18]) Generally speaking, efficiency is about the relation between input and output, with the objective of maximising output for a given amount of inputs or of minimising inputs for a given output, while effectiveness relates the input to the final objective (the outcome), such as welfare, growth or other priorities of public policy (see European Commission 2008). As a consequence of the diversity of objectives of social protection systems and of the related measurement difficulties (see Box 3), the approach favoured here focuses primarily on key outcomes by main social protection functions, thus mainly covering the effectiveness dimension.

([19]) Based on existing European monitoring frameworks, such as the Social Protection Performance Monitor (SPPM), the Employment Performance Monitor (EPM), or the Joint Assessment Framework (JAF), it can be noted that some dimensions can require further refinements (or are still to be covered by appropriate indicators), such as for instance coverage rates of benefits (such as, typically, unemployment benefits) or more generally issues related to the appropriate degrees of pooling of risks or moral hazard issues, as well as the determinants of the provision of services and its quality (such as, typically, in the health sector the numbers of physicians or hospital beds, or prices of pharmaceuticals, in the childcare sector the number of carers per children, or in the housing sector the way housing services are provided).

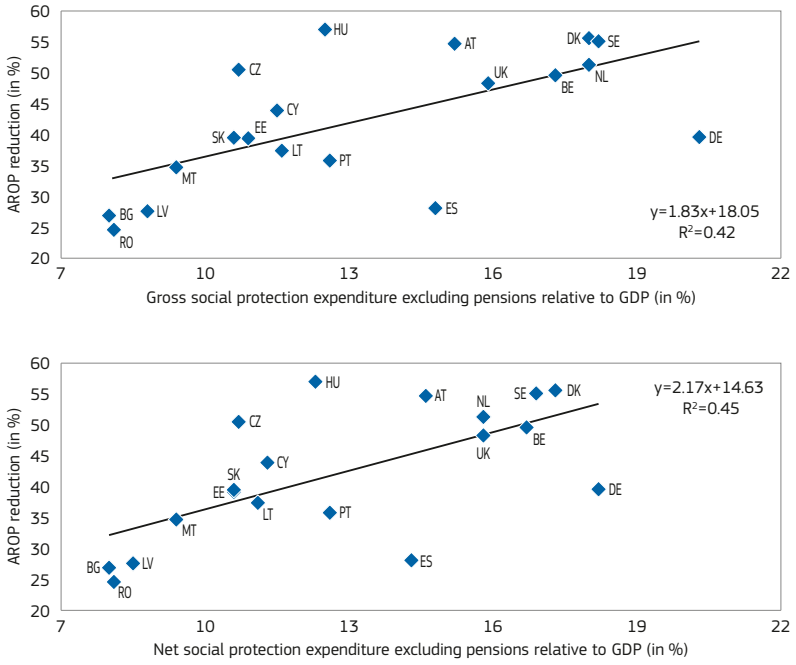
Box 3: Issues in the measurement of effectiveness and efficiency

The measurement of effectiveness and efficiency is very complex since a number of caveats need to be considered.

Firstly, an in-depth assessment of effectiveness would in principle require detailed information on the various outcomes to be considered and on the specificities of social protection systems, which can be very difficult to achieve at the national level and thus is even more challenging in a comparative perspective. For instance, in-depth approaches are often developed to assess specific national programs (such as typically in the health sector as regards the efficiency of hospitals). More generally, the distinction between output and outcome is often blurred (see for instance Afonso *et al.* 2005) even if the importance of the distinction is well recognized.

Secondly, the assessment of costs (or expenditure) is in itself difficult, since one needs in principle to take into account the net costs of expenditures; i.e. not only gross expenditures, but also net ones after taxation of benefits, which raises a number of measurement issues (see Box 6). In Chart the relationships between poverty reduction and gross and net spending are compared. From both the steepness of the trend line and the R^2 (which indicates to what extent the overall variability of data is explained by the trend line), it is clear that net expenditure allows to highlight a stronger relationship between poverty reduction and social transfers.

Chart 19: Gross and net expenditure on social protection benefits (excluding pensions, as % of GDP) and the reduction of the share of population at risk of poverty (in %) in 2009



Source: ESSPROS, EU-SILC, DG EMPL calculations.

Note: AROP reduction refers to the under 65 year-old population. Net expenditure data is not available for: IE, EL, FR, IT, LU, PL, SI. Data is provisional for: EE, PT. Left chart: trend line: y=1.83x+18.05, R2=0.42. Right chart: trend line: y=2.17x+14.63, R2=0.45.

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Thirdly, there can be trade-offs between the various dimensions, for instance income smoothing or poverty reduction need to be assessed alongside labour market friendliness. In principle, one would also need to take into account the interactions between various areas (such as family, housing and unemployment) and potential associated positive or negative spillovers.

Fourthly, not only current net expenditure should in principle be integrated in the analysis, but also net dynamic expenditure, since different types of expenditure can have different dynamic impacts on the labour market and the economy. In other words, effectiveness and efficiency may not only be assessed in cross section (for a given year), but also by taking into account their dynamic and cumulative impacts. For instance family expenditures can have positive impacts on the labour intensity of households and on the development of children. More generally, this relates to the dimension of social expenditure as an investment [1].

[1] See European Commission (2013) and Communication on the social dimension of EMU (COM(2013) 690).

Box 4: A stylised framework

The framework used builds on the one side on the analysis of standard deviations for each country along the various key dimensions identified and on the other side on factor analysis.

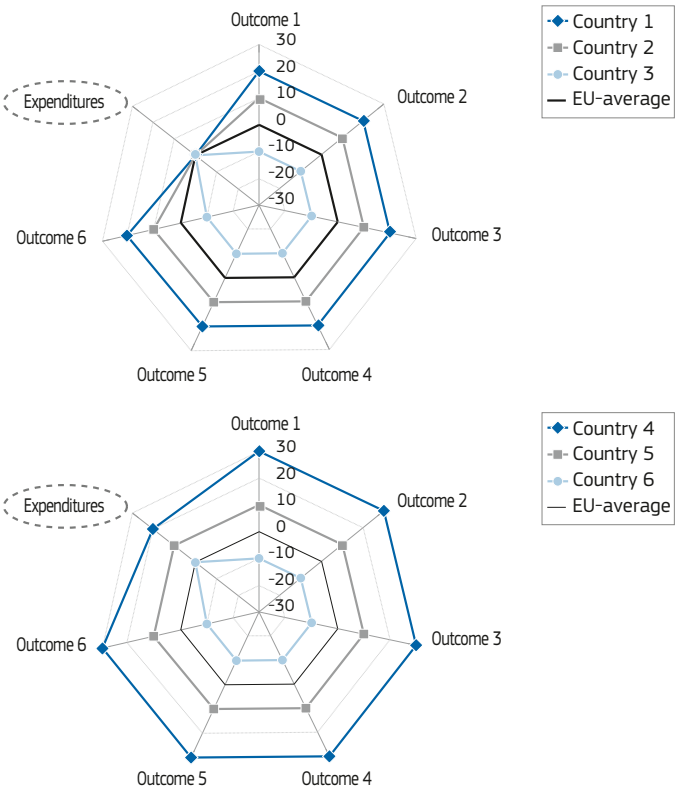
Standard deviations

Each dimension is standardised (difference to weighted mean divided by standard deviation), be it an outcome dimension (such as poverty or poverty reduction) or expenditure (such as expenditures as a share of GDP). These standardised values can then be plotted in 'radar charts' showing the deviation for each MS from the EU-27 average (for which by construction all values are at 0). In other words, if a Member State has a close to average situation along the various dimensions and a close to average spending level, its pattern will follow a perfectly geometric position (with 0 everywhere).

Conversely, if a Member State systematically performs better than the EU average, while its expenditure remains close to average, its pattern will encompass the EU average one (countries 1 and 2 in Chart 20a). On the reverse, if a Member State performs below the EU average, while its spending remains close to average, it will be encompassed by the EU pattern (country 3). In this example, countries 1 and 2 show a relative better performance for their given relative levels of expenditures, while the relative performance for the given levels of expenditures is weak in country 3. Meanwhile this method uses the EU average as a benchmark, which nevertheless does not imply that there are not some effective or efficiency gains that can be obtained on average at EU level. Furthermore, the reference to the average levels of expenditures does not need to be maintained: for instance in Chart 20b, country 5 has a similar pattern of outcomes and expenditures as the EU average, while outcomes appear more favourable for the given levels of expenditures in country 4 and less favourable in country 6.

As a result, this framework allows for illustrating more particularly potential gains in efficiency that can be obtained at constant expenditure levels, by improving performance in one dimension, without deteriorating it in another.

Chart 20: Standard patterns: EU average and asymmetries in patterns



Source: ESSPROS, EU-SILC, DG EMPL calculations.

Note: AROP reduction refers to the under 65 year-old population. Net expenditure data is not available for: IE, EL, FR, IT, LU, PL, SI. Data is provisional for: EE, PT. Left chart: trend line: y=1.83x+18.05, R2=0.42. Right chart: trend line: y=2.17x+14.63, R2=0.45.

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Grouping of Member States in radar charts

To make the radar charts more readable, EU Member States are gathered in 6 groups based on classification of social protection systems available in the literature (such as Esping-Andersen (1990), Bonoli (1997) or Korpi & Palme (1998)) and on geographic proximity. The groups of Member States used in this chapter are the following ones:

- Southern Europe: Cyprus, Greece, Italy, Malta, Portugal, Spain.
- Western Europe: Austria, Belgium, France, Germany, Luxembourg.
- Central Europe: Czech Republic, Hungary, Poland, Slovakia, Slovenia.
- Eastern Europe: Bulgaria, Estonia, Latvia, Lithuania, Romania.
- Northern Europe: Denmark, Finland, the Netherlands, Sweden.
- North-Western Europe: Ireland, the UK.

Factor analysis

As the analysis using radar charts only allows for the inclusion of limited number of dimensions or indicators, a factor analysis is performed on a broader set of variables to provide more evidence on the links between the main dimensions that may be identified.

The general purpose of factor analytic techniques is to find a way to condense (summarize) the information contained in a number of original variables into a smaller set of new, composite dimensions or *variates* (factors) with a minimum loss of information. In other words, it searches and defines some less numerous fundamental constructs or dimensions assumed to underlie the original variables. In summarizing the data, factor analysis derives underlying dimensions that, when interpreted and understood, describe the data in a much smaller number of concepts than the original individual variables (Hair *et al.*, 2006, p. 107).

Therefore, this allows applying the factor analysis on a broader set of variables than those shown in radar charts and identifying key underlying dimensions of this broader set of information. For each of the social protection areas, a table showing the correlation between the identified factors and the variables used is presented. Then, graphs where individual countries' scores are plotted are included. To make the graphs more easily readable, four groups of countries are made (for each social protection area separately) using cluster analysis (based on all factors identified, through the k-means method). Thanks to the groups created in the cluster analysis, the graphs where individual countries' scores are plotted should be more easily readable.

Box 5: Structure of social protection expenditures

Differences in the structure of expenditure are the result of not only differences in expenditure levels as such, but also reflect differences in socio-economic structures. This is particularly relevant for pension expenditure which directly benefit to older people, unemployment expenditure, which directly benefit to unemployed people and family expenditure which directly benefit to household with children expenditure. On the reverse, health and social exclusion and housing expenditure can be deemed to benefit more generally to the whole population.

As a consequence, the comparisons used for the analysis of the orientation of social protection expenditure do not necessarily rely on comparisons of shares of expenditure in GDP (or equivalently of expenditure per capita as a share of GDP per capita) and also reflect key socio-demographic differences, such as differences in pension expenditure in relation to the share of the population aged 65 and older, differences in unemployment expenditure by unemployment rate, and differences in family expenditure according to the share for the population aged 18 and younger.

- Total expenditure: the indicator used is the total expenditure per capita as a share of GDP per capita which is equivalent to the share of expenditure in GDP.
- Pensions: the indicator used is the total expenditure per population aged 65 and older as a share of GDP per capita. This may be biased since the difference between the population aged 65 and older and the one of pensioners can differ from one Member State to the other. For instance, it over-estimates the level of average expenditure, if a significant share of pensioners are aged under 65. On the reverse it allows to identify is levels of expenditures in comparison to the relative size of the elderly population, while the age of 65 actually refers to different situations, depending on Member States actual levels of life expectancy.
- Health and disability: the indicator used is the total health and disability expenditure per capita as a share of GDP per capita which is equivalent to the share of expenditure in GDP.
- Unemployment: the indicator used is the unemployment expenditure per unemployed person (according to the ILO definition) as a share of GDP per capita of population of working age
- Family: the indicator used is the total expenditure per population less than 18 and more as a share of GDP per capita.
- Social exclusion and housing: the indicator used is the total health and disability expenditure per capita as a share of GDP per capita which is equivalent to the share of expenditure in GDP.

3.2. Social protection key outcomes and spending levels in 2010

Based on the stylised framework presented in the previous section, this section reviews social protection systems along five key functions of social protection: pensions, healthcare and disability, unemployment, family, social exclusion and housing.

For most of these functions and for the year 2010, the text reviews the situation of Member States over a few key outcome dimensions in comparison to the EU average (see Box 4) and provides for a brief discussion of the main drivers generally identified in the literature. The review also includes some overall measure of inputs, which allows reflecting on the relative efficiency of national systems (such as share of expenditure in GDP or expenditure per potential beneficiary as a share of GDP per capita). For each function, this framework is complemented by providing a more in-depth analysis of the links between the key outcomes (through factor analysis), linking them to some key policy dimensions.

3.2.1. The orientation of social protection expenditures

This section analyses the orientation of social protection expenditure among Member States. It focuses on the composition of Member States' social expenditures, which differ widely in the EU (see above). This orientation of social expenditures actually reflects both socio-demographic structural factors (such as various demographic and unemployment situations) and the relative levels of expenditures by potential beneficiaries (see above and Box 5).

The focus is thus on comparing expenditure levels (taking into account all types social protection expenditure providers, for instance occupational pensions, as reflected in the ESSPROS) corrected by the size of the population which can potentially benefit most from these expenditure: typically unemployed people for unemployment expenditure or people aged 65 and older for pension expenditure and people aged under 18 for family expenditure (see Box 5).

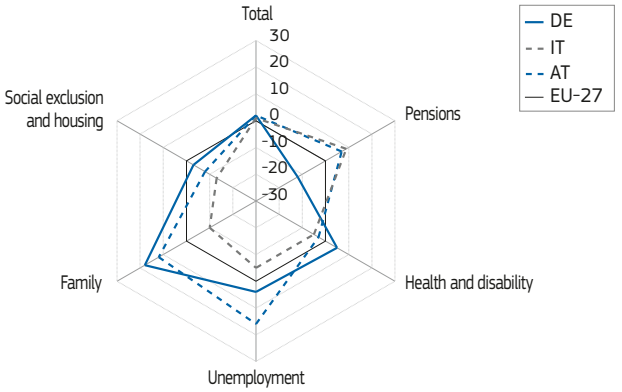
The analysis allows identifying Member States where the allocation of social expenditures is close to the EU average pattern across the various social protection functions or those where the structure of expenditures is skewed towards one or the other function. Typically a country showing higher levels for a given function, compared to the other functions for the same country, tends to spend relatively more on this function than the EU average pattern.

For instance, the orientation of social expenditure is very different in DE, IT and AT which have similar levels of expenditure (Chart 21). In DE, expenditure is more oriented towards family and less towards pensions than the EU average (and is slightly more oriented towards health and unemployment). In AT expenditure is more oriented than in the EU towards pensions, unemployment and family and less towards social exclusion and housing (with average orientation towards health), and in IT, expenditure on all functions except pensions is lower than the EU average (in particular social exclusion and housing and family expenditure).

This allows identifying countries with some potential asymmetry in the orientation of their social protection expenditures per potential beneficiary (and it is of particular interest to reflect on whether they actually achieve higher or lower outcomes than the EU average in the respective areas), or on the contrary countries showing an overall balance of their orientation of social expenditures in comparison to the EU average and given their relative overall level of expenditure (see Table 2).

- Only a few countries actually show a pattern of expenditures over functions very close to the EU average: EL, ES and FR (though with relatively, somehow low orientation on family expenditures).
- In some MSs the orientation of social expenditures appears relatively oriented towards pension expenditure: with a relatively higher orientation in CY, MT and PL (and to a lesser extent AT, IT, RO and SK), but on the contrary relatively lower one in DE and IE (and to a lesser extent BE, DK, FI, HR and SE).
- Only in a few MSs does the orientation of social expenditures appear relatively directed towards health expenditure: with a relatively higher weight in IE and HR, but also on a contrary relatively lower one in CY and IT.
- In a number of MSs the orientation of social expenditures appears relatively oriented towards family expenditure: with a relatively higher orientation in AT, BG, DE, DK, EE, HU, LT and LU (and to a lesser extent in e.g. FI, LV, RO, SI and SK). On the contrary, relatively lower orientation on this function is placed in NL and IT (and to a lower extent FR, PT and the UK).

Chart 21: Orientation of social expenditure in 2010 in DE, IT and AT



Source: See Box 5, DG EMPL calculations.

Notes: Pensions for old-age and survivor expenditure.
Expenditure refers to expenditure per capita as a share of GDP per capita for total expenditure, health expenditure and social exclusion and housing expenditure; for pensions, it refers to old age and survivors expenditure per population aged 65 and older, as a share of GDP per capita; for family, it refers to family expenditure per population aged 18 and younger, as a share of GDP per capita; for unemployment, it refers to unemployment expenditure per unemployed, as a share of GDP per population of working age.

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- In some MSs the orientation of social expenditures appears relatively directed towards unemployment expenditure: with a relatively higher orientation in AT, BE and LU (and to a lesser extent e.g. CY, CZ, NL and RO), but also on the contrary with a slightly lower one in IT, SE and the UK.

- In some MSs the orientation of social expenditures appears relatively directed towards social exclusion and housing expenditure: with a relatively higher orientation in CY, LT, NL and the UK (and to a lesser extent e.g. in RO, SK). On the contrary, relatively lower orientation in IT and AT.

Chart 22 shows the performance of all EU Member States. In Southern Europe, the expenditure structure is often skewed towards pensions (e.g. in IT or MT), with relatively low orientation of expenditures on social exclusion and housing or family functions. In Western Europe, the expenditure structure shows a quite strong orientation of expenditures on family and unemployment functions, e.g. in AT, with a high heterogeneity of orientation of expenditures on pensions. In Central Europe, the expenditure structure shows a quite strong orientation of expenditures on family and health and disability (e.g. in SI), while in Eastern Europe, it is often oriented towards family (e.g. in EE). In Northern and North-Western Europe, the orientation of social expenditures appears relatively more oriented towards health, family, unemployment and social exclusion than towards pensions. In other words, in these countries, pension expenditure often looks relatively low in comparison to the levels of spending on other functions.

Table 2: Orientation of social protection expenditure in 2010

... towards	Sign and strength of orientation of social expenditures...				
	Negative		Balanced	Positive	
	Strong	Mild		Mild	Strong
Old age and survivors	DE, IE	BE, DK, FI, HR, SE	All others	AT, IT, RO, SK	MT, CY, PL
Health and disability		IT, CY	All others	NL	IE, HR
Unemployment		IT, SE, UK	All others	CY, CZ, FI, IE, LV, MT, NL, RO, SK	AT, BE, LU
Family	IT, NL	FR, PT, UK	All others	CY, FI, IE, LV, RO, SE, SI, SK	AT, BG, DE, DK, EE, HU, LT, LU
Social exclusion and housing	AT, IT	PT	All others	BG, LU, LV, MT, RO, SK	CY, LT, NL, UK

Source: DG EMPL.

Note: The orientation of social expenditure towards a risk is assessed by comparing the standard deviation of expenditure by potential beneficiary for the given risk (for instance population aged 65 and older for pensions) to the standard deviation of total expenditure per capita. A mild orientation corresponds to a difference higher than half the reduced standard deviation and a strong orientation to a difference of at least one reduced standard deviation.

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Chart 22: Orientation of social expenditure in 2010 in EU

Southern Europe

Western Europe

Source: See Box 5, DG EMPL calculations.

Note: Pensions for old-age and survivor expenditure.

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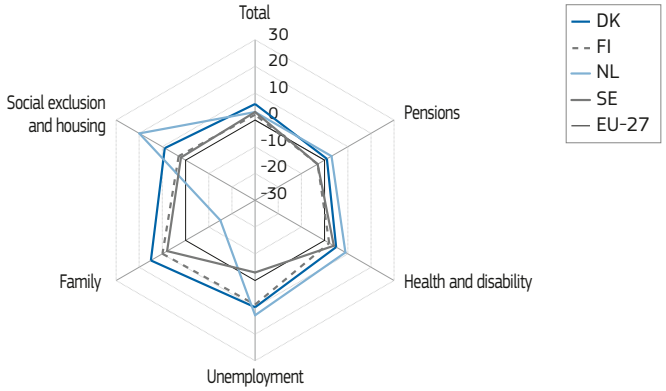
Chart 22: Orientation of social expenditure in 2010 in EU

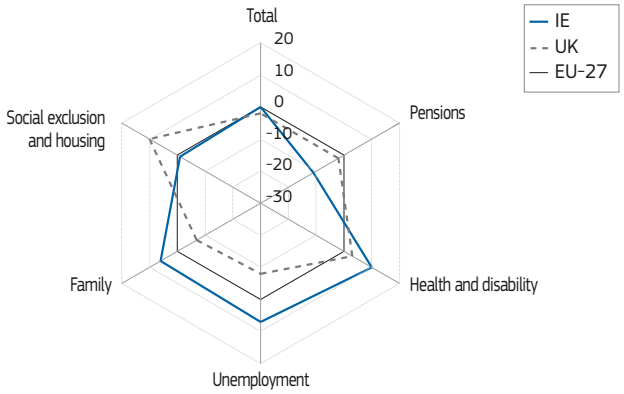
Central Europe

Eastern Europe

Northern Europe



North-Western Europe



Source: See Box 5, DG EMPL calculations.

Note: Pensions for old-age and survivor expenditure.

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3.2.2. Pensions

As reflected in the Open Method of Coordination in the field of pensions ([20]), the main objectives of pension systems (including here old-age pensions and survivors pensions) are to ensure adequate pensions (as regards both overall incomes of older people, but also replacement or poverty rates of older people), but also sustainable pensions (as reflected notably by the employment rate of older workers and projected trends in expenditures levels) and to modernise pension systems (notably to reflect on changing socio-economic trends such as gender aspects).

The main outcomes considered in this section relate thus on the one side to the adequacy of pensions (relative incomes of older people, aggregate replacement rate and poverty rates with a gender breakdown to reflect on the specificities of the situation of older women often more exposed to poverty risk) and on the other side to the labour market situation of older workers (employment and unemployment rates), which directly relates to the sustainability of pensions, while it can be noted that the usual gradual implementation of pension reforms implies a lag to observe their impact on outcomes such as typically employment of older workers. These outcomes are considered together with the level of pension expenditure per population aged 65, as a share of GDP per capita (see Box 6). For instance, IT had relatively high expenditure levels in 2010 and slightly better adequacy than average, though it experienced relatively low integration of older workers in the labour market (Chart 23).

([20]) See notably Pension Adequacy in the European Union 2010–50 (2012), Report prepared jointly by the Directorate-General for Employment, Social Affairs and Inclusion of the European Commission and the Social Protection Committee.

Box 6: Pensions — variables used

This section focuses on a selection of six key outcome indicators to measure the performance of pension systems (the long-term trends are not reflected in the choice of indicators, notably demographic trends, sustainability and adequacy ones, since the focus is on current outcomes):

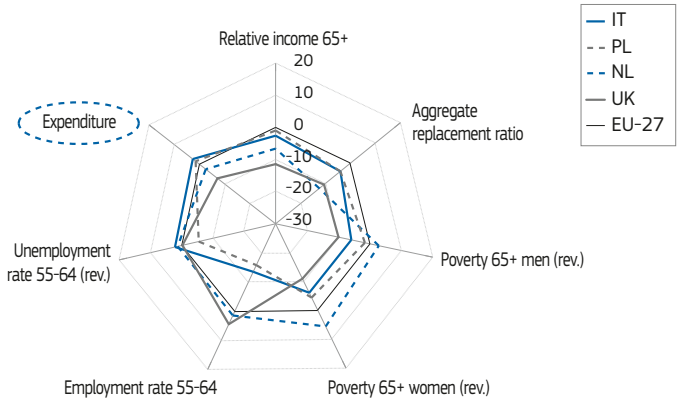
- Relative income of people aged more than 65: the indicator is the ratio between the median equalised disposable income of persons aged 65 or over and the median equalised disposable income of persons aged between 0 and 64. It provides an indication on the overall standards of living of older people.
- Aggregate replacement ratio: the indicator is the ratio of the median individual gross pensions (including all types of pensions) of people in the 65–74 age category, relative to the median individual gross earnings of people in the 50–59 age category (excluding other social benefits). This indicator complements the former one by providing information on the specific impact of pension benefits on the smoothing of incomes over the life-cycle.
- Gender breakdown of the poverty rate among the population aged 65 and older (with a threshold at 60% of the median income). This third indicator provides an indication of the adequacy of incomes in the lower end of the income distribution, while the gender breakdown enables to identify the specific situation of women who generally acknowledge a higher poverty risk in older ages.
- Employment rate for the population aged 55–64: employment rate of those aged 55-64. The employment rate of older workers provides an indication on the overall labour market integration of older workers and thus on the sustainability of pensions, since this reflects the financing base for pension systems and the levels of effective age of exit from the labour market.
- Unemployment rate for the population aged 55–64: unemployment rate of those aged 55–64. The unemployment rate of older workers provides an indication of the labour market developments and of the potential difficulties of access to employment of older workers.
- Expenditure: gross expenditure on ESSPROS functions on old age and survivors (including statutory pensions and occupational pensions) per population aged 65+, relative to GDP per capita.

To reflect on a number of additional dimensions, a number of additional indicators are used in the factor analysis (see Box 10).

Member States can show an asymmetry between their relative performance on adequacy and labour market integration of older people, both in relation to their given levels of expenditures (Chart 24):

- In some MSs, such as FR or PL, the relatively better performance in terms of adequacy, given their relative levels of expenditures, does not seem to be echoed by an as good performance in terms of integration of older workers. In these countries, a key challenge appears to be related to the labour market integration of older workers (in particular in countries where social expenditure is oriented towards pensions, as in MT and PL).

Chart 23: Pensions in 2010 in IT, NL, PL and UK



Source: See Box 6, DG EMPL calculations.

Note: Expenditure refers to the ratio of expenditure for old age and survivors per person aged 65 divided by GDP per capita.

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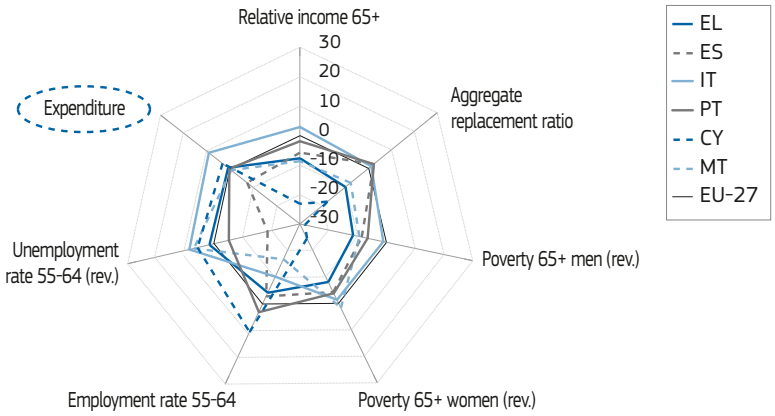
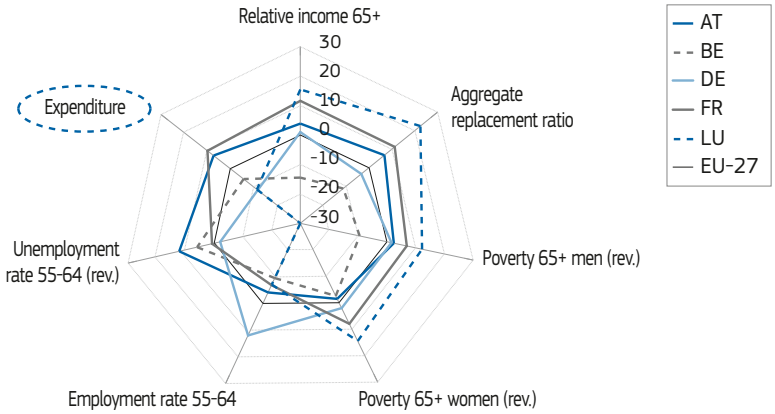
Chart 24: Old age and survivors — key outcomes and expenditure in 2010

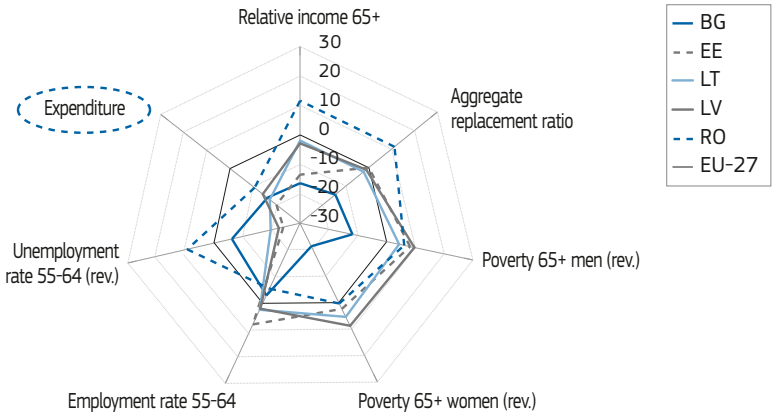
Southern Europe



Western Europe



Central Europe



Source: See Box 6, DG EMPL calculations.

Note: Expenditure refers to the ratio of expenditure per person aged 65 divided by GDP per capita.

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- Conversely, in some other MSs, such as DK or SE, the employment situation of older workers seems to be performing relatively better than the one of the adequacy of pensions (BE, BG, CY, DK, EL, FI, SE, SI, UK), given their relative levels of expenditure. In these countries, a key challenge appears to be related to the adequacy of pensions, in particular for countries where social expenditures are more oriented towards pensions (positively in CY, negatively in FI and SE).

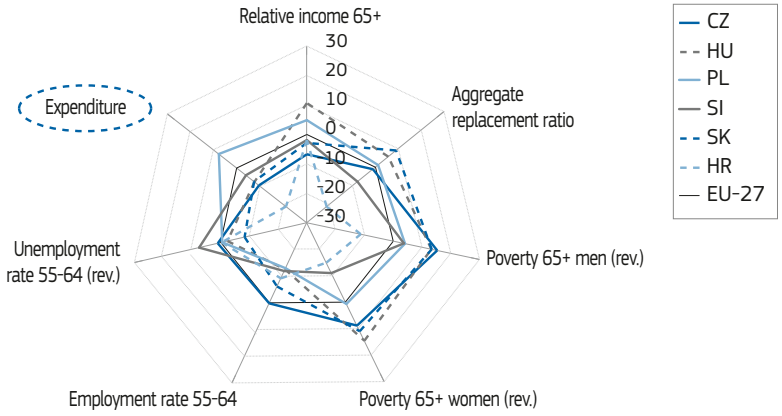
- In a few MSs, both the performance in terms of adequacy of pensions and labour market integration of older workers appears to be relatively strong, for their given levels of expenditures, which can actually reflect relatively low levels of expenditure (such as in DE, IE, HR).

- In two Member States, IT and MT, both adequacy and labour market performance appear relatively low for the given expenditure levels, which clearly relates to a serious weakness in the labour market integration of older workers.

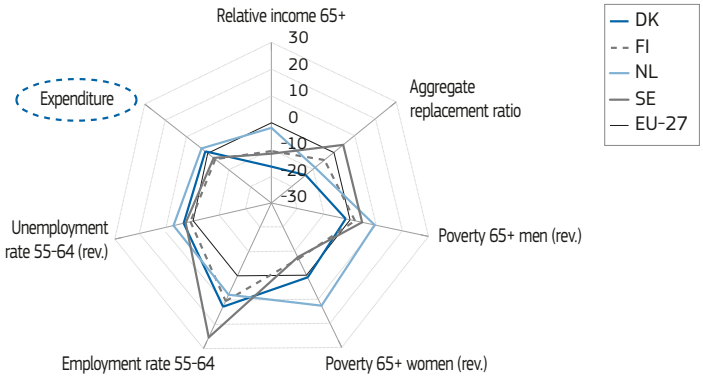
- Finally, in three Member States, ES, NL and PT, both the adequacy and employment records seem to be relatively close to the EU average, given their relative levels of expenditure.

Chart 24: Old age and survivors — key outcomes and expenditure in 2010

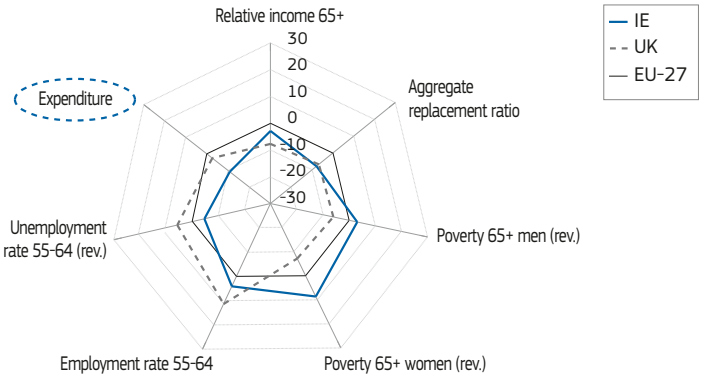
Eastern Europe



Northern Europe



North-Western Europe



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Source: See Box 6, DG EMPL calculations.

Note: Expenditure refers to the ratio of expenditure per person aged 65 divided by GDP per capita.

Factor analysis allows operating with a broader set of variables to reflect on Member States performances. The factor analysis identifies three main dimensions in the Member States performance for pensions, which reflect the key indicators taken into account in the analysis presented above (see Box 7 and more detailed results are in the Annex).

- Factor 1 reflects the good performance on the labour market for the elderly. It links a longer length of working life with higher employment of older people (aged 55–59 and 60–64) and lower inactivity rate of older people. This is positively associated with the share of older people that are in life-long learning.

- Factor 2 reflects the adequacy of pensions for older people: higher at-risk-of-poverty rate is linked with a lower aggregate replacement ratio (especially in the case of women) and lower relative income.

- Factor 3 reflects another aspect of the Member States' labour market performance, lower unemployment rate being linked with higher part-time employment for population aged 55–64.

Box 7: Pensions — factor analysis

A number of additional indicators are taken into account in the factor analysis, to allow reflecting on a broader set of interactions. In particular, a gender dimension is used for both the aggregate replacement ratio and for the at-risk-of-poverty rate, employment rate is broken down in two age groups (55–59 and 60–64) and part-time employment and inactivity rate of those aged 55–64 are added. The average duration of working life, and the share of people aged 55–64 in life-long learning are also used. To take into account the conditionality of benefits, the share of means-tested benefits on pensions is added.

Table 3: Pensions: results of factor analysis

Variable	Factor1: employment and life-long learning	Factor2: poverty and income	Factor3: unemployment and part-time employment
relative income	-0.44	**-0.73**	0.19
aggregate replacement rate (men)	-0.21	**-0.63**	0.15
aggregate replacement rate (women)	0.06	**-0.80**	-0.18
AROP (men 65+)	-0.09	**0.88**	0.05
AROP (women 65+)	0.04	**0.88**	0.05
working life	**0.91**	0.15	0.19
employment rate 55-59	**0.94**	0.01	0.07
employment rate 60-64	**0.89**	0.27	-0.11
part-time employment 55-64	0.49	-0.07	**0.66**
unemployment rate 55-64	0.15	-0.15	**-0.91**
inactivity rate 55-64	**-0.95**	-0.03	0.26
life long learning 55-64	**0.67**	0.13	0.34
share of means-tested benefits	0.08	0.20	0.06

Source: DG EMPL calculations.

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To show how Member States perform in the identified areas, Charts 25 and 26 show plots of the area linked to poverty and income against employment and life-long learning, and unemployment and part-time employment. To improve the clarity of the graphs, 4 clusters of countries were created based on all 3 areas of performance.

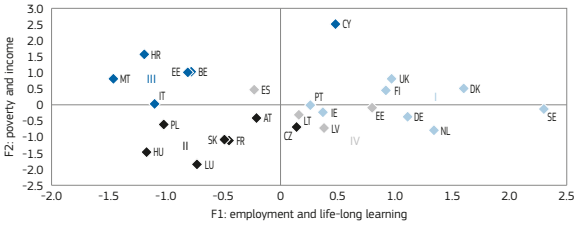
Countries in Group I (DE, DK, FI, IE, NL, PT, SE, UK) have mixed performance in terms of poverty and income, in spite of their good performance in the area of employment and life-long learning (Chart 25) and generally good performance as regards part-time employment and unemployment (Chart 26). It confirms that for a number of these countries, the better labour market performance of the elderly does not translate into a better adequacy of pensions.

Countries in Group II (AT, CZ, FR, HU, LU, PL, SK) all have good performance in terms of adequacy of pensions (i.e. a negative score), in spite of their rather weak performance in employment and life-long learning (Chart 25) and a mixed performance in the area of part-time employment and unemployment (Chart 26). This seems to suggest that for these countries the major challenge is to ensure a better access to the labour market of older workers.

Countries in Group III (BE, CY, EL, HR, IT, MT, SI) have rather poor results in terms of poverty and income, as well as for most of them in the area of employment and life-long learning (Chart 25). Their performance in the area of part-time employment and unemployment is mixed (Chart 26). This seems to suggest that in these countries, there is room for improving both the adequacy of pensions and the labour market situation of older workers.

Most countries in Group IV (EE, ES, LT, LV) perform relatively well in terms of adequacy and in the area of employment and life-long learning (Chart 25), but very poorly in unemployment and part-time employment (Chart 26). In these countries, there is probably room for an improvement of the part-time employment rate of older workers.

Chart 25: Factor analysis for pensions: employment and life-long learning versus adequacy



Source: DG EMPL calculations.

Chart 26: Factor analysis for pensions: Unemployment and part-time employment versus adequacy

Source: DG EMPL calculations.

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3.2.3. Health and disability

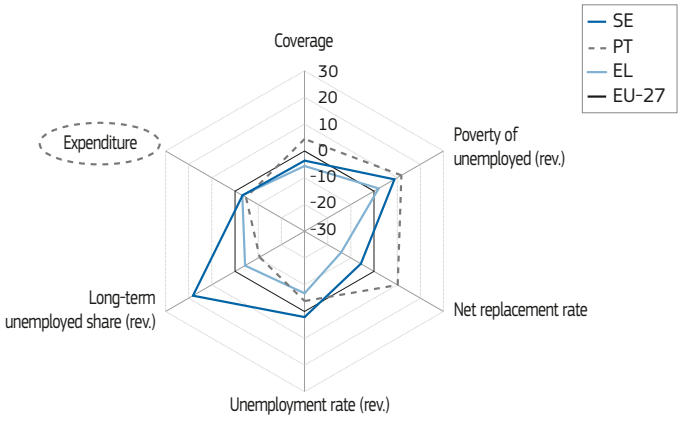
The stylised framework used for other types of social expenditures in this chapter is difficult to apply to the health and disability function for several reasons. On the input side, the impact of health expenditure depends much more on the structure and organisation of systems, than for functions mainly based on monetary transfers. This means that more detailed information on the way money is spent is needed to provide an accurate picture of policy intervention in this area. Moreover, health outcomes that can be associated with health expenditure depend on multiple factors such as lifestyles that also need to be taken into account when comparing the effectiveness of health systems. Finally, while a number of common indicators have been adopted in the framework of the OMC on health and long-term care, a revised set of indicators to reflect health systems performance is currently under development and is expected to allow for more accurate analysis in the future.

For this type of analysis, available comparative data covering the main dimensions of healthcare expenditure can be used, pointing out the specific areas where improvements can be expected. This also requires extensive information and analyses of country-specific features of healthcare systems. Such analyses may be further improved by taking into consideration intrinsic differences in population conditions impacting the demand for healthcare (e.g. demographic structure, nutritional habits, smoking and alcohol consumption patterns, physical activity, etc.), as well as developing health outcome indicators which better reflect the overall goals of the health system (e.g. lifelong quality of life and avoidable mortality) and building a deeper understanding on how specific health policies impact them.

3.2.4. Unemployment

Unemployment benefits provide income replacement in the event of unemployment, typically following the loss of a job. The main objectives are thus obviously to provide for income replacement and a smooth transition back to employment. The quality of the former depends on unemployment benefit eligibility conditions and the related levels of benefits. The second dimension also refers to the quality of employment services to help unemployed people to reintegrate into employment, which can be considered alongside the actual financial incentives provided to unemployed to re-enter employment.

Chart 27: Unemployment in 2010 in SE, PT and EL and in AT, BE, IE and NL



Source: See Box 8, DG EMPL calculations.

Note: Expenditure relates to expenditure per unemployed compared to GDP per capita for the population of active age.

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Box 8: Unemployment — variables used

A limited set of outcome indicators can be used to measure the performance of unemployment expenditure:

- Coverage (source LFS): share of unemployed people (all lengths of unemployment spell) receiving unemployment benefits (both registered and not registered at public employment office) as a share of all unemployed people according to the ILO definition (both registered and not registered at public employment office).
- Net replacement rate (source OECD): net replacement rate in the initial period of unemployment (case taken: single person, no children, 100% of average wage).
- Poverty rate of unemployed (source SILC): share of unemployed living at risk of poverty (at the 60% of median equivalised disposable income threshold).
- Unemployment rate (source LFS): unemployment rate, according to the ILO definition.
- Long-term unemployed rate([1]) (source LFS): share of long-term (more than one year) unemployed (according to the ILO definition) in the total number of active persons in the labour market.
- Expenditure: expenditure on ESSPROS function unemployment per unemployed compared to GDP per capita for the population of active age.

To reflect on a number of additional dimensions, a number of additional indicators are used in the factor analysis (see Box 14).

([1]) As the unemployment rate is included in the set of outcome indicators, the share of long-term unemployed could be used in place of the long-term unemployment rate in order to avoid the correlation between the two indicators. Nonetheless, Member States' patterns as regards the balance of outcomes between the adequacy of income replacement and the labour market situation do not substantially change if the long-term unemployment share is used instead.

The main outcomes considered in this section are related to the adequacy of income replacement and to the labour market situation (see Box 8). The adequacy of income replacement is first of all reflected through the coverage of unemployment benefits (that is the share of the unemployed actually receiving unemployment benefits) and through the net replacement rate during the initial period of unemployment. These two dimensions are complemented by the poverty risk of unemployed people which covers the inadequacy of income protection. The labour market dimension is reflected through the unemployment rate and the long-term unemployment rate which also gives an indication of labour market transitions, in particular of the strength of transitions out of unemployment back to employment. These outcomes are considered together with the levels of unemployment expenditures per unemployed people as a share of GDP.

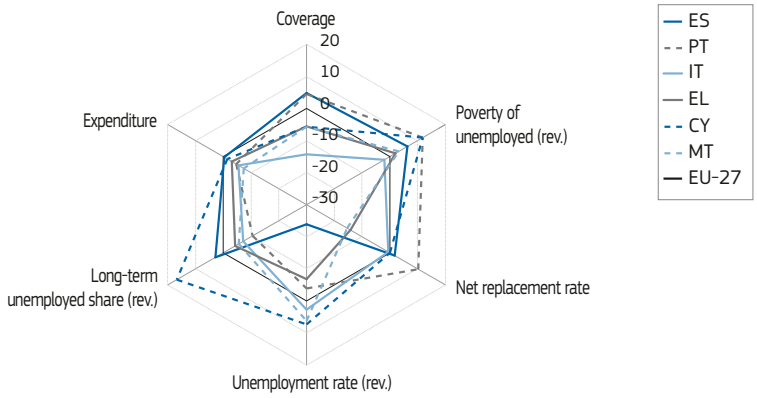
For instance, in 2010, while the expenditure per unemployed level was lower than the EU average in SE, this reflected much more favourable labour market situations, but also much higher than average adequacy of income replacement (Chart 27).

Member States can show an asymmetry between their relative performance on adequacy and labour market, given their levels of expenditure (Chart 28):

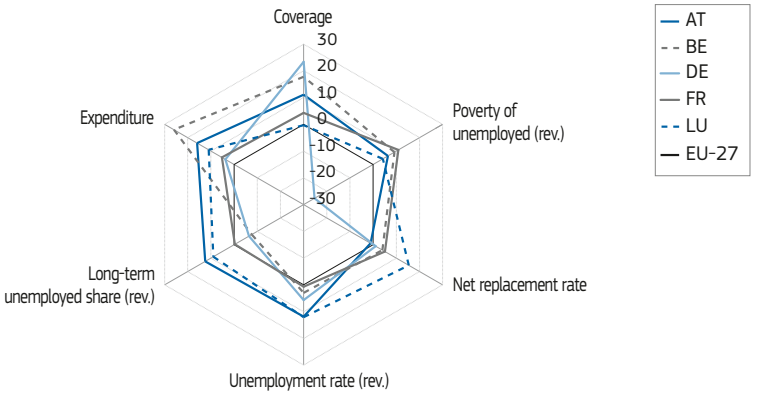
- In some MSs, such as FR and PT (as well as DK, EE, HU, SK and HR), the relatively better performance in terms of adequacy does not seem to be echoed by as good performance in terms of labour market situation, given the relative levels of expenditures.

Chart 28: Unemployment – key outcomes and expenditure in 2010

Southern Europe



Western Europe



Source: See Box 8, DG EMPL calculations.

Note: Expenditure relates to expenditure per unemployed compared to GDP per capita for the population of active age.

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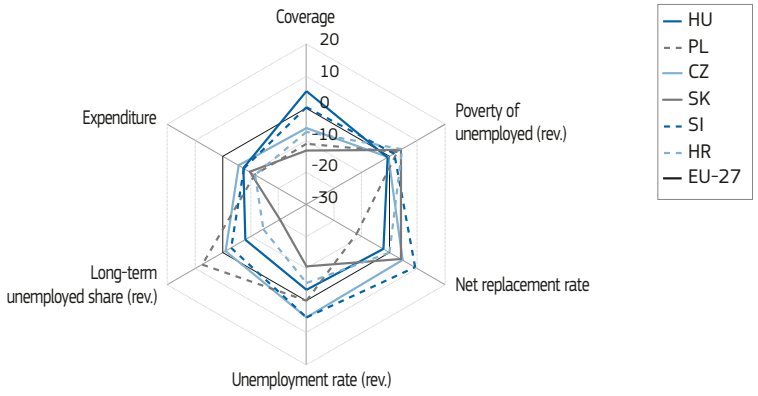
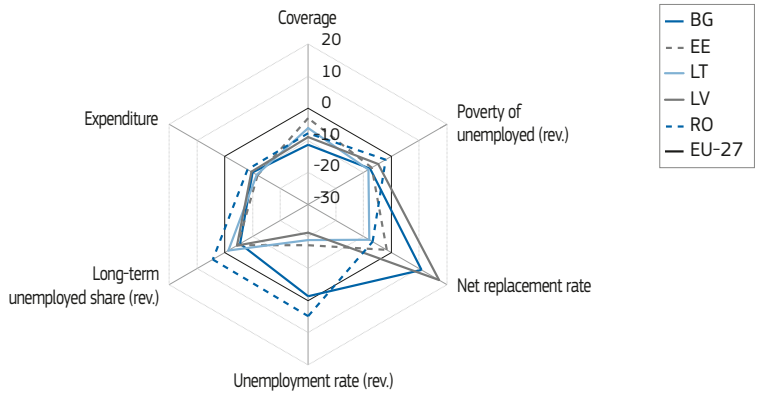
Chart 28: Unemployment – key outcomes and expenditure in 2010

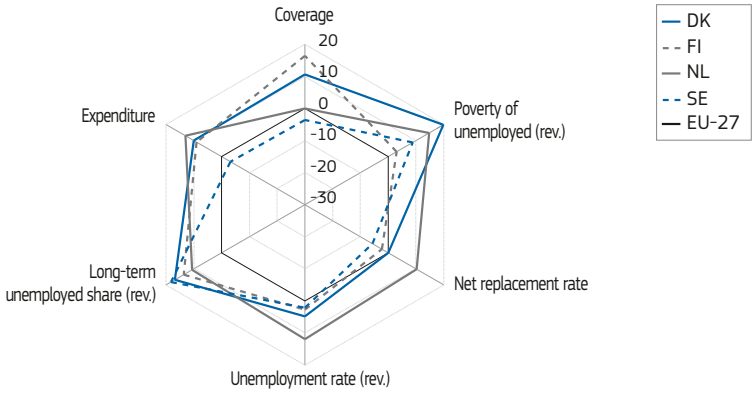
Central Europe



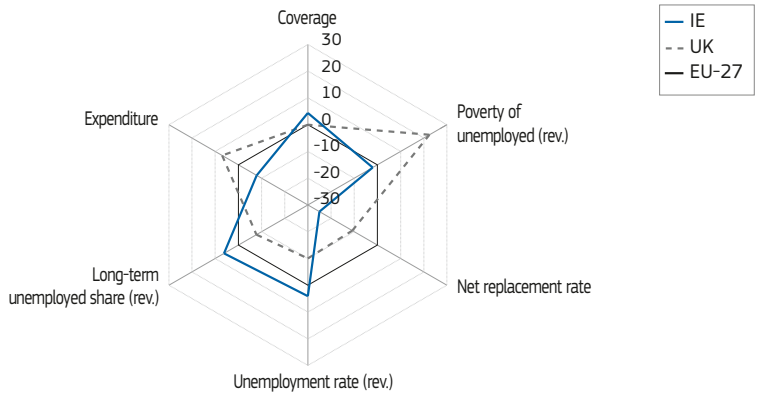
Eastern Europe



Northern Europe



North-Western Europe



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Source: See Box 8, DG EMPL calculations.

Note: Expenditure relates to expenditure per unemployed compared to GDP per capita for the population of active age.

- Conversely, in some other MSs, such as DE and FI (as well as EL, IT, MT, NL, PL, RO, SI and the UK), the relatively better labour market records do not seem to translate into a relatively better situation of adequacy of unemployment benefits, for their given relative levels of expenditure.

- In a few Member States (BE, ES and IE), both the adequacy and employment records seem to be relatively low, given their relative levels of expenditure. In these countries, the challenges of adequacy and unemployment appear to be more specifically inter-linked.

- Finally, in some MSs, such as SE (as well as AT, BG, CY, CZ and LT), both the performance in terms of adequacy of unemployment benefits and the labour market outcomes appear to be relatively strong, for the given levels of expenditures.

Factor analysis allows considering more dimensions of performance in terms of labour market and unemployment benefits. Three main dimensions can be identified to reflect on the performance of Member States in the area of unemployment benefits (see Box 10, more detailed results are provided in the Annex):

- Factor 1 reflects how Member States perform in unemployment (including long-term unemployment) and also in inactivity of youth (NEET).

- Factor 2 reflects both the activity and skills of the Member State's workforce (employment rate, inactivity rate, share of high-skilled workers and participation of those not working in LLL, both of the unemployed and inactive).

- Factor 3 reflects the Member States' performance in net replacement rate, unemployment trap and the participation of people wanting to work in ALMPs.

Box 9: Unemployment — factor analysis

A number of additional indicators are taken into account in the factor analysis, to allow reflecting on a broader set of interactions, including such as the inactivity rate and employment rate, incidence of involuntary part-time work, share of youth not in employment, education, or training (NEET), share of high-skilled workers in the labour force (1); the unemployment trap; and also to what extent the unemployed are being assisted or actively involved in getting back to the labour market, through indicators such as the share of unemployed and inactive in life-long learning (LLL), active labour market policies (ALMP) participation of people wanting to work and transitions (from unemployment to employment and from unemployment to inactivity). To take into account the conditionality of benefits, the share of means-tested benefits on all unemployment expenditure is also included.

Table 4 — Unemployment benefits: results of factor analysis

Variable	Factor1: unemployment and NEET	Factor2: activity and skills of the workforce	Factor3: net replacement rate and unemployment trap
Coverage	-0.45	0.39	0.23
AROP of unemployed	0.33	-0.25	-0.21
Net replacement rate	0.06	-0.04	**0.81**
Unemployment trap	-0.10	0.13	**0.83**
Employment rate	-0.58	**0.69**	-0.02
Inactivity rate	0.06	**-0.92**	-0.06
Unemployment rate	**0.93**	0.18	0.13
Long-term unemployment rate	**0.89**	-0.10	0.19
Involuntary part-time	**0.66**	-0.28	-0.06
NEET	**0.78**	-0.31	-0.08
Unemployed in LLL	-0.52	**0.72**	-0.09
Inactive in LLL	-0.43	**0.79**	-0.02
LMP participation of persons wanting to work	-0.42	0.19	**0.67**
Transitions from unemployment to employment	-0.38	0.37	-0.26
Transitions from unemployment to inactivity	-0.21	0.23	-0.49
Share of means-tested benefits	-0.14	-0.36	-0.49
Share of high-skilled workers	0.01	**0.72**	0.17

Source: DG EMPL calculations.

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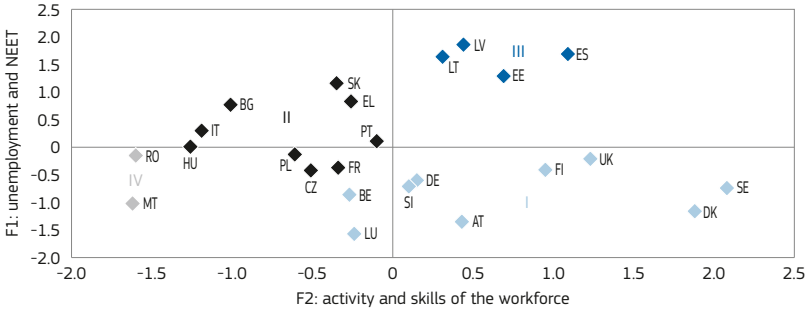
The performance of Member States along these dimensions varies considerably (Charts 29 and 30) and four clusters of countries can be identified based on the performance along all these 3 areas of performance.

Countries in Group I (AT, BE, DE, DK, FI, LU, SE, SI, UK) all perform relatively well in terms of unemployment and NEET and most of them also in terms of activity and skills of the workforce (Chart 29). Their performance in the area of net replacement rate and unemployment trap is rather varied (Chart 30), though we can see that those with the highest score in this area are those that have a worse performance than the others in activity and share of high skilled workers. All countries in

(1) The share of low-skilled and medium-skilled workers were excluded from the analysis based on the Kaiser–Meyer–Olkin measure of sampling adequacy.

Group II (BG, CZ, EL, FR, HU, IT, PL, PT, SK) perform rather poorly in terms of activity and skills of the workforce and most of them have similarly weak performance in unemployment and NEET (Chart 29). Their performance in net replacement rate and unemployment trap varies significantly (Chart 30). Countries in Group III (EE, ES, LT, LV) perform well in activity and skills of the workforce, however, they all have very bad performance in terms of unemployment and NEET (Chart 29). Their scoring varies in terms of net replacement rate and unemployment trap (Chart 30). Countries in Group IV (MT, RO) show very bad performance in activity and skills of the workforce, but perform quite well in unemployment and NEET (Chart 29). They score relatively low in terms of net replacement rate and unemployment trap (Chart 30).

Chart 29: Factor analysis for unemployment benefits: activity and skills of the workforce versus unemployment and NEET



Source: DG EMPL calculations.

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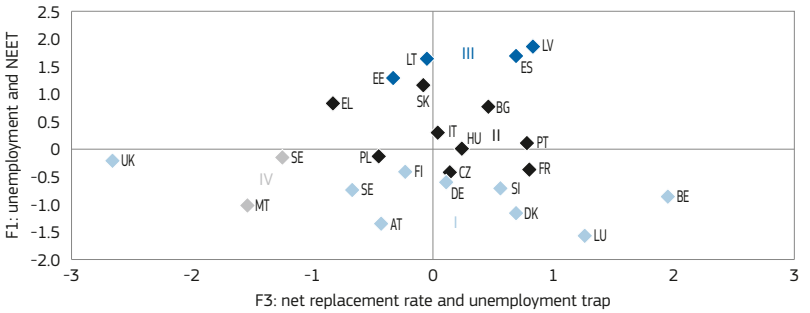
Chart 30: Factor analysis for unemployment benefits: net replacement rate and unemployment trap versus unemployment and NEET



Source: DG EMPL calculations.

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3.2.5. Family

Family expenditure provides income support to households with children. While family policies can be considered to fulfil the broad objective of supporting children's development, this section focuses on the two main objectives of adequacy of income support to families with children and support for a better work-life balance. The first dimension refers to the relative income situation of families with children and typically to child poverty and the poverty reduction impact of family expenditures. The second dimension refers to the employment attachment of households with children, which relates typically to the employment situation of women or to financial incentives to take-up a job for second earners, as well as to the availability of childcare.

The main outcomes considered in this section are accordingly focused on the adequacy of incomes of families and on the labour market situation of households with children (see Box 10). Three indicators focus on the adequacy dimension: the relative income of households with children (compared to all households), child poverty and the impact of family benefits on child poverty. Three other indicators are retained to reflect the labour market attachment of households with children, first of all the share of children living in jobless households, second the employment rate of mothers and third the actual share of children in childcare (full and part-time). These outcomes are considered together with the levels of family expenditure per population aged under 18 as a share of GDP per capita, both for in-cash and in-kind expenditure.

For instance, in 2010, FR, SE and DK spent roughly the same levels in terms of cash benefits, but had rather different levels of expenditure on in-kind benefits (with higher levels in DK than in SE and in SE than in FR) — see Chart 31. While outcomes were roughly similar in terms of poverty reduction, they were very different in terms of child poverty as such or of relative incomes of families (DK better than SE and SE better than FR). These differences seem very much linked to differences in the employment rates of mothers, which in turn are, at least partly, driven by different levels of childcare use (actually achieved with different levels of in-kind expenditures). While the desired outcome of a widespread use of childcare facilities is shown to require adequate spending on services, similarly high levels of childcare use are achieved at different spending levels.

Box 10: Family — variables used in radar charts

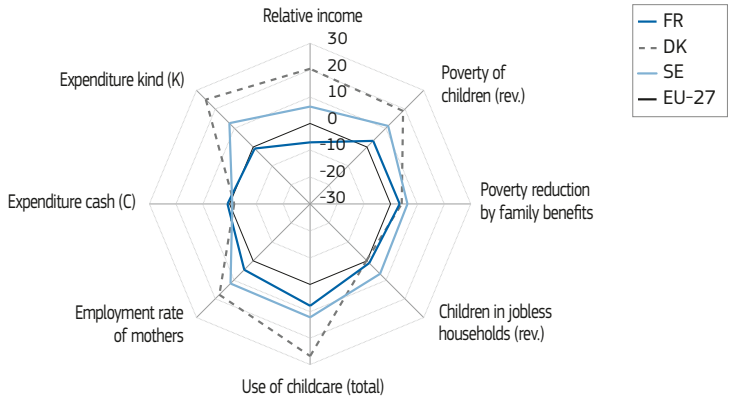
A limited set of outcome indicators can be used to measure the performance of family expenditure:

- Relative income (source SILC): relative equivalised disposable income of households with children compared to the one of all households;
- Child poverty (source SILC): at-risk-of-poverty rate of the population aged 0–17 (at the 60% of median equivalised disposable income threshold);
- Poverty reduction by family benefits (source SILC): reduction in the share of children at risk of poverty due to family benefits;
- Children in jobless households (source SILC): share of children living in households with very low work intensity (less than 0.2);
- Childcare total: share of children aged 0–3 in childcare (both full-time and part-time) following the Barcelona targets ([21]);
- Employment rate of mothers (source LFS): employment rate of women aged 20–49 with youngest child below 6 years of age;
- Expenditure in cash and in kind: total expenditure in cash and in kind on ESSPROS family function per population aged under 18 against GDP per capita.

To reflect on a number of additional dimensions, a number of additional indicators are used in the factor analysis (see Box 11).

([21]) In 2002, at the Barcelona Summit, the European Council set the targets of providing childcare by 2010 to at least 90% of children between 3 years old and the mandatory school age and at least 33% of children under 3 years of age. Member States have restated their commitment to achieve them in the European Pact for gender equality (2011–20). There are broad differences persisting between Member States, as well as slow and uneven progress (see http://ec.europa.eu/justice/gender-equality/files/documents/130531_barcelona_en.pdf).

Chart 31: Family in 2010 in FR, SE, DK



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Source: See Box 10, DG EMPL calculations.

Notes: For France part of in-kind expenditure linked to pre-primary school expenditure is not reflected in the ESSPROS framework. Expenditure relates to expenditure per person aged under 18 compared to GDP per capita.

Table 5: Orientation of social expenditure towards family expenditure

		Orientation of social expenditure towards family expenditure		
		Low	Average	High
Orientation of family expenditure on cash expenditure	Low	IT, NL	ES	DK, FI, SE
	Average	FR, PT, UK	EL, MT, PL	BG, RO
	High		BE, CY, CZ, DE, IE, HR	AT, EE, HU, LT, LU, LV, SI, SK

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While social protection expenditure appears often skewed towards family expenditure (see Table 5), the balance between in-cash and in-kind benefits varies a lot across MSs and appears particularly skewed towards in-kind expenditure in DK and to a lesser extent SE and FI. On the reverse, expenditure seem to be very skewed towards cash benefits in a number of Member States where family expenditure weighs relatively strongly in social expenditure (in particular in AT, EE, HU, LT, LU, LV, SI and SK).

Member States show significantly different patterns as regards adequacy and labour market outcomes, in comparison to their relative levels of expenditures (Chart 32):

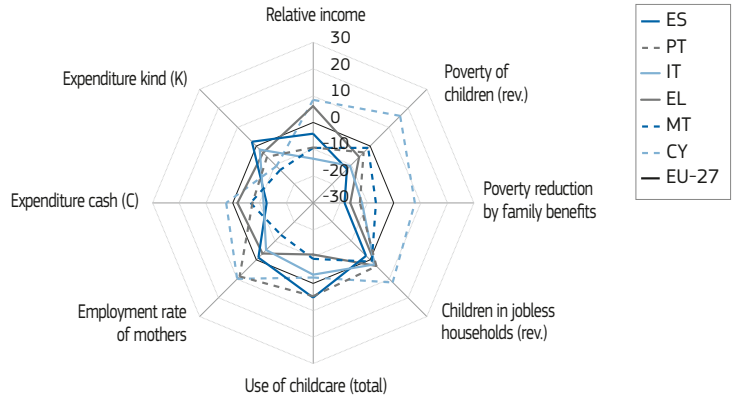
- In some MSs, such as NL, the outcomes appear relatively positive (also including CY, PL and SI) or balanced (DK, EL, FR, LT, SE and UK) for both adequacy and the labour market attachment, given the relative levels of expenditures.
- In some MSs however, such as HU or IE, both adequacy and labour market attachment appear relatively low for their given levels of expenditures (AT, BG, DE, HU, IE and LU). This suggests that in these countries the challenges related to the adequacy and sustainability dimensions are particularly linked.
- In a few of MSs (IT, ES and SK), the performance in terms of labour market seems to be relatively stronger than the one on adequacy (given the relative levels of expenditures). On the reverse, in some MSs, such as DE, the relatively performance seems stronger on the adequacy dimension than on the labour market attachment (also in BE, CZ, EE, FI, LV, MT).

Factor analysis allows for considering a wider set of correlated outcome dimensions, while resulting in a lower number of main dimensions. Four main dimensions can be identified to reflect on the performance of Member States in the area of family benefits (see Box 16, more detailed results are provided in the Annex) ([22]):

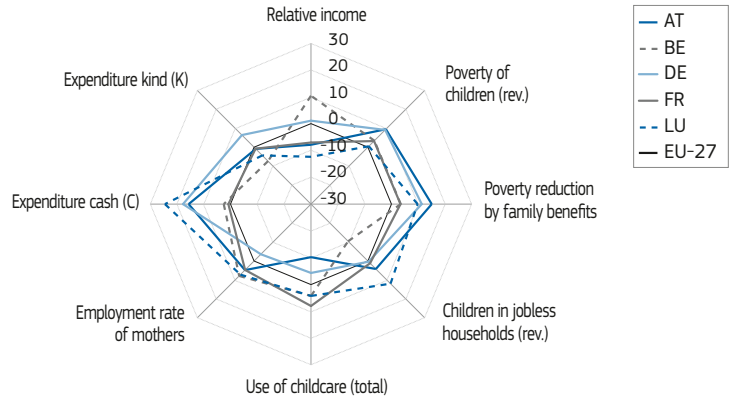
([22]) While the first three factors provide for an estimation of comparable quality as for other social protection functions, the fourth factor has been included here since it allows for reflecting more specifically on the dimension of the gender employment gap.

Chart 32: Family – key outcomes and expenditure in 2010

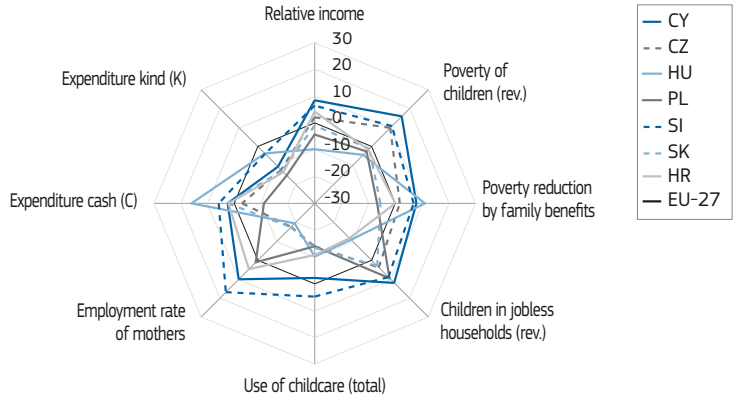
Southern Europe



Western Europe



Central Europe



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Source: See Box 10, DG EMPL calculations.

Note: Expenditure relates to expenditure per person aged under 18 compared to GDP per capita.

- Factor 1 reflects different aspects of poverty (at-risk-of-poverty rate of children, poverty gap, persistent poverty and severe material deprivation), but also the poverty reduction impact of family benefits. It also links higher poverty with higher involuntary part-time employment of women and a higher share of people being inactive or working only part-time due to a lack of childcare ([23]).

- Factor 2 reflects Member States' performance in terms of full-time use of childcare and full-time employment of women, which are negatively associated with the employment impact of parenthood.

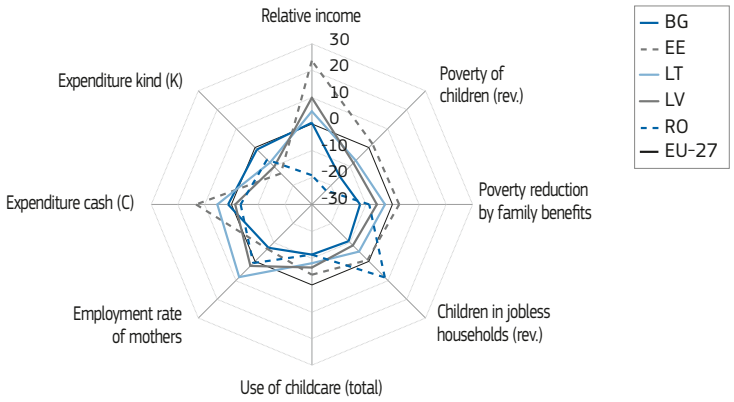
- Factor 3 reflects Member States' performance in terms of part-time childcare use and part-time employment of women that tend to go hand in hand.

- Factor 4 reflects Member States' performance in gender employment gap, which is associated with lower levels of relative income of households with children (compared to all households) and a higher share of means-tested benefits.

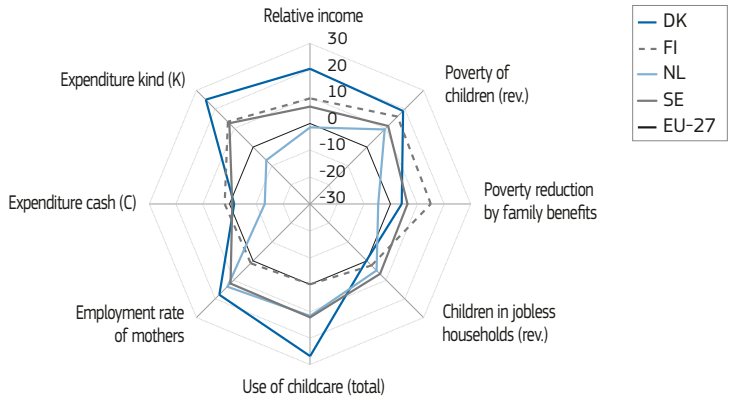
([23]) The correlations between these variables and this factor are high. Indeed, Factor 1 explains around 90% of the variability of the AROP of children and of the poverty gap, 80% of the SMD of children and 70% of persistent poverty, the poverty reduction by child benefits, the involuntary part-time employment of women and the inactivity or part-time employment due to lack of childcare.

Chart 32: Family expenditures in 2010

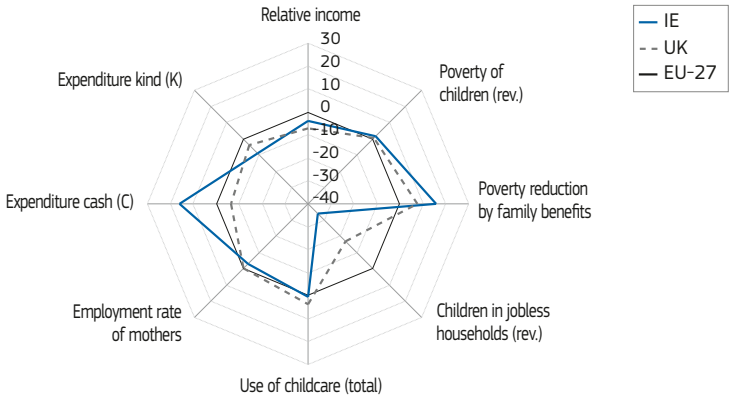
Eastern Europe



Northern Europe



North-Western Europe



Source: See Box 10, DG EMPL calculations.

Note: Expenditure relates to expenditure per person aged under 18 compared to GDP per capita.

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Box 11: Family — factor analysis

A number of additional indicators are taken into account in the factor analysis, to allow reflecting on a broader set of interactions, including the poverty gap, persistent poverty and severe material deprivation of children, as well as several indicators of the labour market friendliness of the system, reflected in the gender employment gap, in the employment impact of parenthood and inactivity or part-time due to lack of childcare (involuntary part-time employment of women aged 15–64 is added to take account of this phenomena in the labour market in general, not only in relation with childcare) [1]. Including more variables also allows making a distinction between the full-time and part-time use of childcare and full-time and part-time employment of women as these can differ widely among countries and both have their importance. To take into account the conditionality of benefits, the share of means-tested benefits on all family benefits is also included.

Table 6: Family benefits: results of factor analysis

Variable	Factor 1: different aspects of poverty	Factor 2: full-time female employment	Factor 3: part-time female employment	Factor 4: gender employment gap
relative income	-0.25	0.31	-0.21	**-0.63**
AROP of children	**0.90**	-0.17	-0.07	0.30
poverty gap	**0.88**	0.15	-0.20	0.01
persistent poverty	**0.67**	-0.09	-0.02	0.40
SMD of children	**0.78**	-0.25	-0.34	-0.17
poverty reduction by child benefits	**-0.65**	-0.16	0.09	-0.46
gender employment gap	-0.07	-0.28	0.03	**0.74**
employment impact of parenthood	-0.15	**-0.91**	-0.23	-0.06
full-time employment rate of women	0.21	**0.86**	-0.22	-0.07
part-time employment rate of women	-0.32	-0.04	**0.90**	0.00
involuntary part-time employment of women	**0.69**	0.16	-0.35	0.11
inactivity or part-time due to lack of childcare	**0.68**	0.11	-0.10	-0.07
full-time use of childcare	-0.27	**0.70**	-0.03	-0.21
part-time use of childcare	-0.20	0.02	**0.89**	-0.01
share of means-tested benefits	0.11	0.26	-0.15	**0.66**

Source: DG EMPL calculations.

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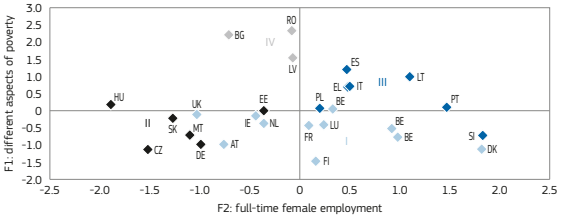
Chart 33: Factor analysis for family expenditure: full-time female employment and poverty



Source: DG EMPL calculations.

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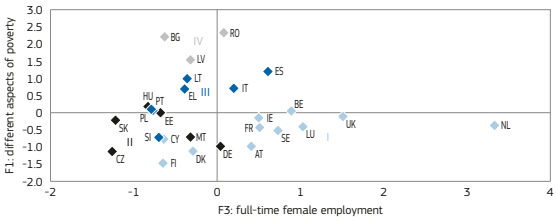
Chart 34: Factor analysis for family expenditure: part-time female employment and poverty



Source: DG EMPL calculations.

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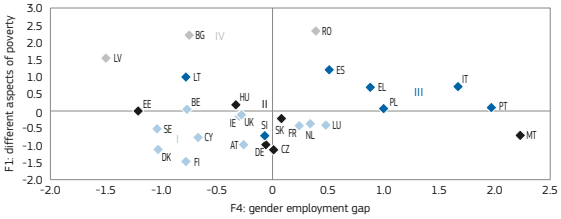
Chart 35: Factor analysis for family expenditure: gender employment gap and poverty



Source: DG EMPL calculations.

(1) The share of children living in jobless households was excluded from the analysis based on the Kaiser–Meyer–Olkin measure of sampling adequacy.

The performance of Member States along these dimensions varies considerably (Charts 33, 34 and 35) and 4 clusters of countries can be identified based on the performance along all these four areas of performance.

Countries in Group I (AT, BE, CY, DK, FI, FR, IE, LU, NL, SE, UK) all perform well in terms of the different aspects of poverty, irrespective of how they do in full-time female employment (Chart 33). Most of them have good performance in part-time female employment (Chart 34) and also in the area of employment gap (which is usually lower in these countries, Chart 35). In this group of countries we can often see a trade-off between good performance in full-time and part-time female employment respectively. Countries in Group II (CZ, DE, EE, HU, MT, SK) generally have good outcomes as regards poverty but lower performance in full-time (Chart 33) and part-time female employment (Chart 34) and mixed results in the area of gender employment gap (Chart 35). Countries in Group III (EL, ES, IT, LT, PL, PT, SI) have rather poor results in terms of poverty, in spite of a relatively good performance in the area of full-time female employment (Chart 33). That is, however, compensated mostly by worse performance in part-time employment (Chart 34) and gender employment gap (Chart 35). Countries in Group IV (BG, LV, RO) have poor performance in terms of poverty, as well as in the areas of full-time and part-time female employment (Charts 33 and 34). Their results as regards the gender employment gap are mixed (Chart 35).

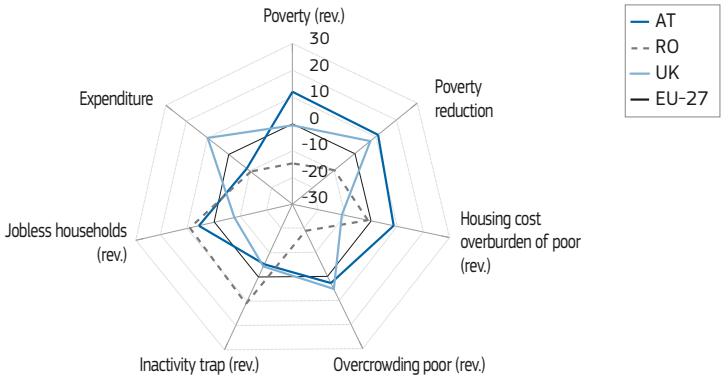
Box 12: Social exclusion and housing — variables used

This section focuses on a limited set of outcome indicators to measure the performance of social exclusion and housing expenditure:

- Poverty rate (source SILC): share of total population living at risk of poverty (at the 60% median equivalised disposable income threshold);
- Poverty reduction (source SILC): relative reduction in the share of population living at risk of poverty (in %) due to social transfers (excluding pensions);
- Housing cost overburden of the poor population (source SILC): the percentage of the population at risk of poverty living in a household where the total housing costs (net of housing allowances) represent more than 40% of the total disposable household income (net of housing allowances);
- Overcrowding rate of poor people (source SILC): the percentage of the population at risk of poverty living in an overcrowded household;
- Inactivity trap (source OECD): average effective tax rate for a transition into full-time work for persons without entitlement to unemployment insurance but entitled to social assistance if applicable (case taken: 67% of average wage, single person);
- Jobless households (source SILC): share of population living in very low work intensity households (population aged 0–59);
- Expenditure: expenditure on ESSPROS functions social exclusion and housing per inhabitant as a share of GDP per capita.

To reflect on a number of additional dimensions, a number of additional indicators are used in the factor analysis (see Box 11).

Chart 36: Social exclusion and housing in AT, RO and UK in 2010



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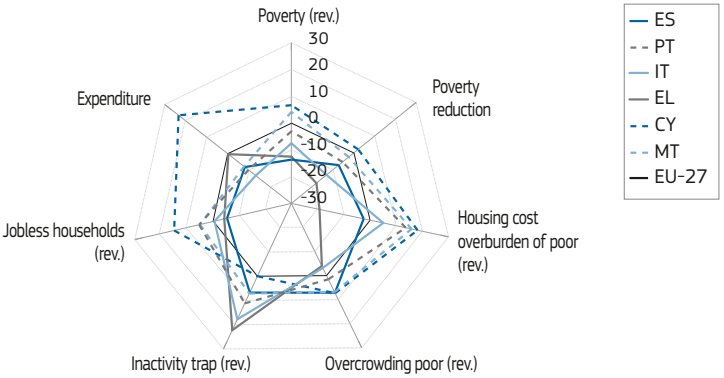
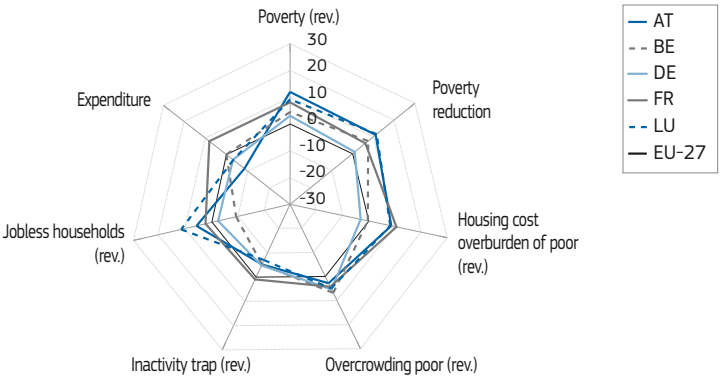
Source: See Box 12, DG EMPL calculations.

Chart 37: Social exclusion and housing – key outcomes and expenditure in 2010

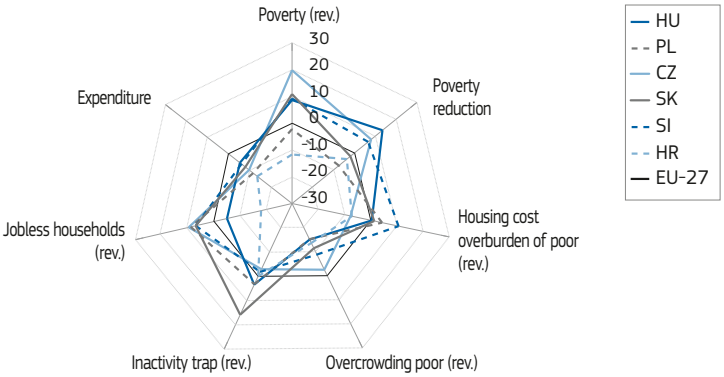
Southern Europe



Western Europe



Central Europe



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Source: See Box 12, DG EMPL calculations.

3.2.6. Social exclusion and housing

Social exclusion and housing expenditures provide support to households in order to reduce the risk of poverty and exclusion, in particular through income and housing support (be it in kind or in cash). The general objective of reducing the poverty risk has been conveyed by the OMC on social inclusion and is reflected in the headline Europe 2020 on poverty and social exclusion. The active inclusion strategy refers notably to the three strands of sufficient income support, inclusive labour markets and access to quality services (notably childcare and housing).

The main outcomes considered in this section are thus related to poverty (at-risk-of-poverty rate and poverty reduction impact of transfers), housing conditions (housing cost overburden for the poor and overcrowding rate of the poor) and employment friendliness (inactivity trap and share of jobless households). These outcomes are considered together with the levels of social exclusion and housing expenditures as a share of GDP (see Box 12). For instance, in 2010, Austria had expenditure levels significantly below the EU average (see Chart 36), while both adequacy (poverty reduction and housing access) and labour market outcomes (poverty trap and jobless households) overall showed a relatively favourable situation.

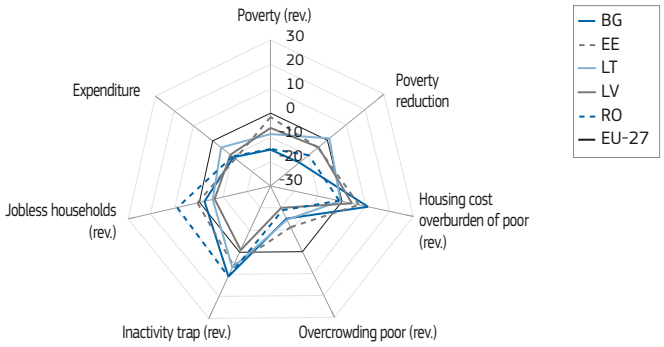
Member States show significantly different patterns as regards their poverty reduction and housing outcomes, as well as labour market friendliness, in comparison to their relative levels of expenditures (Chart 37):

- In some MSs, such as FR or DE, the outcomes appear overall balanced (also in LT, LV and SE and HR) for both adequacy and the labour market attachment, given the relative levels of expenditures.

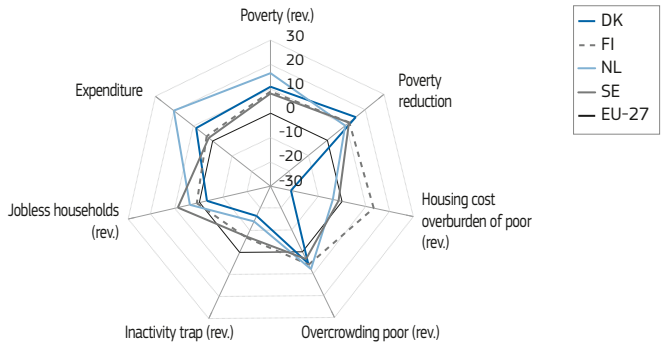
- In some MSs, the outcomes appear overall positive on both adequacy and the labour market attachment, given the relative levels of expenditures (AT, EE, LU, MT, SI, SK).

Chart 37: Social exclusion and housing – key outcomes and expenditure in 2010

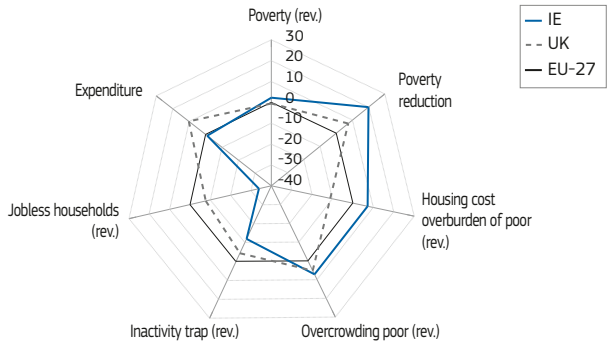
Eastern Europe



Northern Europe



North-Western Europe



Source: See Box 12, DG EMPL calculations.

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- Conversely in a few MSs, outcomes appear overall relatively low as regards both adequacy and the labour market attachment, given the relative levels of expenditures (CY, NL and UK).

- Furthermore, in some MSs, outcomes appear higher on the adequacy dimension, while the labour market performance appears relatively low for the given levels of expenditures (BE, ES, FI, HU, IE), suggesting that the main challenges rely in the links towards the labour market.

- Finally, in some MSs, outcomes appear higher on the labour market dimensions, while the adequacy performance appears relatively low for the given levels of expenditures (BG, CY, DK, EL, IT, PL, PT, RO), suggesting that the main challenges rely in the capacity of policies to effectively deliver on the adequacy side.

Factor analysis allows for including more dimensions in the analysis and for identifying three main dimensions to reflect on the performance of Member States in the area of social exclusion (see Box 18, more detailed results are provided in the Annex):

- Factor 1 reflects different aspects of poverty (at-risk-of-poverty rate, poverty gap, in-work poverty and severe material deprivation), but also the poverty reduction impact of social transfers which are linked with the inactivity trap of a single earner (highlighting potential interactions between high poverty reduction and labour market incentives).

- Factor 2 reflects Member States' performance as regards incentives, with a relatively stronger emphasis on the second earner.

- Factor 3 reflects Member States' performance as regards the labour market attachment.

Box 13: Social exclusion and housing — factor analysis

A number of additional indicators are taken into account in the factor analysis, to allow reflecting on a broader set of interactions, including on adequacy [1] (such as the poverty gap, severe material deprivation, in work poverty), as well as several indicators of the labour market friendliness of the system, reflected in various types of incentives (inactivity trap single and second earner, low wage trap second earner). To take into account the conditionality of benefits, the share of means-tested benefits on social exclusion benefits is also included.

Table 7: Social exclusion benefits: results of factor analysis

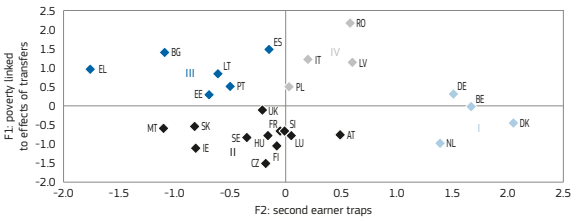
Variable	Factor1: poverty, linked to effects of transfers	Factor2: second earner traps	Factor3: jobless households
AROP	**0.91**	-0.30	0.22
Poverty gap	**0.90**	-0.13	-0.01
Severe material deprivation	0.59	-0.22	0.07
In-work poverty	**0.81**	-0.12	-0.16
Poverty reduction effect of social transfers	**-0.81**	0.33	0.34
Inactivity trap single earner	**-0.61**	0.55	0.32
Inactivity trap second earner	-0.05	**0.81**	-0.13
Low wage trap second earner	-0.17	**0.76**	0.07
Jobless households	0.04	-0.04	**0.81**
Share of means-tested benefits	0.27	0.06	0.05

Source: DG EMPL calculations.

The performance of Member States along these dimensions varies considerably (Charts 38, 39) and four clusters of countries can be identified based on the performance along all these three areas of performance.

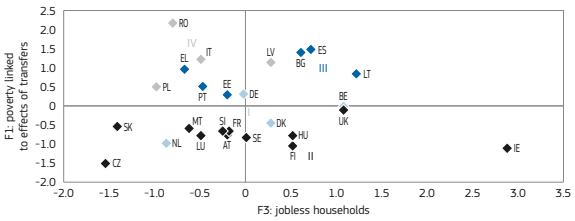
Countries in Group I (BE, DE, DK and NL) have mixed performance as regards their poverty outcomes but have lower levels of incentives for second earners (higher levels of traps, Chart 38). They also have mixed performance in terms of labour market attachment (Chart 39). Countries in Group II (AT, CZ, FI, FR, HU, IE, LU, MT, SE, SI, SK, UK) generally have good outcomes as regards poverty. Most of them have relatively good performance in terms of labour market incentives for second earners (except for AT, Chart 38) and in the area of labour market attachment (except for IE, UK, HU and FI, Chart 39). Countries in Group III (BG, EE, EL, ES, LT, PT) have mostly rather poor results in terms of poverty, in spite of a relatively good performance in the area of labour market incentives for second earners (Chart 38) and mixed outcomes in terms of labour market attachment (Chart 39). Countries in Group IV (IT, LV, PL, RO) perform poorly in terms of poverty and have relatively weak labour market incentives for second earners (Chart 38) and mostly worse labour market attachment (Chart 39).

Chart 38: Factor analysis for social exclusion expenditure: poverty reduction and incentives for second earners



Source: DG EMPL calculations.

Chart 39: Factor analysis for social exclusion expenditures: poverty reduction and labour market attachment



Source: DG EMPL calculations.

[1] Since the number of available indicators to reflect on the housing dimension is rather limited, the factor analysis is focusing on social exclusion dimension only.

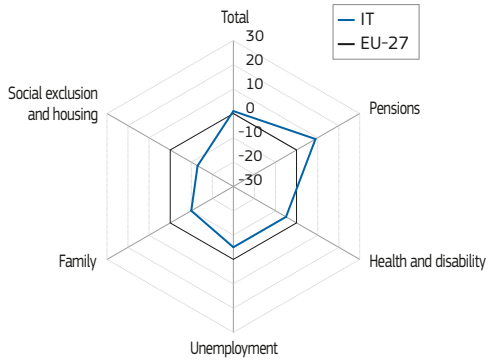
3.2.7. Country examples

Italy

In Italy, social protection expenditure is relatively lower on family and social exclusion and housing and to a lesser extent on unemployment and health, but relatively strongly oriented towards pensions (Chart 40).

- The relatively high weight of pension expenditure allows for a high adequacy performance, though the labour market integration of older workers is low.
- The relatively low weight on family expenditure is reflected in relatively low outcomes in terms of adequacy of family incomes and of labour market friendliness of households with children.
- The relatively low weight given to social exclusion and housing expenditure translates into relatively good housing outcomes, good outcomes in terms of inactivity trap ([24]) and average outcomes in terms of jobless households ([25]), but higher poverty rates and lower poverty reduction.

Chart 40: Orientation of social expenditure in Italy (2010)



Source: ESSPROS, DG EMPL calculations.
Note: Pensions for old-age and survivor expenditure.

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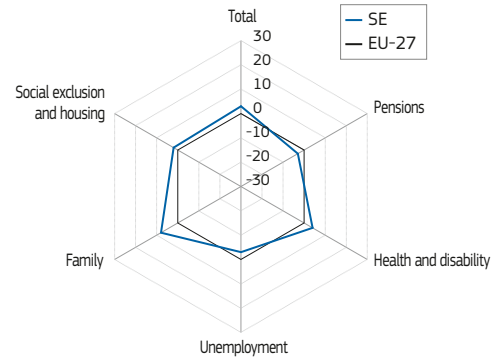
Chart 41: Orientation of social expenditure in Sweden (2010)



Source: ESSPROS, DG EMPL calculations.
Note: Pensions for old-age and survivor expenditure.

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([24]) The relatively low level of inactivity trap can potentially be explained by the low level of social assistance expenditure.

([25]) The average outcomes in terms of jobless households can be explained by endogenous households' composition linked to the relatively low expenditure on social exclusion and housing, together with the relatively low expenditure on unemployment.

- The slightly low weight given to unemployment expenditure reflects an adequacy issue linked to low coverage, while labour market outcomes are mixed with a relatively low unemployment rate and high share of long-term unemployment.

- Actual expenditure growth over the period 2007–10 shows a very high weight given to total pension expenditure (which also reflects a rapid ageing of the population, as reflected by the increase in the number of persons aged 65 and older), with a close to average weight on unemployment expenditure and low weight on health, family and social exclusion and housing.

As a result, there seem to be margins to rebalance expenditure growth and to a lesser extent levels from pensions towards social exclusion, family and unemployment, where outcomes appear relatively low.

Sweden

In Sweden, social protection expenditure is relatively balanced over the various functions, with a somewhat stronger weight given to family and social exclusion and housing and to a lesser extent to unemployment and pensions.

- The relatively low weight of old age and survivors expenditure is associated with a good labour market integration of older workers, though the poverty of older women is high.

- The relatively high weight of family expenditure is reflected in relatively high outcomes in terms of adequacy of family incomes and of labour market friendliness of households with children.

- The relatively high weight given to social exclusion and housing expenditure translates into relatively high housing and labour market or poverty outcomes.

- The slightly low weight given to unemployment expenditure is combined however with relatively strong labour market and adequacy outcomes.

- Actual expenditure growth over the period 2007–10 shows a low weight given to total pension or unemployment expenditure (controlled for the ageing of the population, as reflected by the increase in the number of persons aged 65 and older and the changes in the number of unemployed people), with a low weight on health expenditure, but a high weight given to family expenditure (controlled for the change in the population aged under 18) and social exclusion and housing.

As a result, the pattern of expenditure appears balanced as well as trends in the crisis, though there seems to margins to rebalance expenditure from disability expenditure to some extent towards old age and survivor's ones.

4. DID EXPENDITURE GROWTH OVER THE PERIOD 2007–10 REFLECT AREAS OF HIGHER NEEDS?

While the previous section provided analysis of the effectiveness of welfare systems in light of their related spending levels (in this respect thus also reflecting their efficiency) at a particular point in time, namely in 2010, this section also examines changes in the growth rate patterns of social expenditures across Member States (benchmarked against EU averages) over the period 2007–10.

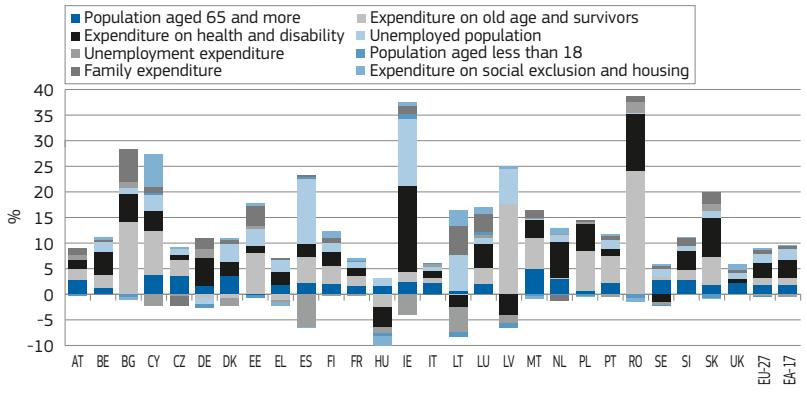
The objective is to see to what extent changes in expenditure growth patterns have reflected performance levels[26] in the different policy/risk areas (old age and survivors, health and disability, family, unemployment, social exclusion and housing). In this light, a typical situation of under-adjustment of expenditure growth is considered to have occurred when a Member State increased spending relatively little on areas where the performance is relatively low and the expenditure levels low or close to the average. Conversely, in some social policy areas, a typical over-adjustment of expenditure growth would be considered to have occurred if a Member State increased spending relatively more on areas where spending is already relatively high, but performance is relatively low.

This section reviews this evidence across the Member States in 2010 and between 2007 and 2010 with respect to the following functions: pensions (covering old age and survivors expenditure), health and disability, family, unemployment and social exclusion and housing.

Expenditure growth over the period 2007–10

Trends of total expenditure growth reflect both the growth in the numbers of potential beneficiaries (i.e. unemployed population, population 65 and

Chart 42: Change in real social expenditure (2007–2010) — contributions of expenditure levels per potential beneficiary population and of socio-economic developments



Source: ESSPROS, DG EMPL calculations.

Note: Impact on overall expenditure growth in volumes of changes in average expenditure per potential beneficiaries and socio-economic trends (changes in population aged 65 and older, in population under 18, and in population unemployed).

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[26] Performance levels can also provide an indication of the needs, in the sense that Member States with high gaps in performance have higher needs and Member States with lower gaps in performance have lower needs.

Table 8: Summary: Old age and survivor expenditure in the crisis (2007–2010)

		Performance in 2010			Share to the contribution of real social protection expenditure growth, corrected for demographic change (2007–10)		
		Low	Av.	High	Low	Av.	High
Expenditure per 65+ in 2010	Low	BG, ES	CZ, EE, IE, LT, LV	LU, RO	IE, LU, LT		BG, CZ, EE, ES, LV, RO
	Av.	BE*, CY, MT	DE*, FI*, HU, SE*, SI, SK		DE#, SE, SI	BE, CY, FI, HU, SK	MT
	High	EL	AT*, DK*, IT, NL*, PL, PT, UK	FR	DK*, IT, NL*, EL#, UK#	AT*, FR	PL, PT

Source: DG EMPL calculations.

Note: Av. for average; Member States are regrouped in three groups for each of the expenditure dimensions (groups of 9 countries for expenditure, levels in 2010 and contributions to expenditure growth 2007–10, corrected for the change in population aged 65 and older, see Chart 4) and based on average levels of standard deviation as regards performance (on average over the main outcomes identified, with thresholds of higher than 0.5 reduced standard deviations or lower than 0.5 reduced standard deviations). The main outcomes used are: relative income of people aged over 65; aggregate replacement ratio; gender breakdown of the poverty rate among the population aged 65 and over; employment rate for the population aged 55–64 and unemployment rate for the population aged 55–64. (*): in 2009, the difference between gross and net expenditures was particularly significant in DK, NL and SE (between 20% and 30%) and to a lesser extent BE, DE, AT and FI (between 10% and 20%) — (figures were not available for IE, EL, FR, IT, LU, PL and RO). (#): for negative contributions to total real growth expenditure.

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older and population aged under 18), and the change of expenditure per potential beneficiary (see above). Actually, while the contributions of old age and survivors expenditure per person aged 65 and older or of family expenditure by population aged 18 and under have generally been positive over the period, this has not generally been the case as regards the contribution of unemployment expenditure per unemployed (Chart 42) ([27]).

More specifically, the share of the contribution of the average old age and survivor expenditure per person aged 65 or older to the overall expenditure growth over the period has been particularly high in some Member States such as BG, RO, PL or PT and particularly low in some others such as DE, IE, LT, NL or the UK. Similarly, the share of the contribution of the average family expenditure per personaged 18 or under to the overall expenditure growth over the period has been particularly high in some Member States such as BG, DE, EE or LT, and particularly low in some others such as CZ, ES, IT or the NL.

Table 9: Summary: Health and disability expenditure in the crisis (2007–2010)

		Share of the contribution to real social protection expenditure growth (2007–10)		
		Low	Av.	High
Expenditure per capita in 2010	Low	CY, CZ, HU#, LT#, LV#	BG, MT, PL, RO	EE, SK
	Av.	ES, IT, PT	AT, LU	BE, EL, SI
	High	SE#	DK, FI, FR	DE, IE, NL, UK

Source: DG EMPL calculations.

Notes: Av. for average; Member States are regrouped in three groups for each of the expenditure dimensions (groups of 9 countries for expenditure, levels in 2010 and contributions to expenditure growth 2008–10).
(#) for negative contributions to total real growth expenditure.

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As regards unemployment expenditure, the contribution of the average unemployment expenditure per unemployed to the overall expenditure growth over the period has been significant high in some Member States such as DE or RO, and particularly low in some others such as CY, DK, ES, IE, LT or LV.

Pensions

In 2010, several Member States had a significantly better performance than the EU average (FR with high levels of expenditure and RO and LU with low levels of expenditure) while some had experienced a significantly lower performance: EL (with relatively high levels of expenditure), BE, CY and MT (with average levels of expenditure) and BG and ES (with lower levels of expenditure).

In terms of developments between 2007 and 2010, some countries with relatively high spending and average or low performance, some have actually devoted a higher than average share of their overall increase in social expenditures to pensions (PL, PT and to a lesser extent AT), which does not seem to reflect higher needs as regards performance (expenditure levels were already high for average or low performance levels). Conversely, some Member States with low levels of expenditure and average or low performance devoted only a relatively small share of their increase in expenditure over 2007–10 to pensions (IE and LT). In these countries, the low weight given to pensions does not seem to reflect the needs given the relatively low expenditure levels and average performance.

([27]) As regards old age and survivors expenditure, the contribution of the change in expenditure in per person aged 65 and older over the period 2007–10 has actually been negative in a some Member States (DE, EL, HU, UK) but very dynamic in some others (BG, CY, EE, LV, MT, PL, PT, RO and SK). As regards family expenditure, the contribution of the change in expenditure in per person aged 18 and under over the period 2007–10 has actually been negative in a few Member States (CZ, NL) but more dynamic than the average in some others (BG, EE, LT, LU, SK). As regards unemployment expenditure, the contribution of the change in expenditure in per unemployed people over the period 2007–10 has actually been negative in nearly half of the Member States and more particularly in CY, DK, ES, HU, IE, LT and LV.

Table 10: Summary: Family expenditure in the crisis (2007–2010)

		Performance in 2010			Share to the contribution of real social protection expenditure growth, corrected for demographic change (2007–10)		
		Low	Av.	High	Low	Av.	High
Expenditure per 18- in 2010	Low	ES, IT, MT	CZ, LV, PL, PT, UK	NL	CZ#, ES, IT#, LV, NL#, PL	MT, PT, UK	
	Av.	BG, RO, SK	BE, EE, EL, FR, LT, HR	CY	BE, FR, RO	CY, EL	BG, EE, LT, SK
	High	HU	AT, DE, IE, LU	DK, FI, SE, SI	HU, IE	DK, FI	AT, DE, LU, SE, SI

Source: DG EMPL calculations.

Notes: Av. for average; Member States are regrouped in three groups for each of the expenditure dimensions (groups of 9 countries for expenditure, levels in 2010 and contributions to expenditure growth 2008–10, corrected for the change in population aged 18 and under, see Chart 4) and based on average levels of standard deviation as regards performance (on average over the main outcomes identified, with thresholds of higher than 0.5 reduced standard deviations or lower than 0.5 reduced standard deviations). The main outcomes are the relative income of households with children, child poverty, poverty reduction by family benefits, the share of children in jobless households, the share of children aged 0–3 in childcare, and the employment rate of mothers with youngest child below 6 years of age.
(#): for negative contributions to total real growth expenditure.

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Health and disability

As we have not assessed the performance of healthcare expenditure, we only analyse here its contribution to the overall evolution of social expenditure. Between 2007 and 2010, a number of countries with relatively high levels of expenditure devoted a relatively high share of their expenditure increase to health and disability (DE, IE, NL and the UK). Conversely, some Member States with originally low or average expenditure levels devoted a low share of their expenditure increase to health and disability (in particular LV, LT and HU, where expenditure declined, but also in CZ). This suggests that the dynamics of expenditure may have been unbalanced during the crisis in these countries.

Family

While most Member States had an average performance in 2010 with respect to family expenditures, some had significantly lower performance than the average (notably HU with relatively high expenditure, BG, RO and SK with average levels of expenditure and ES, IT and MT with low levels of expenditure). At the same time, some had higher performance than the average (notably CY with average levels of expenditure, and DK, FI, SE, SI with higher levels of expenditure and NL with relatively low expenditure levels).

Among the countries with relatively high spending and average or low performance, some have devoted a higher than average share of their overall increase in social expenditures to family expenditure (AT, DE and LU), while conversely some Member States with low expenditure levels and low or average performance did not devote a strong share of their expenditure increase to family expenditure (in particular ES and IT or to a lesser extent CZ and PL).

Table 11: Summary: Unemployment expenditure in the crisis (2007–2010)

		Performance in 2010			Share to the contribution of real social protection expenditure growth, corrected for unemployment changes (2007–10)		
		Low	Av.	High	Low	Av.	High
Expenditure per unemployed in 2010	Low	EE, LT, SK, HR	LV, PL, RO, SI, UK		LT#, LV#, UK#	PL, SI	EE, RO, SK
	Av.	EL	BG, CZ, ES, HU, IT, MT, PT, SE	CY	CY#, CZ#, EL#, ES#, SE#	MT, PT#	BG, HU, IT
	High		DE, FR, IE	AT, BE, DK, FI, LU, NL	DK#, FR#, IE#	BE, FI#, NL	AT, DE, LU

Source: DG EMPL calculations.

Notes: Av. for average; Member States are regrouped in three groups for each of the expenditure dimensions (groups of 9 countries for expenditure, levels in 2010 and contributions to expenditure growth 2008–10, corrected for the change in population aged 18 and under, see Chart 4) and based on average levels of standard deviation as regards performance (on average over the main outcomes identified, with thresholds of higher than 0.5 reduced standard deviations or lower than 0.5 reduced standard deviations). The main outcomes are the coverage, the net replacement rate, the poverty rate of the unemployed, the unemployment rate and the long-term unemployed rate.
(#): for negative contributions to total real growth expenditure.

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Table 12: Summary: Social exclusion and housing expenditure in the crisis (2007–2010)

		Performance in 2010			Share to the contribution of real social protection expenditure growth (2007–10)		
		Low	Av.	High	Low	Av.	High
Expenditure per capita in 2010	Low	LV	BG, CZ, EE, IT, PL, PT, RO	AT	BG#, PL#	AT, CZ, EE, IT, LV, PT	
	Av.		BE, DE, ES, HU, IE, LT, SI, SK	LU, MT	DE, ES, HU#, MT#, SK#	BE, IE, SI	LT, LU
	High	EL	DK, NL, SE, UK	CY, FI, FR	EL#	DK	CY, FI, FR, NL, SE, UK

Source: DG EMPL calculations.

Notes: Av. for average; Member States are regrouped in three groups for each of the expenditure dimensions (groups of 9 countries for expenditure, levels in 2010 and contributions to expenditure growth 2008–10) and based on average levels of standard deviation as regards performance (on average over the main outcomes identified by function, with thresholds of higher than 0.5 reduced standard deviations or lower than 0.5 reduced standard deviations). The main outcomes are the poverty rate, poverty reduction, the share of the population at risk of poverty and housing cost overburden, the overcrowding rate of poor people, the inactivity trap and the share of jobless households.
(#): for negative contributions to total real growth expenditure.

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Unemployment

As regards unemployment expenditure, most Member States had average performance in 2010, while some experienced lower performance than the average (notably EL with average expenditure levels and EE, LT, SK and HR with low levels of expenditure) and some higher than the average (CY with average levels of expenditure and AT, BE, DK, FI, LU, NL with higher levels of expenditure).

Once controlled for the change in the number of unemployment people over 2007–10, among countries with relatively high or average spending and average performance, only Germany has devoted a higher than average share of their overall increase in social expenditures to unemployment expenditure. Conversely, some Member States with low expenditure levels and low or average performance did not devote a stronger than average share of their expenditure increase due to average expenditure per unemployed (LT, LV and UK). In these countries, as well as in a number of other ones, the actual average expenditure per unemployed people decreased in real terms over the period (CY, CZ, DK, EL, ES, FR, IE, PT and SE).

Social exclusion and housing

As regards social exclusion and housing expenditure, while most Member States had average performance in 2010, two experienced lower performance than average (EL with relatively high expenditure and LV with low levels of expenditure) and several other higher than average performance levels (notably AT, LU and MT with average or low levels of expenditure).

The balance of expenditure growth does not seem to have been skewed towards social exclusion and housing in the crisis, with high increases only in three countries with high expenditure levels but average performance levels (NL, SE and UK). Nevertheless, the contribution of social exclusion and housing expenditure has actually been negative in several countries (BG, EL, PL, HU, MT and SK), although performance was actually close to average in all of these Member States.

5. CONCLUSIONS

The deteriorating economic and labour market conditions as a result of the crisis have put pressure on household incomes, just as rising budget deficits and debt levels escalated into sovereign debt crises in several Member States, putting European welfare systems under heavy financial strain. As a result increased attention is being paid to the potential for improvements in the efficiency as well as the effectiveness of social protection systems.

This chapter provides an overview of developments across the EU in terms of different forms and areas of social expenditure and a detailed comparison of Member State performances against key common social and employment outcomes. Trends in social protection expenditure are analysed since the onset of the crisis, with a particular focus on the extent to which it has managed to sustain household incomes in comparison with past episodes of economic downturn or recession. It also reviews the effectiveness and efficiency of social spending in terms of key policy outcomes, typically in terms of income smoothing and redistribution but also employment friendliness, and it analyses whether expenditure trends up to 2010 were focused on areas of greatest need.

In the early phase of the crisis (until 2009), social expenditures played an important role in stabilising household incomes in most EU countries, as did the fiscal stimulus measures put in place to sustain aggregate demand and contain major job shedding, in line with the European Economic Recovery Plan of November 2008. Apart from unemployment insurance, other functions such as pensions and health contributed positively to net social benefits, while declining taxes also contributed positively to the change in gross household disposable income (GHDI) in 2009 and in the first two quarters of 2010. From mid-2010 on, the contribution of social benefits to the change in gross household income started to lessen. This occurred because of different factors, which combined differently depending on the Member State, such as, in particular, the increase in the number of long-term unemployed losing their entitlements and the partial phasing-out of both automatic stabilisation and the stimulus measures put in place to counter the crisis (following some improvement in the economic situation and outlook in some Member States). At the same time, the tapering off of the impact of social spending reflected the sheer size of the budget consolidation efforts needed in the current crisis.

Overall, the reduction in social expenditure growth rates after the peak of 2009

(which translated into declines in real terms in 2011 and 2012) appears more pronounced in comparison to economic crises that have occurred over the past three decades.

This underlines the need for a much closer examination of both the effectiveness and efficiency of social protection expenditure, not just in terms of smoothing the business cycle, but of improving income distribution and labour market outcomes, as well as providing public services and contributing to social investment.

The allocation of welfare expenditure to different social functions has strong implications for the overall efficiency and effectiveness of social protection. Concretely, efficiency gains can be obtained in situations whereby the expenditure allocation is oriented towards a specific social function delivering comparatively low economic or social outcomes, but also in situations combining relatively lower spending levels with low outcomes in comparison to the EU average ([28]).

In 2010, EU Member States had different welfare expenditure patterns. As expenditure on pensions, healthcare and disability represents more than three quarters of total expenditure, spending patterns are of particular interest in these areas. While a number of Member States (such as Poland) appear to have a strong orientation towards pension expenditures, relatively few display such a strong orientation towards health and disability spending (the most prominent being Ireland and Croatia). Conversely, pension expenditure in Germany, Denmark, Finland, Ireland and Sweden appear significantly below the EU average (after controlling for the age structure of the population), while the same applies to health and disability spending in Cyprus and Malta.

Beyond these key spending functions, more prominent divergences in the spending patterns of Member States exist in various areas. In terms of family expenditure, there is a higher orientation in Austria, Bulgaria, Denmark, Estonia, Hungary, Lithuania and Luxembourg while there is a lower orientation in the Netherlands and Italy. In terms of unemployment expenditure, the differences are smaller but there is still a stronger focus in Austria, Belgium and Luxembourg against a negative one in Italy, Sweden and the UK. In terms of social exclusion and housing expenditure there is a higher orientation in Cyprus, Lithuania, the Netherlands and the UK and a lower one in Italy and Austria.

The stylised framework presented in the chapter allows for reviewing the relative performance and efficiency of Member States in four broad social protection functions: pensions, unemployment, family and social exclusion and housing**.** For each type of spending, performances can typically be assessed in terms of labour market outcomes, such as employment rates of older workers or of mothers, as well as social outcomes, such as the adequacy of pensions, poverty risk or poverty reduction, or housing overcrowding.

Using this framework, the evidence shows, for example, that high expenditure on pension expenditure is typically associated with strong pension adequacy, but may increase the risk of low labour market attachment among older workers. Likewise, higher levels of unemployment expenditures indicate high coverage and adequacy, but risks creating unemployment traps. Higher levels of family expenditure may be linked to a greater reduction in child poverty, while a strong weight on in-kind benefits is seen as beneficial to the employment rate of women and to the relative income of households with children.

The framework developed in this chapter helps identify situations where the dynamics of different types of social expenditure may not be optimally balanced. Such situations can for instance occur when stronger expenditure increases are observed in less efficient areas (i.e. those with already high expenditure levels but low performance) or conversely, when lower expenditure increases are observed in areas of initially low expenditure levels and relatively low performance (where the analysis suggests the possibility of achieving a greater impact).

([28]) A more in-depth and comprehensive analysis of the overall efficiency of social protection is outside the scope of this chapter.

Annexes

A1 — Sources and measurement of social protection expenditure

Social protection expenditure trends can be assessed in different ways, and are most frequently looked at as a share of GDP or as a share of other public expenditures, or in volumes (deflated by some price index, generally HICP) or expenditures per capita. This paper focuses on trends in volumes, since other measures actually reflect a number of other effects, such as changes in GDP levels or changes in the levels of other public expenditures. In particular, it can be noted that in periods of relatively high growth, the share of expenditure in GDP would not increase if real expenditure growth were at a quicker pace than its long-term trend.

Two main data sources on social protection expenditures are used in this analysis, the European System of Integrated Social Protection Statistics (ESSPROS until 2010) and the National Accounts (until 2013).

ESSPROS data on social protection expenditure is compiled by Eurostat in accordance with the methodology of the European System of Integrated Social Protection Statistics 'ESSPROS Manual 2011'. Social protection is defined as encompassing 'all interventions from public and private bodies intended to relieve households and individuals of the burden of a defined set of risks or needs, provided that there is neither a simultaneous reciprocal nor an individual arrangement involved'. As such, the field of observation of the ESSPROS goes beyond that of social security (i.e. social protection provided by governments) to include benefits provided by private social protection schemes, in so far as they have similar effects on social security for the beneficiary. Social protection expenditure includes social benefits, classified by function, and administrative and other costs incurred by social protection schemes. This data is currently available for up until 2010 and in gross terms. An exercise to provide net data as well has been the subject of pilot programmes and is now in the regulation process. The eight policy areas covered in the ESSPROS are the following: sickness/healthcare, disability, old age, survivors, family/children, unemployment, housing, social exclusion. ESSPROS also provides the information whether given benefits are provided in cash or as services directly to citizens ('in kind'), and also whether they are means-tested or not.

Data on social protection expenditure from the **National Accounts** is in accordance with the European System of Accounts 1995 (ESA95) and covers 'Social transfers in kind' and 'Social benefits other than social transfers in kind'. Generally speaking, the levels for total expenditure on social protection are somewhat higher than in the ESSPROS. The main differences are that:

- First, National Accounts also include the function of Education in social protection expenditure. Due to this, developments in expenditure on social transfers in National Accounts are influenced by developments in the Education function (unlike social protection expenditure in the ESSPROS). The order of magnitude of this effect on the level of growth of the total social transfers' aggregate from the National Accounts can however be gauged based on the COFOG classification of the National Accounts: it has been on average around only 0.1 pp. since 2000 for both the EU-27 and EA-17 and in each year has been lower than 0.5 pp. Therefore, it does not impact significantly on the changes in social transfers' growth described below for 2011 and 2012.

- Second, while the ESSPROS covers both current and capital transfers, National Accounts only cover current transfers.

- Third, the treatment of certain reductions in taxes and other obligatory levies payable by households is accounted for in a different way by the ESSPROS and National Accounts (e.g. flat rate allowances, paid in cash where the taxable income of eligible households is too low to benefit from a reduction).

- Fourth, while in the ESSPROS, social benefits in kind may be granted by any type of scheme (e.g. unfunded employers' schemes), in the National Accounts they refer exclusively to benefits provided by government units (social security and social assistance), those provided by other schemes being treated as cash benefits.

For more details on the main differences compared with the European System of Integrated Social Protection Statistics (ESSPROS) in the way social benefits in cash and in kind are distinguished please refer to the Manual on sources and methods for the compilation of COFOG Statistics, page 65–66, Eurostat ([29]). Data that was missing in the National Accounts (for Malta, Luxembourg, Bulgaria and Ireland) was complemented by estimates available from the AMECO database of the European Commission.

Furthermore, to reflect on trends in real social expenditure, the deflator used here is the HICP, since it allows for estimating the trend in the overall real value or purchasing power provided by social expenditure. Indeed, the HICP is a price index that reflects changes in a basket of goods and services, which appears closer to the actual expenditure on consumption of households in comparison to the deflator of household consumption from the National Accounts (which also for instance includes imputed rents). Furthermore the deflator of consumption in the National Accounts reflects changes in the structure of consumption over time and thus appears less suitable than the HICP which does not directly reflect yearly changes in the consumption structure, which are partly a reaction to price changes.

A2 — Various definitions of efficiency and related measurement issues

International organisations and academic scholars have paid considerable attention to the challenge of measuring the efficiency of social protection systems ([30]).

Generally defined as the ratio of output to input (see Mandl, Dierx and Ilzkovitz 2008), efficiency is most commonly applied to the assessment of (industrial) production processes, where a certain number of inputs are used to produce standardised output under the objective of profit maximisation. A related concept of Pareto efficiency can also be derived as a situation where it is not possible

([29]) http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-RA-07-022/EN/KS-RA-07-022-EN.PDF

([30]) See notably European Commission (2008).

to improve an outcome without worsening another one, for a given level of expenditure. Furthermore, administrative efficiency in principle relates to the administrative costs related to the provision of social protection.

The measurement of technical efficiency usually relies on the idea of a best practice frontier. Over the course of the last two decades, a number of papers and reports have tried to apply the concept of production efficiency to the social field, either through parametric or non-parametric approaches. Two main methodological alternatives can be used to determine this best practice frontier.

So-called parametric approaches assume an underlying production function. The error term of the estimation (which reflects the unexplained variation in outputs) then serves as an indicator of efficiency. The results of parametric analyses thereby depend on (and change with) the set of control variables included and the functional form chosen. Grigoli and Kapsoli (2013) provide an overview of existent studies on emerging and developing countries, as well as a discussion of some of the challenges in using regression analysis to measure social efficiency.

Alternatively, non-parametric methods are used to derive a best practice frontier and do not require the specification *a priori* of a functional form, but allow for the specification of different assumptions (e.g. on the production process). The most common techniques are the 'Data Envelope Analysis (DEA)' and the 'Free Disposal Hull' (FDH). The DEA method involves the use of linear programming to construct a piece-wise frontier over the data, where different assumptions can be made over the input or output orientation (whose variable is fixed in order to resolve the programming component) and the type of returns to scale ([31]). The FDH method does not make *a priori* assumptions on the convexity of the production frontier.

While a growing literature provides attempts to measure social efficiency using both parametric and non-parametric approaches (basically SFA and DEA, respectively), the application of the concept of production efficiency to the public sector remains problematic for several reasons. Borrowed from the measurement of technical efficiency in production, an efficiency frontier can most reliably be computed at the micro-level for a large number of production units that use well-defined inputs designated to produce standardised outputs. For the purpose of comparability, the production environment should be either homogeneous or have no significant impact on the achieved outputs.

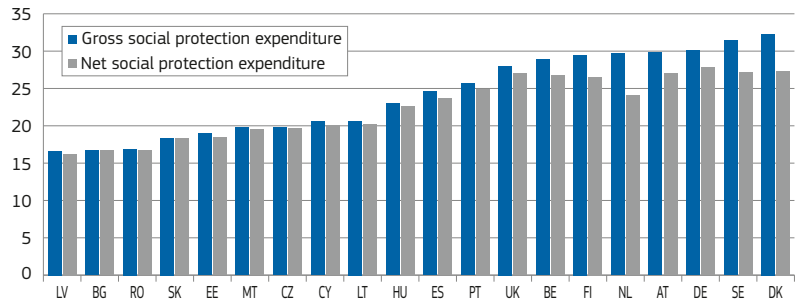
As discussed in detail by Ravallion (2005) and Pestieau (2007), these ideal conditions hardly hold for the 'production processes' that underlie social outcomes. Although one of the advantages of DEA is to consider multiple output and input settings, the accounting of social outcomes and public sector inputs is hardly complete. Social policies affect several and sometimes opposing objectives, which would all need to be taken into account for a complete analysis. As social spending tends to serve several policy objectives, input (typically benefits/transfers) often cannot easily be assigned to a specific outcome. Family benefits, for instance, are not exclusively targeted at mitigating child poverty, but may as well follow education and employment targets. Likewise, social outcomes can be addressed by more than one social protection function, which widens the set of relevant input factors.

More importantly, employment and fiscal policies as well as a wide range of contextual factors (demographic, economic, cultural, lifestyle factors, etc.) often also have a significant impact on social outcomes. Based on the assumption of a direct and causal relationship between input and output indicators, non-parametric approaches do not allow accounting for the impact of environmental factors, and might therefore be misleading. In their study of public spending efficiency in redistributing income, Afonso *et al.* (2008), for instance, have tried to address these concerns by estimating the impact of such environmental factors on the DEA efficiency scores in a second-stage regression. Their results suggest a substantial bias in the estimated efficiency scores when relevant context factors are omitted.

While regression analyses do allow the inclusion of both direct inputs and context indicators as explanatory factors, the sample size needed for robust estimates also increases with the number of control variables included. Non-parametric methods are also sensitive to the sample size and the number of inputs and outputs considered. Park *et al.* (2000) use simulations to illustrate the considerable imprecision inherent to FDH estimates which are based on a sample size of 100 or fewer, even when only a few input and output factors are included. Attempts to model the 'production' of social outcomes based on an EU sample of 28 heterogeneous observations run the risk of simplification notably due to the omission of factors, which implies that results of cross-country studies on social efficiency and country rankings need to be interpreted with care. Nevertheless, in spite of related potential limitations, the study by Aubyn *et al.* (2009) is a useful attempt to use both semi-parametric (two-stage DEA) and parametric methods (SFA) for the evaluation of the efficiency and effectiveness of public spending on tertiary education.

([31]) Coelli et al. (2005) and Thanassoulis (2001), for instance, provide a detailed overview of the DEA methodology.

Chart A1: Gross versus net social protection expenditure in the EU in 2009 (as a share of GDP)



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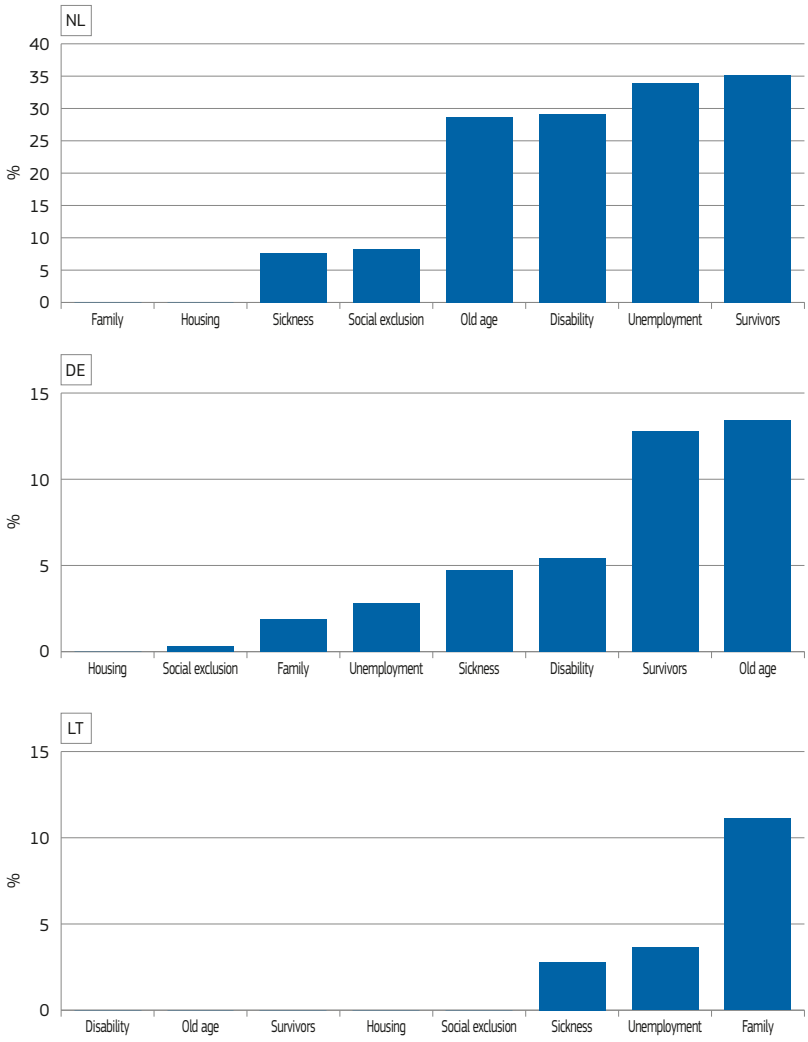
Source: ESSPROS.

Note: Net expenditure data is not available for: IE, EL, FR, IT, LU, PL, SI. Data is provisional for: EE, PT.

Chart A2: Difference in taxation of benefits by spending function in 2009 in NL, DE and LT



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Source: ESSPROS, DG EMPL calculations.

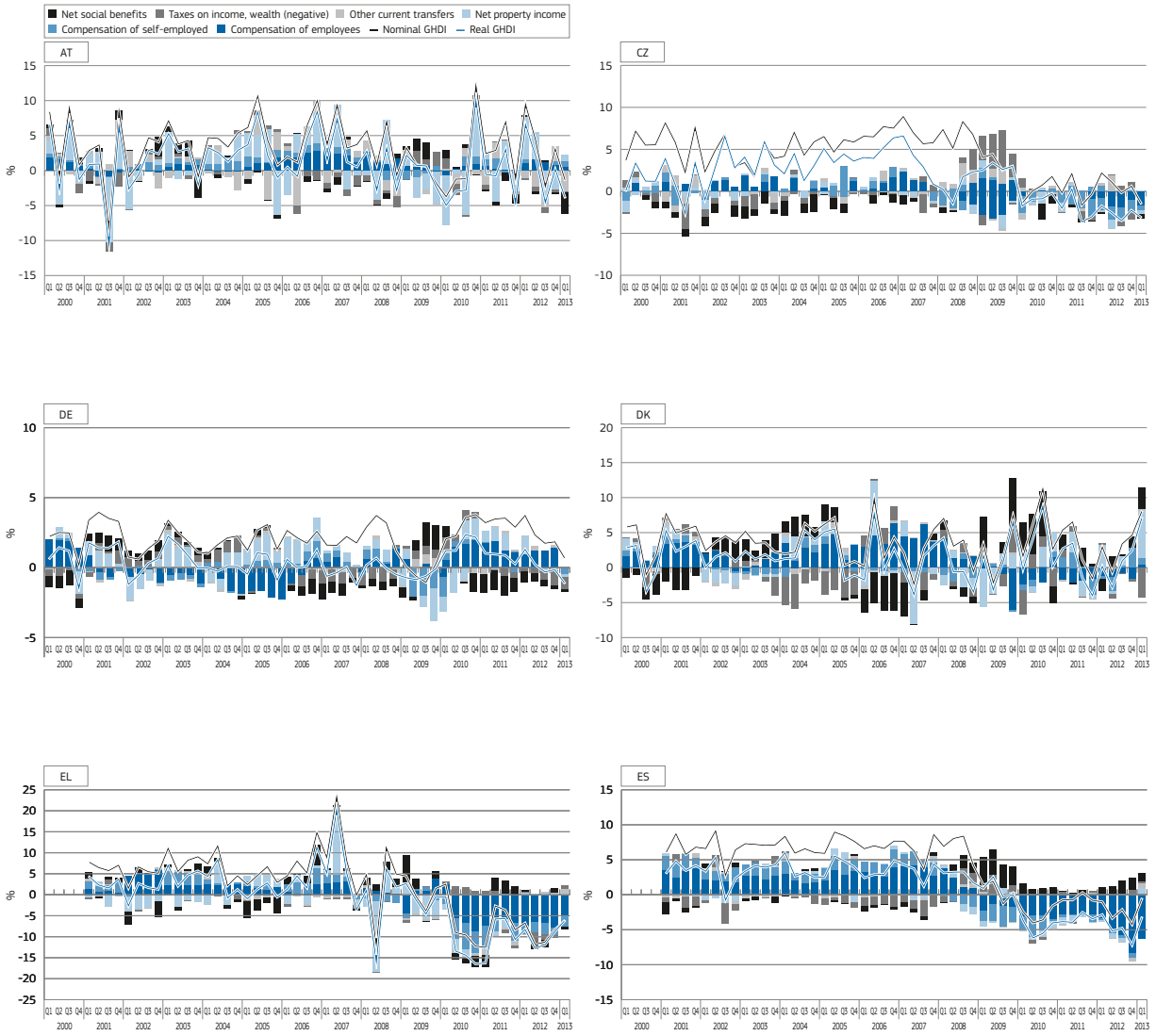
A3 — Net social expenditures

In 2008 Eurostat started to collect information on the taxes and social contributions paid on gross social protection benefits by recipients. The net value of social benefits is derived by deducting the combined value of the two forms of obligatory levy (income taxes and social contributions) applied by general government to the income of fiscal units that relates to liable (cash) social benefits.

Chart A1 reports gross and net social protection expenditure for the Member States where net values are available. In 2009, the average obligatory levy on all social benefits ranges from less than 1 % in Bulgaria, Czech Republic, Romania and Slovak Republic to more than 10 % in Denmark, Finland, Sweden and a maximum of 19 % in the Netherlands.

Chart A2 shows considerable discrepancies in the overall taxation of different functions of social expenditure within selected Member States. The pattern of these discrepancies varies also across Member States. For instance, in a country with a high average overall taxation of social benefits such as the Netherlands the overall tax on expenditure for family and children is zero, while in Lithuania is 9 pp. higher than the national average (2 %). The pattern of taxation of unemployment benefits versus other social benefits is also very different across Member States. For example, the overall taxation of unemployment benefits is 80 % higher than the overall taxation of all social benefits in the Netherlands, 51 % higher in Lithuania and 63 % lower in Germany.

Chart A3: Contributions to GHDI real growth in Member States (Q1 2000–Q1 2013)



Source: National Accounts.

Note: GHDI year-on-year changes (expressed as a percentage) and contributions of the various components to this change. For Poland and Romania data is only available for GHDI and compensation of the self-employed.

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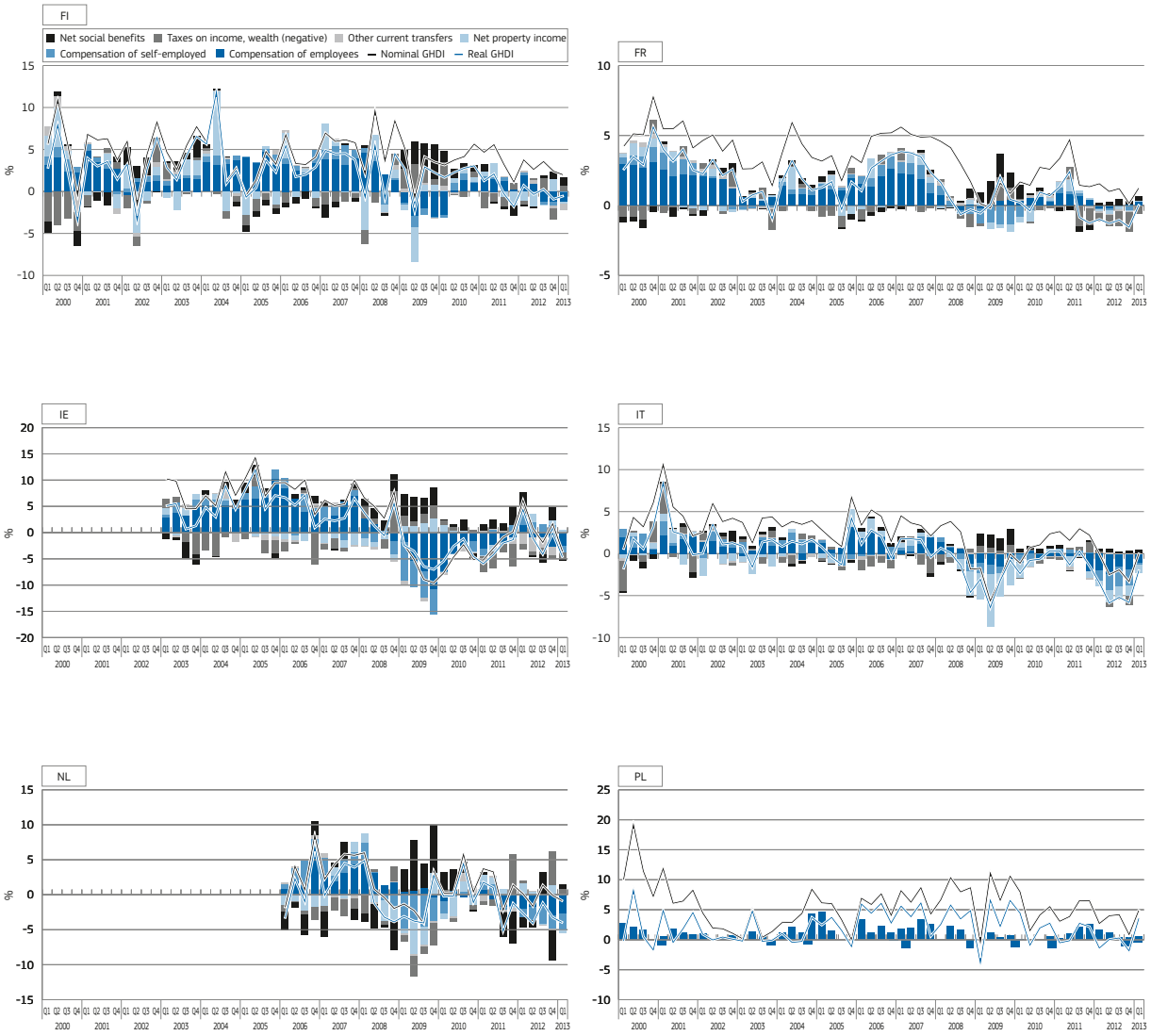
Chart A3: Contributions to GHDI real growth in Member States (Q1 2000–Q1 2013) (cont.)



Source: National Accounts.

Note: GHDI year-on-year changes (expressed as a percentage) and contributions of the various components to this change. For Poland and Romania data is only available for GHDI and compensation of the self-employed.

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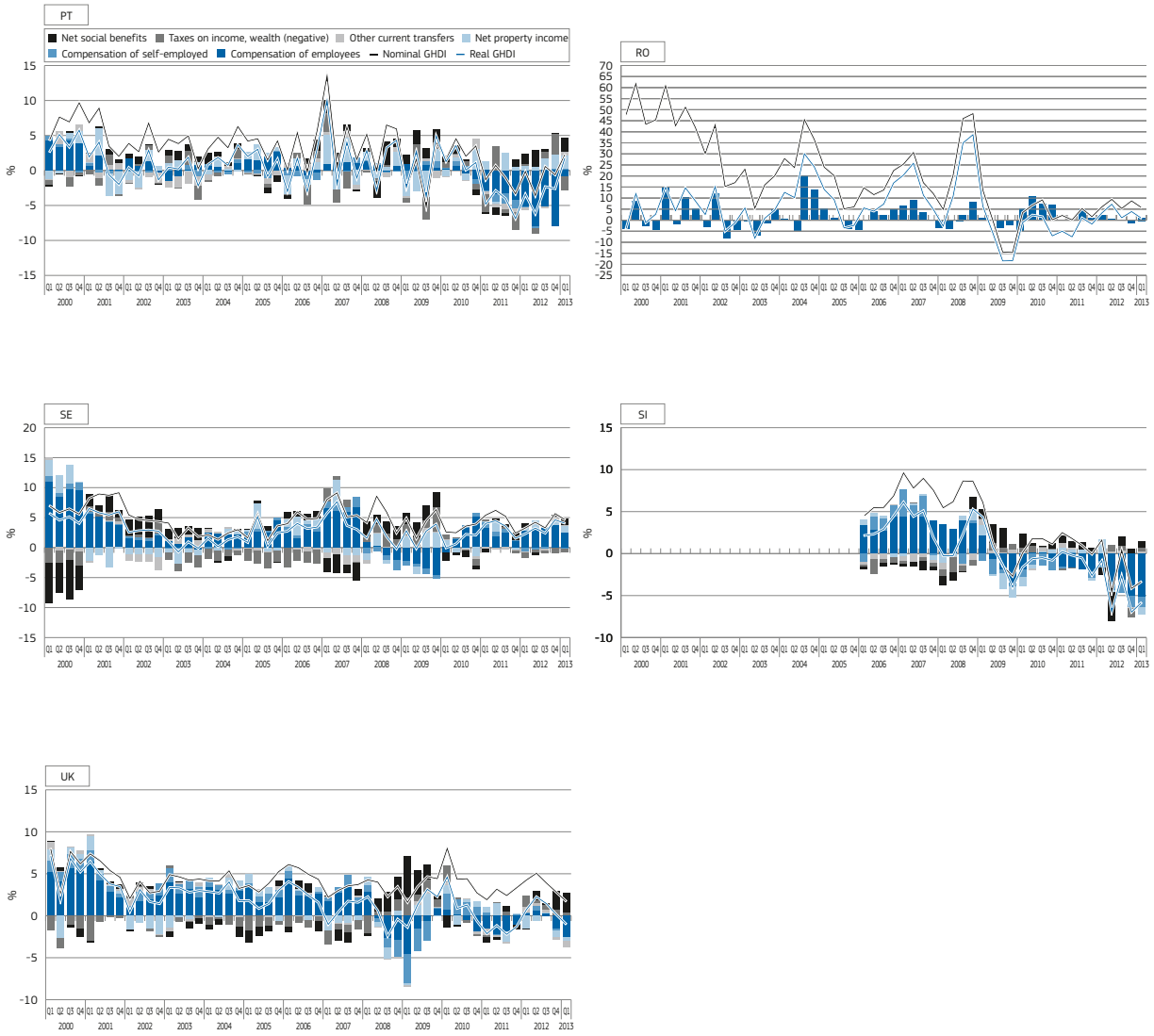
Chart A3: Contributions to GHDI real growth in Member States (Q1 2000–Q1 2013) (cont.)



Source: National Accounts.

Note: GHDI year-on-year changes (expressed as a percentage) and contributions of the various components to this change. For Poland and Romania data is only available for GHDI and compensation of the self-employed.

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Table A4: Statistical output of factor analysis — Pensions

Factor analysis/correlation — Number of obs = 26
Method: principal factors — Retained factors = 3
Rotation: (unrotated) — Number of params = 36

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	4.84	1.99	0.45	0.45
Factor2	2.85	1.27	0.27	0.71
Factor3	1.59	0.83	0.15	0.86
Factor4	0.76	0.18	0.07	0.93
Factor5	0.57	0.39	0.05	0.99
Factor6	0.19	0.06	0.02	1.00
Factor7	0.13	0.06	0.01	1.02
Factor8	0.07	0.05	0.01	1.02
Factor9	0.02	0.03	0.00	1.02
Factor10	-0.01	0.04	0.00	1.02
Factor11	-0.04	0.04	0.00	1.02
Factor12	-0.08	0.04	-0.01	1.01
Factor13	-0.12	.	-0.01	1.00

LR test: independent vs. saturated: chi2(78) = 323.77 Prob>chi2 = 0.0000

Factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Factor3	Uniqueness
rel_income	-0.72	0.42	0.25	0.24
ARR_m	-0.47	0.45	0.20	0.53
ARR_f	-0.34	0.73	-0.13	0.33
AROP_65m	0.35	-0.82	0.01	0.21
AROP_65f	0.46	-0.75	0.00	0.23
working_life	0.88	0.30	0.13	0.11
ER55_59	0.83	0.44	0.02	0.11
ER60_64	0.90	0.19	-0.17	0.12
PT55_64	0.44	0.28	0.64	0.32
UR_55_64	0.00	0.23	-0.90	0.13
IA_55_64	-0.83	-0.44	0.31	0.02
LLL_55_64	0.67	0.20	0.30	0.42
MT_benefits	0.17	-0.14	0.05	0.95

Factor analysis/correlation — Number of obs=26
Method: principal factors — Retained factors=3
Rotation: orthogonal varimax (Kaiser on) — Number of params=36

Factor	Variance	Difference	Proportion	Cumulative
Factor1	4.37	1.07	0.41	0.41
Factor2	3.30	1.70	0.31	0.71
Factor3	1.60	.	0.15	0.86

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Factor3	Uniqueness
rel_income	-0.44	-0.73	0.19	0.24
ARR_m	-0.21	-0.63	0.15	0.53
ARR_f	0.06	-0.80	-0.18	0.33
AROP_65m	-0.09	0.88	0.05	0.21
AROP_65f	0.04	0.88	0.05	0.23
working_life	0.91	0.15	0.19	0.11
ER55_59	0.94	0.01	0.07	0.11
ER60_64	0.89	0.27	-0.11	0.12
PT55_64	0.49	-0.07	0.66	0.32
UR_55_64	0.15	-0.15	-0.91	0.13
IA_55_64	-0.95	-0.03	0.26	0.02
LLL_55_64	0.67	0.13	0.34	0.42
MT_benefits	0.08	0.20	0.06	0.95

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Kaiser-Meyer-Olkin measure of sampling adequacy

Variable	kmo
rel_income	0.83
ARR_m	0.66
ARR_f	0.68
AROP_65m	0.69
AROP_65f	0.53
working_life	0.63
ER55_59	0.47
ER60_64	0.57
PT55_64	0.31
UR_55_64	0.15
IA_55_64	0.49
LLL_55_64	0.89
MT_benefits	0.30
Overall	0.54

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Table A5: Statistical output of factor analysis — Unemployment

Factor analysis/correlation
Method: principal factors
Rotation: (unrotated)

Number of obs = 24
Retained factors = 3
Number of params = 48

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	6.01	3.31	0.42	0.42
Factor2	2.70	0.89	0.19	0.61
Factor3	1.81	0.56	0.13	0.73
Factor4	1.25	0.45	0.09	0.82
Factor5	0.80	0.04	0.06	0.88
Factor6	0.76	0.23	0.05	0.93
Factor7	0.53	0.18	0.04	0.97
Factor8	0.35	0.10	0.02	0.99
Factor9	0.25	0.13	0.02	1.01
Factor10	0.12	0.08	0.01	1.02
Factor11	0.04	0.04	0.00	1.02
Factor12	0.00	0.01	0.00	1.02
Factor13	-0.01	0.01	0.00	1.02
Factor14	-0.02	0.04	0.00	1.02
Factor15	-0.06	0.03	0.00	1.01
Factor16	-0.09	0.02	-0.01	1.01
Factor17	-0.11	.	-0.01	1.00

LR test: independent vs. saturated: chi2(136) = 416.84 Prob>chi2 = 0.0000

Factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Factor3	Uniqueness
coverage	0.62	0.16	-0.09	0.59
AROP_U	-0.43	-0.14	0.11	0.79
NRR	-0.01	0.74	-0.35	0.33
LTU_rate	-0.71	0.46	0.36	0.16
U_trap	0.22	0.74	-0.33	0.29
ER	0.89	-0.03	0.15	0.18
UR	-0.56	0.49	0.61	0.08
invol_PT	-0.68	0.10	0.22	0.48
inactivity_rate	-0.66	-0.29	-0.57	0.15
NEET	-0.79	0.11	0.27	0.29
U_in_LLL	0.86	-0.06	0.23	0.21
I_in_LLL	0.84	0.05	0.30	0.20
LMP_wanting_work	0.49	0.51	-0.40	0.34
trans_U_E	0.51	-0.27	0.15	0.65
trans_U_I	0.27	-0.44	0.25	0.67
MT_ben	-0.18	-0.59	-0.11	0.61
share_high_skilled	0.49	0.35	0.42	0.46

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Factor analysis/correlation — Number of obs = 24
Method: principal factors — Retained factors = 3
Rotation: orthogonal varimax (Kaiser on) — Number of params = 48

Factor	Variance	Difference	Proportion	Cumulative
Factor1	4.21	0.45	0.29	0.29
Factor2	3.76	1.21	0.26	0.56
Factor3	2.55	.	0.18	0.73

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Factor3	Uniqueness
coverage	-0.45	0.39	0.23	0.59
AROP_U	0.33	-0.25	-0.21	0.79
NRR	0.06	-0.04	0.81	0.33
LTU_rate	0.89	-0.10	0.19	0.16
U_trap	-0.10	0.13	0.83	0.29
ER	-0.58	0.69	-0.02	0.18
UR	0.93	0.18	0.13	0.08
invol_PT	0.66	-0.28	-0.06	0.48
inactivity_rate	0.06	-0.92	-0.06	0.15
NEET	0.78	-0.31	-0.08	0.29
U_in_LLL	-0.52	0.72	-0.09	0.21
I_in_LLL	-0.43	0.79	-0.02	0.20
LMP_wanting_work	-0.42	0.19	0.67	0.34
trans_U_E	-0.38	0.37	-0.26	0.65
trans_U_I	-0.21	0.23	-0.49	0.67
MT_ben	-0.14	-0.36	-0.49	0.61
share_high_skilled	0.01	0.72	0.17	0.46

Kaiser-Meyer-Olkin measure of sampling adequacy

Variable	kmo
coverage	0.59
AROP_U	0.60
NRR	0.35
LTU_rate	0.61
U_trap	0.42
ER	0.57
UR	0.41
invol_PT	0.72
inactivity_rate	0.46
NEET	0.80
U_in_LLL	0.76
I_in_LLL	0.81
LMP_wanting_work	0.60
trans_U_E	0.60
trans_U_I	0.48
MT_ben	0.32
share_high_skilled	0.56
Overall	0.58

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Table A6: Statistical output of factor analysis — Family

Factor analysis/correlation — Number of obs = 27
Method: principal factors — Retained factors = 4
Rotation: (unrotated) — Number of params = 54

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	5.20	2.52	0.43	0.43
Factor2	2.67	0.83	0.22	0.65
Factor3	1.85	0.71	0.15	0.80
Factor4	1.14	0.43	0.09	0.90
Factor5	0.71	0.28	0.06	0.96
Factor6	0.43	0.24	0.04	0.99
Factor7	0.19	0.06	0.02	1.01
Factor8	0.13	0.04	0.01	1.02
Factor9	0.09	0.06	0.01	1.03
Factor10	0.03	0.04	0.00	1.03
Factor11	-0.01	0.01	0.00	1.03
Factor12	-0.03	0.05	0.00	1.02
Factor13	-0.07	0.02	-0.01	1.02
Factor14	-0.10	0.03	-0.01	1.01
Factor15	-0.12	.	-0.01	1.00

LR test: independent vs. saturated: chi2(105) = 310.52 Prob>chi2 = 0.0000

Factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Factor3	Factor4	Uniqueness
rel_income	-0.30	0.58	-0.40	0.11	0.39
AROP_child	0.90	-0.26	0.13	0.20	0.06
poverty_gap	0.86	0.17	0.01	0.24	0.17
persistent_poverty	0.71	-0.24	0.25	0.05	0.38
SMD_child	0.77	-0.07	-0.37	0.28	0.19
AROP_red_by_fam_bens	-0.74	0.03	-0.35	0.07	0.33
gend_empl_gap	0.11	-0.55	0.33	-0.44	0.38
empl_imp_of_parenth	-0.09	-0.72	-0.61	-0.06	0.10
ER_FT_mothers	0.28	0.84	0.22	-0.12	0.15
ER_PT_mothers	-0.62	-0.23	0.54	0.43	0.09
invol_PT	0.77	0.18	-0.03	0.00	0.37
inact_PT_lack_care	0.62	0.15	0.00	0.27	0.52
childcare_FT	-0.27	0.71	0.15	-0.10	0.40
childcare_PT	-0.51	-0.18	0.57	0.47	0.17
MT_benefits	0.33	-0.01	0.43	-0.50	0.46

Factor analysis/correlation — Number of obs=27
Method: principal factors — Retained factors=4
Rotation: orthogonal varimax (Kaiser on) — Number of params=54

Factor	Variance	Difference	Proportion	Cumulative
Factor1	4.37	1.89	0.36	0.36
Factor2	2.48	0.40	0.20	0.57
Factor3	2.08	0.14	0.17	0.74
Factor4	1.93	.	0.16	0.90

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Factor3	Factor4	Uniqueness
rel_income	-0.25	0.31	0.21	-0.63	0.39
AROP_child	0.90	-0.17	0.07	0.30	0.06
poverty_gap	0.88	0.15	0.20	0.01	0.17
persistent_poverty	0.67	-0.09	0.02	0.40	0.38
SMD_child	0.78	-0.25	0.34	-0.17	0.19
AROP_red_by_fam_bens	-0.65	-0.16	-0.09	-0.46	0.33
gend_empl_gap	-0.07	-0.28	-0.03	0.74	0.38
empl_imp_of_parenth	-0.15	-0.91	0.23	-0.06	0.10
ER_FT_mothers	0.21	0.86	0.22	-0.07	0.15
ER_PT_mothers	-0.32	-0.04	-0.90	0.00	0.09
invol_PT	0.69	0.16	0.35	0.11	0.37
inact_PT_lack_care	0.68	0.11	0.10	-0.07	0.52
childcare_FT	-0.27	0.70	0.03	-0.21	0.40

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Variable	Factor1	Factor2	Factor3	Factor4	Uniqueness
childcare_PT	-0.20	0.02	-0.89	-0.01	0.17
MT_benefits	0.11	0.26	0.15	0.66	0.46

Kaiser-Meyer-Olkin measure of sampling adequacy

Variable	kmo
rel_income	0.46
AROP_child	0.62
poverty_gap	0.58
persistent_poverty	0.74
SMD_child	0.65
AROP_red_by_fam_bens	0.63
gend_empl_gap	0.49
empl_imp_of_parenth	0.36
ER_FT_mothers	0.41
ER_PT_mothers	0.43
invol_PT	0.86
inact_PT_lack_care	0.80
childcare_FT	0.63
childcare_PT	0.42
MT_benefits	0.44
Overall	0.57

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Table A7: Statistical output of factor analysis — Social exclusion

Factor analysis/correlation
Method: principal factors
Rotation: (unrotated)

Number of obs = 26
Retained factors = 3
Number of params = 27

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	4.49	3.39	0.63	0.63
Factor2	1.11	0.16	0.16	0.79
Factor3	0.94	0.33	0.13	0.92
Factor4	0.61	0.39	0.09	1.01
Factor5	0.22	0.15	0.03	1.04
Factor6	0.07	0.09	0.01	1.05
Factor7	-0.02	0.02	0.00	1.05
Factor8	-0.04	0.06	-0.01	1.04
Factor9	-0.10	0.10	-0.01	1.03
Factor10	-0.19	.	-0.03	1.00

LR test: independent vs. saturated: chi2(45) = 175.18 Prob>chi2 = 0.0000

Factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Factor3	Uniqueness
AROP	0.91	0.10	0.33	0.04
gap	0.85	0.28	0.12	0.18
SMD	0.61	0.06	0.14	0.60
AROP_red	-0.90	-0.11	0.24	0.12
inact_trap	-0.82	0.17	0.26	0.22
inact_trap~r	-0.40	0.71	-0.07	0.33
low_wage_t~p	-0.50	0.59	0.10	0.39
in_work_pov	0.78	0.28	-0.04	0.31
jobless_HH	-0.03	-0.14	0.80	0.33
MT_ben_SE	0.21	0.16	0.10	0.92

Factor analysis/correlation
Method: principal factors
Rotation: orthogonal varimax (Kaiser on)

Number of obs=26
Retained factors=3
Number of params=27

Factor	Variance	Difference	Proportion	Cumulative
Factor1	3.75	1.94	0.53	0.53
Factor2	1.81	0.83	0.25	0.78
Factor3	0.98	.	0.14	0.92

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Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Factor3	Uniqueness
AROP	0.91	-0.30	0.22	0.04
gap	0.90	-0.13	-0.01	0.18
SMD	0.59	-0.22	0.07	0.60
AROP_red	-0.81	0.33	0.34	0.12
inact_trap	-0.61	0.55	0.32	0.22
inact_trap~r	-0.05	0.81	-0.13	0.33
low_wage_t~p	-0.17	0.76	0.07	0.39
in_work_pov	0.81	-0.12	-0.16	0.31
jobless_HH	0.04	-0.04	0.81	0.33
MT_ben_SE	0.27	0.06	0.05	0.92

Kaiser-Meyer-Olkin measure of sampling adequacy

Variable	kmo
AROP	0.62
gap	0.85
SMD	0.87
AROP_red	0.63
inact_trap	0.70
inact_trap~r	0.37
low_wage_t~p	0.61
in_work_pov	0.66
jobless_HH	0.11
MT_ben_SE	0.32
Overall	0.62

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