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Excessive Social Imbalances and the Performance of Welfare States in the EU

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ABSTRACT

Our paper[4] starts from the premise that the disparity and lack of convergence of levels of child poverty in the Eurozone signals 'excessive imbalances' that should be a common concern. Increasing and diverging child poverty rates warrant a common concern, first, because they contradict the expectation that deepening European integration leads to growing cohesion at national and pan-European level, and second, because they signal investment deficits that may be cause and effect in a vicious circle of underperforming labour markets and education systems. The empirical part of the paper aims to develop an 'efficiency scoreboard' of member states' performance, based on their observable performance with regard to child poverty and 'efficiency-benchmarks' that take into account the levels of spending (distinguishing pension spending and other social spending), household employment rates and the 'pro-poorness' of social spending. With regard to household employment we distinguish a measure of 'work poverty' (which correlates with social investment, i.e. investment in education, child care and active labour market policies) and the 'relative severity of work poverty' (which reflects polarization, i.e. the unequal distribution of jobs over households). With regard to pro-poorness, an upshot of our research is that it confirms recent publications that question the so-called Korpi-Palme 'paradox of redistribution', without however showing that pro-poorness of social transfers (other than pensions) adds to the efficiency of spending on social transfers.

Although the impact of these indicators is statistically significant, they still leave substantial unexplained disparities in child poverty rates in European welfare states. On a structural level, the unexplained disparity reflects differences in the underlying societal fabric of welfare states, which correlate with differences in the level and architecture of social spending, GDP per capita and social investment, but are not readily 'explained' by these factors (which correlate strongly with each other). Our result with regard to the impact of pension spending on child poverty shows that analyzing the impact of incremental changes in policies must not be conflated with analyzing structural differences across welfare states.

CONTENTS

1.   INTRODUCTION

The European Union (EU) has adopted a surveillance mechanism to prevent and correct macroeconomic imbalances within the EU, the 'Macro-economic Imbalance Procedure' (MIP). It relies on an alert system that uses a scoreboard of indicators and in-depth country studies, strict rules in the form of an 'Excessive Imbalance Procedure' and enforcement in the form of financial sanctions for euro area member states that do not follow up on recommendations. The approach encompasses 'early warning' and 'preventive and corrective action'.[5] In section 2 of this paper we argue that, analytically, a notion of 'excessive imbalance' also applies to specific social parameters characterizing Eurozone members. This is not to say that an *identical* concept of imbalances would apply to the social domain, or that MIP-type procedures should be developed in the social domain (in fact, whether or not the MIP provides the correct toolbox in the economic domain, is itself debatable and requires a separate discussion). However, the expression 'excessive social imbalances' adequately describes a set of social problems that affect member states very differently (thus creating 'imbalances') but should be a matter of common concern for all Eurozone members. Youth unemployment and child poverty are two examples where this applies. These are not simply 'similar problems' in a subset of poorly performing member states: they are partly attributable to shared causes at the pan-European level; and they may create problem 'spill-overs' from single countries to the pan-European level, thus generating shared consequences. We illustrate the argument in this paper with the case of child poverty. But the reasoning can be extended to youth unemployment, where it may even be more straightforward.

A successful reduction of such excessive social imbalances involves both national responsibility and collective action at the European level. It is legitimate to consider individual member states of the Eurozone as responsible for the improvement of social outcomes, by enhancing the performance of national welfare systems. Simultaneously, the EU must provide a supportive framework that enables member states to improve social outcomes. Balancing national responsibility and European support implies a sense of 'reciprocity' across European member states and presupposes a shared understanding of factors contributing to welfare state performance.

In section 3 of this paper, we present an empirical analysis of the performance of welfare states with regard to child poverty. Not surprisingly, the level of social spending and labour market performance emerge as key parameters in this analysis. We refine the account of social spending, first, by

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[5] An early warning system: an alert system is established based on a scoreboard consisting of a set of ten indicators covering the major sources of macroeconomic imbalances. For each indicator, alert thresholds have been set to detect potential imbalances. The scoreboard and the thresholds are not applied mechanically and the scoreboard is complemented by an economic reading. The composition of the scoreboard indicators may evolve over time. The aim of the scoreboard is to trigger in-depth studies in order to determine whether the potential imbalances identified in the early-warning system are benign or problematic. The Commission can organize missions, with the ECB if appropriate. The in-depth reviews shall be made public.

Preventive and corrective action: The MIP allows the Commission and the Council to adopt preventive recommendations under article 121.2 of the Treaty at an early stage before the imbalances become large. There is also a corrective arm in more serious cases, and an excessive imbalance procedure (EIP) can be opened for a Member State. In cases of serious imbalances, the Member State concerned will have to submit a corrective action plan with a clear roadmap and deadlines for implementing corrective action. Surveillance will be stepped up by the Commission on the basis of regular progress reports submitted by the Member State concerned.

distinguishing the role of spending on transfers, excluding pensions, on the one hand, and pension spending on the other hand; although the aim of pensions is first of all 'income smoothing' over the life cycle, *de facto* pensions have a non-negligible impact on child poverty in a number of member states. Secondly, we measure the degree of 'pro-poorness' of both transfers and pensions. We also refine the analysis of employment, by distinguishing 'work poverty' in welfare states (i.e. the share of individuals living in households with a relatively weak participation in the labour market) and the 'severity' of work poverty; the 'severity' of work poverty correlates with measures of 'polarization' of jobs over households, which reveal a strikingly disparate pattern of household employment across European welfare states.

Analyzing welfare state performance should contribute to the shared understanding that is needed to balance national responsibility and European support. We start from the hypothesis that it is conceptually meaningful to distinguish 'performance' (social outcomes) and 'efficiency' (which one may loosely define as 'performance per unit of input'). However, the empirical analysis shows that it is not straightforward to substantiate this conceptual distinction with robust empirical results. Nevertheless, we believe this type of analysis can be helpful to inspire the 'contractual approach' to European governance proposed by President Herman Van Rompuy, and to develop the scoreboard that is necessary to inform a contractual approach that is both operational and *fair*.

The analysis in section 3 ventures into two debates that engage academic scholars and policymakers. The first debate is about 'targeting' social benefits versus universalism. The second debate is about the strengths and weaknesses of the so-called 'social investment' approach.

Targeted benefits are directed (sometimes disproportionately, sometimes exclusively) to people with low incomes, whereas universal benefits are provided to most or all citizens. *Prima facie*, targeted programmes are more efficient at achieving redistribution, since each euro of benefits yields a greater reduction in poverty. However, in a seminal paper, Korpi and Palme (1998) tabled evidence, reflecting realities in the mid 1980's, to show that this *prima facie* argument is deceptive: 'The more we target benefits at the poor only and the more concerned we are with creating equality via equal public transfers to all, the less likely we are to reduce poverty and inequality' (p. 682). They coined this 'the paradox of redistribution', which they explained by the following trade-off: the greater the degree of low-income targeting, the weaker the support in the middle class for social policy and the smaller the size of the redistributive budget. We cannot establish a clear link between 'pro-poorness' of transfers and measures of 'efficiency', as we define them in this paper (since the 'pro-poorness' of transfers has no impact on poverty rates, when controlled for levels of spending and household employment indicators; yet, with regard to pensions, 'pro-poorness' does play a role). However, our results imply a further questioning and even a reversal of the paradox: today, when comparing 29 European welfare states, the overall poverty outcome, the size of the transfers (excluding pensions) of welfare states all correlate positively with the degree of observable 'pro-poorness' of transfers.[6] These results are in line with other recent studies, but we do not pretend that they close the discussion on the basic Korpi-Palme argument. One might object that we only table the result of cross-country comparisons at given moments in time; we may overlook a trend of decreasing performance and efficiency of welfare states *over time*, which may be associated with

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[6] These positive correlations do not hold for pensions spending, when examined separately, but aggregating pension spending and transfer spending does not fundamentally change the positive correlation between pro-poorness of aggregate benefits and poverty outcomes, as explained below.

the combined phenomenon on increased emphasis on targeting and shrinking budgets. Moreover, 'pro-poorness' as we observe it *ex post*, is not necessarily linked to *ex ante* practices of targeting such as means-testing. Nevertheless, these results should lead to a nuanced discussion on the merits and drawbacks of targeting versus universalism. They lend support to the pragmatic approach proposed by the European Commission's Communication on the Social Investment Package, which calls for 'improved targeting' and emphasizes that 'both universalism and selectivity need to be used in an intelligent way.' (European Commission, 2013b, p. 9).

Our results also engage with the 'social investment paradigm', as it is now promoted by the European Commission (European Commission, 2013b). We strongly believe in the merits of this concept (see Vandenbroucke, Hemerijck and Palier, *The EU needs a social investment pact,* 2011). The scholarly discussion of this approach – with advocates such as Hemerijck (2013) and Morel, Palier and Palme (2012) and more critical approaches, such as Cantillon (2011) – is confronted with two difficulties. The first difficulty follows from the intrinsic limitations of regression analysis, given the nature of the data that are involved in assessing the impact of social investment. Our data clearly confirm a negative correlation between social investment (defined as spending on education, child care and active labour market policies) and child poverty, and a negative correlation between social investment and one of our two household employment indicators, 'work poverty'. These simple correlations suggest that social investment plays an important role, mediated by household employment; but the type of regression analysis we apply cannot yield a decisive 'proof' of the impact of social investment on poverty, for reasons explained in Section 3. This is not a counterargument against social investment, but it learns that attempts to 'proof' the case of social investment by this type of quantitative research cannot deliver hard proofs; in addition, fine-grained and qualitative policy analysis is necessary. A second difficulty in the scholarly debate is that one should consider both cross-country differences in *levels* of at-risk-of-poverty rates and inter-temporal *changes* in at-risk-of-poverty rates. Much confusion, both in the academic and in the policy debate, is caused by the unwarranted conflation of these two perspectives. By way of example, perhaps we ought to explain how contemporary Sweden can continue to rank quite well in terms of poverty in a cross-country perspective and yet, as a country, has clearly followed a rather inegalitarian course in the second half of the past decade. Factors accounting for the Scandinavian 'superiority' in terms of social inclusion and employment (relative to performance levels across Europe) are not preventing some Scandinavian welfare states from shifting to less outstanding outcomes (more so than is the case in other European welfare states) or from changing their models quite fundamentally. We do not remedy this second weakness in this paper, since that would require a deeper analysis; but we hope to have introduced at least some building blocks that can be useful in further research on the reasons why welfare state performance changes over time, and we point to one particular example underscoring the difference between analyzing incremental changes in policy and analyzing structural differences across welfare states (the impact of pension spending on child poverty).[7]

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[7] For an analysis of intertemporal change within welfare state 'models', see Kvist and Greve (2011), who argue that 'classical typologies need revision', because 'profound changes [in the Danish welfare state] have taken place in such a way that although core characteristics are still in place, new structures and understandings of the welfare state are also developing.' For an econometric examination of the impact of (changes in) welfare states (linked to the social investment paradigm) on poverty outcomes, see Wang and van Vliet (2012). The

2. EXCESSIVE SOCIAL IMBALANCES IN THE EUROZONE

A. SOCIAL DIVERGENCE IN THE EUROZONE THREATENS THE LEGITIMACY OF THE EU

We start our discussion with a focus on child poverty. Table 1 presents key figures on at-risk-of-poverty rates for individuals below the age of 18 in EU welfare states, for which data are available from 2005 to 2011 on the basis of the EU Statistics on Income and Living Conditions (EU SILC). The years '2005', '2011', etc. refer to the SILC survey years; except for the United Kingdom and Ireland they reflect incomes of the year before the survey. Hence we show figures essentially relating to the years 2004 to 2010. Throughout this paper we will use 'child poverty' as a shortcut for this indicator. Although we consider it to be a crucial parameter in the assessment of welfare state performance, the notion 'poverty', so defined, should be used with some caution. Being at risk of poverty means living in a household with an equivalized[8] net disposable income below 60 per cent of the national median equivalized net disposable household income. This poverty concept presupposes a sharing of all resources within households, which is not necessarily the case. The at-risk-of-poverty *rate* applied here is a rather crude headcount: it simply measures the share of individuals in households with an income below the poverty threshold, and does not account for the depth or severity of the poverty faced. The poverty headcount defines poverty in relation to the level of income in the welfare state where an individual happens to be living: it is a relative measure. If we use floating poverty thresholds, as in columns (1-4), the threshold changes every year. In a number of countries the floating poverty threshold *decreased* during the crisis years, reflecting the decrease of median household incomes: this has a favourable impact on the headcount, although financial needs may have increased in many families, poor and non-poor alike. Columns (5-6) provide a different perspective by anchoring the threshold in time at its value in SILC 2005. This yields a quite different picture. In Finland, Sweden, Slovenia, Slovakia and Latvia, for instance, the poverty headcount based on the floating threshold increased, but it decreased when the calculation is based on the SILC 2005 threshold (compare columns 7-8). In other words, relative inequality was rising in these countries during the second half of the 2000s; however, the share of children living below the SILC 2005 threshold decreased in the same period, because median incomes and the poverty threshold increased substantially. In Italy and Greece, by contrast, the increase in child poverty was even larger with a fixed poverty threshold, compared to the assessment with a floating poverty threshold; in Spain the increase is similar on the two counts.

[Table 1 about here]

The countries in Table 1 are ranked according to their level of child poverty in SILC 2005. Membership of the Eurozone (as of 2012) is indicated with a grey shade. There is a huge disparity in child poverty across EU member states: in SILC 2005 it ranges from 10% in Finland to 29.3% in Poland (in Romania it is even higher, but SILC 2005 did not include Romania). The disparity within the Eurozone is not much less in SILC 2005, ranging from 10% in Finland to 24.2% in Spain.

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changing performance of welfare states during the Lisbon era is discussed in Cantillon and Vandenbroucke (forthcoming).

[8] Household incomes have been equivalized with the so-called modified OECD scale, which gives a value of 1 to the first adult, 0.5 to subsequent adults and 0.3 to children; a child is defined as somebody younger than 14.

This disparity is partly explained by the fact that the welfare states under consideration display different patterns of poverty risks within the non-elderly population. Column (4) shows the ratio of the child poverty rate and the poverty rate for the total population below the age of 60. These ratios indicate the country-specific *relative* poverty risk for children.[9] Across the European welfare states[10], on average[11] the relative poverty risk for children is 123%. In a small subset of countries (Denmark, Norway, Finland, Germany, Sweden) it is less than 105%, with Denmark and Finland as outliers that seem highly specialized in preventing child poverty; in another subset of countries it is higher than 135% (Spain, the United Kingdom, and a rather diverse set of six new member states). In other words, explaining child poverty calls for a specific, child-centred analysis.

During the second half of the 2000s, child poverty rates displayed a tendency to converge in the EU, both when measured on the basis of floating thresholds and (to a lesser extent) when measured with a threshold anchored in 2005.[12] In some countries where child poverty rates were initially high, such as Poland, Lithuania, Portugal, the UK and Estonia, they declined both with the floating and the fixed threshold. In some countries, where they were traditionally low, such as Finland and Sweden, they increased when measured on the basis of a floating threshold. Simultaneously, there are some notable exceptions to this pattern, such as Denmark (low initial poverty rates, no increase) and Spain, Italy and Greece (high and increasing child poverty rates).[13] *Within* the Eurozone, there was no convergence of national poverty rates. On the contrary, during the crisis years the Eurozone displayed a growing dispersion and divergence of child poverty rates calculated with a threshold anchored in 2005.[14]

We use 'convergence' and 'divergence' in a technical sense here. When it comes to poverty rates as we define them, neither 'convergence' nor 'divergence' are *per se* desirable. If convergence obtains because poverty rates increase in countries where poverty was initially low, we are not describing a satisfactory state of affairs. *However, the huge disparity of levels of child poverty in the Eurozone, and the non-convergence and even divergence (during the crisis years, when anchoring poverty thresholds in time) signal 'excessive imbalances' that should be a common concern.*

Increasing (child) poverty rates are a matter of common concern because there appears to be a shared cause: the economic crisis that hit the EU in 2008. Figure 1 plots the growth rates of child

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[9] The figures in column (4) are averages of these ratios for all the years registered in SILC 2005-2011.

[10] In this paper, we use 'the European welfare states' as a shortcut for the EU27, Norway and Iceland.

[11] In this paper, the term 'average' invariably refers to the unweighted average, unless otherwise indicated.

[12] Child poverty rates are point estimates with sometimes large statistical confidence intervals around them; hence, not all changes shown in Table 1 are statistically significant. Since we do not have the user data base of SILC 2011 at our disposal at the moment of writing, we do not present confidence intervals. The annual report of the Social Protection Committee 2012 uses a rule of thumb with regard to changes in child poverty between 2008 and 2011 (on the basis of a floating threshold): the report considers changes not significant if they are in the [-1;+1] interval (Social Protection Committee, 2013, p. 35).

[13] The pattern for the EU, when comparing SILC 2011 with SILC 2005 is one of beta-convergence: changes in poverty rates correlate negatively with the initial levels of poverty in SILC 2005.

[14] When we compare poverty rates in SILC 2008 and SILC 2011 on the basis of the SILC 2005 thresholds, the standard deviation of poverty rates increases, and changes in poverty are positively correlated with initial levels of poverty.

poverty, anchored in time, and the growth rates of GDP per capita for all European welfare states from 2008 (SILC 2009) to 2010 (SILC 2011).[15]

[Figure 1 about here]

For obvious reasons, there is a strong negative correlation between the growth rates of the 'fixed' child poverty indicator and the growth rates of GDP per capita.[16] Since the threshold of this specific poverty indicator is anchored in time, the growth of median incomes plays a key role in the development of the indicator: if all people become poorer, poverty – so defined – increases; if all people become richer, poverty – so defined – decreases. Although it may be conceptually problematic for long-term comparisons, anchoring the poverty threshold in time provides a good measure of hardship experienced by people in the short run. Figure 1 illustrates that the economic crisis was a crucial driver for increasing poverty, so defined. However, notwithstanding this common cause, countries differ: a similar shock in GDP per capita is accompanied by a larger increase in poverty rates (anchored in time) in Spain than in Denmark, to take but two examples. In other words, we witness a combination of a common shock, signalling a common responsibility with regard to macro-economic policy, and domestic differentiation, signalling national 'homework' on the performance of welfare states. One should note that the increases in poverty rates in Figure 1 are percentage increases: in percentage *points*, the differentiation across Europe is much more important than it appears here, since the initial poverty rates differ. For instance, child poverty (anchored in time) in Spain increased with 8.9 percentage points over the two years in question. Denmark suffered a similar decline in GDP per capita, but Danish child poverty (anchored in time) was unchanged (-0.3 percentage points).

To some extent, this diversity of changes in poverty rates (anchored in time) for similar shocks in GDP per capita reflects the fact that the correlation between changes in GDP and changes in aggregate disposable household income was far from perfect during the recession (see Jenkins et al, 2013, pp. 38-40). But, apart from this factor, the diversity of changes in poverty rates (anchored in time) since 2008 is also explained by the heterogeneity of national developments with regard to the distribution of household incomes; the latter factor is captured by changes in poverty rates defined on the basis of a floating threshold. A regression analysis of changes in poverty rates (anchored in time) over the years covered by SILC 2005-2011 confirms that they are explained to a very large extent by two variables: the real growth of mean household incomes on the one hand, and changes in poverty rates defined on the basis of a floating threshold, on the other hand. As Bourguignon (2003) has shown for a large set of countries and 'growth spells', both income growth and income distribution contribute to changes in poverty rates anchored in time.[17] The divergence we observe within the Eurozone with regard to child poverty anchored in time, is the combined result of the fact that the economic crisis severely hit countries which already had high levels of child poverty in the mid-2000s on the one hand, and differences in domestic developments with regard to relative income distribution on the other hand.

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[15] For Ireland and the UK we use SILC 2008 and SILC 2010, for reasons explained in the first paragraph of this section.

[16] In general, there is much less correlation or no correlation between growth rates of GDP and growth rates of poverty based on floating thresholds.

[17] Our regression results, based on SILC and confined to the EU, largely confirm Bourguignon's larger analysis. They are not reported here, but available on request.

Common causes, next to domestic differentiation, warrant a common concern. In addition, increasing and diverging child poverty rates are a matter of common concern because of shared consequences: they may generate 'externalities' or 'spill-overs' at the pan-European level. The main spill-over is in the realm of political legitimacy. Since the start of the European project, increasing cohesion across member states has been a crucially important objective. During successive waves of *enlargement*, the promise of growing pan-European cohesion was vindicated. Enlargements of the European Community and the EU have invariably resulted in upward convergence; the World Bank has dubbed the EC and the EU a veritable 'convergence machine' (Gill and Raiser, 2012); with regard to the social performance of EU welfare states this upward convergence is documented convincingly by Lefebvre and Pestieau (2012). There is, so far, no evidence that the current phase of enlargement threatens pan-European cohesion. However, if the *deepening* of the European project, *in casu* the creation of one currency, does not lead to convergence but rather to divergence, the political legitimacy of the European project is at stake. Apart from the overall social suffering in those countries that feature increasing child poverty – notably Greece, Spain, Italy – such divergence, if it continues, will steadily undermine the credibility of the European project both in the countries that are perceived as 'losers' in the deepening process and in the countries that are perceived as 'winners'. Both in 'failing' and 'successful' Eurozone members, public opinion may become increasingly dissatisfied by the observation of growing divergence. Reasoning in terms of 'us' and 'them' – 'the South' versus 'the North' – will inevitably gain legitimacy, while the Union will lose legitimacy.

The 'us'-'them' divide is particularly paralyzing with regard to the Eurozone. In the North, the Eurozone divide will be framed more and more in terms of 'social efficiency': Eurozone members with a disappointing social record will be seen as both socially inefficient and economically uncompetitive. This will make it increasingly difficult to take steps that are necessary to consolidate the Eurozone in the longer term, such as collective action on part of the sovereign debt, stabilizing fiscal transfers, let alone the creation of a fully-fledged fiscal union (see De Grauwe, 2013, on the necessity of fiscal union). We know it is hard to sustain a fiscal union between entities that lack mutual trust in each other's internal social fabric: Belgium, with its internal north-south divide, is a telling example. It seems even harder to create a new system of fiscal transfers if the parties that have to agree on it do not trust each other with regard to their social and economic efficiency. For that reason, we should take social divergence in the Eurozone very seriously and try to understand to what extent differences in performance are indeed linked to real social inefficiencies, to what extent other factors are at play, and what can be done about it.

In short, social divergence in the Eurozone erodes the legitimacy of European cooperation as it exists today, and damages the trust-based legitimacy that will be needed for it to perform better in the future. This legitimacy argument is hypothetical and inevitably subjective: we do not know whether divergence will continue, and we cannot prejudge with certainty what the impact of it will be on the political support for the EU. In our opinion, however, the argument is sufficiently plausible and important to assign the label 'excessive imbalances' to the observations summarized in Table 1.

B.   THE EUROZONE NEEDS A BASIC SOCIAL CONSENSUS

The legitimacy argument developed in the previous section is not confined to child poverty. It equally applies to surging youth unemployment and it may also apply to other social outcomes that

matter in public opinion. However, we focus on child poverty in this section of the paper rather than on social outcomes at large, for the following reason: next to the problem it creates for the political legitimacy of the European project, the disparity and divergence in child poverty rates can be seen as objectively problematic for the sustainability of the Eurozone. We write 'can', because this assessment depends on the analytical framework applied to the consequences of monetary unification, notably the consequences of the demand for 'symmetry' among the economies of the participating member states. To substantiate the point we wish to make, we first propose a minor detour on the consequences of monetary unification.

For a monetary union to be beneficial to its members, the participating countries must display an adequate combination of economic symmetry and internal flexibility (De Grauwe, 2012). In textbook theory about optimal currency areas, symmetry refers to the degree to which output and employment growth are correlated. Flexibility relates to wage flexibility and interregional and international labour mobility, which determine a country's 'internal' adjustment capacity in the event of an asymmetric shock. Less symmetry necessitates more flexibility: the less symmetry there is between the countries of a single currency area, the greater the required capacity for internal adaptability in order for the monetary union to be beneficial.

In current debates about the European Monetary Union (EMU), symmetry is essentially assessed on the basis of current account balances, export market shares, real exchange rates, unit labour costs, government and private debt, housing prices, unemployment etc. These parameters must be properly attuned in a monetary union; they should converge in a direction that ensures its sustainability. A related question, which is rarely discussed explicitly, is whether symmetry requires *social* convergence. This question might be answered negatively on the premise that different social systems can be *functionally equivalent* as to the relevant macro-economic outcomes (i.e. outcomes relevant with a view to macro-economic symmetry) they produce. For instance, in times of crisis, labour market flexibility may be generated by quite different arrangements: temporary shorter working hours in one country (such as in Germany), worker mobility in a relatively unregulated labour market in another country, and so forth Financially sustainable pension systems may be based on high employment rates for older workers and generous pensions in some countries, while other countries secure financial sustainability with lower employment rates but less generous pensions. In other words, national or regional diversity in the architecture of social systems may be compatible with the supranational demand for economic symmetry. The possibility that different social systems are 'functionally equivalent' may legitimize the principle of *subsidiarity* with regard to social policy, also within a monetary union. However, there seem to be limits to the diversity in social systems that can be accommodated in a monetary union. Vandenbroucke (2012a) discusses that argument with regard to pension policy: for reasons of *political economy* it is plausible to argue that, in practice, divergences in retirement policy pose a long-term problem for the cohesion of a monetary union. However, if this assertion is true, then this may be the case for a whole gamut of parameters of the social model that the member states pursue domestically. The 'if' in the preceding sentence is an important 'if': there are no hard proofs in these matters. But even if it remains unproven that the tuning of economic strategies presupposes some tuning of social policy, it is certainly a plausible hypothesis. The notion that economic policy is outlined supranationally while social policy is shaped in neatly separated national or regional arenas is most likely naïve – a position that Leibfried has long argued in respect of the EU (Leibfried, 2010).

Let us now return to child poverty. In the absence of a process of (upward) convergence, huge disparities in child poverty should be alarming since they signal problems that are relevant to the sustainability of monetary union, both 'upstream' of the observation of child poverty (why is child poverty comparatively high in country X?) and 'downstream' of that observation (what will be the likely consequences of unchanged or even worsening levels of child poverty in country X?). Upstream, a comparatively high rate of child poverty may signal poorly functioning labour markets with a large number of jobless households, which in turn may be related to issues of cost competitiveness, deficits in child care and/or deficits in the education system. Downstream, child poverty makes success in education policy more difficult to obtain, given the strong link between the social, economic and cultural status of children and their success at school. In yet other words, upstream, child poverty signals underinvestment in human capital and/or inadequate mobilization of human capital. Downstream, child poverty announces continuing underinvestment in human capital. Hence, *a comparatively high level of child poverty is synonymous with an investment deficit that may be cause and effect in a vicious circle of underperforming labour markets and education systems.* Today, we witness huge imbalances across the Eurozone with regard to labour market outcomes, formal educational achievements and educational outcomes as measured by the OECD's PISA programme. If some members of the Eurozone get trapped into a vicious circle of underperforming labour markets and education systems (a 'bad equilibrium'), that may create an objective problem for the long-term sustainability of a monetary union. If high levels of child poverty reflect persistent investment deficits, that reinforces the legitimacy-based argument formulated in the previous section: growing disparity in child poverty signals the emergence of an excessive imbalance among welfare states that participate in the same currency area. They signal that the national social fabrics are not 'functionally equivalent'.

The assertion that child poverty is *cause* and *effect* of underperforming labour markets and education systems obviously requires evidence. The causal relation that runs from (child) poverty to education has been well-documented in many studies.[18] In Section 3 of this paper we briefly explore relations that run in the other direction, i.e. from underperforming labour markets and education systems to child poverty. The impact of labour markets on child poverty is very clear. The impact of investment in human capital on child poverty seems first of all to be mediated by its impact on

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[18] Several sources indicate that it is especially poverty in early years that has detrimental long-run effects on education and several other measures of social progress (Cunha *et al*., 2006; Cunha, Heckman and Schennach, 2010). Early learning is a foundation for learning throughout life, and lack of proper stimulation in these years is especially harmful. Brooks-Gunn and Duncan (1997) show that the effect of family income on children's completed schooling is by far largest in the years 0-5, and largely insignificant in later years. The fact that students from low-income families are underrepresented among college attendants is only weakly related to a lack of finances at the point that students can enrol. These differences are related by and large to lack of college readiness due to lack of finances when children are younger (Cameron and Heckman, 1999). Families with more resources have access to better schools and more academic opportunities for their offspring. The literature clearly and convincingly demonstrates that lack of investment in children is strongly related to poor school performance, bad health, crime and low earnings (see Almlund, Duckworth, Heckman and Kautz, 2011, and Borghans, Duckworth, Heckman and Ter Weel, 2008, for extensive overviews. One should note that investments have a very broad meaning in this field of research. They also comprise the stimulation and assistance that parents (and peers) provide children in their learning process and other non-monetary investments. For example, Bianchi, Robinson and Milkie (2006) show that college-educated mothers spend more time in child enrichment activities, such as reading to the child, than mothers with lower education levels.). Still, there is clear evidence that purely monetary poverty is responsible for a significant share of the influence of total investment.

labour market performance. As already indicated, the regression analysis we propose cannot deliver hard proofs that go beyond these correlations. We consider it plausible to argue that child poverty signals an investment deficit in the social fabric of welfare states that may reflect and contribute to economic asymmetries, but given the absence of hard proofs in this paper, we propose a cautious formulation of this part of the argument: *economic symmetry in the Eurozone would benefit from upward convergence in the 'social fabric' of the Eurozone members.* This argument implies that 'economic symmetry' is not socially neutral: the envisaged social convergence presupposes a choice of direction. If we agree that economic symmetry also presupposes social convergence, then common benchmarks need to be set as targets for organising such convergence. As a matter of fact, the fiscal and economic policies recommended by the EU do have an important social impact. In that sense, 'social subsidiarity' may already be an elusive concept.

Vandenbroucke (2012a) claims that the Eurozone needs a basic consensus on the social model it serves. That argument is broader than the link between the demands of symmetry and social convergence, as sketched in the previous paragraphs. It also refers to the impact of different types of 'internal flexibility' on the social order in the member states. We do not purport that the monetary union will only survive if European policy meets the requirements of social justice as the authors of this paper would define it. Our claim is more limited: the long-term sustainability of that union requires a consensus on its social dimension. However, in order for such a consensus to be broad-based, it must tie in with the goals that the European welfare states have in common. In the past, it has often been stressed that the European welfare states are so diverse that it is impossible to accurately define the European social model (e.g. Sapir, 2006). Nonetheless, no matter how diverse the reality of European welfare states may be, at this time a minimal consensus is needed on common, normatively charged objectives of social policy.

Subsequently, a complex question of reciprocity in dealing with imbalances and asymmetric developments needs to be answered. At the level of inter-human relationships, we believe strongly in reciprocity as a cohesive agent (Bowles, 2012). The question (as was neatly summarised in an Editorial of the European Constitutional Law Review, WTE, DN, 2011) is whether the notion of 'reciprocity' can play a meaningful role in the relationships between members of a union. This is evidently a complex matter, as it involves various intertwined issues. What is the 'individual' responsibility of member states for (social and other) imbalances and/or in the event of an asymmetric evolution? At which point does the individual responsibility of member states end and is collective support required on the basis of jointly organised mechanisms (such as stabilizing transfers)? Should we adhere to a strictly principled morality (whereby 'sinners' must face the punishment their sins merit) or to a more consequentialist moral framework (duly accounting for the fact that excessively strict punishment of sinners will also get saints into trouble)?

We start from the presupposition that the performance of welfare states is a responsibility of the member states themselves. On a pan-European level, however, there is a common interest in having well-performing welfare states. The EU's policy framework may be more or less supportive of the actions to be undertaken by member states to enhance the performance of their welfare states.

C. CAN ONE APPLY A NOTION OF EFFICIENCY TO WELFARE STATES?

The notion of welfare state 'performance' refers to observable social outcomes with regard to social inclusion, income security, health, labour market participation, education etc. European discussions often refer to the 'efficiency' of welfare states. Is there a proper role for a concept of 'efficiency' as opposed to performance? An operational definition of the 'efficiency' with which a welfare state achieves its objectives would refer to some measure of 'performance per unit of input'. The relevant outcomes of a welfare state are influenced by the economic context in which it operates; hence, the economic impact of a welfare state is part and parcel of the question of its social efficiency – if we can define that notion. For instance, a social policy design which has a very negative impact on employment rates, will produce less good outcomes than a social policy design that is more employment friendly: given their economic impact, the former may be less 'efficient' per unit of social spending than the latter. Since the expression 'efficiency' carries different meanings, we first briefly revisit the usage of 'efficiency' in economic analyses of social policy, and then propose a pragmatic definition of 'efficiency' with regard to social objectives.

With regard to the economic impact of welfare state arrangements, two well-known arguments, both framed in terms of 'efficiency', can be opposed to each other:

1. To the extent that welfare states are redistributive, there is a trade-off between 'efficiency' and 'equality'. This argument has been explained compellingly with the 'leaky bucket' metaphor in Okun's famous essay *Equality and Efficiency. The Big Trade-Off* (Okun, 1975). Okun's leaky bucket metaphor anticipated insights later formalized in optimal taxation theory, whereby income taxation may be used to fund redistributive schemes to improve the income of the worst-off, but inevitably has a negative impact on the average income level, given its impact on incentives.

2. To the extent that welfare states contribute to overcoming market imperfections, notably imperfections linked to asymmetric information (e.g. by compulsory risk pooling in health insurance), or the incompleteness of markets (e.g. by organizing unemployment insurance), they may enhance efficiency, i.e. they may create Pareto-improvements. A classic textbook explaining this argument is Barr, *The Economics of the Welfare State* (Barr, 2012). Barr emphasizes that collective social insurance is not just a matter of justice but also a matter of economic efficiency, and also examines to what extent this kind of Paretian efficiency-argument would apply (or not apply) to government intervention in education (because of imperfections in capital markets and asymmetric information).

Both the first and the second argument refer to 'efficiency' in a standard Paretian sense. The first argument holds that redistribution will, in the reality of a second-best world, imply an outcome below the counterfactual Pareto-efficient 'possibility frontier' that would exist if that government could use first-best lump sum transfers to redistribute. The second argument implies that the 'possibility frontier' is improved, thanks to public interventions allowing Pareto-improvements. Thus, mainstream economic theory teaches that, on balance, one cannot prejudge the impact of the welfare state on the economic 'possibility frontier' of a nation. The overall 'efficiency' of a welfare state, so conceived, depends on the set of instruments used and the way in which redistributive, insurance, education etc. objectives are implemented in practice.

In the top ten of the Global Competitiveness Index 2012-2013, one finds the archetypal Nordic and continental welfare states Finland, Sweden, the Netherlands and Germany, together with the more liberal welfare states of the United Kingdom and the USA (World Economic Forum, 2012, Table 3, p. 13). The observation that some of the most developed mature welfare states are simultaneously economically very competitive and prosperous has inspired an impressive body of literature that goes beyond the formal economic reasoning summarized in the previous paragraph. It is plausible to argue that mature welfare states are made possible by economic competitiveness and prosperity, but simultaneously support prosperity and competitiveness, because of positive 'feedback-effects' associated with social cohesion and trust in society, investment in human capital, the encouragement of sound risk-taking and flexibility in well-designed welfare states, etc.: *social policy can be a productive asset,* so this line of argument goes. A recent and forceful restatement of that argument is Hemerijck's *Changing Welfare States* (Hemerijck, 2013). Hemerijck underscores at the same time that some welfare states – notably the Nordic ones – perform better as productive assets than other welfare states; he explains this by their social investment tradition.

The macro-economic *automatic stabilizers* associated with welfare state institutions (notably unemployment insurance, progressive taxation etc.) may be seen as one specific instance of such positive 'feedback-effects', as they dampen the impact of economic shocks on the level of output and incomes, and so maintain the production possibility frontier at a higher level than would otherwise obtain. Obviously, automatic stabilizers come at a cost, and can only function sustainably under certain conditions (such as avoiding building up public debt during good economic years, Andersen, 2012). Dolls *et al.* observe that in the event of unemployment shocks, automatic stabilizers are much more important in some welfare states, such as Sweden and Denmark, than in other welfare states, such as Estonia, Italy, Greece, Poland, the USA and Spain (Dolls *et al.*, 2012; Basso *et al.*, 2012). Boeri *et al.* (2009) underscore that the extent of labour market dualism is of crucial importance in this respect, as "both automatic stabilisers and protection against job loss do not operate efficiently when there is a dualism in the labour market".

In short, some welfare states perform better as 'productive assets' than others, and some welfare states are better equipped for macro-economic stabilization than others. On the basis of this literature, the following picture emerges: *welfare states that are considered as performing well qua 'productive asset' (such as the Nordic welfare states) and qua 'automatic stabilizer' (such as Denmark and Sweden) simultaneously perform well in terms of social objectives sensu stricto, for instance, in achieving low rates of (child) poverty.* Admittedly, as it is formulated here, this observation remains rather impressionistic. Also, correlations do not imply causality, let alone a specific direction of causality. Moreover, it would be wrong to reduce the legitimacy of welfare states to their role as 'productive asset' or 'automatic stabilizers'. However, this observation is sufficiently robust to start a discussion of the beneficiary role of welfare states *sensu lato* with data on their *social* performance *sensu stricto*. The question then is narrowed down to whether or not one can establish that a welfare state *A* 'performs better' and/or is 'comparatively more efficient' than a welfare state *B* in achieving *specific social objectives.*

Lefebvre and Pestieau (2012) argue that one must not benchmark the performance of welfare states with regard to one single objective, but take into account that welfare states may display different preferences with regard to the objectives to be achieved. Moreover, they argue that it is not

possible to measure the 'efficiency' of welfare states 'per euro of social spending'.[19] Hence, they propose that we benchmark the overall performance of welfare states by constructing a 'best practice frontier' for a set of objectives (a best practice frontier for 'outputs' of policy), whereby the 'input' of policy is not 'euros spent' but, for each welfare state, 'one unit of government'. They then benchmark the performance of each welfare state on the basis of its distance to that frontier.

This technique respects diversity with regard to national social objectives and yields interesting observations with regard to the global social performance of EU member states. However, Lefebvre and Pestieau reject an application of this technique to measure 'efficiency per euro spent' on this level of aggregation, for two reasons. First, the relation between inputs and outputs on this level of aggregation is too complex, notably with regard to education and health outcomes. Second, one cannot disentangle 'merit' (attributed to a government policy) from 'circumstances' (which influence the outcomes of this policy but are beyond government control) on this level of aggregation. We accept this sceptical argument, on this level of aggregation, but we think it does not follow that one should not and cannot benchmark the performance of welfare states, taking into account the level of public spending, with regard to a specific objective such as 'child poverty' or 'poverty among the elderly'. Obviously, to carry normative meaning, such a benchmarking exercise presupposes an accepted framework: first, an EU-wide consensus on specific objectives, and second, clarity about the 'circumstances' that are taken into account when benchmarking national performance. Although the principle of subsidiarity implies respect for 'preferences' of welfare states, for the reasons explained in Section 2 we consider imbalances in child poverty as a common problem with important long-term spill-over effects across member states if they persist; that justifies its status as a common objective in this paper, which is not to say that it is the only objective welfare states should pursue. Second, with regard to child poverty, it may be possible to specify a relation between 'inputs' and 'outputs' that allows a meaningful discussion of the 'efficiency' of welfare states. We propose to start from a cross-country analysis of achieved social outcomes *when controlling for differences in levels of social spending.* Such an analysis will yield insight into the factors that, together with spending, determine outcomes. It presupposes that the impact of the volume of spending is dissociated as much as possible from other factors influencing social outcomes. We think it is not sensible to try to partition those other factors neatly into circumstances that are totally beyond the control of national governments and factors that can be attributed unambiguously to government policy. We therefore propose a set of benchmarks, differentiated on the basis of the factors taken into account to explain performance. Such a set of benchmarks allows a more fine-grained (and inevitably political) deliberation on the distinction between 'circumstances beyond control' and 'policy merits'. But, whatever our judgement on the matter, it is certainly difficult to accept that one should not at all hold governments 'responsible' for results they achieve with regard to child poverty by what they spend.

The notion of 'efficiency' applied in this paper does not refer to Pareto-efficiency. A welfare state may be said to be Pareto-inefficient, if we can show that with the available resources it can improve one its outcomes without worsening the others. Assessing Pareto-efficiency would require an examination of the interdependencies between the particular outcome on which we focus (child poverty) and other desirable outcomes – interdependencies which may take the form both of trade-

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[19] In Sapir's discussion of the efficiency and equity of the European social models, 'efficiency' is defined in terms of performance, notably with regard to employment rates (Sapir, 2006).

offs and complementarities; we focus on only one outcome. Rather than assessing Pareto-efficiency, our benchmarks measure the productivity of spending, conditional on other 'inputs' such as employment, human capital, etcetera. However, for convenience we will present them as a scoreboard of efficiency benchmarks, or an 'efficiency scoreboard'.

In the context of our discussion, 'achieved social outcomes' refer to poverty rates as we observe them, i.e. what is called 'post-transfer poverty'. It is quite common to discuss the redistributive efficiency of welfare states on the basis of an indicator referred to as 'reduction of poverty by transfers'. Poverty reduction is defined as the difference between post-transfer poverty and pre-transfer poverty. The Eurostat method used to calculate 'pre-transfer poverty' proceeds as follows: social transfers except pension transfers – but not taxes – are excluded from household incomes in the SILC survey results; then 'pre-transfer poverty rates' are calculated using the same poverty thresholds as in the 'post-transfer' calculation. For different reasons, 'poverty reduction by transfers' should not be read as 'the level of poverty that would be obtained in the absence of social transfers'. First, the poverty threshold is not adapted to what it would be without transfers. Second, the taxes funding social transfers are not added to incomes in the counterfactual. Third, this manipulation of the data does not take into account possible behavioural changes induced by the abandoning of transfer policies and concomitant reductions in taxation. Figures on 'poverty reduction by transfers' indicate rather the quantitative significance of social transfers in terms of a counterfactual poverty rate, in a particular equilibrium that is created by, among other factors, those same transfers and the taxes financing them, and with reference to the median income shaped by transfer and tax policies.

Because behavioural changes are neglected in this indicator, one should not interpret the relationship between poverty reduction and the level of spending as an indicator of the efficiency of welfare states. It may appear that a welfare state performs 'efficiently' in terms of the relationship between its level of spending and the amount of 'poverty reduction' measured, if the ratio 'poverty reduction/spending' is relatively high compared with other welfare states. But if social benefits create inactivity traps to the effect that pre-transfer poverty is very high in that particular welfare state, describing this as comparative 'efficiency' may be misleading. This particular welfare state may be 'efficient' in remedying a problem of inactivity traps it has created itself.

In our view, the efficiency of spending can only be assessed on the basis of the final outcome, which is post-transfer poverty. In this sense, our approach differs from the approach developed in the European Commission's analysis of welfare state efficiency in *Employment and Social Development in Europe in 2012* (European Commission, 2013a, pp. 219-226). It would be better to label the relationship established between poverty reduction and levels of spending as 'gross productivity of social spending'. It is an indicator of productivity, as it measures 'poverty reduction per euro spent'; but it is 'gross' in the sense that it does not take into account the level of pre-transfer poverty that may be associated with a particular architecture of social spending. Obviously, in order to further analyse and understand the comparative efficiency of welfare states, it would be interesting to control the relationship between post-transfer poverty and spending by an indicator of pre-transfer poverty. In the next section, we control the relationship between post-transfer poverty and

spending by indicators of household employment; this is congenial to controlling that relationship by indicators of pre-transfer poverty (which correlates with employment).[20]

Before developing this approach in the next section, we must insist on one crucial *caveat*: efficiency (or productivity) is not a virtue *per se*. Consider two countries, A and B; country A spends much less than country B on social policy, and has much more poverty. It may be the case country A ranks higher in our efficiency scoreboard than country B, but it is quite possible that we prefer the combination of spending and poverty in country B to the combination in A. *'Efficiency' is not our criterion for choosing between A and B.* What the efficiency scoreboard shows is that B might perform better, with the same level of spending – a situation one would definitely prefer. Hence, efficiency is not a criterion on the basis of which we would rank the performance of welfare states, neither when we discuss their performance *sensu stricto*, nor when we discuss it *sensu lato* (i.e. with a view to its economic impact and the economic spill-overs it may create in the Eurozone at large). But it informs our assessment of the performance of welfare states and the possibilities to improve it.

D.   PRELIMINARY CONCLUSIONS

The argument of section 2 may be summarized as follows:

1. Growing social imbalances among EU member states threaten the long-run sustainability of the Economic and Monetary Union and should therefore be considered as 'excessive (social) imbalances'.

2. The reduction of these excessive social imbalances involves both national responsibility and positive European support.

3. Balancing national responsibility and European support requires a basic consensus on the orientation of the European social model and a sense of reciprocity among EU member states.

4. Such a contractual approach – a consensus on policy orientation and reciprocity in the action – in turn presupposes a shared understanding of (i) the positive economic feedback effects of well-performing welfare states and (ii) the factors contributing to the performance and efficiency of welfare states.

5. Efficiency is not the prime virtue of welfare states (nor of any human activity), but a well-conceived efficiency scoreboard can inform the shared understanding that is needed at a pan-European level.

In section 3 of this paper, we examine whether it is possible to give these notions empirical substance. We focus on child poverty, but our aim is not to reproduce the fine-grained analysis of family policy, as developed in *Doing Better for Families* (OECD, 2011) or *Starting Strong* (OECD, 2012), the analyses of child poverty by the European Social Protection Committee (2012) or the

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[20] Vandenbroucke (2012a) uses a slightly different approach, which consists in applying two criteria to assess the comparative efficiency of welfare states: one on the basis of the relationship between post-transfer poverty and spending, and a second criterion on the basis of the relationship between poverty reduction and spending. This is congenial to applying the benchmarks B and C in Figure 9 below.

research on child care in the EU by Van Lancker (2013) and other scholars. Rather, we examine whether it is feasible and sensible to benchmark welfare state efficiency with regard to poverty on the basis of the information gathered by the European Statistical System (notably the Statistics on Income and Living Conditions, SILC). We try to establish what the relevant explanatory variables would be in a SILC-based scoreboard for excessive social imbalances that aims to explain diverging performance and to incorporate assessments of 'comparative efficiency'.

3.   MAPPING THE PERFORMANCE AND EFFICIENCY OF EUROPEAN WELFARE STATES

In section 2 we illustrated recent social divergence in the Eurozone using a definition of child poverty with the threshold anchored in time. We briefly discussed the interrelation between changes in child poverty 'anchored in time', the growth of average incomes, and changes in child poverty defined on the basis of a floating threshold: both growth of incomes and distribution are important. Our analysis in section 3 focuses on the distributive issue, i.e. child poverty defined on the basis of a floating threshold.[21]

In section 3.A we introduce a first set of building blocks to map the performance of European welfare states: indicators of household work intensity, and at-risk-of-poverty rates differentiated according to the work intensity of households. In section 3.B we illustrate how one can use these data to decompose cross-country differences in poverty rates on the basis of a 'shift-share analysis'. This gives a first rough indication of what matters when we try to explain poverty rates. Subsequently, in section 3.C we introduce a key explanatory variable for poverty rates, social spending. From section 3.D onwards we develop the analysis on the basis of a time-pooled cross-section analysis. Sections 3.A-C include data from SILC 2005 to SILC 2011; from section 3.D onwards we limit ourselves to SILC 2005-SILC 2010; data used in the regression model are to be retrieved in the user data base of SILC 2011 which is not yet at our disposal at the moment of writing.

The dependent variables in our regression model are different *levels* of performance. However, the model we prefer includes country fixed effects, which implies that the analysis predominantly reflects the impact of changes of spending levels, rather than cross-country differences in levels.[22]

The regression analysis does not pretend to provide *causal* explanations for cross-country differences in levels of poverty. We rather propose a mapping of levels of poverty based on their association with levels and features of social spending on the one hand and patterns of household employment on the other.

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[21] Separating 'income growth' and 'income distribution' in the analysis of poverty anchored in time, does not imply that growth and distribution are unrelated. If negative income growth reflects an economic crisis, the concomitant decline in employment rates will have a negative distributive impact (as shown below). Conversely, distribution may have positive feedback effects on growth, e.g. via a positive impact on human capital formation.

[22] Explicitly focussing on changes in levels would require a first differences regression model, which we do not develop here. However, the result of a first differences model on the same data are not very different from the results we obtain with the model including country fixed effects.

A.   THE RELEVANCE OF HOUSEHOLD WORK INTENSITY AND PATTERNS OF HOUSEHOLD EMPLOYMENT IN EUROPEAN WELFARE STATES

Eurostat defines 'household work intensity' as the ratio between the total number of months worked by working-age household members (excluding students) and the total number of months that they could, in theory, have worked. For persons who reported having worked part-time, an estimate of the number of months in terms of full-time equivalents is computed on the basis of the number of hours habitually worked at the time of the interview.

In all European welfare states, at-risk-of-poverty rates of individuals correlate negatively with the work-intensity of the household to which they belong. Figure 2 shows the weighted average for the EU27 of the national at-risk-of-poverty rates for five different subsets of households, as registered in SILC 2008: Eurostat distinguishes households with very high work-intensity (work-intensity ranges between 85 and 100 per cent), households with high work-intensity (between 55 and 85 per cent), households with medium work-intensity (between 45 and 55 per cent), households with low work-intensity (between 20 and 45 per cent), and households with very low work-intensity (20 per cent or less). The at-risk-of-poverty rate in households with very high work-intensity was 6.9 per cent; the at-risk-of-poverty rate in households with very low work-intensity was ten times higher (69 per cent). *Hence, for individuals in Europe, the work-intensity of the household to which they belong is a crucial determinant of their individual poverty risk.*

[Figure 2 about here]

We now shift our attention from an analysis at the individual level to an analysis at the level of welfare states. To what extent is a welfare state's poverty record determined by the work-intensity of its households? For our analysis, we distinguish three indicators of the 'household employment' record of welfare states. The first indicator is the share of children (i.e. individuals below the age of 18) living in households with very low work-intensity (between 0 and 20 per cent); we label these households as 'very work poor'. The second indicator is the share of children living in households with medium work-intensity or less (i.e. 55 per cent or less); we label these households as 'work poor'. We will use 'work poverty' as a shortcut for the share of children living in work-poor households, and 'severe work poverty' as a shortcut for the share of individuals living in very work-poor households. Our third indicator is the share of children in very work-poor households *within* the subgroup of children in work-poor households; we will call this indicator 'the relative severity of work poverty'. The reader should note that the expressions 'work poverty', 'severe work poverty' and 'relative severity of work poverty', as we use them here, refer to features of welfare states, not to characteristics of individuals or households.

Figure 3 shows the average values of the 'work poverty' indicator in the pre- and post-crisis years.

[Figure 3 about here]

There is a huge disparity among EU member states with regard to 'work poverty', as we define it. Among the mature welfare states of Europe, 'work poverty' is around 20% in Scandinavian welfare states, but close to or even larger than 40% in Spain, Greece, Italy. Although 'work poverty' is influenced by the prevalence of part-time work and by the distribution of jobs across households, it correlates rather strongly with simple individual employment headcounts, such as the standard

employment rates calculated on the basis of the European Labour Force Survey (LFS). Cross-country differences in these employment rates are known to be associated with cross-country differences in investment in education, child care and active labour market policies, often summarized as 'social investment spending' (Hemerijck, 2013; Morel *et al.*, 2012). Hence, it does not come as a surprise that our 'work poverty' measure also correlates with social investment, so defined.[23] We illustrate this in Figure 3 by displaying an indicator of average social investment spending over the years 2000-2010, as a percentage of GDP. Since spending on these programmes cannot have an immediate impact on labour market participation and poverty, we prefer to use average figures over a relatively long time span, thus suggesting that what really matters is the 'stock' of social investment efforts accumulated over the years. Throughout we will refer to this indicator as 'social investment'. Obviously, correlation does not imply one-way causality: investing in human capital, child care and active labour market policies (ALMP) may contribute to labour market participation, but labour market participation itself creates demands for child care, and active labour market policies.

Additionally, Figure 3 shows that the negative correlation between social investment and work poverty is mainly due to Scandinavian countries, which have both very high social investment and low work poverty. Indeed, when we exclude these countries, the correlation between social investment and work poverty is no longer significant.[24] Nevertheless, it remains clearly positive. It is difficult to assess further where this potential effect of social investment originates from. The evidence for the effectiveness of educational expenditure is very weak. There is empirical evidence that child care programmes have favourable long-run effects, and that these effects are larger for disadvantaged families. Blau and Currie (2006) provide a rich overview of such literature. They show that subsidizing child care has direct positive impacts on employment levels of parents, and positive long-run effects on a range of later-life outcomes for children. Spending on education and spending on child care correlate equally strong with work poverty, but since these two indicators are extremely strongly correlated with each other, this does not tell us much more. Given that we only have a static indicator of investments, providing us with only 29 observations, it is difficult to disentangle what kind of spending is behind these effects, also because each of them can in turn be correlated again with other relevant factors that we do not observe.

Figure 4 shows the average value of the 'relative severity of work poverty' indicator for the pre- and post-crisis years.

[Figure 4 about here]

Figure 4 illustrates that there is also a huge disparity in the 'relative severity of work poverty' across European welfare states: the relative severity of work poverty tends to be low in Southern welfare states and high in Scandinavian welfare states, Belgium and the UK. One might see this reversal of positions between Northern and Southern welfare states, when comparing Figure 4 and Figure 3, as simply reflecting the existence of a 'natural floor', below which severe work poverty does not easily

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[23] Our measure for social investment is the sum of total expenditure on education (all levels of education combined), expenditures on active labour market programmes, and expenditures on child day care benefits, averaged over the period 2000-2009. All are retrieved from Eurostat and are expressed as a percentage of GDP.

[24] Admittedly, the number of observations is low here (n=29), and more so when we exclude Scandinavian welfare states. Additionally, the correlation between social investment and individual employment remains strong and statistically significant.

diminish: if there is a 'natural floor' below which severe work poverty does not fall, the 'relative severity of work poverty' will be inversely related to work poverty. However, such an explanation is too short. The share of individuals living in very work-poor households ('severe work poverty') varies a great deal across European welfare states; it is much less correlated with individual employment rates than work poverty. As a result, European welfare states display quite different patterns with regard to individual employment rates, work poverty and severe work poverty. The average size of households plays a role in these cross-country differences: in countries where the average household size is comparatively large, 'extended families' imply larger degree of 'pooling' of non-employment risks in households, and hence less household work-poverty and severe household poverty for any given rate of individual non-employment. But, differences in household size do not explain everything: in addition a phenomenon labelled 'polarization' is at play (Gregg, Scutella and Wadsworth, 2008, 2010). Using SILC and a notion of 'jobless household' defined with reference to the so-called ILO concept of employment (a jobless household is a household where no working age adult was in work in the weeks before the survey), Corluy and Vandenbroucke (2012) calculate a 'polarization index' for each EU welfare state in terms of the difference between, the actual share of individuals living in jobless households on the one hand, and the hypothetical share of individuals living in jobless households on the other, given the specific household size structure in each welfare state, but assuming that individual employment is distributed *randomly* across households. Traditionally, within the EU15, polarization was very high in the United Kingdom and Belgium; in contrast, the Southern 'extended family' model was associated with negative polarization index (i.e. less individuals lived in jobless households than one would expect on the basis of their individual employment record and household size structure). We have added the average values of the polarization index, for the years covered by SILC 2005-2010 in Figure 4, which shows that there is an important correlation between polarization, so defined, and the average values for 'relative severity of work poverty'.

Contrary to work poverty, severe work poverty does not correlate with social investment and human capital indicators (which, by construction, leads to a negative correlation with the relative severity of work poverty). In short, it seems that our work poverty indicator is associated with social investment and human capital, while our relative severity indicator captures something else, linked to institutional and socio-cultural determinants of the distribution of jobs over households. In section 3.D, the regression analysis will demonstrate that both indicators of household employment are relevant with regard to at-risk-of-poverty rates.

B.   HOUSEHOLD EMPLOYMENT AND AT-RISK-OF-POVERTY RATES: DECOMPOSING EUROPEAN DIVERSITY

Given the fact that subgroups of the population with different levels of household work-intensity face quite different poverty risks, we can decompose differences in poverty levels between countries into (i) differences that can be accounted for by cross-country differences in the distribution of the population by household work-intensity (in the hypothesis that there would be no cross-country differences in the at-risk-of-poverty rates characterizing these work-intensity subgroups) and (ii) differences that can be accounted for by cross-country differences in the at-risk-of-poverty rates characterizing these work-intensity subgroups (in the hypothesis that the distribution of the population by work-intensity would be identical). Decomposition analysis does not reveal causality:

it is basically an accounting device. However, it yields interesting descriptions of cross-country differences

Figure 5 presents the building blocks of a decomposition of cross-country differences in child poverty, as registered in SILC 2008, i.e. just before the outbreak of the financial crisis. The countries in Figure 5 are ranked according to the at-risk-of-poverty rate for children. For each country we present 'work poverty' (the share of children in work-poor households), the at-risk-of-poverty rate of children in work-poor households, and the at-risk-of-poverty rate in other households (which we label 'work-rich'). Since the overall at-risk-of-poverty rates are a weighted average of the at-risk-of-poverty rates in the work-poor segment and the work-rich segment, weighted by the share of children in the work-poor and the work-rich segment, all the building blocks for a shift-share decomposition of cross-country differences are present in Figure 5. We do not pursue this decomposition here, but a presentation of the basic elements is telling in itself. (For a full decomposition of cross-country differences in child poverty on this basis, see Vandenbroucke, 2012b). The horizontal lines in Figure 5 show the pan-European median value of the national figures for 'work-poverty', at-risk-of-poverty rates in the work-poor segment, and at-risk-of-poverty rates in the work-rich segment.

[Figure 5 about here]

Figure 5 suggests three conclusions:

- Countries that perform very well with regard to poverty are characterized by a comparatively low share of individuals in work-poor households, lower levels of poverty in work-poor households, and lower levels of poverty in work-rich households; but there are exceptions to this pattern.

- From this one may infer that there is no 'trade-off' between a smaller share of individuals in work-poor households and less poverty in work-poor households, at least not in this kind of macro-level cross-country comparison: countries with low work-poverty are not necessarily countries with high levels of financial poverty in the group of the work-poor.

Relatively high poverty risks among work-rich households account – to a considerable extent – for the very bad performance of a number of countries at the right hand side of Figure 7, notably some of the Southern and Eastern European countries.

C.   SOCIAL SPENDING IN EUROPEAN WELFARE STATES

It is common practice to use the administrative data on public social protection spending, as published by Eurostat on the basis of the ESSPROS classification, to gauge the importance of social spending. A well-known problem is that these data refer to gross public spending, and do not account for cross-country differences in the taxation regime for benefits; hence, they tend to overestimate the real impact of benefits on household incomes in Scandinavian countries, compared to countries like France, Belgium and Germany (Adema *et al.*, 2011, Chart I.11). Another problem is that these data do not allow us to assess the real importance of public spending on *pensions* on the one hand, and spending on *other transfers* on the other, for demographic subgroups of the population. Figures 6 and 7 illustrate this.

[Figure 6 about here]

[Figure 7 about here]

In Figure 6 we compare three sets of data:

- The mean standardized[25] value of transfers, excluding pensions, as registered in SILC 2008, as a percentage of the mean standardized value of household income, for the population below the age of 60;[26]

- The mean standardized value of pensions, as registered in SILC 2008, as a percentage of the mean value of standardized household income, for the population below the age of 60;

- Spending on cash benefits, excluding old age and survivor programmes, as registered on the basis of ESSPROS by Eurostat, for the year 2007, as a percentage of GDP.[27]

Figure 7 provides the same data, but restricted to the population below the age of 18 for the SILC data. In both Figure 6 and Figure 7, countries are ranked according to the level of spending registered on the basis of ESSPROS by Eurostat.

In Appendix 1 we show that the SILC-based data on transfers and pensions for the whole population (including the elderly) correlate quite well with the administrative data classified according to ESSPROS. In general, the SILC-based percentages are much higher, which is explainable by two factors: first, GDP contains other incomes than household incomes, and, second, in SILC both the numerator and the denominator are net of income taxes, whilst the administrative data are before taxes (in most countries, income taxation on benefits and pensions is lower than income taxation on wages and salaries). However, in some countries, such as Ireland, Hungary, Sweden, Denmark and Norway, the cash transfers registered in SILC seem to deviate (in an upward sense) from what one would expect on the basis of the administrative data.

Next to these observations, the correspondence between the administrative data and the real impact of transfers and pensions on the child population is further complicated, because European welfare states display quite different profiles as to the distribution of these benefits over demographic age groups. For instance, in Denmark, cash transfers are quite important for the household income of individuals of 60 and older: hence, total public spending on cash transfers overestimates the impact of cash benefits for Danish individuals below the age of 60. In contrast, in Greece, Poland, Italy, Romania, Portugal, Bulgaria and Spain, pensions, expressed as a percentage of household income, are more important than other cash transfers, and in a range of countries, including Slovenia, France and Hungary, the impact of pensions is between 40% and 60% of that for transfers. Figure 7 shows that even for individuals below 18, pensions are important for household incomes, notably in Greece, Poland, Bulgaria, Romania, Slovakia, Portugal, Italy. As illustrated in the

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[25] The standardization applies the modified OECD equivalence scale (see footnote 8) to account for household size and structure. We use the standardized values since only these are published on the Eurostat site, for which we have to rely on SILC 2011.

[26] We use the age bracket [0-59] and not [0-64] as the research reported here fits in a larger research project that also examines evolutions of poverty in the age bracket [0-59].

[27] We take the year 2007 for the administrative spending figures, since SILC 2008 refers to incomes in 2007 (except for the United Kingdom and Ireland).

report *Employment and Social Developments in Europe 2012* on the basis of data for 'poverty reduction by pensions', the share of the population living in multigenerational households seems to play a role here (European Commission, 2013a, Chart 40, p. 222). In these countries, spending on cash transfers underestimates the public effort to support the incomes of families with dependent children.

Figures 6 and 7 show that working on the basis of SILC changes the picture of social protection spending in Europe thoroughly, compared to working on the basis of the administrative data and GDP: Hungary and Ireland now appear as 'big spenders' on cash transfers; adding pension transfers makes Hungary the most important 'spending nation' on cash benefits for non-elderly individuals. The spending effort of Romania and Slovenia becomes comparable to the effort in Sweden, and larger than in Denmark and Finland. Countries that spend less on transfers spend more on pensions. Obviously, the SILC data are point estimates, with confidence intervals around them; sampling issues may also explain differences with the administrative data. Nonetheless, in order to explain poverty rates, as measured in SILC, it seems coherent to rely on these SILC data on transfers and pensions. When we compare the data on cash transfers and pension transfers for the two population groups (the non-elderly in Figure 6 and children in Figure 7), we observe that the relative sizes are very similar for cash, but not for pensions. Therefore, we choose in our regression analysis of child poverty to employ the transfer spending for the population aged 0-59, but employ pension spending for the population aged 0-17. Sensitivity analysis indeed shows that employing either population group for cash transfers does not have any meaningful impacts on results, but that the estimates for pensions can be different when we instead focus on the group aged 0-59.[28]

Aside from the size of spending, we also consider what we label 'pro-poorness of spending', following Verbist and Matsaganis (forthcoming) and using roughly the same indicator as Korpi and Palme (1998).[29] This indicator is based on the *concentration coefficient* of transfer and pension benefits that households receive, as we register these benefits in SILC. Calculating concentration coefficients indicates how income components are distributed, irrespective of their size. To calculate these concentration coefficients, individuals are ranked according to their income. Concentration coefficients that are smaller than the Gini coefficient indicate that cash benefits go disproportionally to the poor. Verbist and Matsaganis distinguish between strong and weak pro-poorness: they label transfers with a negative concentration coefficient as 'strongly pro-poor'; benefits for which the concentration coefficient has a value between zero and the Gini coefficient are 'weakly pro-poor'. Weak pro-poorness means that the transfers are still going more to the lower parts of the income distribution in relative terms, but to a lesser extent than transfers with a negative concentration coefficient. To represent 'pro-poorness' in this paper, we reverse the scale: our indicator of pro-poorness is equal to -1*concentration.[30]

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[28] These results are not shown, but available on request.

[29] Korpi and Palme (1998) also use concentration coefficients. The income concept they use to rank income units is gross income, whereas we rank income units on the basis of disposable income. This last approach is also the one adopted by Whiteford (2010). A comparison of using either income concept to rank income units can be found in Marx et al. (2013), who demonstrate that using either gross or disposable income as ranking variable yields broadly similar outcomes.

[30] Hence, positive values of our indicator reflect strong pro-poorness rather than lack of pro-poorness; values that are negative, but less negative than -1*Gini correspond to weak pro-poorness.

Figure 6 and 7 have shown how important household transfers are for individuals in age groups 0-59 and 0-17 as a share of their living standard. We now also use these age-specific equivalized household transfers to calculate *age-specific concentration coefficients*.[31] These concentration coefficients provide a summary measure of how transfers benefiting individuals in these age groups are distributed in comparison with equivalent disposable household income.

Figure 8 shows the values of our age specific pro-poorness indicator (i.e. the inverse of the concentration coefficients) for the EU 27 plus Iceland and Norway. The figure shows the degree of pro-poorness of both transfers and pensions, for both the population 0-59 as well as 0-17. It shows that transfers are, not surprisingly, much more pro-poor then pensions. Additionally, spending towards the population group 0-17 is more pro-poor than spending towards the population group 0-59. We see that Southern and Eastern European countries are least pro-poor. High pro-poorness is prevalent among Anglo-Saxon welfare states as well as some Northern welfare states (the Netherlands, Denmark and Finland, but not particularly in Norway, Iceland and Sweden). For simplicity, we compare these age-specific pro-poorness indicators with the (inverse of) the Gini-coefficients for the income distribution of the whole population; this gives a rough indication that for a (small) subset of countries, pension spending may even not be weakly pro-poor, but rather 'pro-rich'.

[Figure 8 about here]

D.   MAPPING AT-RISK-OF-POVERTY RATES ON SPENDING AND HOUSEHOLD EMPLOYMENT: REGRESSION ANALYSIS

We now introduce a next step in the analysis by providing the results of a pooled time-series cross section analysis of national at-risk-of-poverty rates with social spending, household employment indicators, and pro-poorness as independent variables (see Appendix 2 for a full description). For social spending we use two independent variables, on the basis of SILC:

- the mean standardized value of transfers (excluding pensions), as a percentage of the mean standardized value of household income, for the population below the age of 60;

- the mean standardized value of pensions, as a percentage of the mean value of standardized household income, for the population below the age of 18

For household employment, we use 'work poverty' and the 'relative severity of work poverty'.[32] These are on the basis of the population aged 0-17. Pro-poorness is measured separately for cash transfers and pensions. Analogous to the variables that measure the size of spending, the former are calculated with respect to the population 0-59, and the latter with respect to the population 0-17.

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[31] This means that the value of transfers for individuals who are not part of this age group are set to zero. In this way it is possible to determine where these age-specific benefits are located in the entire distribution (e.g. by comparing them with the Gini coefficient of the total population).

[32] We executed several specifications with different controls for employment. Results with only a measure of individual employment were roughly similar (they show a slightly larger estimate for transfer spending, and weaker for pension spending), but provide a less good fit. These results are available on request.

The analysis covers 29 European welfare states and uses the SILC surveys from SILC 2005 to SILC 2010. We use a panel-based linear GLS model, with a heteroskedastic error structure. A key methodological question is whether we should include unit fixed effects in this analysis or not. All models presented in this section include time dummies and country dummies. In Appendix 2, we discuss the choice between alternative specifications (notably, 'country fixed effects', or not). An approach without country fixed effects has the drawback that countries that spend more also tend to have a better 'underlying fabric of society' and/or a better architecture of spending, which is relevant for the poverty outcomes. Such country-level characteristics will be picked up by the coefficient on spending, leading to an overestimation of the impact of the level of working age cash benefits on at-risk-of-poverty rates; so conceived, an analysis without country fixed effects provides a clear upper bound (in an absolute sense) on the estimated impact of spending. Including country fixed effects implies that the analysis predominantly reflects the impact of changes of spending levels, rather than cross-country differences. This has the advantage that it focuses on what really is at stake (changes in levels of spending *per se*, rather than differences in the architecture of spending or the related social fabric), but, for the period under consideration, it may lead to an underestimation of the role of spending, since the period in question includes a deep economic crisis, during which public social expenditures automatically increase, along with poverty rates. For several reasons, explained in the Appendix, we prefer the model with country fixed effects. Simultaneously, however, the difficulty of the specification choices implies that one should not infer simple and straightforward conclusions from such quantitative analysis with regard to the impact of social spending and labour market conditions, on poverty. Appendix 2 also addresses the sensitivity to alternative estimation methods, to the inclusion of certain countries that appear to be outliers, and to using different time frames. We should emphasize that this analysis does not pretend to 'explain' poverty rates, but aims to contribute to a better understanding of the structure of the data reported in SILC.

Table 2 summarizes the most interesting results, for four sets of regressions. The first set of regressions uses the at-risk-of-poverty rate of the whole child population as dependent variable. The second set of regressions focuses on the work-poor segment of the child population, with the at-risk-of-poverty rate for children in work-poor households as a dependent variable. The third set of regressions uses the at-risk-of-poverty rate of the work-rich (child) population as dependent variable. The fourth set of regressions uses poverty reduction as dependent variable. Poverty reduction is calculated on the basis of pre-transfer poverty rates that exclude both cash and pension transfers. This allows us to estimate the impact of each type of spending on this outcome variable.

[Table 2]

The spending coefficients are insignificant when we simply regress poverty on spending with country fixed effects.[33] This is explained by the fact that the years under consideration encompass years of

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[33] Without country fixed effects the coefficients for both transfers and pensions are significant, but the sign of pension spending is positive (as if increasing spending on pensions would *per se* increase poverty). This shows that the effect of transfers (which is very strong and negative) has a downward bias because transfer spending is high in countries with good poverty records. Pension spending, on the other hand, is high in poor-performing countries, mainly in Southern and Eastern Europe. This causes a positive bias. Both these distortions are corrected when we extract country fixed effects. This is one of the reasons why we prefer the model with country fixed effects; without country fixed effects the spending variables pick up dimensions of

boom and crisis. The crisis both increased poverty rates, as well as the need for social spending. This joint upward movement leads to a positive bias in our estimates. Changes in spending levels partially compensate for changes in the economic situation and dampen the impact of the business cycle on poverty, but are unrelated to the observed poverty rates. However, the spending coefficient becomes significant when we add measures for individual and household employment, since they (partially) pick up the economic situation. Model 1.3 shows that there is a significant effect of spending on poverty levels for both social spending on transfers and on pensions when we control for labour market indicators in addition to time and country fixed effects. The coefficients suggest that a 1 percentage point increase in the weight of transfers or pensions in disposable income decreases the poverty rate by around 0.25 (slightly lower for transfers and slightly higher for pensions).[34] The standard deviation of the spending variables is around 4 for transfers and around 2 for pensions, which indicates that an increase in one standard deviation for both indicators together would just amount to a decrease in the poverty rate with 1.5 percentage points. The two indicators of household work-intensity (work poverty and the 'relative severity of work-poverty') yield significant coefficients. This result suggests that one should study the country-specific distribution of household work-intensity over the population, and that the concentration of individuals in very work-poor households does play an independent role. The regression result obviously concurs with the observation that the poverty rate for people in very work-poor households is typically higher than the corresponding poverty rate in households that are work-poor but not very work-poor.

The choice for this model might warrant some further elaboration. An alternative specification to the one we use as our base model, might use work poverty and severe work poverty as labour market indicators, instead of work poverty and the relative severity of work poverty. How would such an alternative be different from our base model? Both models contain the same information. There are two main differences between two such specifications. Primarily, the models measure the degree of severe work intensity on a different scale. By dividing through work poverty, our base model gives more weight to changes in severe work poverty when work poverty is low. The difference is similar to a case where we either specify a variable in logs or in levels; the information is the same but the fit is different. The fact that our relative severity measure provides a better fit indicates that increases in severe work poverty are indeed more important (with respect to poverty) when work poverty is low. This can easily be confirmed by fitting a model with only severe work poverty for both countries with above- and below-average work poverty. Indeed, the coefficient for severe work poverty is significantly higher for the group with low work poverty.

Another difference between our baseline model and a model with work poverty and severe work poverty lies in the interpretation of the coefficients for these work intensity variables. Naturally, coefficients show the effect of increasing that particular variable while holding all else constant. When work poverty goes up in our baseline model, relative severity can only be held constant if severe work poverty also increases. More precisely, the increase in work poverty is divided over the work poor and the very work poor in the same ratio as the original value of our relative severity measure. In other words, the coefficient for work poverty in our model reflects the effect of an increase in the work poor which is 'smoothly' divided over the group with work intensity [0-55]. In

the underlying fabric of welfare states, and the coefficients do not reflect what changes in levels of spending *as such* imply.

[34] Again, these estimates do not reflect causal impacts, but their size can still be informative in giving a sense of the magnitudes we are dealing with in this context.

an alternative model with work poverty and severe work poverty, an increase in work poverty while holding severe work poverty constant implies that the increase occurs in the segment with work poverty [20-55]. In that alternative model, the coefficient reflects the effect of increases which are relatively close to the margin. Therefore, the coefficient for work poverty is much lower in that alternative model than in our baseline model; the latter reflects the effect of increases in work poverty that are relatively more severe than in the alternative model.

For a consistent interpretation of the coefficients on work poverty and the relative severity of work poverty, all these indicators are standardized to have a mean zero and a standard deviation of 1. We can interpret these coefficients to get an idea about their relative magnitudes, but we have to stress again that these estimates are not causal, and that the role of work intensity Is mainly to act as a control for the quite severe changes in work intensity that the crisis caused. Nonetheless, the coefficients suggest that an increase in the share of the work poor by one standard deviation would increase the poverty rate by 1.70 percentage points. For the relative severity of work poverty, a similar increase is suggested to lead to an increase of 1.26 in the poverty rate. Alternatively, the effect of an increase of one percentage point in both rates would increase poverty rates by 0.158 and 0.148, respectively.[35] These are modest magnitudes. In combination with the relatively weak coefficients for spending, this illustrates that the reasons for the comparably much larger differences in poverty rates between countries and within countries over time are more structural. The particular results for work poverty and relative severity of work poverty can also illustrate that variation in the rate of work poverty over time and across countries is mainly due to transitions from being weakly work poor to being moderately work rich. The risk of poverty is likely to be relatively low in this segment, which would explain why this has only moderate effects on poverty (the at-risk of poverty rate is around 20% for households with work intensity between 0.45-0.55). As we mentioned before, it is really the share of those with real low work intensity that drives the relation between work poverty and financial poverty.

In model 1.4, we add controls for the pro-poorness of spending to our model. This does not affect the coefficient for transfer spending, but increases the absolute impact of pension spending. The underlying reason is that higher pension spending is correlated with lower pro-poorness. Interpreting this from the perspective of the fixed effects model, this means that countries that increase their pension spending tend to simultaneously decrease their pro-poorness. Hence, initial estimates of pension spending also reflect decreasing pro-poorness which reduces the estimated effectiveness of 1 euro spent on pensions. When we correct for this, pensions become substantially more effective in addressing poverty.[36] In addition, the pro-poorness of pensions is negatively correlated with poverty, and this effect is statistically significant: when pensions are more pro-poor, poverty rates for the child population are lower. However, the magnitude of the impact of pro-poorness of pensions is modest. The coefficient suggests that an increase of one standard deviation in the degree of pro-poorness reduces the poverty rate by around 0.22. On the other hand, a higher

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[35] One might wonder if such low effects indicate a substantial downward bias from our model. However, estimates from the model without fixed effects, as well as estimates from the fixed effect model without the crisis years, are a best a factor 2 larger for work poverty and are weaker for the severity of work poverty.

[36] The coefficient for pensions is larger here than for transfers. However, appendix 2 shows that this is not true for every specification of the model. Hence, one should not conclude that pensions are more effective in reducing poverty than transfers (also given the high standard error of the estimate for pension spending).

pro-poorness of transfers does not appear to lead to less poverty: the coefficient for pro-poorness of transfers is positive but insignificant.[37]

Model 2.1 focuses on poverty in the work-poor subgroup, i.e. individuals living in households with low work-intensity (0-55). The impact of transfer spending on poverty for this group is much larger. In the specification with country fixed effects, it is already strong and significant without controls for employment or work-intensity. The effect for pension spending is now insignificant, but still large in magnitude. Since we are looking at poverty *within* the group of work poor, changes in the structure of work intensity naturally have less influence here. The effect of work poverty is also lower now that we already focus on those that are work poor. In fact, the model with the best fit is the one where we only include the relative severity of work poverty.[38] The size of the coefficient for this indicator is also much larger than when we take the total child population. Note that the coefficient for pro-poorness is now larger for cash transfers, but it is only (marginally) significant for pensions (which has a lower standard error).

In contrast, the effect of cash transfers on poverty is insignificant when we look at the work rich segment of the (child) population. Pension transfers, on the other hand, do significantly lower poverty rates. The low coefficient for transfers could reflect that cash transfers are less prominent for this population group (and might come at the expense of higher taxes, also for households with high work intensity but low levels of pay). Evolutions in poverty in the work-rich segment did play a significant role in the overall evolution in poverty in some European welfare states during the good economic years (Corluy and Vandenbroucke, 2012); explaining these evolutions in the work-rich segment, however, would appear to require explanations that go beyond basic parameters such as welfare state spending or crude employment patterns. Note that the impact of pro-poorness is insignificant for both measures, and has a positive sign. It is not surprising that higher pro-poorness would not directly be to the benefit of the work rich.

The effect of cash and pension transfers on poverty reduction is statistically significant and comparably large. The coefficient suggest an increase in poverty reduction of 1.1-1.4 percentage points for an increase in 1 percentage points in the weight of cash transfers in disposable income. The effect is slightly lower for pensions. The coefficients for our two controls of work intensity are also statistically significant and negative, and suggest that more work poverty reduces the effectiveness of reducing poverty through transfers. The opposite is true for pro-poorness of transfers, which, not surprisingly, increases the effectiveness of poverty reduction. The fact that the spending estimates are much higher for poverty reduction than for post-transfer poverty suggests that transfers increase pre-transfer poverty. This is indeed confirmed when we employ pre-transfer

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[37] The insignificance of the pro-poorness measure for transfers could be due to the difference in mean levels between both indicators. Transfers are on average much more pro-poor. It is possible that more pro-poorness has less influence at this margin than at the (higher) margin for pensions. In other words, shifting the targeting of benefits from the poor to the very poor has less influence than shifting from the average to the poor. If such non-linearity indeed were present, it could reflect that a too strong targeting of benefits can make people more dependent on government support, and less incentivized to be self-providing.

[38] The coefficient for work poverty is actually negative when we include it. This is also the case when we exclude spending and the relative severity of work poverty. This result may reflect the fact that the average person in a work-poor household is in a relatively better position when there are many work-poor households. The coefficient of work poverty reflects impact the total size of the work poor. When the group becomes bigger, the average work poor person moves to the right in the distribution.

poverty as an outcome variable. [39] This suggests that transfer income might take incentives away for people to be self-dependent.

It is interesting to note that the coefficients for poverty reduction are very robust to employing different specifications. Effects are very similar when we exclude country fixed effects, or controls for work intensity. Since a bias from the 'underlying fabric' of countries is reflected in both the pre- and post-transfer poverty rates, these are largely factored out when we subtract these two measures from each other. For the same reason, the impact of controlling for work intensity of the household on the spending coefficients is minimal. This robustness is also apparent when we address sensitivity (appendix 2 elaborates more on this). The estimates are invariant to excluding certain years or (groups of) countries. This suggests a very general technology between spending and poverty reduction across welfare states and time periods.

E. THE EXPLANATORY POWER OF HUMAN CAPITAL, SOCIAL INVESTMENT AND DEMOGRAPHIC DEPENDENCY

We have seen that spending and household employment explain poverty rates, but still leave substantial unexplained variation. This indicates that there must be other country-level characteristics that help explain disparities in poverty rates across welfare states. In this section, we discuss the impact of other characteristics of welfare states on at-risk-of-poverty rates, i.e. other than the level of spending, household employment or pro-poorness.

As explained earlier, we define 'social investment' as the average spending over the years 2000-2009, as a percentage of GDP, on education (all levels of education combined), expenditures on child care and ALMP. Next to social investment, we test the impact of several human capital indicators: the educational attainment structure (defined as the share of highly educated individuals divided by the share of poorly educated individuals), low PISA achievement (the share of students that are 1.5 standard deviations below the average PISA-test score, averaged over all three test topics, for all participating countries) and internal PISA inequality (the share of students in PISA who are more than 1.5 standard deviations below the country-average score, averaged over all three test topics). We also test the impact of GDP per capita (in PPP) and old and young age dependency ratios. These indicators have something in common: they give information on the 'underlying fabric of society', which may be relevant for poverty outcomes but is not directly related to social spending (although it may correlate with it in practice).

With regard to the effect of these indicators, we have to distinguish two separate questions. If countries that spend more also differ strongly in indicators such as their level of social investment, this will be picked up initially by the estimated coefficient on spending. If so, adding the indicator as a control should be reflected in a substantial change in that spending coefficient. In addition, we can examine what the direct effect is of these indicators on poverty. These are two separate questions. In the former case, we assess whether there is a correlation between the indicator and the level of spending itself; in the latter case, we assess whether there is a correlation between the level of the indicator and what may appear, *prima facie,* as a degree of efficiency of social spending in the countries under review (as explained below).

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[39] The same holds for pro-poorness of transfers. It is significantly positively associated with higher pre-transfer poverty.

We use two different models to test the impact of these additional indicators: a model with country fixed effects and a static model. It is necessary to include the latter because we do not have dynamic measures of some of our indicators (social investment, internal PISA inequality, low PISA achievement),[40] which makes a panel model unfeasible. In this model, we use average measures for the whole period covered by SILC 2005-SILC 2010 as indicators of poverty, spending, work intensity, GDP per capita, educational attainment structure and pro-poorness. We discuss results from the fixed effect model for the dynamic indicators, and for the static model for the static indicators.

Table 3 illustrates the impact of these indicators on both child poverty and the coefficients for transfer and pension spending in the regression results for child poverty (results from the static regression model are indicated with a grey shade). We first discuss the impact on the spending coefficients, i.e. the latter of the two questions distinguished in the previous paragraph. A comparison of Table 3 shows that none of the indicators relating to the underlying fabric of society has any significant impact on the coefficient for transfers. On the other hand, the coefficient for pensions is more sensitive to the inclusion of certain variables. All these impacts work in a positive direction (which in most cases means the coefficient for pensions becomes less negative). This applies most notably to both PISA indicators. These results are somewhat in line with other sensitivity analyses, which suggest a stronger variation for the pension coefficient. This is both related to the fact that this coefficient is measured with more error than the estimate for transfers, and that it appears to be more endogenous than our measure for cash transfers (which is, for example, reflected by the very strong difference in estimates with and without country fixed effects). The impact of adding social investment is modest in Table 3, but is very strong when we exclude controls for work intensity (not shown). This confirms earlier (correlational) findings that social investment and work poverty are strongly related and that controlling for one of them largely suffices to take this particular mechanism out of the estimated relationship between spending and poverty. For the other indicators, the results are not markedly different between the specifications with and without controls.[41]

Turning to the first question formulated before, we observe that the majority of these indicators has no statistically significant impact on poverty rates. Social investment is strongly significant in the model without work intensity, but not anymore in the full specification as portrayed in Table 3. Since we are estimating a static model here which is based on few observations, we should not draw any final conclusions regarding the lack of an impact of social investment on poverty (net of employment). It does appear that any possible impact of social investment is *partly* picked up by work intensity measures. The only indicators that have a statistically significant impact on poverty are the young age dependency ratio and internal PISA inequality. The negative impact of the young age dependency ratio could be simply due to the fact that benefits need to be divided over more children, thereby decreasing benefits per child. The effect of internal PISA inequality is, remarkably, negative. However, both observations are again based on the static model, which limits the conclusions one may draw. Note that the coefficient for pension spending is positive in the static

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[40] And even if we would have repeated observations, the true impact of such variables would work with a time lag that is arbitrary, making it still unsuitable for fixed effect analysis.

[41] The main reason for this is that controlling for work intensity incorporates two opposing forces. Most indicators are correlated negatively with the share work poor, but not with the share very work poor. By definition, this makes then correlate negatively with the relative severity of work poverty. These opposite correlations lead to a net effect that can work in either direction.

model, and strongly significant. This is simply due to the endogenous mechanism that countries with high child poverty rates spend much on pensions (we return to this observation in Section 3.F). This implausible coefficient underlines that a model without fixed effects is improper here.

[Table 3 about here]

The results seem to suggest that human capital variables have a relation with poverty rates that is weak at best. However, we have to keep in mind that most of these results are based on findings from 'naïve' static models, which do not imply (lack of) causality in any way. Moreover, there could be other, less crude, indicators of a country's human capital level that have more explanatory power. On the other hand, the results do confirm that there is a connection between how much a country invests in human capital and the share of households that suffer from low work intensity.

Finally, Table 4 presents cross-correlations for all the indicators we use. Our results imply a further questioning and even a reversal of the 'paradox of distribution' identified by Korpi and Palme (1998) in welfare states of the mid-1980s. Today, when comparing 29 European welfare states, the overall poverty outcome, the size of the transfers (excluding pensions) of welfare states all correlate positively with the degree of observable 'pro-poorness' of transfers. These positive correlations do not hold for pensions spending, when examined separately, but aggregating pension spending and transfer spending does not fundamentally change the positive correlation between pro-poorness of aggregate benefits and poverty outcomes, as explained below. Our outcomes do not settle the Korpi-Palme argument,[42] but they are in line with studies that have examined whether this 'paradox' still holds. Both Kenworthy (2011) and Marx et al. (2013) replicate the methodology applied by Korpi and Palme for more recent years, and find that the negative relationship between targeting and redistribution has disappeared. This also holds when the country coverage is extended beyond the 11 countries in Korpi and Palme. Marx et al. (2013) argue that this disappearance or reversal of the relationship may be due to a different view on targeting, which receives more political support, as many targeted programs are increasingly aimed at people in work in low-paid jobs, while in the eighties the means-tested systems were broadly designed for non-working individuals. Note that 'pro-poorness' as we observe it ex post, is not necessarily linked to ex ante practices of targeting such as means-testing. Yet, these results should lead to a nuanced discussion on the merits and drawbacks of targeting versus universalism. They lend support to the pragmatic approach proposed by the European Commission's Communication on the Social Investment Package, which calls for 'improved targeting' and emphasizes that 'both universalism and selectivity need to be used in an intelligent way.' (European Commission, 2013b, p. 9). Traditionally, universalism has been advocated on the basis of legitimacy. The conviction that selective systems suffer from a lack of legitimacy is forcefully expressed in the often cited assertions that 'services for the poor are poor services' (Titmuss 1969) and that 'programs for the poor become poor programs' (Rainwater 1982, 42), or that 'good targeting leads to program shrinkage' (Grosh, 1992). Both targeting and universalism may entertain a logic of legitimacy, which may be complimentary: Cantillon, Van

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[42] As indicated in the introductory Section to this paper, an observation at one point in time does not settle the basic Korpi-Palme argument. One might object that we only table the result of cross-country comparisons at given moments in time; we may overlook a trend of decreasing performance and efficiency of welfare states over time, which may be associated with the combined phenomenon of increased emphasis on targeting and shrinking budgets.

Mechelen, Van den Heede and Pintelon (forthcoming) argue that one should distinguish types of benefits when pondering the meaning of universalism and targeting.[43]

[Table 4 about here]

F.   AN 'EFFICIENCY SCOREBOARD' WITH REGARD TO SOCIAL SPENDING

Some welfare states display poverty outcomes that seem rather feeble given their level of social spending and their employment record. Other welfare states obtain poverty results that are better than one would expect on the basis of their social spending level and employment record. The regression models listed in Table 2 allow us to account for these differences, at least to some extent, and thus yield an analysis of what seem to be differences in the 'comparative efficiency' of welfare states. We visualize the main results in Figures 9.

[Figure 9 about here]

The 'efficiency scoreboard' of welfare states, so conceived, consists of four benchmarks. Benchmark A is a straightforward performance measure: it lists the mean difference over the period 2005-2010 between the country's actual child poverty rate and the average poverty rate for the whole sample (EU27 plus Iceland and Norway) in that year. Note that the values for benchmark A are equal to what we employ as dependent variable in our static model in Table 3, only now these values are demeaned by the average poverty rate of the whole sample. We see that disparities are large; Northern welfare states[44] and the new Central European welfare states[45] perform especially well, while Southern[46] and Eastern nations[47] have above average poverty rates. We assess to what extent different country-level indicators can explain such disparities. In order to do this, we use the country dummies from the fixed effect model as expressions of country-level 'comparative efficiencies'. The country dummies give the difference between the predicted poverty outcome of a country based on all variables present in the model, versus the actual outcome. Hence, it shows to what extent a country over- or underperforms, conditional on certain indicators. For example, a country can have

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[43] 'An important caveat applies with regard to research into the relationship between generosity on the one hand and universalism/targeting on the other. It usually considers the totality of social cash transfers, without distinguishing between, for example, parental leave, child benefits or unemployment benefits. Aspects that have definitely been neglected in this debate are the type of risk against which cash transfers are deployed, the social distribution of the risks concerned and – at the same time – which segments of the income distribution those risks tend to affect. The argument that the broad middle classes are more willing to pay for universal protection systems resonates quite differently depending on whether one is considering unemployment or child benefits, parental leave or pensions. Long-term unemployment is after all a highly selective risk affecting primarily the low skilled, ethnic minorities and socio-economically more vulnerable groups. As higher-skilled groups are far less exposed to this risk, it seems unlikely that targeting within unemployment benefit schemes would be detrimental to their willingness to pay; quite the contrary in fact. On the other hand, the argument seems much more pertinent in the context of so-called 'new' social risks that are distributed more evenly across the population (such as parenthood and the combination of work and family life). In this line of reasoning it may be expected that downward pressures on benefit levels may have been stronger in relation to the social risks (such as long-term unemployment) whereas the logic of universalism may have been more prevalent in the context of pensions, universal child benefits or parental leave' (Cantillon, Van Mechelen, Van den Heede and Pintelon, forthcoming).

[44] Referring to Denmark, Finland, Iceland, the Netherlands, Norway and Sweden.

[45] Referring to Czech Republic, Slovakia and Slovenia.

[46] Referring to Greece, Italy, Portugal and Spain.

[47] Referring to Bulgaria, Estonia, Latvia, Lithuania, Poland and Romania.

very low poverty, but this can be achieved through very high levels of spending. If so, then the 'residual' from benchmark A should reduce substantially once we control for spending. We do not directly use country dummies, since they are always benchmarked to a certain country, while we are interested in deviations from the average. Therefore, we construct an artificial benchmark where we anchor the country fixed effects so that the sum of their squared values are minimized. Hence, they essentially resemble residuals in a model without country fixed effects, if such country-level residuals would be averaged over all time periods.[48]

Benchmark B is the first of these 'efficiency benchmarks': it controls child poverty for the level of spending on transfers and pensions, measured as the percentage of total disposable income (with respect to the population 0-59 for transfers, and the population 0-17 for pensions). Here, we have to solve the following problem: in a model with country fixed effects, the effect of spending on poverty is not significant or robust before we control for work intensity; but a model with both spending and work intensity does not allow us to distinguish between both factors. Therefore, we use the coefficient for the two spending variables from the model with employment and impute these estimates into a model with only poverty and the two spending variables. We then calculate a constant that minimizes the sum of squared errors for this imputed model. The effects of moving from benchmark A to benchmark B are modest. We already observed in section 3.D that the coefficients for transfer and pension spending are significant, but not large.[49] The difference between benchmarks A and B is especially small because high pension spending for many countries compensates for low transfer spending and vice versa. One might have expected a strong convergence between, for example, Romania and Denmark after correcting for spending. Although transfer spending is indeed around 14 percent for Denmark and around 8 percent for Romania, this is compensated for a pension spending in Romania of around 7 percent of disposable income while this is 0.15 for Denmark. Hence, we only observe some very modest reductions for Estonia, Greece, Malta, Italy, Portugal and Spain, and even increases in 'residuals' for Cyprus, Hungary, Ireland and the Netherlands.

We now assess what happens when we also control for work intensity, which is portrayed in benchmark C. Benchmark C establishes a 'conditional efficiency': it gauges how efficient a welfare state is with regard to poverty, given its level of spending and its household employment record. This 'conditional efficiency' may conceal inefficiencies that are linked to the fact that the design of social policy is not employment-friendly. Hence, this benchmark is liable to the same criticism as using 'poverty reduction by transfers' as a benchmark to calculate the efficiency of spending: a welfare state that enhances inactivity and pre-transfer poverty by an inadequate organization of social policy may be seen as 'efficient' in repairing a problem it has to some extent created itself. Yet, with this *caveat* firmly on our mind, it is nevertheless interesting to observe this benchmark. There are some substantial decreases in unexplained variance for Bulgaria, Cyprus, Finland, Hungary, Iceland, Slovenia and the United Kingdom. However the effect is again generally small, and the 'residuals' even increase for some countries. The main reason is that countries often have opposite dynamics in each of the two work employment indicators. The impact of each separate indicator is roughly of the same size, although slightly larger for the relative severity of work poverty. Many

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[48] The actual residuals in the model with fixed effects are different, because they factor out the country fixed effects and are largely based on variation over time.

[49] Note that these impacts would be completely different if we were to employ a naïve estimation without fixed effects.

Northern welfare states have low work poverty but a high relative severity of work poverty. Correcting for both at the same time leads to a negligible joint effect.[50] Hence, we only observe strong swings for countries where both indicators are either very high or very low. An interesting effect occurs for both Belgium and Ireland, which both have high levels for both indicators. Correcting for high work poverty makes the already 'efficient' Belgium welfare state[51] even more (conditionally) efficient, and turns Ireland from an 'inefficient' country to a (conditionally) 'efficient' one.

In a final stage, we control for the degree of pro-poorness of spending (benchmark D). Correcting for pro-poorness of both transfers and pensions reflects an interesting dynamic. As we already saw in table 2, only the pro-poorness of pensions is significant, while the coefficient for pensions increases substantially. The size of the coefficient for pro-poorness of pension spending suggests that an increase in the pro-poorness of pensions by one standard deviation reduces poverty by around 0.17 percentage points. To illustrate, the difference in the pro-poorness of pension spending between efficient and pro-poor Norway and less efficient and pro-rich Italy is around 1.5 standard deviation, which accounts for around 0.25 percentage point of their difference in poverty rates. Correcting for pro-poorness has a direct reducing effect on residuals, since countries with *prima facie* efficiencies are more pro-poor.[52] However, this is not visible when we compare benchmark C to benchmark D, since it is largely cancelled out by the increase in the coefficient for pensions. Since inefficient countries spend more on pensions, they largely become even more 'inefficient' when we correct for this.

It might be surprising that these indicators are significant in the model, but still do not reduce disparities. However, the significance in the model is largely related to how well the indicators can explain differences within countries over time. The country dummies, on the other hand, express differences in poverty rates across countries. More importantly, all these benchmarks incorporate the effect of two opposing forces. Transfer spending and pension spending are negatively correlated, as are the share of the work poor and the relative severity of work poverty. In addition, there is a negative correlation between the pro-poorness of pensions and the size of pensions. Adding corrections for pro-poorness leads to a significant direct effect on poverty, but also an increase in the coefficient for pension spending. Again, two opposing effects lead to a low net effect.

This indicates that there have to be country-level characteristics, which are not in one of our models, that can explain disparities. We saw before that simple correlations between human capital levels or social investment and poverty rates are often strong. Figure 10 plots the final 'residuals' from benchmark D against the level of social investment in each country. This figure suggests a strong log-linear relation between (conditional) efficiencies in poverty and social investment. Figure 11 shows a similar graph, but now with GDP per capita on the horizontal axis, which also shows a strong (linear) relationship. The estimated correlations between the residuals and these indicators are strong:

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[50] Put differently, it is severe work poverty that matters in the model and the levels of severe work poverty do not differ systematically across welfare states, in contrast to measures of (normal) work poverty (see table A4).

[51] In a model without country fixed effects, high-spending Belgium appears as comparatively inefficient, because, in such a model, spending is estimated to have a much larger impact on poverty than in the model with country fixed effects.

[52] This is mainly due to the weak but negative coefficient for transfers, which is strongly related to *prima facie* efficiencies. Pro-poorness of pensions is insignificantly correlated with *prima facie* efficiencies.

around 0.65 for social investment (in logs) and around 0.47 for GDP per capita. The coefficients for GDP per capita and social investment are almost equal to each other when we exclude Luxemburg, which is a strong outlier in GDP.[53]

[Figure 10]

[Figure 11]

Table 5 portrays the correlations between the 'residuals' from benchmark D and several country-level characteristics. The table shows that 'efficient' countries are primarily characterized by high social investment, high transfer but low pension spending, high GDP per capita and a high degree of pro-poorness in transfers. In addition, they tend to be not heavy on pension spending (pension-heaviness is defined as the share of cash benefits on pension and old age benefits relative to spending on working age cash benefits, for the whole population[54]), and have a low share of low achievers in education.[55]

However, the results from a simple regression analysis in the next column show that many indicators are not significant anymore when we include all variables jointly. The only variables that remain statistically significant are pension spending and the degree of pro-poorness in transfers. The overall loss in significance reflects that many of the explanatory variables we use are heavily correlated with each other. This, in turn, indicates that inputs in social protection policy are strongly interrelated. As such, naïve correlations and regressions are not very informative, because they pick up on many other effects in addition to any possible 'true' effect. The significant coefficient for pensions in the regression indicates that, from a structural point of view, in the second half of the 2000s, the social fabric of countries with high 'unexplained' child poverty was strongly characterized by a relatively high share of pensions in the disposable income of households with children. (This may indicate a endogenous effect: welfare states with high levels of child poverty, because of an inadequate (non-pension) transfer system and high levels of work poverty, incentivize young people to live in multigenerational households which benefit from pension incomes.) However, if we have to answer the question 'what would be the impact of a reduction in pension spending that affects household income of the child population, if all other factors remain unchanged?', we have to turn to the more robust fixed effect model applied to our data panel; this indicates that, *ceteris paribus,* pension spending is effective in reducing poverty.[56]

[Table 5]

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[53] The correlation coefficient for social investment is not very sensitive to excluding outliers. When we exclude Denmark and Romania, which are at opposite extremes, the coefficient drops by 0.10. Conversely, excluding the Czech Republic increases the coefficient by 0.10.

[54] This variable is not based on SILC, but on the administrative spending data classified on the basis of ESSPROS. It is a macro 'political economy' indicator, rather than an indicator of the spending effort oriented towards the subgroups of the population under review here.

[55] The negative and significant coefficient for PISA inequality is striking and difficult to explain. This observation would require further exploration between measures of educational inequality and poverty.

[56] The results for young age dependency indicate an interesting pattern of results for young age dependency. There is a negative correlation between young age dependency and benchmark D, which disappears when controlled for other indicators. On the other hand, the impact of young age dependency is significant and positive in the fixed effect model. Hence, countries with higher young age dependency have lower child poverty rates, but this negative correlation disappears when we control for other country-level indicators, and becomes positive when we extract all structural country characteristics.

Given the 'naïve' character of the correlations and regression results illustrated in Figures 10 and 11 and Table 5, one should not jump to conclusions. These observations *as such* do not constitute conclusive evidence. We cannot assess the impact of social investment in a country fixed effect model, since we construct social investment as a static variable, reflecting the average level of spending on education, child care and ALMP over a number of years. Furthermore, when we would use repeated observations of social investment, the estimation results from a fixed effect model would depend on the time lag we specify, which would be completely arbitrary. Still, structural investment in human capital might play a role in explaining the remaining puzzles in terms of the wide disparity in poverty performance across European welfare.

Moreover, when analyzing child poverty and employment at the macro-level, one cannot easily disentangle the impact of investments in education and investments in child care on poverty and employment. Hence, we cannot say very much about the specific role played by spending on compulsory education. A survey of the literature demonstrates that analyses based on macro-data on the relation between public investments in education and student performance are not convincing.[57] On the other hand, there is some evidence of a link between expenditure in primary and secondary education and (Gini) measures of income inequality (Bergh and Fink, 2008 and Sylwester, 2002).[58] Altogether, this evidence appears much weaker than the substantial returns of several early childhood programs, documented in the literature (Cunha *et al*. 2006). In other words, while child poverty signals an 'investment deficit', more public spending on education *per se* is not necessarily the most adequate answer to cut the said deficit; in contrast, there is little doubt that spending on child care is a necessary ingredient of the extra investment that is needed in many countries. This being said, it is also rather difficult to see how *cuts* in education spending might contribute to the necessary investment in human capital.

G. CAVEATS WITH REGARD TO EFFICIENCY

The analysis in section 3.F shows that our indicators cannot explain a large share of the variation in poverty rates across European welfare states. Although we clearly identify certain indicators that explain poor performance, the vast majority of nations perform well in some and badly in others. In the end, the sum of these indicators leaves disparities largely intact. Poor performing nations have low transfer spending and high work poverty, but their high poverty rates are made more puzzling given their high pension spending and low relative severity of work poverty. For countries with favourable poverty rates, this dynamic is generally the opposite. This indicates that there should be

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[57] Class size and expenditure per student explain little with respect to differences in performance, or later-life earnings, and many find insignificant results (Card and Kruger, 1996). The most favourable results indicate a return of 1-2% in earnings for every 10% increase in per-pupil expenditure. Hanushek (1997) concludes from a vast overview of studies that there is no strong and consistent relationship between expenditures on education and student performance, once we factor out differences in family inputs. The connection between financial inputs and school achievement also appears to be weak. Woessman (2003) finds that country-level institutional characteristics explain much more of the variation in PISA scores than financial indicators. In fact, educational expenditure per student and average class size are found to be negatively related to student performance. Institutional factors that contribute to higher PISA scores are, among others, presence of a central exam, high school autonomy, high scrutiny of students' achievement and large teacher freedom in terms of teaching methods.

[58] It is worthwhile to note that of all our three indicators incorporated into social investment, expenditures on education shows the strongest negative link with poverty rates (when we only employ this type of spending, the coefficient is still insignificant, but not far from a 10% significance criterion).

unobserved country-level indicators that can still explain the large dispersion in poverty rates. This result is in a way unsatisfactory, but the fact remains that the majority of the indicators that we tested are significantly related to poverty performance. It is mainly because countries do not perform universally well or badly on these indicators that this still leaves much variation unexplained. Nevertheless, the results suggest that higher spending levels, lower work poverty and higher pro-poorness can lead to significant decreases in poverty.

Still, we have to keep in mind that the magnitudes we find for each of these impacts are relatively modest. Naïve estimations of such effects generally overestimate such impacts. When country fixed effects are excluded, estimates of, for example, spending, pick up on multiple structural characteristics of welfare states that are correlated with both poverty and spending. The results show that the fact that the well-performing Scandinavian countries have high (transfer) spending levels does not simply mean that countries such as Bulgaria and Latvia simply have to spend more to achieve similarly low levels of poverty. Poverty records are related to multiple and much more structural indicators, which all need to be addressed before such substantial improvements can be made.

Despite these cautionary notes, the issue of 'efficiency' is important and should be an element of the EU social agenda: *not* because efficiency is the prime virtue of welfare states, as we argued in Section 2.D, but because assessments with regard to efficiency allow us to improve welfare state performance. Moreover, as explained in Section 2, judgments on 'efficiency' inevitably pervade the European public debate: it is better to have judgments informed by facts and analysis than by perception. However, in addition to the cautionary note that efficiency is not the prime virtue, a number of *caveats* further apply with regard to this conceptualization of 'efficiency'.

First, 'efficiency' must be defined in relation to an objective. In our analysis, the efficiency of spending refers to the objective of reducing poverty, not to any other, possibly equally legitimate, objective (such as reducing income insecurity or specific family policy objectives and/or promoting gender equality). More specifically, efficiency of spending is assessed here in terms of a poverty headcount, using 60 per cent of median income as the poverty threshold. Obviously, the choice of threshold matters. Theoretically, policy changes may reduce the efficiency of spending measured by the 60 per cent threshold and yet enhance efficiency measured by a threshold of 40 per cent of median income; increased targeting at the very poor might yield such an outcome. In such an event, efficiency decreases with regard to the poor, but increases with regard to the very poor. For this reason, the efficiency analyses proposed here ideally ought to be repeated with different poverty thresholds and measures for the poverty gap.

A second *caveat* concerns the fact that we measure efficiency only in a comparative sense: we construct a benchmark on the basis of the average performance of EU welfare states (that is what the regression model does). As a result, we cannot say anything about the evolution of efficiency over time: it may be the case that poverty rates have been increasing because the efficiency of welfare states has diminished for structural reasons: our benchmarking system does not allow us to assess this. The third *caveat* immediately follows from the second. Our approach presupposes that it makes sense to benchmark welfare states vis-à-vis a hypothetical, uniform 'European welfare state technology', encompassing welfare states with very different histories and dimensions. The benchmark may however be quite sensitive to the inclusion or exclusion of outliers. However, a

sensitivity analysis presented in Appendix 2 indicates that sensitivity is low. Even when we exclude all mini-states and outliers Romania and Bulgaria, coefficients are only lightly affected. The coefficient for transfer spending appears especially robust, while the coefficient for pension spending is somewhat more sensitive.[59] This approach, moreover, raises a host of statistical problems: since this virtual EU average is calculated on the basis of point estimates with wide confidence intervals, we should be extremely cautious when drawing conclusions. Furthermore, the difference between Eurostat spending data, which are collected on an administrative basis, and the data on social transfers actually registered in the SILC surveys merits further research.

The fourth *caveat* is that the efficiency notion examined here is static in yet another sense: it may be the case that a programme that is less efficient than the academic observer may wish nonetheless enjoys broad popular support because of the benefits it creates for middle-class households. We have cast doubt on the Korpi-Palme argument that pro-poorness leads to smaller size; nevertheless, refuting the statistical argument does not necessarily close the case. It may be the case that 'inefficient' programmes are politically more robust in the longer term, and hence more beneficial to the poor in the longer term; such a dynamic notion of efficiency is not captured by our figures.

The fifth *caveat* is to some extent a rejoinder of Lefebvre and Pestieau's warning against introducing an efficiency concept when judging the impact of government intervention. Our results show that the employment record that influences poverty outcomes is, in part, related to an aspect of the distribution of jobs over households (as measured by 'relative severity of work poverty') which is related to a phenomenon of 'polarization' on the labour market that is not easily changed by public action. That is not to say that polarization cannot be a matter of public concern and policy. Tax and benefits systems, the quality and accessibility of activation and child care do play a role in polarization of jobs over households. The United Kingdom has proven that it is possible to fight joblessness among single parents, which contributed to the high level of polarization in that country. But the impact of governments on factors such as the average size of households or homogamy (the tendency for partners to have the same educational and other characteristics that determine unemployment risks, a phenomenon which contributes to polarization) is obviously rather limited.

4. GENERAL CONCLUSIONS

The EU has adopted a surveillance mechanism to prevent and correct macroeconomic imbalances within the EU, the Macro-economic Imbalance Procedure. In this paper we argue that, analytically, a notion of 'excessive imbalance' also applies to specific social parameters characterizing Eurozone members. These excessive social imbalances signal problems that Eurozone members share with each other. Youth unemployment and child poverty are two examples where this applies. These are not simply 'similar problems' in a subset of poorly performing member states, for two reasons. First, they are partly attributable to shared causes at the pan-European level: in section 2.A, we showed the strong impact on child poverty rates of the economic crisis that hit the EU. Second, these imbalances may create problem 'spill-overs' from single countries to the pan-European level, thus generating shared consequences. The immediate spill-over is a loss of legitimacy: social divergence in the Eurozone erodes the legitimacy of European cooperation as it exists today, and damages the

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[59] This is not surprising, since the coefficient for pensions is measured with more error, since it represents a much lower share of total income than transfers.

trust-based legitimacy that is needed for it to perform better in the future. Legitimacy is not simply a desirable feature of political systems; it is an essential input for a system of governance – including economic governance – to function. Not only political observers, but economists should be deeply worried about this. Next to the loss of legitimacy, huge disparities in child poverty are alarming since they signal problems relevant to the sustainability of monetary union, both 'upstream' of the observation of child poverty (why is child poverty comparatively high in country X?) and 'downstream' of that observation (what will be the likely consequences of unchanged or even worsening levels of child poverty in country X?). A comparatively high level of child poverty is synonymous with an investment deficit that may be cause and effect in a vicious circle of underperforming labour markets and education systems. Huge imbalances with regard to the performance of labour markets and education systems, make it even more difficult to achieve the degree of economic symmetry that is required in a monetary union.

A successful reduction of excessive social imbalances involves both national responsibility and collective action at the European level. It is legitimate to consider individual member states of the Eurozone as responsible for the improvement of social outcomes, by enhancing the performance and efficiency of national welfare systems; as much as our Figure 1 points to the root problem of macro-economic governance in the EU, it also illustrates domestic differentiation. This domestic differentiation is the combined effect of the differential impact of a similar macro-economic shock on incomes and income distribution in the member states and the different redistributive trajectories of member states since the mid-2000's. Some welfare states are more effective, both in achieving social objectives and in cushioning economic shocks. In other words, next to sound pan-European macro-economic policies, there is domestic homework to raise the performance and efficiency of a number of welfare states. Simultaneously, the EU must provide a supportive framework that enables member states to improve social outcomes. Balancing national responsibility and European support implies a sense of 'reciprocity' across European member states and presupposes a shared understanding of factors contributing to the performance and efficiency of welfare states. The contractual approach, proposed by Council President Herman Van Rompuy, can embody this idea of 'reciprocity', if the 'contracts' are fair and seen to be fair, i.e. if they instantiate burden sharing in the necessary adjustment processes and provide the necessary support.

In section 3 of this paper, we presented an empirical analysis of the performance of welfare states with regard to child poverty, which we use to construct an 'efficiency scoreboard'. This type of analysis may contribute to the shared understanding that is needed to balance national responsibility and European support. It can be helpful to inspire a 'contractual approach' to European governance. We identify several indicators that explain poverty rates, including not only the 'work poverty' of households, but also the 'severity' of work poverty, and the pro-poorness of spending. The sum of these indicators, however, still leaves us with substantial disparities in poverty rates across European welfare states. The reason is that no country puts up a universally 'strong' or 'weak' performance in all of these indicators. Northern welfare states have high transfer spending, low work poverty, and high pro-poorness. However, they also have a high relative severity of work poverty, and – in contrast to Eastern and Southern countries – pension spending is relatively unimportant for the incomes of households with children in these welfare states. For Eastern and Southern countries, the pattern of indicators is generally the opposite. This leaves a substantial puzzle in explaining why countries perform so differently. These results for one indicate that, when

countries have poor poverty records and their spending is low, it is too simplistic to argue that increases in spending will, by themselves, automatically bring their poverty rates up to average levels. Transfer systems must be sufficiently generous, but poor poverty records are shown to be related to many more aspects than only low generosity of their transfer system, of which many are difficult to identify. The same *caveat* holds for any single ingredient of policy.

With regard to the architecture of spending, scholars and policy makers have been divided over the merits of targeting versus universalism. Traditionally, universalism has been advocated on the basis of legitimacy. This argument has been supported by Korpi and Palme (1998), who demonstrated, for the mid 1980s and a sample of mature welfare states, a trade-off between the size of redistributive budgets and the degree of targeting. Our results question the 'paradox of distribution' identified by Korpi and Palme, in line with other recent studies, and should lead to a nuanced discussion on the merits and drawbacks of targeting versus universalism. They lend support to the pragmatic approach proposed by the European Commission's Communication on the Social Investment Package, which calls for 'improved targeting' and emphasizes that 'both universalism and selectivity need to be used in an intelligent way.' (European Commission, 2013b, p. 9).

With regard to social investment, Section 3 does not provide strong econometric evidence for its contribution in reducing child poverty (*net of work poverty*), but simultaneously illustrates the analytical limits of this type of analysis, which has to be confined to a 'naïve regression'. The European Commission correctly emphasizes the importance of social investment (European Commission, 2013b). In the literature, the high rate of return of several early childhood intervention programmes is documented very convincingly; child care presents a case of social investment *par excellence.* This is less the case for education spending *per se*. While child poverty signals an 'investment deficit', more public spending on education *per se* is not necessarily the most adequate answer to cut that deficit; in contrast, there is little doubt that spending on child care is in many countries a necessary ingredient of the extra investment that is needed. This being said, it is also rather difficult to see how *cuts* in education spending might contribute to the necessary investment in human capital.

On a structural level, the 'unexplained disparity' in child poverty rates reflects differences in the underlying societal fabric of welfare states, which correlate with differences in the level and architecture of social spending, GDP per capita and social investment, but are not readily 'explained' by any of these factors separately (as they correlate strongly with each other). A remarkable finding is that from a structural point of view, in the second half of the 2000s, the social fabric of countries with high 'unexplained' child poverty was characterized by a relatively high share of pensions in the disposable income of households with children. However, if we have to answer the question 'what would be the impact of a reduction in pension spending that affects household income of the child population, if all other factors remain unchanged?', the more robust fixed effect model applied to our data indicates that, ceteris paribus, pension spending is effective in reducing poverty. This result is contradictory at first sight, but it shows that analyzing the impact of incremental changes in policies must not be conflated with analyzing structural differences across welfare states. In policy terms, it underscores the critical (and endogenous) dependence of some welfare states in Southern Europe and Eastern and Central Europe on pension spending and the extended family model to prevent child poverty from being even more important than today. Without improvement in the

non-pension transfer system and labour markets, this foretells growing social problems in the future in these member states, as the extended family model is doomed to diminish in importance.

The cross-correlation of welfare state features that are associated with success in fighting child poverty also confirms that *well-organized social protection and social investment are complementary strategies*, as emphasized by Vandenbroucke, Hemerijck and Palier (2011). Social investment is no panacea for all social ills, and one should eschew easy rhetoric about 'win-win policies' as if no internal tensions and conflicts arise when pursuing social protection and investment in the context of narrow budgetary margins. *However, to the extent that deficits in social investment explain, at least in part, the current disequilibria in the EU, we need more social investment, not less.* Moreover, together with the intrinsic value of social protection and care, the social investment perspective may offer a substantive definition of the European social purpose, a purpose which must be defined if we are to achieve long term sustainability of the Eurozone (and, thus, the EU). For all those reasons, the recent argument by the Commission in favour of social investment marks an important turn in EU policy discourse.

The argument we deployed is macroeconomic, but obviously there is a political corollary. Both the survival of the Eurozone and the necessary recalibration in welfare policy conjure up a democratic predicament with national as well as European dimensions. The social consequences of the sovereign debt crisis have put increasing pressures on national governments in both domestic social policy and supranational economic policy arenas. In policy terms, the challenge is to make long-term social investments and medium-term fiscal consolidation mutually supportive and sustainable, under improved financial and economic governance. This requires a more balanced approach to macro-economic coordination (De Grauwe, 2013). The contractual approach, proposed by President Van Rompuy, should serve that goal, if it is to play a constructive role in the current situation. Conditional but tangible support for member states pursuing social reforms, oriented towards inclusive social investment, should be part and parcel of such a contractual approach.

The observation that the econometric analysis in this paper leaves a substantial puzzle in explaining why countries perform so differently, signals the need for further research. But it also implies that a 'contractual approach' should be far removed from a top-down, 'one size fits all' approach to social policy-making in the member states. What is needed is a combination of:

- greater room of manoeuver and support for member states that opt for a social investment strategy;

- policy guidance based on clear and sufficiently stringent and constraining objectives with regard to well-defined social outcomes on the one hand, and genuine scope for exploration and mutual learning on the ways and means to achieve those outcomes on the other hand.

The purpose of this paper is not to elaborate on issues of governance. However, in political terms, the challenge is clear: European citizens need a reformist perspective that gives the social *acquis* they cherish a credible future. That requires that both national social cohesion and pan-European cohesion are firmly put on the agenda and carry the same political weight as economic objectives at the highest levels of policy making in the EU.

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6. APPENDIX 1: SOCIAL SPENDING ACCORDING TO SILC VS. SOCIAL SPENDING ON THE BASIS OF ESSPROS

Figures A1 and A2 show that the SILC-based data on transfers and pensions for the whole population (including the elderly) correlate quite well with the administrative data classified according to ESSPROS. In general, the SILC-based percentages are much higher, which is explainable by two factors: first, GDP contains other incomes than household incomes (see also Feseau et al. 2012 for a comparison of micro-survey data and macro national accounts data in OECD countries), and second, in SILC both the numerator and the denominator are net of income taxes, while the administrative data are before taxes (in most countries, income taxation on benefits and pensions is lower than income taxation on wages and salaries). However, in some countries, such as Ireland, Hungary, Sweden, Denmark and Norway, the cash transfers registered in SILC seem to deviate (in an upward sense) from what one would expect on the basis of the administrative data.

[Figure A1 about here]

[Figure A2 about here]

These differences in deviations across countries are due to a number of factors. It is important to note that data in SILC are collected in some countries entirely on the basis of surveys, while other countries (like the Nordic countries) rely on administrative (or register) data (see Eurostat (2008)). That this choice of data collection may affect poverty outcomes is illustrated by Lohman (2011), who investigates how the relationship among employment, earnings and poverty changes when different approaches to data collection are used. This difference in data collection (with register data often regarded as being more correct) is one of the reasons why not all income components are equally well covered. In general, salaries have a good correspondence between SILC and National Accounts data, as well as some categories of social spending. But for other income types country practices can differ considerably, most notably income from self-employment, capital income and pensions (especially occupational pensions). Moreover, the classification of income types can differ across countries. E.g. for Sweden, the classification of 'housing benefits', taken up by the elderly, as 'pensions' in their administrative data may play a role here. But still many challenges remain when trying to match micro and macro sources (Feseau et al. 2012).

7. APPENDIX 2: MODEL SELECTION AND SENSITIVITY

The empirical results presented before are based on a GLS model with country and time fixed effects, assuming a heteroskedastic error structure. The choice for this specification is, for one, based on several statistical tests (heterosekdasticity was shown to be present, serial correlation and contemporaneous correlation not).[60] More importantly, we have to make a decision between employing unit fixed effects or not. The choice between fixed effects or no fixed effects should be evaluated on a case-to-case basis. In our context, an approach without country dummies has the drawback that countries that spend more on transfers tend to have better institutional characteristics that are relevant for poverty outcomes (the Scandinavian countries are a typical

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[60] The procedure in selection the appropriate model and specification of the error term has been largely based on Podesta (2002, 2006).

example). Such country-level characteristics will be picked up by the coefficient on spending, leading to an overestimation of the impact of transfer spending on post-transfer poverty. This bias is exactly opposite when we look at spending on pensions. Southern and Eastern European nations are generally large spenders on pensions; countries who appear to have less favourable country characteristics.

On the other hand, an estimation that is largely based on changes over time (e.g. a model with unit fixed effects) can be especially vulnerable to the influence of cyclical economic effects. Since our time frame incorporates a severe economic crisis (2009-2010), this is a relevant problem. But also variation during the boom period of 2005-2008 can be contaminated. Economic prosperity can lead to a lower need for spending, which would also lead to a downward bias (since lower spending goes hand in hand with lower poverty). Conversely, a better economic situation can make countries more generous, since it becomes more affordable to do so. However, our data show a consistently decreasing pattern in spending over this period, which would point more in the direction of the previous argument. A similar argument can also apply to crises; a bad economic situation can lead to budget pressure and cuts. However, this has not yet occurred in the first phase of the current economic crisis, since spending is continuously increasing between 2008 and 2010. Altogether, the pattern of spending over time suggest a positive bias (which means that the bias would underestimate an assumed negative true impact) for the fixed effect model. On the other hand, the no fixed effect model appears to provide a clear upper bound on the estimated impact of transfer spending (in an absolute sense), and would underestimate the contribution of pensions in reducing poverty levels.

Initial estimation shows indeed that the fixed effect model is vulnerable to the inclusion of crisis years. When we simply regress poverty on spending, this renders both spending coefficients insignificant, while they are statistically significant and negative when we restrict ourselves to the pre-crisis years (referring to SILC 2005-2008). However, the coefficients become significant for the whole sample when we add measures for individual or household employment, since these (partially) control for a deteriorating economic climate. Measures with controls for employment for the sample as a whole are very similar to those for the pre-crisis years without controls for employment. When we add other indicators of this economic situation, such as GDP per capita, the coefficients do not change anymore. This suggests that the bias that is imposed in a fixed effect model through cyclical economic effects is largely controlled for by adding measures of work intensity as controls. On the other hand, the bias in the model without fixed effects appears more cumbersome, as it is related to structural aspects of the nation that are often hard to observe. This is reflected by some initial results from this model. We obtain strong negative coefficients for transfer spending, but a significantly positive effect from pension spending. These coefficients are reduced in size when we add controls for employment, but the effect for pensions remains positive and significant.

We clearly favour the model that does include fixed effects, both based on theory and on the fact that its bias seems better controllable. The choice for fixed effects is also a conceptual one. When we are assessing the impact of changes in spending on poverty, we want to know how poverty would change when we change spending. A model that is predominantly based on variation over time is more appropriate for answering that question than one that is largely based on variation in a

diverse set of countries. However, we need to emphasize that neither of these models provides true causal impacts, since also the fixed effects model can suffer from statistical bias.

We execute additional regressions with alternative model specifications, to assess how sensitive our main results are to the choice of this model. Table A1 shows these results. Romania, Bulgaria, Malta and the United Kingdom are excluded from these regressions, because some methods require fully balanced samples and these countries contain some missing observations.

[Table A1]

The table shows that clearly the biggest impact of different model specifications is through the adding of country fixed effects. Models without fixed effects all lead to stronger effects for transfers and positive coefficients for pensions. Within the set of models that controls for country fixed effects differences are small. Standard errors are affected somewhat stronger in some cases, because the error is differently specified across models. Adding a lagged dependent variable leads to a lower but still statistically significant impact of transfer spending, but a positive and marginally significant estimate for pension spending. The results from the first difference analysis are similar for transfer spending as well, but larger for pension spending (which has a higher standard error in all specifications and is therefore naturally more sensitive).

We also tests whether the results are sensitive to the specified time periods and the countries included in the sample. Results from this analysis are shown in table A2. Sensitivity to dropping specific time periods is generally small. Again, the coefficient for pensions is slightly more sensitive. The largest change occurs when we drop both crisis years; 2009 and 2010. This increases the spending coefficients significantly. This is not that surprising, since it is likely that such a typical period as the (early years of) the current financial crisis has a different technology between spending and poverty than a boom period has. Presumably, the worsening of the financial situation has made social spending slightly less effective in the crisis period.

[Table A2]

We also address sensitivity to dropping countries that appear as outliers in some measures. We first drop Greece and Romania, which are especially (low) outliers when it comes to transfer spending. In the next two steps we drop Greece, Romania, Denmark and Poland (outliers in pension spending), Cyprus, Iceland, Luxemburg and Malta (small welfare states) and Denmark, Finland, Iceland, Norway and Sweden (Scandinavian welfare states, with remarkably strong poverty records). The impacts of these omissions on the spending coefficients are not large in magnitude, but they increase the coefficient for pensions somewhat. The following columns show that this originates mainly from the segment of work poor. Hence, the size of especially the transfer coefficient is very stable across time periods and to the exclusion of outliers. The pension coefficient, which is estimated with more error, is somewhat more sensitive, and shows to be higher in most alternative samples. The higher sensitivity of the coefficient for pension spending throughout the sensitivity analysis shows that we should not draw too strong conclusions from the fact that the coefficient for pensions is larger than for transfers in our benchmark model. As tables A1 and A2 show, this result does not uphold for every model specification. Still, the sensitivity results do not change our main conclusions in any major way. It is remarkable how extremely stable the coefficient for poverty reduction is throughout the table. Naturally, this variable should be less affected by changes in economic prosperity over

time, but the lack of sensitivity to excluding outliers is a strong result. It suggests a very general technology for poverty reduction across European welfare states.

8. APPENDIX 3: SUMMARY STATISTICS

Tables A3 and A4 show summary statistics of all the indicators that were employed in the empirical analysis, for the EU27 plus Iceland and Norway. These are averages over the period SILC 2005-2010 (except for countries with missing observations in this period, and for the static indicators). Table A3 lists mean values for several measures of poverty, while table A4 presents statistics for the independent variables in our analysis.

[Table A3]

[Table A4]

9.   FIGURES AND TABLES

Table 1: Levels and changes in poverty rates (2005-2011)

GEO/TIME	At-risk-of-poverty rate [0-17]: level						AROP [0-17]: change			
	With floating poverty threshold				Threshold 2005		Change 2005-2011		Change 2008-2011	
	2005	2008	2011	% of AROP [0-59], 2005-2011	2008	2011	Floating threshold	Fixed threshold	Floating threshold	Fixed threshold
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Finland	10,0	12,0	11,8	95%	9,5	6,2	1,8	-3,8	-0,2	-3,3
Sweden	10,2	12,9	14,5	106%	8,7	8,9	4,3	-1,3	1,6	0,2
Denmark	10,4	9,1	10,2	86%	8,9	8,4	-0,2	-2	1,1	-0,5
Slovenia	12,1	11,6	14,7	115%	7,8	9,3	2,6	-2,8	3,1	1,5
Germany	12,2	15,2	15,6	101%	12,7	13,3	3,4	1,1	0,4	0,6
Cyprus	12,8	14,4	12,0	117%	7,9	7,4	-0,8	-5,4	-2,4	-0,5
France	14,4	15,9	18,8	118%			4,4		2,9	
Austria	14,9	14,9	15,4	123%	15,5	13,1	0,5	-1,8	0,5	-2,4
Netherlands	15,3	12,9	15,5	127%	9,2	11,2	0,2	-4,1	2,6	2
Malta	16,7	19,3	21,1	144%	16,0	15,8	4,4	-0,9	1,8	-0,2
Czech Republic	17,6	13,2	15,2	147%	9,8	8,2	-2,4	-9,4	2	-1,6
Belgium	18,1	17,2	18,7	128%	16,3	16,6	0,6	-1,5	1,5	0,3
Slovakia	18,9	16,7	21,2	143%	8,8	4,3	2,3	-14,6	4,5	-4,5
Hungary	19,9	19,7	23,0	138%	14,5	19,3	3,1	-0,6	3,3	4,8
Luxembourg	20,2	19,8	20,3	132%	20,0	21,6	0,1	1,4	0,5	1,6
Greece	20,4	23,0	23,7	117%	21,2	25,2	3,3	4,8	0,7	4
Estonia	21,3	17,1	19,5	115%	6,0	9,3	-1,8	-12	2,4	3,3
Latvia	21,5	24,6	25,0	119%	7,8	14,6	3,5	-6,9	0,4	6,8
United Kingdom	22,9	24,0	18,0	130%	18,8	19,1	-4,9	-3,8	-6	0,3
Italy	23,6	24,7	26,3	131%	24,2	27,7	2,7	4,1	1,6	3,5
Portugal	23,7	22,8	22,4	130%	21,5	20,9	-1,3	-2,8	-0,4	-0,6
Spain	24,2	24,4	27,2	132%	18,4	26,6	3	2,4	2,8	8,2
Lithuania	27,2	22,8	24,3	121%	7,4	11,2	-2,9	-16	1,5	3,8
Poland	29,3	22,4	22,0	124%	11,5	8,0	-7,3	-21,3	-0,4	-3,5
Eurozone										

Source: EU SILC, Website Eurostat, accessed 20.2.2013; years refer to the SILC survey years; for all countries, except the UK and Ireland, these figures relate to income realities in the year before the survey. The Eurozone countries are indicated with a grey shade.

Figure 1

Growth of 'fixed' child poverty rate vs. growth of GDP/capita, 2008-2010

$y = -7,2071x - 0,0935$
$R^2 = 0,5981$
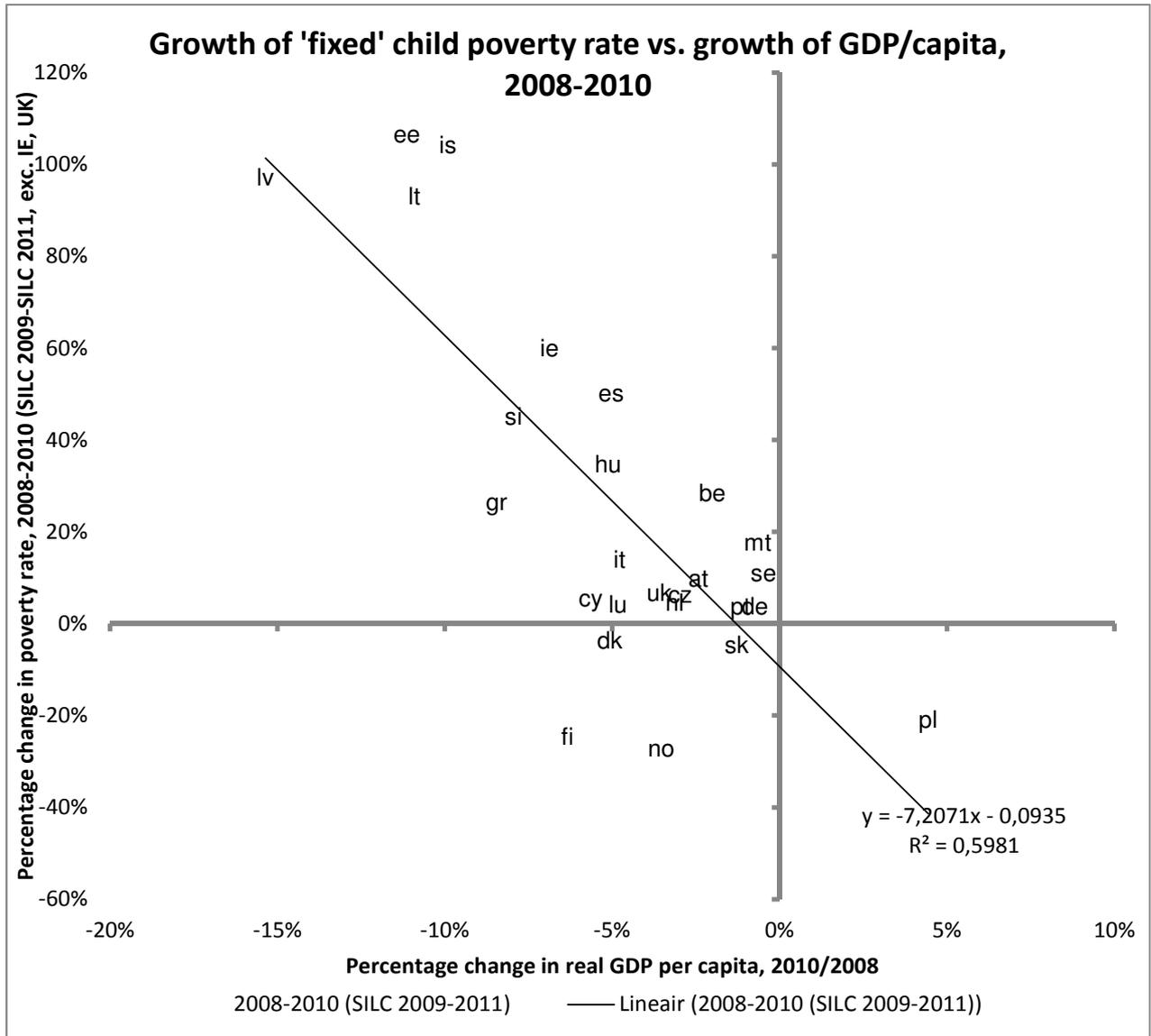
The figure shows growth rates in poverty, using poverty rates anchored in time (on the basis of the SILC 2008 threshold), as well as real GDP per capita growth, both for the period 2008-2010.

Figure 2
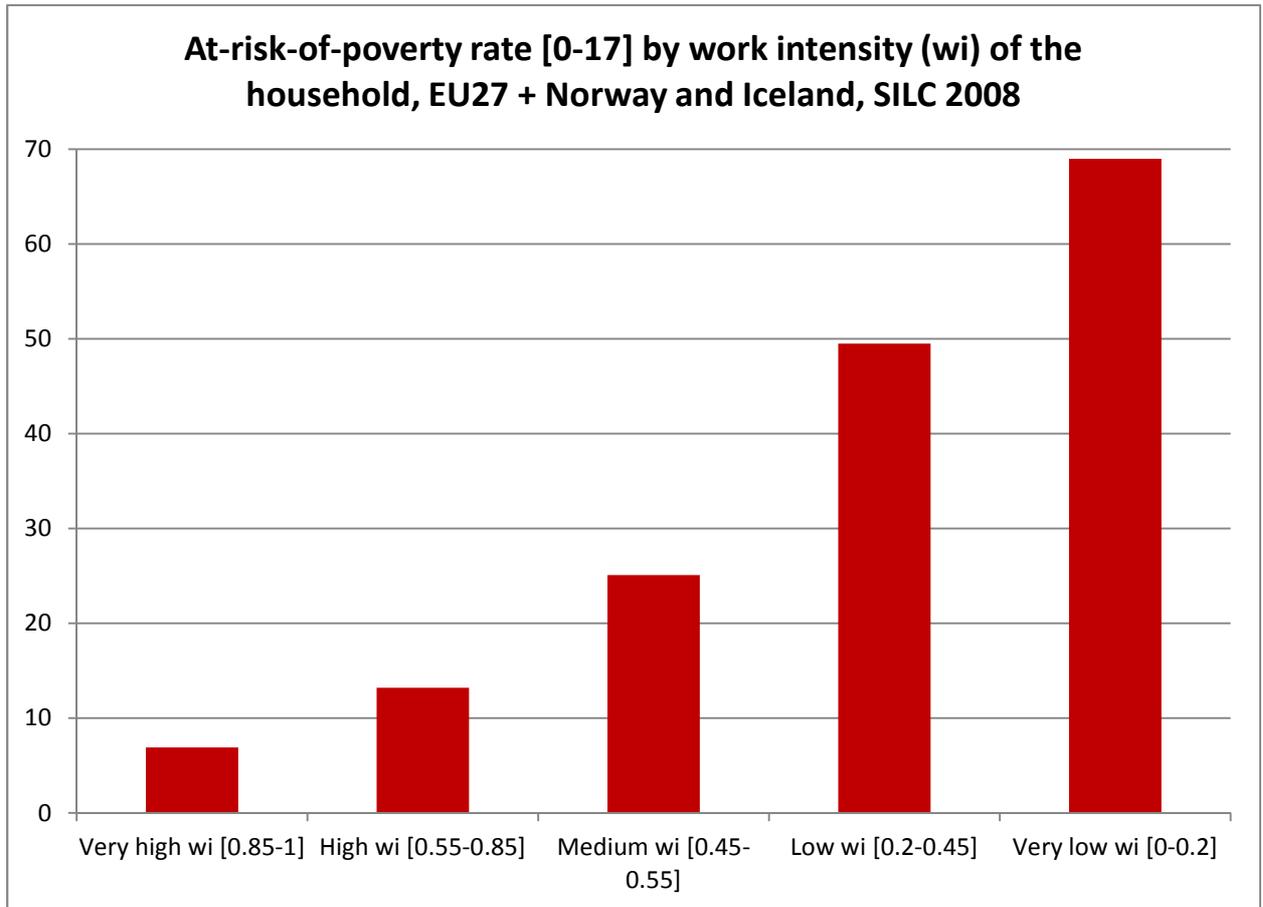
The figure shows the average child poverty rates for the EU 27 plus Norway and Iceland, for households with different work intensity.

Figure 3
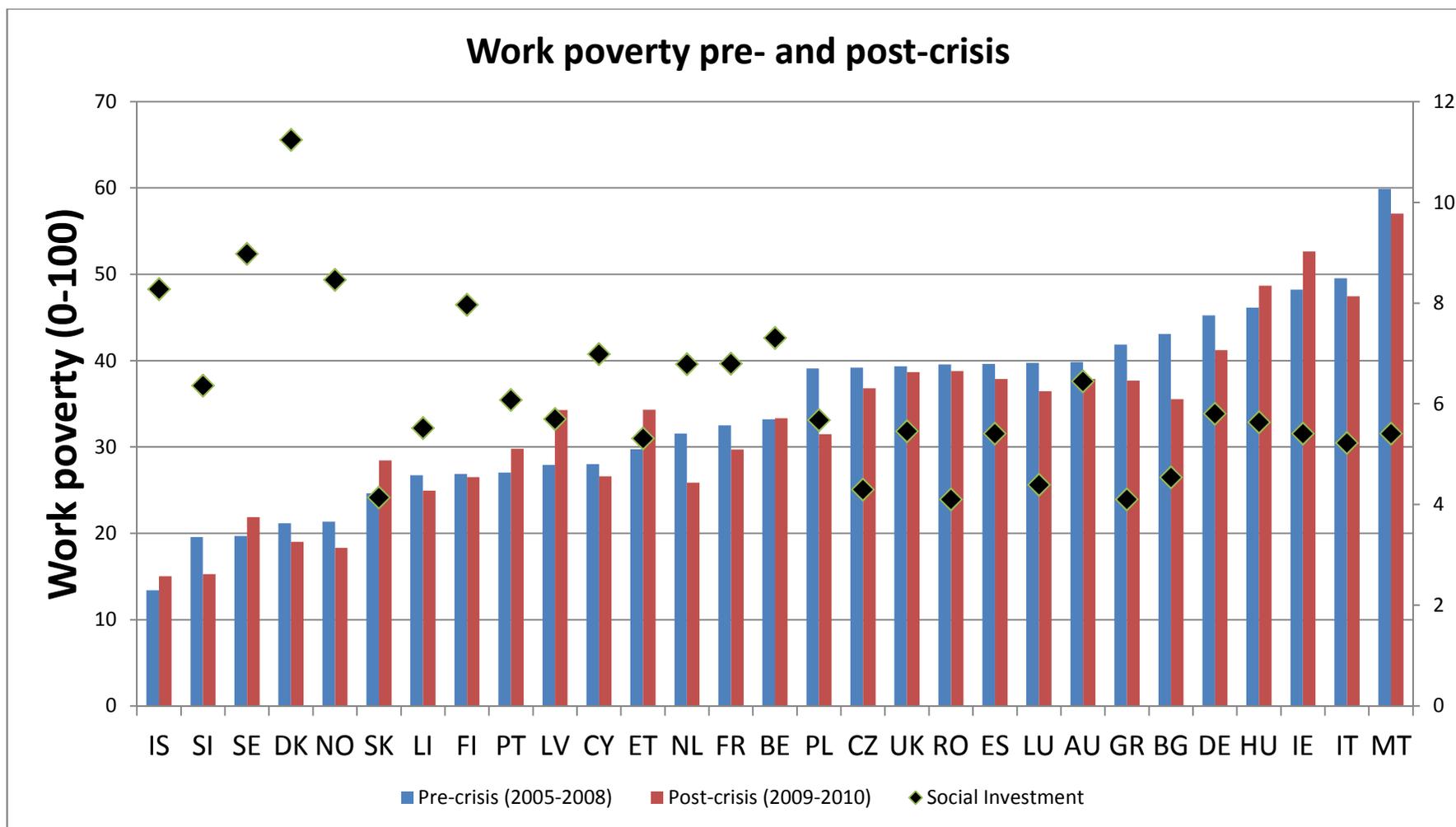
The graph shows the size of work poverty in percentage points, both pre-and post-crisis, and the size of social investment. Social investment measures spending on child care, education and active labour market policies, in % of GDP. Work intensity is measured with respect to the population aged 0-17. IE and UK figures are based on SILC 2004-2009; Romania has no data for 2005-2006.

Figure 4

Severity of work poverty pre- and post-crisis
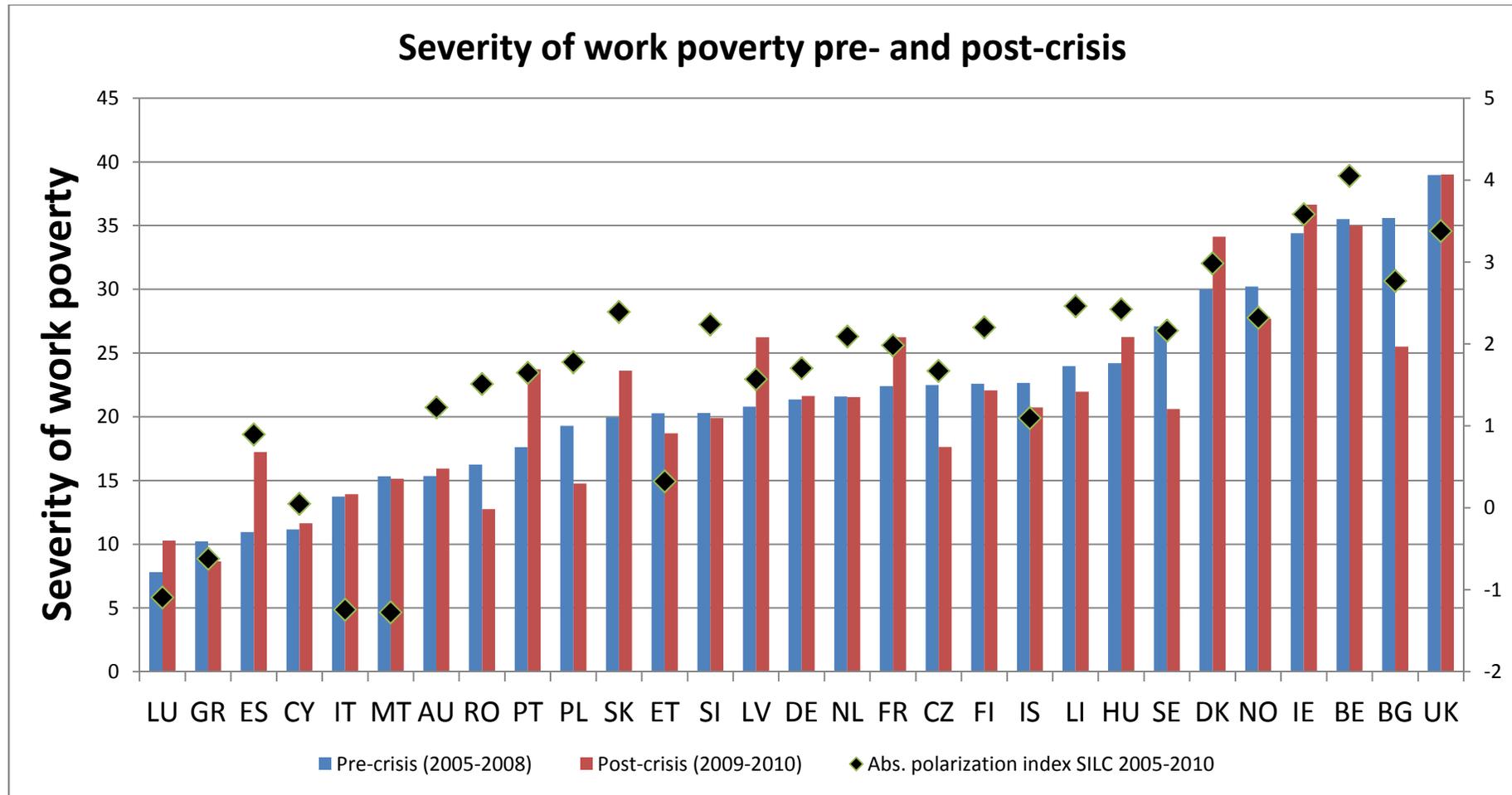
The graph shows the relative severity of work poverty, in percentage points, both pre-and post-crisis, and the degree of polarization. For 'polarization' we use the average value (over SILC 2005-2010) of the absolute polarization indices as defined and calculated by Corluy and Vandenbroucke (2012). Work intensity is measured with respect to the population aged 0-17. IE and UK is based on SILC 2004-2009; Romania has no data for 2005-2006.

Figure 5
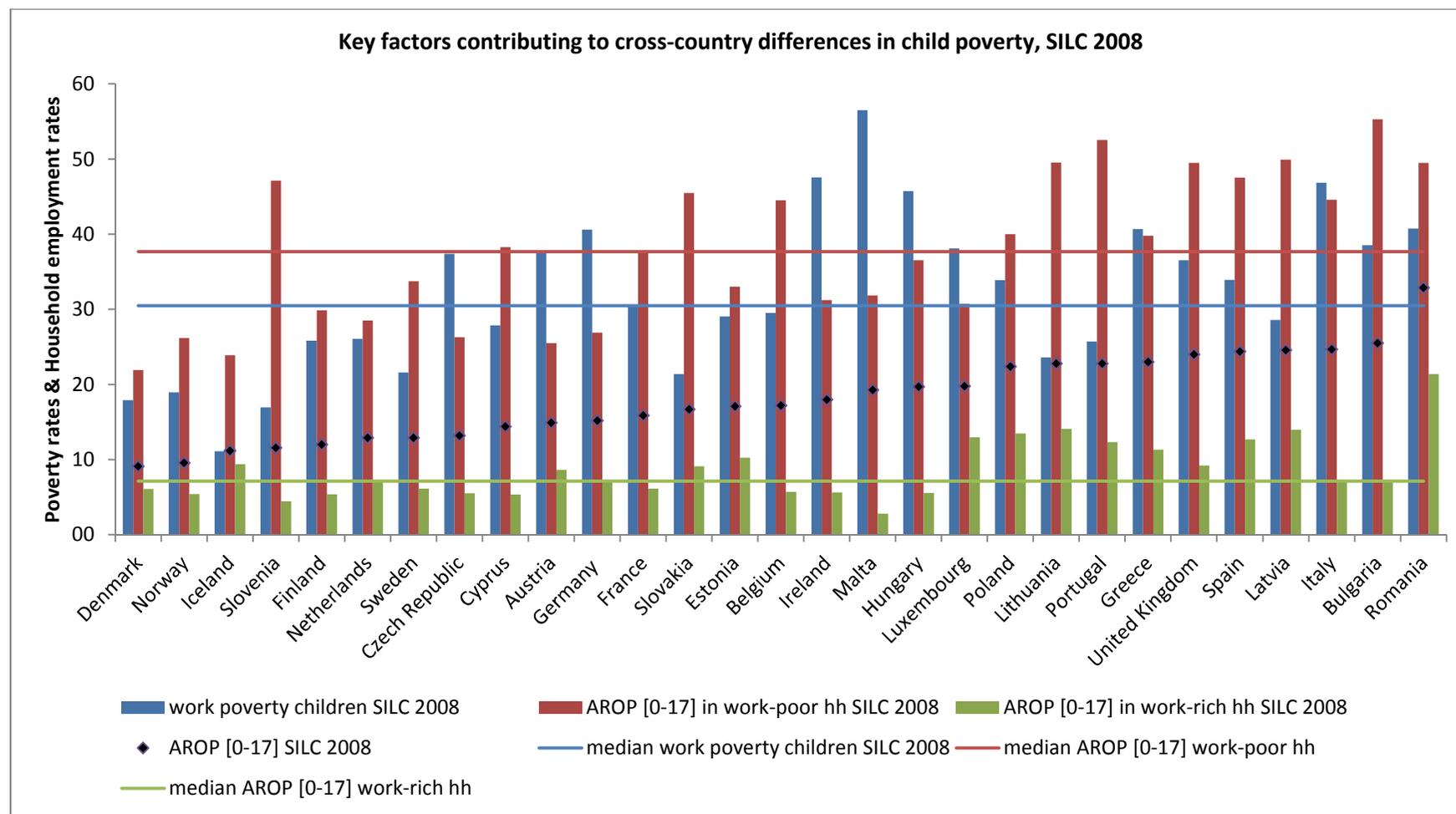
The graph portrays the essential building blocks for a decomposition of cross-country differences in child poverty rates, using work poverty, poverty within the group of work poor households, and poverty within the group of work-rich households as components. The vertical axis measures either the poverty rate (for the total population, the work-poor segment, and the work-rich segment), or 'work poverty', i.e. the share of individuals living in work-poor households.

Figure 6

Transfers and pensions as % of eq. disposable income in SILC 2008; age [0-59] versus ESSPROS data (working-age cash benefits, % GDP; 2007)
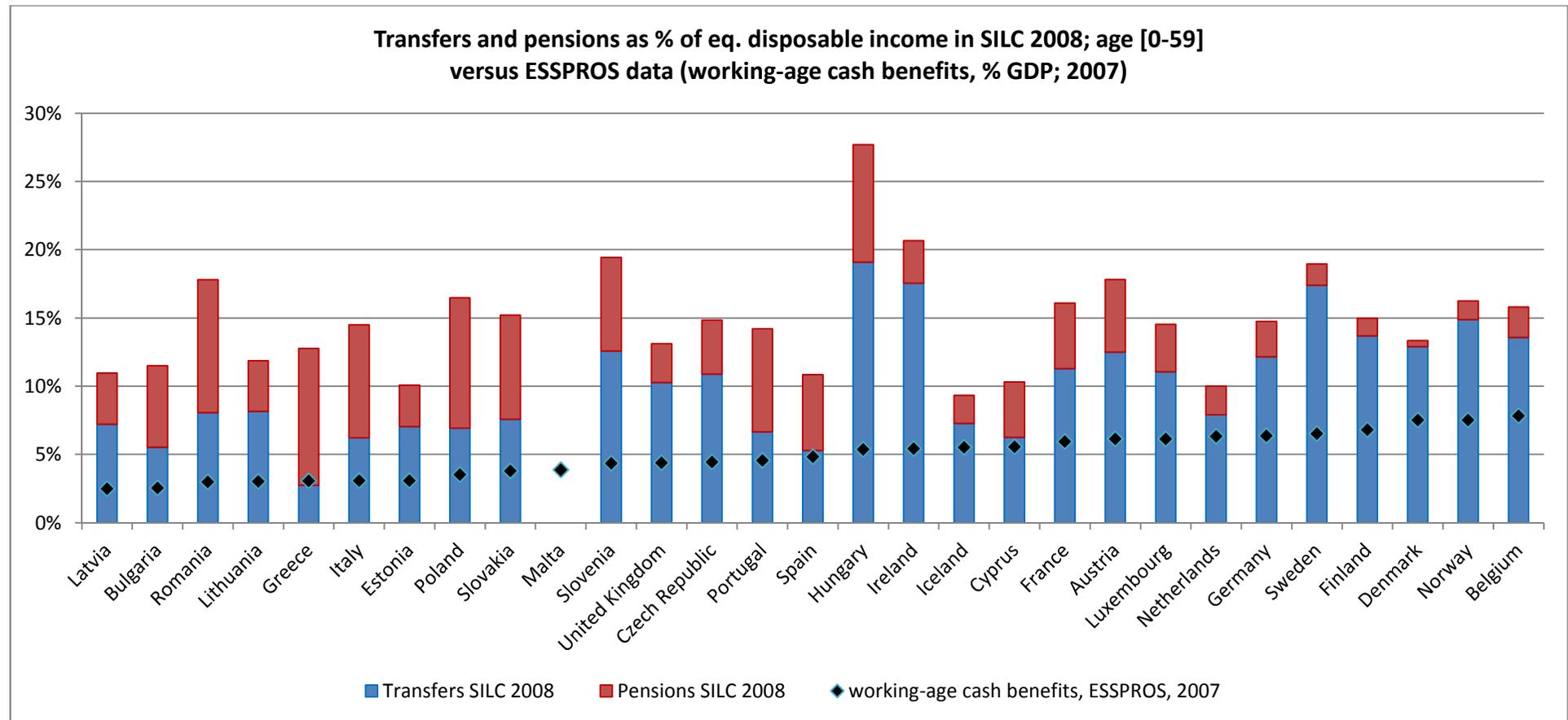
The figure show transfer and pension spending, measured as a % of equivalized disposable income, using EU SILC, and cash benefits (excluding old age and survivor programmes) as reported by EUROSTAT on the basis of the ESSPROS classification of administrative public spending data. EU SILC measures are calculated with respect to the population 0-59.

Figure 7

Transfers and pensions as % of eq. disposable income in SILC 2008; age [0-17] versus ESSPROS data (working-age cash benefits, % GDP; 2007)
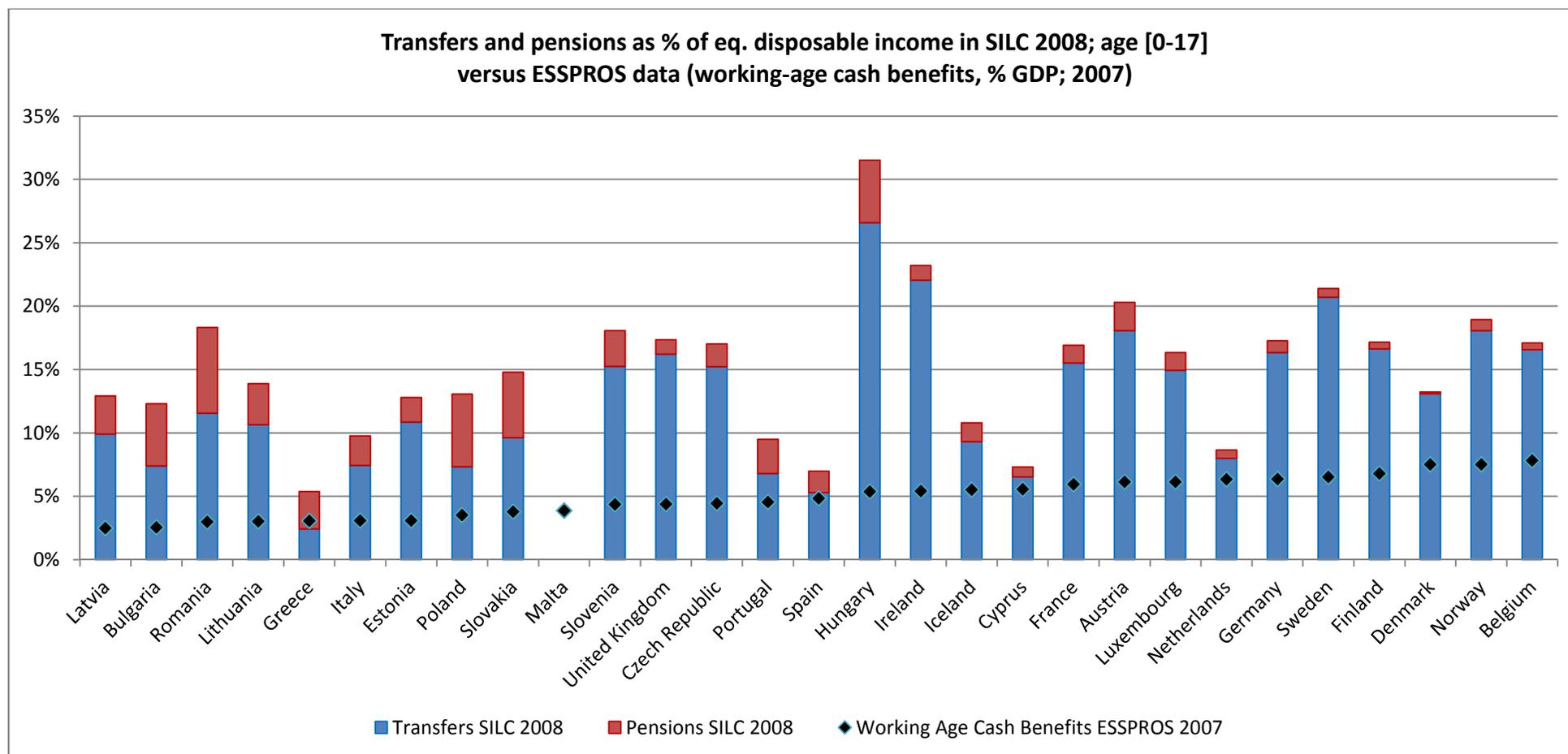
The figure portrays the same information as Figure 6, only with EU SILC measures calculated with respect to the population 0-17.

Table 2: Main regression results (fixed effect model)

	Transfers	Pensions	Work poverty	Relative severity work poverty	PP transfers	PP pensions
AROP 1.1	-0.075 (0.076)	0.016 (0.223)				
1.2	-0.226*** (0.071)		1.53*** (0.397)	1.22*** (0.194)		
1.3	-0.235*** (0.071)	-0.274* (0.165)	1.70*** (0.412)	1.26*** (0.202)		
1.4	-0.233*** (0.081)	-0.429*** (0.172)	1.85*** (0.413)	1.19*** (0.202)	0.987 (2.10)	-1.66** (0.795)
AROP work poor 2.1	-0.831*** (0.127)	-0.363 (0.422)	-2.56*** (0.787)	3.92*** (0.428)		
2.2	-0.982*** (0.163)	-0.624 (0.437)	-2.13** (0.840)	3.87*** (0.417)	-4.53 (3.81)	-3.67* (2.11)
AROP work rich 3.1	-0.0028 (0.054)	-0.335*** (0.126)	-1.46*** (0.313)	-0.318** (0.153)		
3.2	0.028 (0.058)	-0.326** (0.154)	-1.54*** (0.318)	-0.345** (0.153)	0.683 (1.55)	0.407 (0.595)
Pov. Red. (excl. pensions) 4.1	1.15*** (0.052)					
4.2	1.35*** (0.070)		-1.06*** (0.294)	-0.394** (0.189)	10.24*** (1.62)	
Pov. Red. (incl. pensions) 4.3	1.15*** (0.063)	1.07*** (0.201)				
4.4	1.36*** (0.076)	0.798*** (0.196)	-0.900*** (0.337)	-0.661*** (0.214)	9.20*** (1.85)	0.254 (1.10)

Note: table 2 shows the effect of spending on transfers and pensions on poverty rates (AROP) in the child population [0-17]. We estimate a GLS model with heteroskedastic error structure, and include time and country fixed effects. Controls are added for work poverty (the share of individuals living in work-poor households; i.e. with work intensity 0-55) and the 'relative severity of work poverty' (i.e. share of individuals living in very work-poor households within the subgroup of work-poor households (very work-poor households have work intensity of 0-20). We also control for pro-poorness of spending, for both cash transfers and pension transfers (PP transfers and PP pensions). Dependent variables are the poverty rate (AROP), the poverty rate for individuals in work-poor households (AROP_wp) for individuals in work-rich households (AROP_wr), and for poverty reduction (pov_red), all for the population [0-17]. We employ two different measures for poverty reduction; one where we only consider poverty reduction through cash transfers, and one where we consider poverty reduction through both cash and pension transfers. The latter includes pension spending in the model. Spending data is retrieved from Eurostat, comprising the period 2004-2010. All other data are based on SILC. The analysis uses transfers and pro-poorness of transfers for the population 0-59 and pensions, pro-poorness of pensions and work poverty measures for the population 0-17. We include 29 European welfare states over 6 time periods [SILC 2005-2010]. Since poverty data for Ireland and the United Kingdom are based on the reference year, while they are based on the previous year in all other nations, we use data from SILC 2004-2009 for those two countries. The poverty data from the years 2007 until 2010 are complete for every nation. For 2006, poverty data is missing for Romania. For 2005, poverty data is missing for Romania, Bulgaria and the United Kingdom. Spending data is missing for Malta for the period 2005-2008. This gives a total of 165 observations.

Figure 8

Strong and weak pro-poorness in demographic subgroups
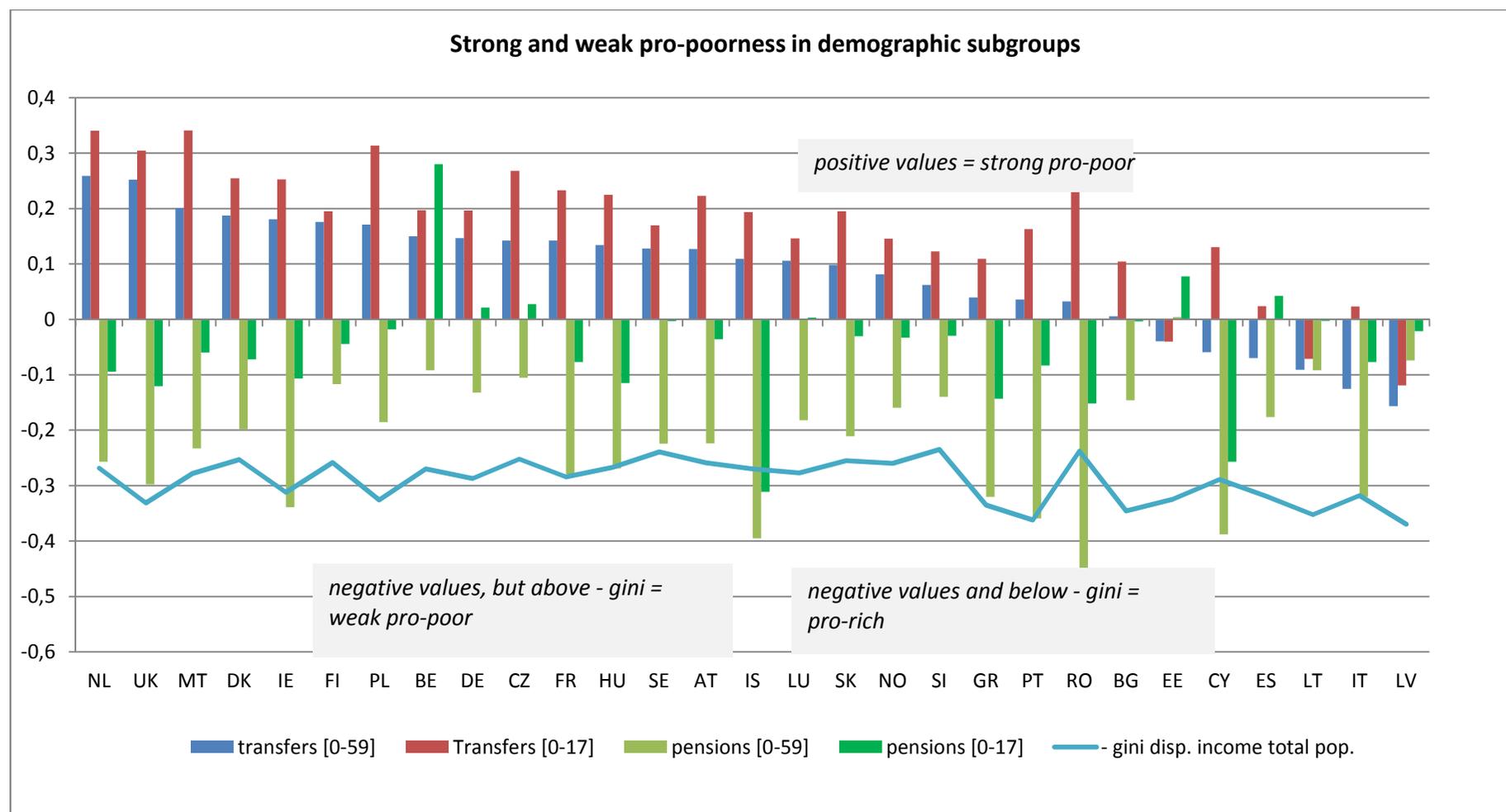
This graph shows the age-specific pro-poorness indicators for two demographic subgroups of the total population and the inverse value of the Gini coefficients of the income distribution for the total population. All values are average values for SILC 2005-2010 (except for BG, MT and RO for which a more limited set of SILC results is available). The countries are ranked according to the pro-poorness of transfers in the age group [0-59].

Table 3: Impact of social investment, human capital and demographic dependency on poverty

	Transfers	Pensions	Work poverty	Rel. severity	X1	X2
Base model fixed effects	-0.235*** (0.071)	-0.274* (0.165)	1.71*** (0.413)	1.22*** (0.195)	-	-
Add GDP per capita	-0.242*** (0.072)	-0.274* (0.159)	1.70*** (0.408)	1.20*** (0.197)	0.000082 (0.000077)	
Add educational attainment	-0.220*** (0.071)	-0.140 (0.192)	1.52*** (0.398)	1.15*** (0.200)	-0.202 (0.422)	
Add Age dependency (young/old)	-0.221*** (0.072)	-0.202*** (0.174)	1.89*** (0.416)	1.02*** (0.201)	0.382** (0.160)	0.203 (0.198)
Base model static	-0.474** (0.187)	1.71*** (0.337)	2.23*** (0.586)	1.19* (0.705)	-	-
Add social investment	-0.415*** (0.189)	1.48*** (0.381)	1.70*** (0.720)	1.30*** (0.694)	-0.367 (0.594)	
Add low PISA achievement	-0.525*** (0.164)	1.33*** (0.328)	2.63*** (0.592)	0.570 (0.667)	0.178 (0.110)	
Add PISA inequality	-0.503*** (0.165)	1.39*** (0.318)	3.03*** (0.670)	0.712 (0.790)	-0.526** (0.259)	

Table 3 shows the effect of adding certain country-level indicators to our base model including only controls for spending and household employment. The last two columns show the coefficient of the added indicator, specified in column 1. We use a static model for our estimation of social investment and the two PISA indicators, using averages over SILC 2005-2010 for all other variables in the model (indicated with grey shade in the table). All other impacts are estimated using a fixed effect model. Social investment refers to investment in active labour market policy, education and child care, averaged over the period 2000-2009.The PISA indicators are based on PISA 2009 and refer to those who are either more than 1.5 standard deviation below the PISA average (low PISA achievement) or below the country average (internal PISA inequality). Educational attainment structure measures the share of highly education individuals over the share of lowly educated individuals, based on EU SILC. GDP per capita is in purchasing power parity. Dependency ratios are for old and young age, referring to the share of the population over 64 relative to those 15-64, and the share of 0-14 relative to the share 15-64, respectively (source: Eurostat).

Table 4: Correlations between country-level indicators

	T 0-59	P 0-17	SumTP	WP	Sev. WP	Rel.sev	PPT	PP pens	GDP/0063	DR_Y	DR_O	Educ.At.	SI	Ed.In.	Low.Ac	Poverty
Transfers 0-59																
Pensions 0-17	-0.372***															
Sum Trans+Pens	0.893***	0.086														
Work poverty	-0.087	0.219***	0.014													
Severe work pov.	0.378***	-0.0020	0.405***	0.550***												
Rel.sev.	0.535***	-0.204***	0.476***	-0.106	0.744***											
PP transfers 0-59	0.409***	0.284***	-0.301***	-0.012	-0.347***	-0.417***										
PP pensions 0-17	0.142*	0.057	-0.125	-0.129*	-0.160**	-0.141*	-0.011									
GDP/cap	0.344***	-0.619***	0.069	-0.115	-0.148*	-0.054	0.318***	-0.011								
Dep.rat. young	0.386***	-0.515***	0.165**	-0.318***	0.036	0.312***	0.419***	0.238***	0.555***							
Dep.rat. old	-0.026	-0.197***	-0.124	0.121	0.032	0.018	-0.211***	-0.264***	-0.023	-0.388***						
Educ.att.	0.393***	-0.208**	0.329***	-0.429***	0.028	0.358***	0.103	-0.242***	0.027	0.150*	-0.011					
Soc.inv.	0.506***	-0.601***	0.239	-0.604***	-0.170	0.361*	-0.279	0.113	-0.167	0.591***	0.066	0.237				
Educ. Ineq	0.195	-0.306	0.043	0.021	0.198	0.235	-0.130	-0.034	0.291	0.111	-0.125	-0.045	0.409**			
Low. ach.	-0.112	0.387**	0.089	0.305	0.364*	0.184	0.012	0.081	0.127	-0.068	-0.080	-0.285	-0.329*	-0.192		
Poverty	-0.487***	0.672***	-0.197**	0.510***	0.253***	-0.128*	0.380***	-0.096	-0.394***	-0.471***	0.139*	-0.316***	-0.715***	-0.328	0.508***	
Poverty WP	-0.436***	0.574***	-0.189**	0.030	0.145*	0.103	0.417***	-0.156**	-0.509***	0.495***	0.174**	-0.088	-0.493***	-0.334	0.423**	0.749***

Note: Table shows simple correlations between country-level characteristics. For static indicators (educational inequality, low achievement, social investment) correlations with mean levels of other indicators are calculated. Transfer 0-59 = share of disposable income that consists of transfers; pensions 0-59 = share of disposable income that consists of pensions; Sum Trans+Pens = sum of Transfers 0-59 and Pensions 0-17; work poverty = share of work poor; severe work pov. = share of very work poor; rel.sev = relative severity of work poverty; PP transfers 0-59 = pro-poorness of transfers for population 0-59; PP pensions 0-17 = pro-poorness of for pensions for population 0-17; GDP/cap = GDP per capita; Dep.rat.old = old age dependency ratio; dep.rat.young = young age dependency ratio; educ.att. = educational attainment structure (share of highly educated/share of lowly educated); soc.inv. = social investment in education, child care and active labor market policy; educ.ineq = internal inequality in PISA scores; low.ach.= share of low achievers in PISA; Poverty = at-risk of poverty rate

Figure 9

Assessing welfare states w.r.t. child poverty: benchmarks A (performance) & B, C, D (measures of efficiency)
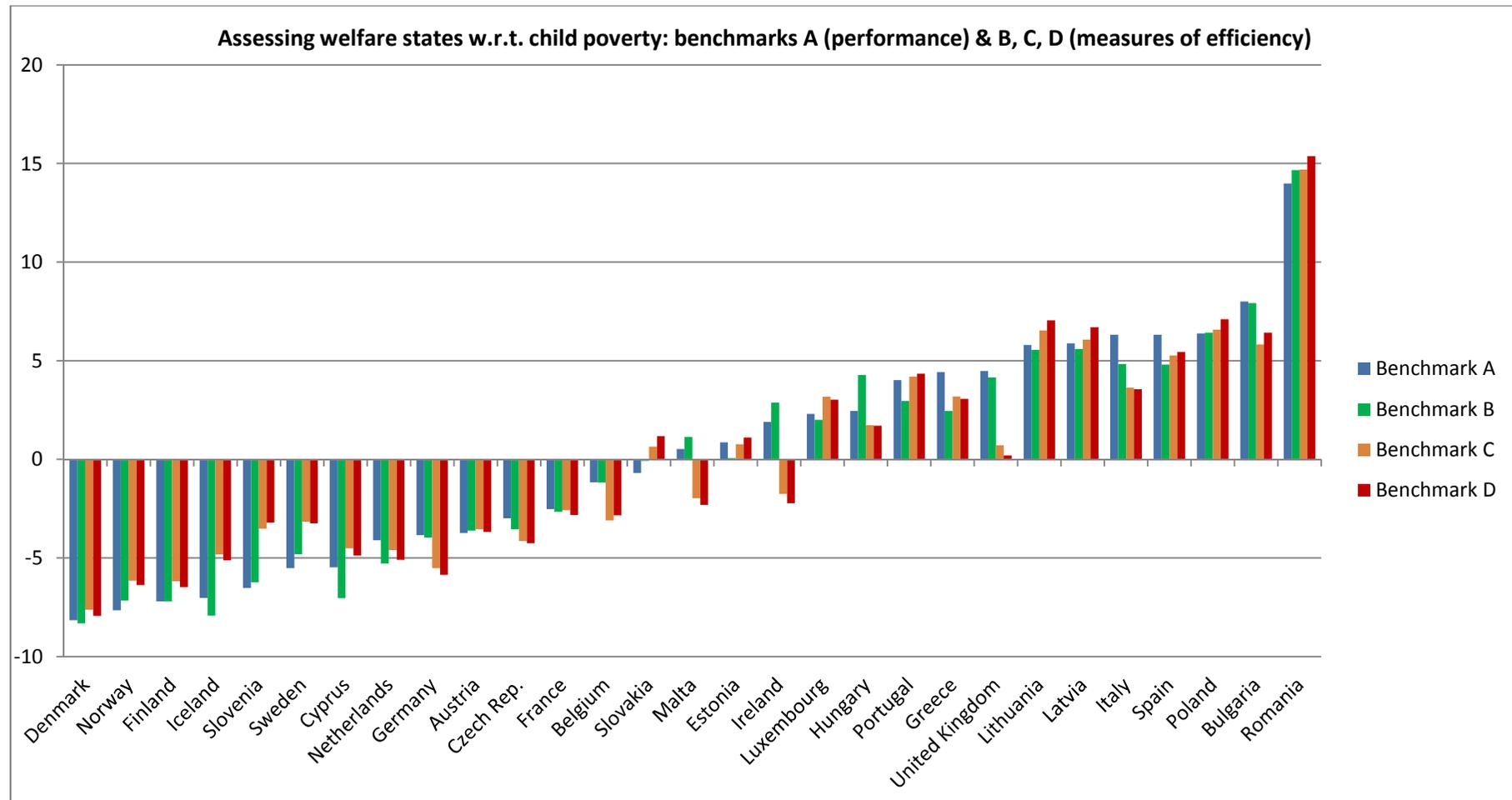
The figure shows the country fixed effects for different model specifications. Country fixed effects are anchored to a level where the sum of their squared values is minimized. Benchmark B controls for spending on transfers [0-64] and pensions [0-17]; benchmark C additionally controls for work poverty and the relative severity of work poverty; benchmark D additionally controls for pro-poorness of spending on transfers [0-59] and pensions [0-17]. Countries are ranked according to the country fixed effects in benchmark A.

Figure 10
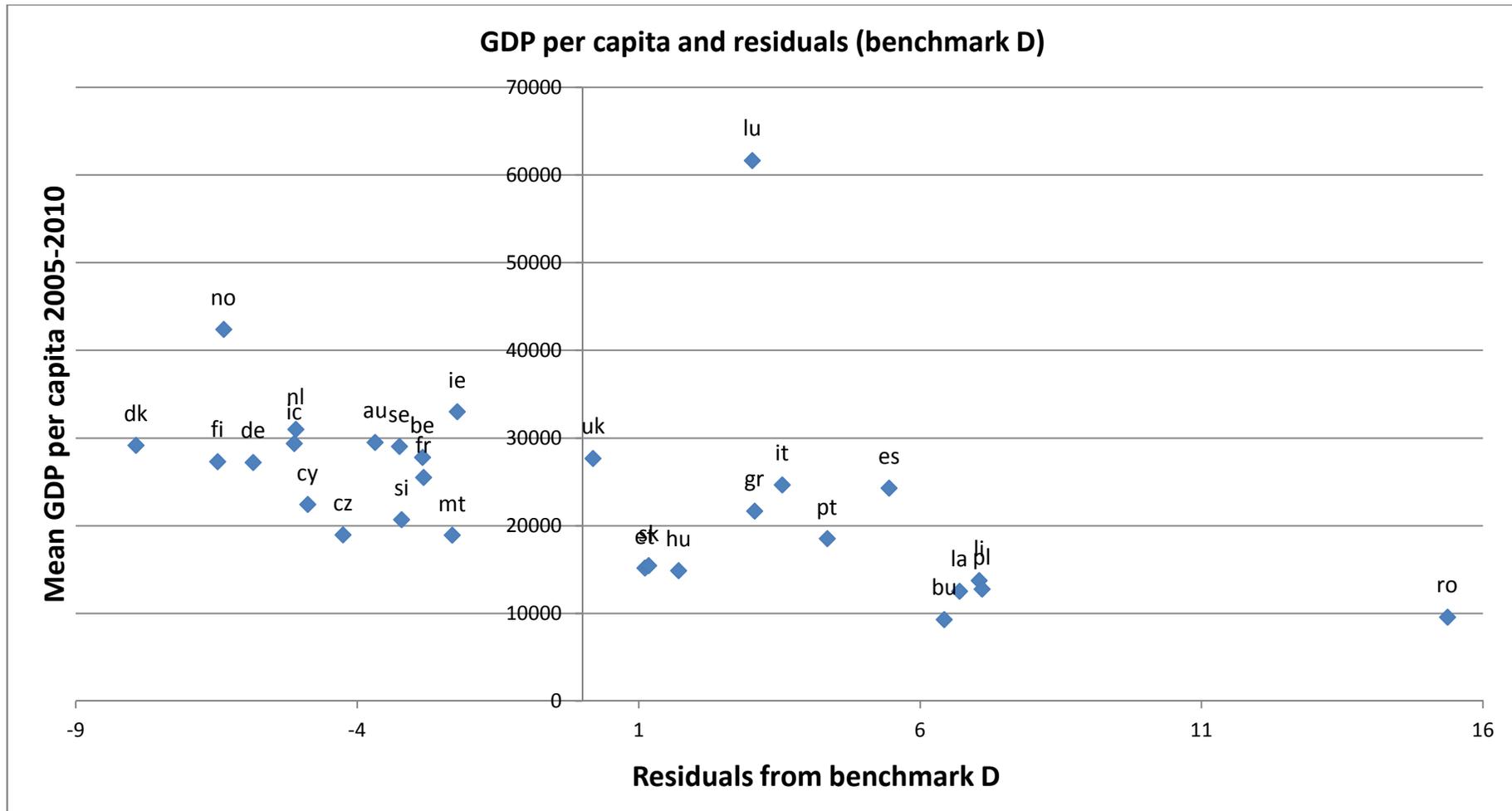
The figure displays the mean GDP per capita in purchasing power parity over the period 2005-2010 against the residuals from our benchmark D (efficiency controlled for spending, work intensity and pro-poorness). GDP figures are retrieved from Eurostat.

Figure 11
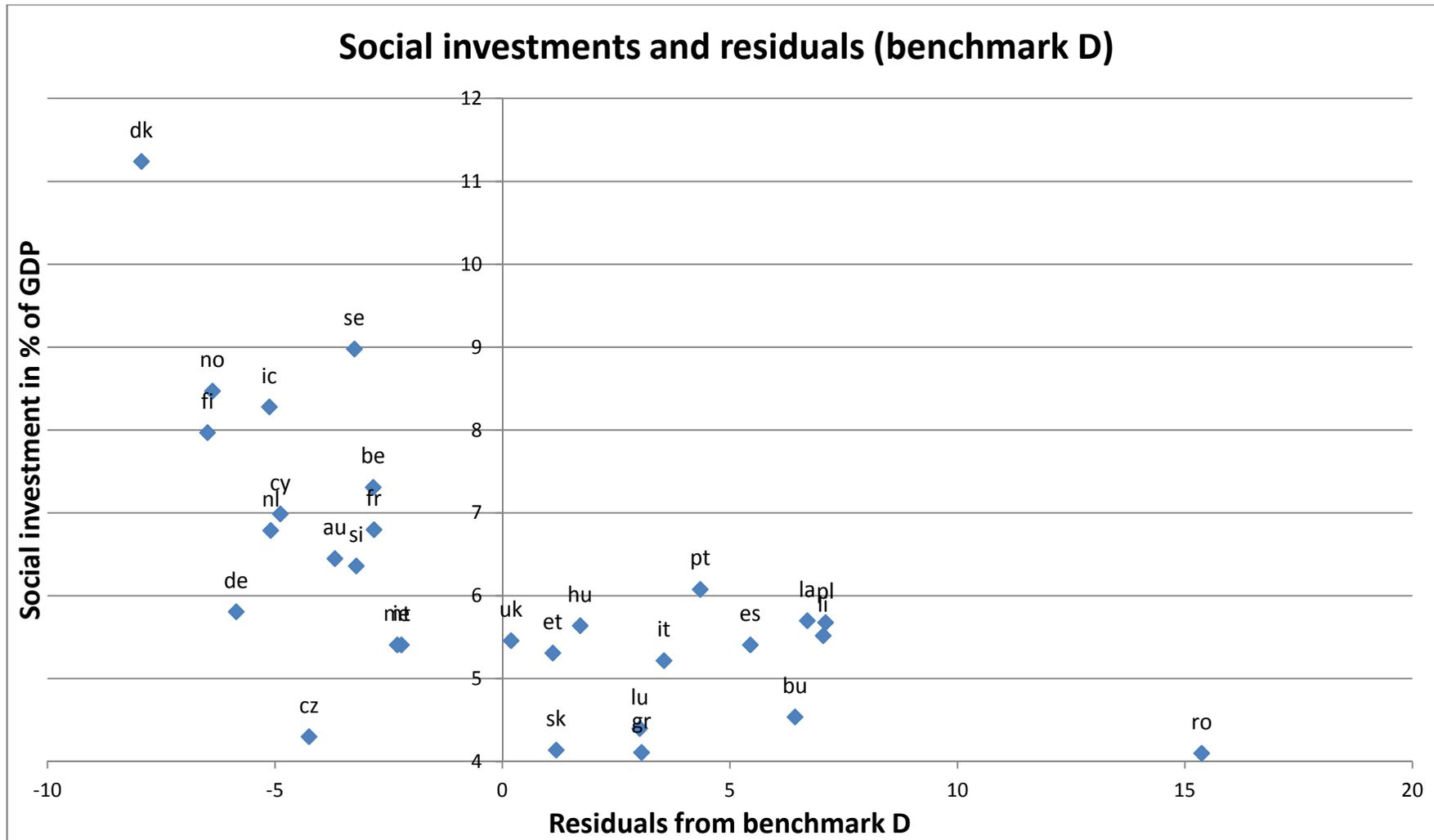
The figure displays the size of social investment in % of GDP against the residuals from our benchmark D (efficiency controlled for spending, work intensity and pro-poorness). Social investment measures average investment in active labour market programs, education and child care over the period 2000-2009, retrieved from Eurostat.

Table 5: Correlations and regressions (no fixed effects) with country-level indicators

	Correlations	Regression Results (no WI)	Regression Results (with WI)	Regression Results (with WI; reduced)
Transfer spending	-0.513***	0 -0.142 (0.205)	-0.250 (0.225)	-0.254 (0.206)
Pension spending	0.825***	1.99*** (0.205)	2.14*** (0.589)	2.16*** (0.539)
Social investment	-0.647***	-0.528 (0.508)	-0.121 (0.675)	-0.025 (0.573)
GDP per capita	-0.471**	-0.000027 (0.00015)	0.0000029 (0.00015)	0.000050 (0.00013)
GDP per capita: no LU	-0.768***	-	-	-
Pro-poorness Transfers	0.535***	14.57** (5.96)	16.83** (6.29)	15.84** (5.99)
Pro-poorness Pensions	-0.101	-9.72 (6.48)	-6.47 (7.09)	-3.83 (5.68)
Educational attainment	-0.240	-0.354 (1.15)	0.274 (1.40)	-
Young age dependency	-0.505***	0.367 (0.287)	0.258 (0.314)	-
Pension heavy	0.457**	-	-	-
Internal PISA inequality	-0.405**	-	-	-
Low PISA achievement	0.452**	-	-	-
Work Poverty			0.860 (0.901)	0.711 (0.723)
Relative severity of work poverty			0.722 (0.868)	1.05 (0.763)

The table shows simple correlations between the final residuals of the breakdown analysis (benchmark D) and the mean level of several country-level characteristics, as well as regressions with benchmark D as dependent variable and all other variables included as explanatory variables, jointly. Educational attainment measures the share of highly educated individuals (ISCED 5-6) over the share of lowly educated individuals (ISCED 0-2). Internal PISA inequality measures the share of students that are more than 1.5 standard deviation below the country average in PISA 2009. Low PISA achievement measures the share of students that are more than 1.5 standard deviation below the total PISA average. Pension heavy measures the ratio of cash benefits of survivor and pension spending relative to spending on working age cash benefits (unemployment, health care and sickness, disability, families and children, and non-elsewhere classified social exclusion). LU= Luxemburg. All regression results exclude Luxemburg.

Figure A1

Transfers in SILC and transfers according to ESSPROS

Figure A2

Pensions in SILC and pensions according to ESSPROS
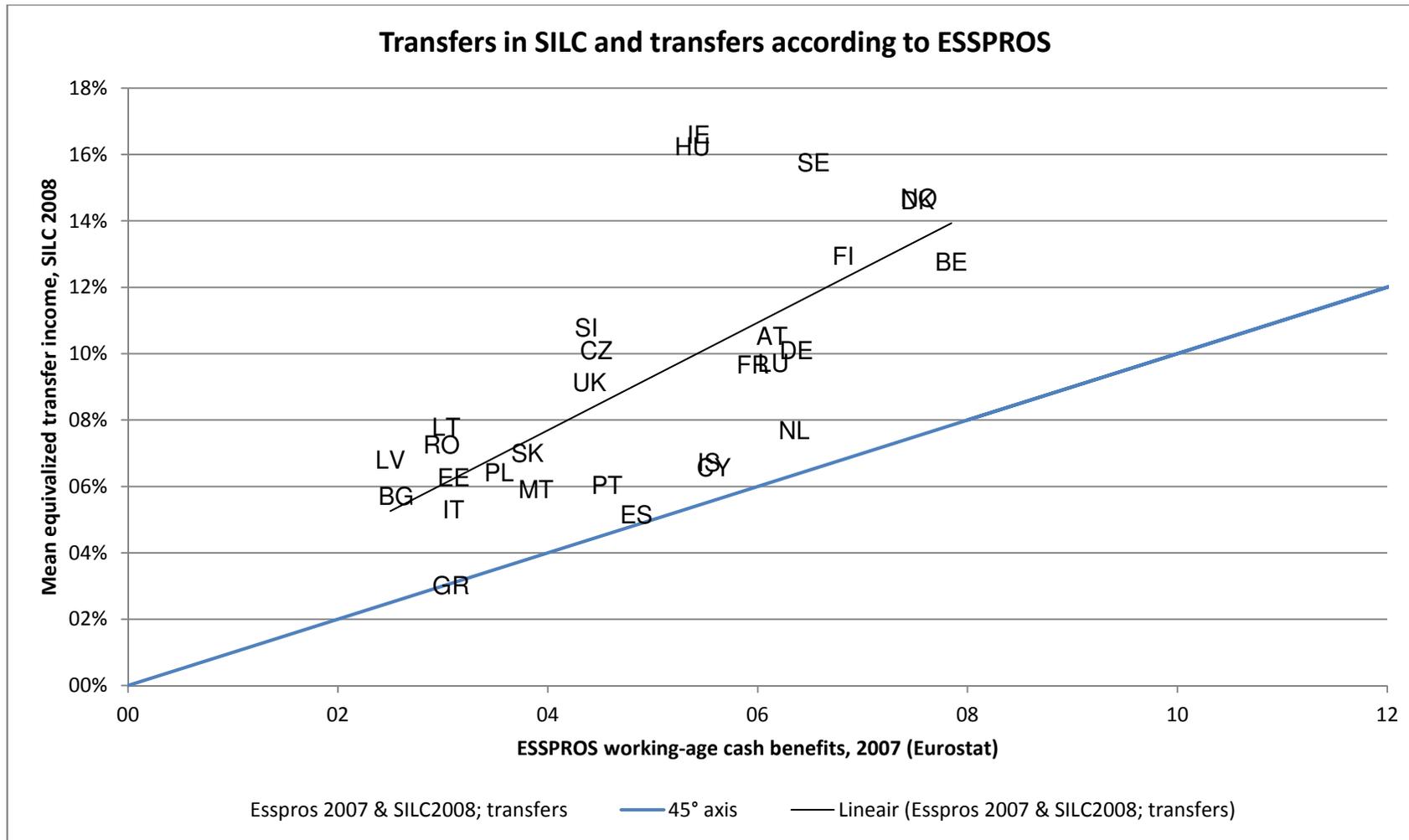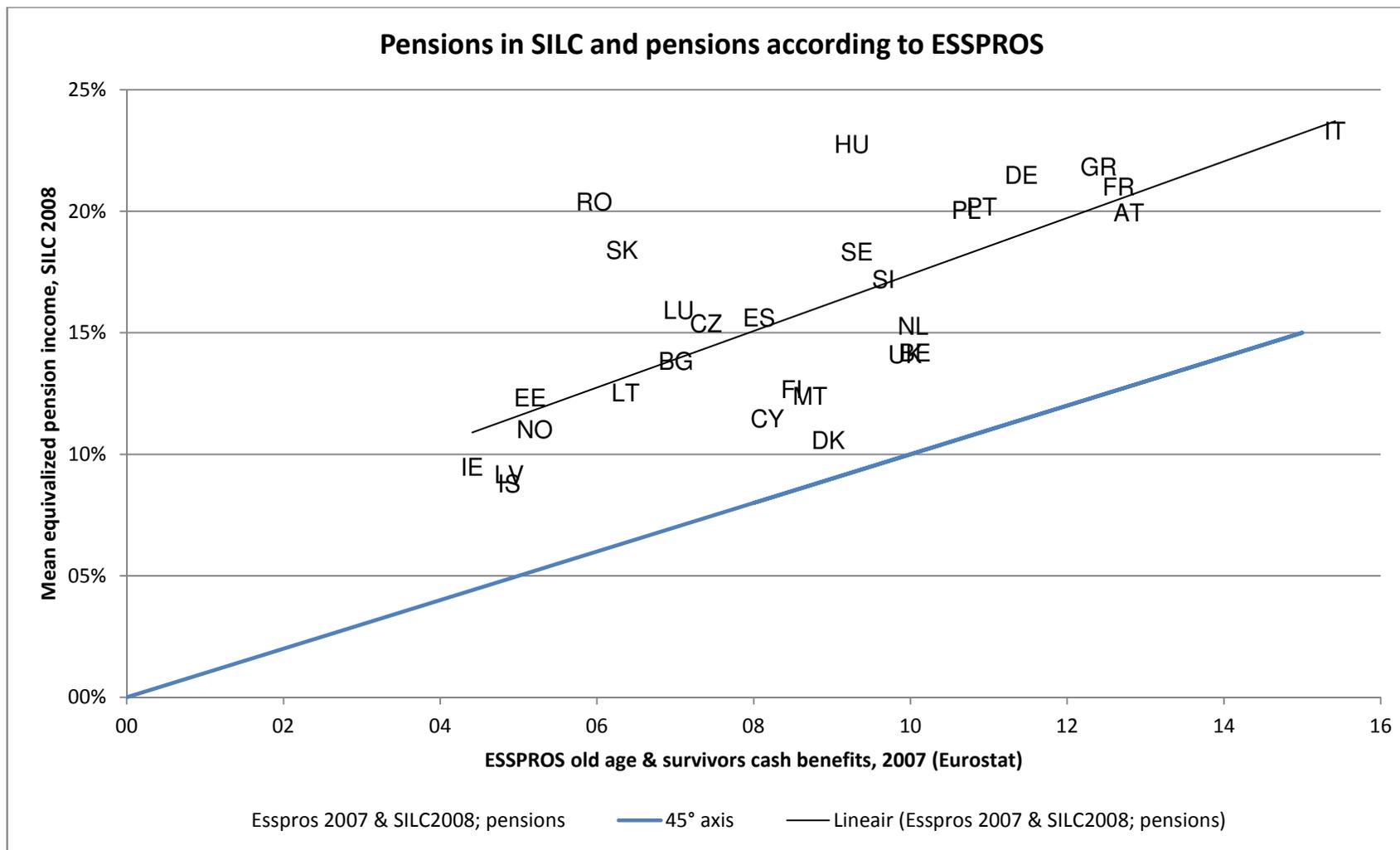
Table A1: Sensitivity to alternative model specifications

	Transfers	Pensions	Lagged Poverty
Baseline model	-0.233***	-0.429**	
	(0.081)	(0.172)	
GLS no country fixed Effects	-0.515***	1.40***	
	(0.046)	(0.068)	
Pooled OLS	-0.478***	1.39***	
	(0.071)	(0.138)	
Pooled OLS: Time and country dummies	-0.357***	-0.208	
	(0.107)	(0.292)	
OLS with lagged dep. variable	-0.129**	0.201*	0.752***
	(0.050)	(0.111)	(0.047)
Random Effects	-0.469***	0.699***	
	(0.084)	(0.224)	
Fixed effects (no time dummies)	-0.288***	-0.264	
	(0.098)	(0.293)	
Fixed effects (with time dummies)	-0.357***	-0.208	
	(0.107)	(0.292)	
First Differences	-0.329***	-0.802***	
	(0.099)	(0.214)	
GLS: Correct for autocorrelation	-0.228***	-0.122	
	(0.064)	(0.194)	
Panel corrected standard errors	-0.230***	-0.114	
	(0.048)	(0.124)	

Note: the table shows the effect of spending and work intensity on non-elderly poverty for different model specifications. Bulgaria, Malta, Romania and the United Kingdom are dropped, because some methods require a fully balanced sample. Baseline model is a GLS model with time and country fixed effects and a heteroskedastic error structure. The fixed effect model with time dummies represents a fixed effects (within) regression estimator, *without* correction for a heteroskedastic error structure.

*Significant at 10% level **significant at 5% level ***significant at 1% level

Table A2: Sensitivity to excluding time periods and country outliers

	Poverty		Poverty work poor		Poverty work rich		Poverty reduction	
	Transfer	Pension	Transfer	Pension	Transfer	Pension	Transfer	Pension
Benchmark	-0.233***	-0.429***	-0.982***	-0.624	0.028	-0.326**	1.36***	0.798***
	(0.081)	(0.172)	(0.163)	(0.437)	(0.058)	(0.154)	(0.076)	(0.196)
Drop 2005	-0.224***	-0.406***	-0.978***	-0.647	0.100*	-0.424**	1.42***	0.610***
	(0.080)	(0.149)	(0.176)	(0.435)	(0.058)	(0.179)	(0.085)	(0.209)
Drop 2006	-0.170**	-0.407**	-0.790***	-0.081	0.111*	-0.240*	1.26***	0.750***
	(0.084)	(0.170)	(0.194)	(0.466)	(0.061)	(0.133)	(0.088)	(0.322)
Drop 2007	-0.224***	-0.273	-0.992***	-0.561	-0.0037	-0.259*	1.30***	0.804***
	(0.085)	(0.194)	(0.181)	(0.480)	(0.044)	(0.155)	(0.087)	(0.210)
Drop 2008	-0.284***	-0.499***	-1.17***	-0.715	0.016	-0.247	1.42***	1.07***
	(0.086)	(0.177)	(0.171)	(0.515)	(0.061)	(0.160)	(0.066)	(0.195)
Drop 2009	-0.188**	-0.265	-0.865***	-0.686	-0.029	-0.233	1.35***	0.814***
	(0.087)	(0.200)	(0.171)	(0.441)	(0.068)	(0.154)	(0.07d)	(0.201)
Drop 2010	-0.401***	-0.323	-1.15***	-0.084	0.067	-0.764***	1.39***	0.760***
	(0.091)	(0.245)	(0.162)	(0.529)	(0.071)	(0.223)	(0.072)	(0.202)
Drop 2009-2010	-0.491***	-0.496**	-1.06***	-0.214	-0.0042	-0.552**	1.26***	0.829***
	(0.090)	(0.231)	(0.147)	(0.381)	(0.090	(0.253)	(0.072)	(0.194)
Drop BG and RO	-0.203**	-0.470**	-1.03***	0.055	0.0087	-0.445***	1.30***	0.885***
	(0.083)	(0.224)	(0.175)	(0.557)	(0.062)	(0.169)	(0.082)	(0.228)
Drop BE, GR and HU	-0.152*	-0.358**	-0.892***	-0.674	0.034	-0.187	1.39***	0.624***
	(0.087)	(0.181)	(0.180)	(0.504)	(0.060)	(0.173)	(0.078)	(0.209)
Drop CY, IC, LU, MT	-0.304***	-0.550***	-1.17***	-0.745*	0.061	-0.349**	1.27***	0.901***
	(0.091)	(0.179)	(0.164)	(0.411)	(0.057)	(0.160)	(0.072)	(0.206)
Drop DK, FE, IS, NO, SE	-0.271***	-0.556***	-1.08***	-0.855**	0.035	-0.388**	1.34***	0.786***
	(0.089)	(0.175)	(0.159)	(0.394)	(0.059)	(0.158)	(0.075)	(0.207)

Note: coefficients show the effect of transfer and pension spending on post-transfer poverty, controlled for work intensity, pro-poorness of transfers and pensions, and unit and time fixed effects. Benchmark contains period SILC 2005-2010 and all 29 countries (EU27 + Iceland and Norway).

Table A3: Summary statistics of poverty outcomes

	Child Poverty	Pre-transfer Poverty	Poverty Reduction	Transfer spending	Pensions spending	Poverty threshold	Poverty work poor	Poverty work rich
Austria	14.50	38.87	24.37	12.57	2.34	10914	27.04	6.36
Belgium	17.07	32.33	15.27	13.88	0.735	9958.67	43.31	3.86
Bulgaria	26.40	37.53	12.52	5.83	5.51	2665	56.93	5.75
Cyprus	12.75	23.58	10.70	6.98	1.03	10580	33.64	4.86
Czech Rep.	15.25	31.70	16.45	10.36	1.74	5423	31.79	4.82
Denmark	10.08	24.08	14.00	13.91	0.146	10224	27.24	5.28
Estonia	19.10	32.27	13.17	8.63	2.36	3989	38.45	10.09
Finland	11.03	30.40	19.37	14.13	0.561	9513	28.79	4.22
France	15.70	36.02	20.32	12.59	1.44	9761	37.16	5.73
Germany	14.40	32.30	17.90	13.16	0.895	10183	25.28	6.02
Greece	22.67	27.77	5.10	2.82	3.07	7062	38.69	11.81
Hungary	20.68	49.92	29.23	17.33	4.48	3825	36.87	6.31
Iceland	11.22	26.02	14.80	8.80	1.84	11701	24.23	8.75
Ireland	20.30	41.54	21.24	16.67	1.36	10140	34.67	5.52
Italy	24.55	33.92	9.37	5.86	2.26	8761	43.16	6.83
Latvia	24.12	36.20	12.08	8.39	4.42	3444	49.56	12.68
Lithuania	24.03	38.12	14.08	9.60	3.52	3446	53.34	13.31
Luxemburg	20.53	38.20	17.67	11.57	1.70	16156	31.85	13.60
Malta	18.75	30.72	19.97	7.04	2.91	7662	29.61	3.23
Netherlands	14.13	25.93	11.80	9.01	0.604	10724	31.76	6.65
Norway	10.58	31.13	20.55	15.93	0.815	13.076	27.18	5.53
Poland	24.62	40.23	15.62	7.58	6.33	3714	42.70	14.19
Portugal	22.25	32.85	10.60	6.76	3.03	5439	51.20	10.86
Romania	32.48	47.78	10.20	8.20	7.16	1938	48.95	21.20
Slovakia	17.55	33.20	15.65	8.63	5.22	3714	42.37	9.07
Slovenia	11.72	28.73	17.02	12.60	2.90	7859	44.75	4.50
Spain	24.55	31.77	7.22	5.77	2.23	7862	44.55	11.79
Sweden	12.72	34.33	21.62	17.05	0.630	10016	32.41	6.77
Un. Kingdom	22.88	41.90	19.02	11.25	1.26	10672	46.02	8.04

All levels are based on averages for SILC 2005-2010. Spending variables are based on the share of transfers and pensions in mean disposable income. Non-elderly poverty is based on the population 0-59, child poverty on the population 0-17. All other variables are based on the population group 0-59.

Table A4: Summary statistics of country-level indicators

	Ind. non-employment	Work poverty	Severe work poverty	Relative severity work poverty	Social investment	Pro-poorness Transfers	Pro-poorness Pensions	Internal PISA inequality	Low PISA achievement	Educ. Att. Structure
Austria	22.87	39.17	6.08	15.54	6.45	0.127	-0.036	0.180	0.088	0.899
Belgium	26.26	33.25	11.79	35.33	7.31	0.150	0.280	0.194	0.079	1.39
Bulgaria	25.58	40.58	13.38	32.23	4.54	0.0055	-0.0038	0.198	0.217	0.675
Cyprus	20.24	27.55	3.12	11.32	6.99	-0.059	-0.257	-	-	1.07
Czech Rep.	23.11	38.40	8.04	20.87	4.30	0.143	0.028	0.190	0.065	1.09
Denmark	17.46	20.46	6.45	31.37	11.24	0.187	-0.072	0.156	0.079	0.951
Estonia	21.97	31.25	6.25	19.75	5.31	-0.040	0.077	0.123	0.022	1.95
Finland	22.96	26.75	6.01	22.42	7.97	0.176	-0.044	0.141	0.018	1.50
France	22.53	31.57	7.45	23.68	6.80	0.142	-0.077	0.185	0.094	0.883
Germany	22.83	43.89	9.38	21.45	5.81	0.147	0.021	0.189	0.069	1.19
Greece	28.70	40.47	3.94	9.70	4.11	0.040	-0.143	0.142	0.080	0.591
Hungary	29.94	46.98	11.72	24.89	5.64	0.134	-0.115	0.145	0.050	0.790
Iceland	12.48	13.94	3.18	22.01	8.28	0.109	-0.311	0.163	0.066	0.717
Ireland	29.69	49.98	17.77	35.30	5.41	0.191	-0.056	0.152	0.065	0.788
Italy	30.79	48.84	6.75	13.80	5.22	-0.126	-0.077	0.158	0.069	0.274
Latvia	25.12	30.05	6.96	22.61	5.70	-0.157	-0.021	0.113	0.036	1.09
Lithuania	22.81	26.14	6.15	23.30	5.52	-0.091	-0.0026	0.144	0.073	1.94
Luxemburg	23.11	38.65	3.32	8.65	4.40	0.106	0.0029	0.175	0.103	0.680
Malta	33.29	58.94	8.99	15.27	5.41	0.201	-0.060	-	-	0.184
Netherlands	18.99	29.65	6.43	21.57	6.79	0.259	-0.094	0.169	0.022	1.11
Norway	18.24	20.34	6.00	29.37	8.47	0.081	-0.033	0.145	0.054	1.81
Poland	30.86	36.56	6.67	17.78	5.68	0.171	-0.018	0.149	0.043	1.13
Portugal	24.22	27.96	5.53	19.64	6.08	0.036	-0.083	0.142	0.062	0.190
Romania	26.91	39.18	5.68	14.50	4.10	0.016	-0.076	0.133	0.252	0.405
Slovakia	21.84	25.91	5.51	21.18	4.14	0.098	-0.030	0.154	0.070	1.90
Slovenia	25.22	18.14	3.64	20.16	6.36	0.062	-0.029	0.172	0.101	0.729
Spain	28.36	39.05	5.09	13.04	5.41	-0.069	0.043	0.153	0.077	0.615
Sweden	15.93	20.42	5.02	24.93	8.98	0.128	-0.0031	0.160	0.074	2.16
Un. Kingdom	21.74	39.07	15.24	38.98	5.46	0.250	-0.145	0.132	0.060	1.90

Note: individual non-employment is based on the population 20-59 (excluding students). All work intensity and pro-poorness measures are based on the population 0-59. Indicators of pro-poorness have been inverted from Verbist and Matsaganis so that they reflect pro-poorness. See tables A1 and A6 for a description of all variables.