Social Income Transfers and Poverty Alleviation in OECD Countries.

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Abstract
Poverty alleviation is an important policy objective in developed welfare states. This paper analyzes the effect of social transfer policies on poverty. A vast literature claims that high social effort goes along with low poverty levels across countries. This paper systematically analyzes this claim. We employ several social expenditure ratios (as a proxy for social effort) and correct for the impact of the tax system and for private social arrangements, using OECD methodology. Also, we control for demographic and macro-economic differences across countries. We performed several tests with the most recent data (LIS, OECD, and SOCX) for the period 1985-2005.
Our results are less clear-cut than earlier findings. We still find quite a strong negative relationship between the level of *public* social expenditure and poverty among 28 OECD countries. However, for non-EU15 countries this relationship is stronger than for the EU15. The results alter considerably if *private* social expenditures are included as well. For non-EU15 countries in our sample, we do not find evidence for a negative correlation between the level of *total* social spending and the incidence of poverty. In contrast, for the group of EU15 countries private social arrangements do matter as far as poverty alleviation is concerned.
Demographic and macro-economic (control) variables are important as well. We developed and employed multiple linear regression models to control for these complex interrelationships. Our results point at one direction: *gross* social spending is *the* driving force as far as differences in poverty levels across countries are concerned, although the ageing of the population and unemployment rates have some explanatory power, both for non-EU15 countries and for EU15 countries.
Our analyses captures another effect as well. It is essential to control for the impact of taxes on the social expenditure ratios used. By doing so, the linkage between social effort and poverty levels across countries becomes insignificant. In view of the fact that with these corrections on expenditure statistics, we have a much better – although still not perfect - measure of what governments really devote to social spending, the familiar claim that higher social expenditure goes along with lower poverty levels does *not* hold across the 28 examined countries examined.
We believe that our comparison of the impact of several social expenditure ratios on poverty levels has emphasized that taking into account both the public/private-mix and the impact of the tax system on social expenditure ratios really matters for comparative welfare state research and for policy makers who want to reduce poverty.

JEL-codes: H53, H55, I32
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"Policy makers and citizens react to information on the level of poverty, international comparisons of poverty, and analyses of the composition of poverty. A high poverty rate relative to peers is embarrassing, triggers concerns regarding inequality in the distribution of income, and elicits calls for changes in the extent and effectiveness of policy interventions to reduce poverty."
(Haveman, 2008, p. 5)

"The number of people living below the poverty line and in social exclusion in the Union is unacceptable. Steps must be taken to make a decisive impact on the eradication of poverty ..."
(Presidency conclusion, Lisbon European Council, March 2000).

1. INTRODUCTION

The poverty problem is striking in highly-developed welfare states. Industrialized countries spend a large share of their income on social security, but poverty has not been eradicated. A sizeable proportion of the population lives in economic poverty in all industrial welfare states. According to the most common standards used in international poverty analyses, on average roughly one in ten households live in relative poverty in OECD countries (cf. Atkinson et al. 1995; Behrendt 2002; Smeeding, 2005; OECD, 2008). The European Union especially encourages Member States to combat poverty (Caminada and Goudswaard, 2009a). In the EU people are said to be at risk of income poverty if their incomes are below 60 per cent of the median disposable income of households in their country, after adjusting for household size (equivalence scales).[1] Based on this EU-agreed definition, the proportion of the EU25-population who were at risk of poverty in 2007 is 16 percent. This means that around 78 million citizens are considered as being at risk of poverty; one fourth are children, one fifth are elderly, one fifth are working poor, twelve percent are unemployed and one fourth are inactive people of working age (European Commission, 2009, p. 38). In the smaller subset of EU15 countries differences range from 10 up till 20 percent of total population.
The persistence of poverty in industrial welfare states calls for an explanation. If these welfare states offer elaborate systems of income maintenance, why is there still a considerable amount of poverty?
This paper analyzes the effectiveness of income transfer policies in European (EU15) and other OECD countries in alleviating poverty. A vast literature claims that high social effort goes along with low poverty levels across countries. Noland and Marx (2009, p. 329-330) state that "there is a strong relationship at country level between the level of social spending and the incidence of poverty " – "arguably one of the most robust findings in comparative poverty research". The strong cross-country association between high welfare state effort and low poverty would suggest that increasing spending in currently low-effort countries would

1 The evolution of the European Union will increasingly lead to question poverty-issues in a EU-wide perspective, about both Europe–wide data and the underlying concepts (Atkinson, 2002, p. 626). Up till now EU-wide estimates of poverty play no role. A paper of Brandolini (2006) provides the first estimates of poverty in the enlarged European Union as if it were a single country.

lead to a downward convergence in poverty outcomes.[2] In this paper we will investigate this claim systematically, using several indicators for social expenditure. We perform a cross-country analysis of the relationship between poverty rates and social effort, as measured by social expenditure ratios. Both EU15 countries and non-EU15 countries are taken into account to investigate whether both groups of countries generate (dis)similar results with their systems of income transfers. Next, we correct social expenditure ratios for the impact of the tax system and for private social arrangements, using OECD methodology (Caminada and Goudswaard, 2005). We separately investigate the impact of expenditures for health programs. And finally we analyze the influence of demographic and macro-economic circumstances on poverty, using a multi linear regression model.
The paper is organized as follows. Section 2 presents the research design. After a descriptive overview of poverty rates in highly-developed welfare states, section 3 investigates the relationship between welfare state effort and poverty rates across countries in several steps. We address the question whether there is a correlation between the size of the welfare state as measured by social expenditure ratios and the incidence of poverty. We correct these expenditure ratios for the impact of the tax system and for private social arrangements. Section 4 analyzes the robustness of the findings over time (1985-2005). The impact of demographic and macro-economic differences are examined in section 5. We developed and employed multiple linear regression models to analyze their (partial) contributions to poverty rates across countries. Section 6 concludes.

2. RESEARCH DESIGN

The main question we address is whether there is a significant correlation between the size of the welfare state and the incidence of poverty. Are high social expenditure ratios associated with low poverty rates across countries?[3] Our research design starts with the data to be used, because poverty rates and social expenditure rates can be collected from several sources. Next, we discuss how to measure social effort and the effect of social transfers on poverty rates in a cross-national perspective.

2.1 Measuring poverty incidence

For various reasons, we use poverty rates from different databases. The official EU-indicator for social cohesion is the at-risk-of-poverty rate after social transfers. This rate is defined as the share of persons with an equivalized disposable income below the risk-of-poverty threshold, which is set at 60 percent of the national median equivalized disposable income. For this indicator, Eurostat data (ECHP/EU-SILC) are available for the period 1995-2007, but not for all member states. For a further comparison, we will use OECD poverty rates. The OECD poverty rate is usually defined as the proportion of individuals with equivalized disposable income less than 50 percent of the median income, although other poverty lines are available as well. In this paper, we will use OECD poverty data from the mid-1980's until the year 2005 based on the OECD study (2008) entitled 'Growing unequal? Income distribution and poverty in OECD countries'. Finally, we use data from the Luxembourg Income Study (LIS). The LIS database contains income data files for 32 nations covering the period 1967 to 2005.[4] With this data set, we can also analyze both the level and trend in poverty for a considerable period across a wide range of nations.

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2 However, Cantillon et al (2003) show that increasing social expenditures within the existing social transfer system of nine EU Member States would not always have a strong effect on poverty rates since additional spending would end up disproportionally with those already above the poverty line.

3 Poverty *reduction* through the tax/transfer system (the difference between market income poverty and disposable income poverty) is analyzed in related work; see Caminada and Goudswaard (2009b).

4 LIS generates the best data available for cross-national comparison for income and income poverty. Disposable money income is given by the sum of all cash incomes earned by the household (wages, salaries, earnings from self-employment, cash receipts from property, unemployment compensation, welfare benefits, public and private pensions, child and family allowances, alimony), net of income taxes

There are three common ways of setting the poverty line: an absolute standard, a relative standard, and a subjective standard. The U.S. poverty threshold is based on an absolute poverty standard (Orshansky-poverty), which remains fixed over time in real terms. The EU-agreed relative poverty line is set as a fixed percentage of the median income in each country, which may change over time if median income changes in real terms. The subjective poverty line is based on respondents' answers to questions regarding what they consider an adequate standard of living.[5] Following international standards, we use the relative rather than the absolute or subjective approach in measuring income poverty. This means, we define those households that have an equivalent disposable income below a certain threshold representing the level of well-being of the population in a specific country as being poor. In our empirical analysis, we use several thresholds for a poverty line (40 percent, 50 percent, and 60 percent), because the absolute number as well as the structure of poverty differ to a large extent depending on the threshold chosen.[6] In most comparative studies the poverty threshold has been set at 50 percent of median equivalent disposable income, but we also employ the EU-agreed definition of poverty and the 40 percent poverty line. For comparison, the official United States poverty line was just about 30 percent of median United States disposable post-tax household income in 2007.[7+8]

It should be noted that there have been controversial arguments regarding the issues in the measurement of poverty. These arguments have their own merits and shortcomings, and there has been little professional consensus among researchers with regard to the theoretical superiority of a particular way of measuring poverty (Haveman, 2008). Moreover, the availability of reliable data restricts the possibilities for conducting empirical research, which is especially problematic in cross-national studies. The aim of this paper is *not* to review definitional issues that arise in assessing the extent of, and change in, poverty in Western industrialized countries. We simply refer to a vast literature on the sensitivity of measured results to the choice of income definitions, poverty lines, appropriate equivalence scales, and other elements that may affect results in comparative poverty research.[9]

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and social security contributions. However broad, this definition excludes capital gains, imputed rents, other unrealized types of capital income, home production, and in-kind income (Brandolini and Smeeding, 2007).

5 Some researchers have measured poverty by relying on the subjective responses of individuals to questions about their perceptions of economic position or well-being, relative to some norm. This approach to poverty measurement is associated with the "Leyden School". See Van Praag (1968), Hagenaars (1986) and Van Praag, Hagenaars, and Van Weeren (1982). These subjective measures survey households and ask them to specify the minimum level of income or consumption they consider to be "just sufficient" to allow them to live a minimally adequate lifestyle. If respondents indicate that their own level of living either exceeds or falls. short of what they consider to be 'minimally adequate' monetary poverty line, a poverty rate can be estimated from observations of actual income. While attractive, subjective measures are based on individual opinions of what constitutes "minimally adequate" or "enough to get by." Hence establishing an overall poverty rate requires an assumption that individual perceptions of these notions reflect the same level of real welfare for all respondents. The effectiveness of subjective measures is limited by the small sample sizes on which they are based; most estimates show wide variation around the mean (Haveman, 2008, p. 13-14).

6 Hagenaars and De Vos (1987) applied eight definitions for a poverty line to a 1983 household survey for the Netherlands: four definitions based on an absolute approach, three on a subjective and one a relative measure. The derived overall poverty rates ranged from 5.7 to 33.5 percent.

7 U.S. Census Bureau's Current Population Survey reports for 2007 a poverty threshold for a 4-persons family (weighted average) of $21,203; median disposable income for 4-persons families amounts $69,654.

8 Although US poverty is much higher than poverty in Europe when a relative poverty measure is used, using the official absolute poverty measurement from the US (Orshansky-poverty) alters the picture; see Notten and De Neubourg (2007). Their estimates according to the Orshansky-methodology for 1996 and 2000 show (still) high USA poverty rates, but not that much difference with most European countries, while Greece, Spain and Portugal even have figures four times higher than the USA. It should be noted that this result is highly sensitive for the purchasing power parity rates used to convert the US poverty lines to country specific thresholds of EU15.

9 Among others, see Atkinson (1987 and 2003), Hagenaars and De Vos (1987), Förster (1993), Atkinson et al (1995), Behrendt (2000), Gottschalk and Smeeding (1997 and 2000), Smeeding et al (2000), Marcus and Danziger (2000), Atkinson and Brandolini (2001), Caminada and Goudswaard (2001 and 2002), Förster and Pearson (2002), Smeeding (2005 and 2005), Guio (2005), Förster and Mira d'Ercole (2005), OECD (2008) and (other) papers listed in our reference section using data from the Luxembourg Income Study. Recent comprehensive reviews on methodological assumptions underlying international levels and trends in inequality are found in Brandolini and Smeeding (2007 and 2008). See Bourguignon et al (2002) for a more elaborated paper on the evaluation of poverty impact of economic policies.

2.2 Measuring social effort

The overall result of quantitative studies seems to be that there is strong negative correlation between poverty and social expenditures across European countries over the last 25 years (Behrendt, 2002). For example, the European Commission (2009, p. 27) states that across the EU, the countries with the lowest poverty rates are clearly those who spend most on social benefits. Smeeding claims in several papers (2006, p. 80; and 2005, p. 974) that higher levels of government spending as in Scandinavia and Northern Europe and more careful targeting of government transfers on the poor as in Canada, Sweden and Finland produce lower poverty rates. Noland and Marx (2009, p. 329-330) state that "there is a strong relationship at country level between the level of social spending and the incidence of poverty " – "arguably one of the most robust findings in comparative poverty research". The strong cross-country association between high welfare state effort and low poverty would suggest that increasing spending in currently low-effort countries would lead to a downward convergence in poverty outcomes.[10]

To investigate this familiar claim systematically, we employ several social expenditure ratios from the most recent OECD Social Expenditure Database (SOCX, 2008). This database contains aggregate and disaggregated data on social expenditures. The main social policy areas included are old age, survivors, family, health and other social programs. Both cash benefits and benefits in kind are included. The OECD defines social expenditures as 'the provision by public and private institutions of benefits to, and financial contributions targeted at, households and individuals in order to provide support during circumstances which adversely affect their welfare, provided that the provision of the benefits and financial contributions constitutes neither a direct payment for a particular good or service nor an individual contract or transfer' (OECD 2007, p. 6). Since only benefits provided by institutions are included in the social expenditure definition, transfers between households - albeit of a social nature - are not in the social domain. Social benefits include cash benefits (e.g. pensions, income support during maternity leave, and social assistance payments), social services (e.g. childcare, care for the elderly and disabled) and tax breaks with a social purpose (e.g. tax expenditures towards families with children, or favorable tax treatment of contributions to private health plans).

In this study we perform several tests at the aggregate level, because there is no one program or one type of policy instrument that is universally generous and common across nations, and yet they all generate redistribution albeit of different magnitude.[11] It should be noted that social expenditure indicators at the aggregate level have their limitations (Kühner, 2007): changes in expenditure ratios may not be caused by policy changes, but simply by the number of beneficiaries as a result of an ageing population or changes in unemployment levels due to cyclical factors (see also section 2.3). However, we will test the relationship between poverty rates and social expenditures across countries at several moments in time (around 1985, 1995, and 2005) to analyze the influence of the business cycle. In addition, we take demographic effects into account.

One might question whether the results that we capture are merely reflections of EU15 countries - because we will apply a relative poverty line – or of the other nations as well. In order to investigate this question, we include observation for 13 non-EU15 countries for which we have both measures of social spending and measures of income poverty. Moreover, these non-EU15 countries may shine some light on the effects of European policy combating poverty.[12+13]

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10 However, Cantillon et al (2003) show that increasing social expenditures within the existing social transfer system of nine EU Member States would not always have a strong effect on poverty rates since additional spending would end up disproportionally with those already above the poverty line.

11 We refer to related work. Caminada and Goudwaard (2009b) perform a cross-national analysis on poverty *reduction* through the tax/transfer system – both for the entire population and several vulnerable age groups such as children and the elderly - at the program level as well. Data on poverty rates and poverty alleviation among OECD countries, and correlation tests are available from Caminada's webpage. Click here.

12 It should be noted that the EU has not been afforded legislative competence to harmonize national laws in this field, though the Open Method of Coordination of the EU seeks both to stimulate domestic policy

It is also necessary to take into account the role of private resources and services/benefits in ensuring adequate protection in addition to those provided by public systems. In particular, the extent to which social protection systems redistribute resources towards low-income groups, thus helping to reduce the poverty risk, depends on the structure of social protection expenditure. A problem with social expenditure as an indicator for differences in social protection across countries, is related to differences in the public/private mix in the provision of social protection and differences in features of the tax system. Adema (2001) has developed indicators that aim at measuring the share of an economy's domestic production recipients of social benefits really draw on, net total social expenditure. This requires capturing private social benefits and the impact of tax systems on social effort. For private programs to be considered 'social', they need to have a social purpose and contain an element of interpersonal redistribution and/or compulsory participation.[14] The distinction between public and private social protection is made on the basis of whoever controls the relevant financial flows. Private social benefits may be important for our analysis. In so far they contain an element of redistribution, they may also have an impact on poverty levels. For example, private but mandatory pensions (in the second pillar) may have an effect on poverty incidence among the elderly. However, the impact of private social benefits is likely to be smaller than the impact of public social transfers.

The impact of the tax system on the social effort is threefold. In some countries cash benefits are taxable as a rule, in other countries they are not. In the former countries net social effort is less than suggested by gross spending indicators. Indirect taxation of consumption by benefit recipients is another factor that may blur the picture. When indirect taxes are higher, benefit recipients have less effective purchasing power. And thirdly, the tax system can be used for social purposes. Tax deductions (e.g. family tax allowances) replace direct expenditures in some cases. The Earned Income Tax Credit in the United States is a good example of a tax break, which has the features of a social protection program. To control for the impact of tax systems on social spending, we will use the OECD data on net social expenditure. Unfortunately, these data only cover a relatively short time period (1993-2005) as well as a small group of countries.

The most recent figures of the net social expenditure as percentage of GDP, based on the 2008 edition of the Net Social Expenditure data, indicate that accounting for the impact of taxes and of private social expenditure has an equalizing effect on levels of social effort across countries; see Caminada and Goudswaard (2005).

2.3 Tests on the linkages between social protection and poverty

National preferences for social protection differ substantially across countries. Especially Anglo-Saxon countries do not seem to be prepared to sustain the high protection levels prevailing in other countries with the same level of income. Swabish et al (2006) assembled data to examine the cross-national effects of income inequality and trust on social expenditures. Their results suggest that as the 'rich' become more distant from the middle

processes and to provide a coordinating framework for member states to exchange policy ideas and practices. OMC combines centralized processes of European objective setting, performance measurement (in line with agreed indicators) and evaluation (joint review by the European Commission and Council of Ministers) with the decentralized production of National Action Plans on Inclusion; see Armstrong, 2006, p. 80). However, compared to other modes of EU governance and even compared to the economic and employment coordination processes, the social inclusion process is weakly institutionalized in the EU treaty system and is ultimately voluntary (albeit that the commitments to the aims of the process and the process itself have been endorsed at the highest level—the European Council).

13 It should be mentioned that European non-EU15 countries as Czech Republic, Hungary, Norway, Poland, Slovakia, Switzerland, or even Turkey may also be influenced by European integration, for example via policy competition.

14 Private social programs can be mandatory or voluntary. Mandatory private benefits are often incapacity related. For example, in several countries employers are obliged to provide sickness benefits. Occupational injuries and accidents ('risque professionel') can also be covered by mandatory private insurances. A number of EU member states have supplementary employment-based pension plans with mandatory contributions, based on a funding system. Voluntary private social security covers a wide range of programs, of which private pension plans and private social health insurance constitute major components.

and lower classes, they find it easier to opt out of public programs and to buy substitutes for social insurance in the private market. These cultural differences within the group of OECD countries could point to variance in the antipoverty nature of social systems as well. Anglo-Saxon welfare states (especially the United States) rely more heavily on private social arrangements as far as pensions, health care and other programs are concerned (Super, 2008). However, private social programs may generate a more limited redistribution of resources than public ones, and tax advantages towards private pension and health plans are more likely to benefit the rich. Private employment-related social benefits mostly re-allocate income between the (formerly) employed population. The same holds for fiscal advantages related to, for example, supplementary private pension plans. In general, we do expect that private schemes will generate less antipoverty effects than public programs.

We perform a cross-county analysis of the relationship between (public and private) social expenditures and poverty rates at one moment in time. The material presented is only descriptive and does *not* explain poverty levels and poverty structure. Such an analysis should ideally be based on a theory, which would have to address at least the following cross-national differences (cf. Gottschalk and Smeeding, 2000, p.263): differences in labor markets that affect earnings of individual household members; demographic differences, such as the ageing of the population and growth of single parent households, which affect both family needs and labor market decisions; and differences across countries in tax and transfers policies that not only affect family income directly, but also may affect work and investment decisions. Two recent seminal books edited by Kakwani and Silber (2007 and 2008) present the panorama of the many dimensions of poverty from various disciplines. Duclos et al (2007, p. 244) state that it is a common assertion that poverty is a multidimensional phenomenon, yet most empirical work on poverty uses one-dimensional yardstick, usually household expenditures or income per capita or per adult equivalent, to judge a person's well-being. When studies use more than one indicator of well-being, poverty of comparisons are either made for each indicator independently of the others, or are performed using a arbitrary defined aggregation of multiple indicators into a single index. In either case aggregation across multiple welfare indicators, and across the welfare statuses of individuals or households, requires specific aggregation rules that are necessarily arbitrary. Therefore, a multidimensional approach is not an attractive route for empirical research.[15] A fully-fledged model should be developed to assess the relative performance of social factors and the economic development. Such a comprehensive approach is far beyond the scope of this paper.

Still, critics argue for a multidimensional poverty concept. In addition, assessing the impact of government intervention on the risk of poverty is a complex task, since a broad range of government policies influence the actual living standards of households. How to proceed? We simply believe that social protection expenditure plays a decisive role in reducing the risk of poverty. Therefore, we employ bi-variate and multiple regressions on the relationship between poverty rates and social expenditures, and other commonsense control variables as the ratio of the elderly population (for old age pensions), the unemployment rate (for the business cycle), and GDP per capita US dollars (PPS). Nevertheless, one could argue that omitted (macroeconomic) variables cause bias. Indeed, differences in social effort across countries at one point in time can be the result of numerous factors.

Although our analysis focus on the income dimension of poverty, it should be mentioned that the European Union has emphasized the multidimensional nature of deprivation, and has developed supplementary indicators of poverty based on social indicators and the broad

15 The multidimensional approach of poverty is a complex undertaking (Haveman, 2008, p. 4) and suffers from several difficulties, among which the most serious is the estimation of the interaction between attributes (dimensions of poverty). One has to define a list of attributes to be taken into account and decide how much weight to give to each of these dimensions. Thorbecke (2007, p. 17-18) concludes: "It should be clear that a complete mapping of combination of attributes into the utility space appears daunting, if not altogether utopian." "…, there are too many unresolved questions left over to consider seriously using multidimensional measures in any truly operational sense."

concept of social exclusion. The European Union has defined common objectives on social indicators - based on Atkinson et al (2002) - to be benchmarked by the streamlined Open Method of Coordination. Both data and measurement techniques have been developed in order to capture a variety of dimensions of deprivation beyond money income (poverty). Another important point to keep in mind is that we only analyze the impact of transfers on income poverty, while, as we mentioned before, several other strategies can be chosen to alleviate poverty. In fact, several EU member states are increasingly emphasizing strategies to facilitate labor force participation of lower income groups (European Commission, 2008, p. 101). This may also be an effective strategy to tackle poverty.

3. WELFARE STATE EFFORT AND THE ALLEVIATION OF POVERTY: AN EMPIRICAL ANALYSIS

3.1 Poverty rates: some descriptive statistics

In spite of differences in the measurement of poverty and the databases used, most studies have consistently found that there is a large difference in poverty rates among welfare states, depending on the poverty line applied. Reports on poverty profiles for EU15 and other OECD countries for the latest data year available from OECD (2008), LIS (2009), and Eurostat (2009) consistently show that Scandinavian and Benelux countries have the lowest poverty rates, followed by continental European countries. Anglo Saxon welfare states have relatively higher poverty rates. Among them, the level of poverty is highest in the United States.[16] However, country clustering based on poverty rates is quite different from that of welfare state regimes. Among the countries with low poverty rates, we find representatives of the social democratic regime and the corporatist regime. Likewise, the nations with higher rates of poverty represent several regime types and both members of the EU15 and the new member states.

Table 1 reports poverty profiles for 28 industrialized countries for the latest data year available. In order to account for different intensities of poverty, three different poverty lines are applied. Households are deemed to live in 'extreme poverty' if their income remains below a poverty line of 40 percent of median equivalent income; a poverty line of 50 percent demarcates 'severe poverty', whereas households with an income between 40 and 50 percent of median equivalent income are considered as living in 'moderate poverty'. Households whose income exceeds the poverty line of 50 percent, but remains below 60 percent of median equivalent income are considered as living 'in poverty'.

16 See Caminada and Goudswaard (2009b) for a review. Data and analyses on poverty rates and poverty alleviation among 28 OECD countries are posted at and available from Caminada's webpage. Click here.

Table 1: Percent poverty for total population in 28 countries based on data of OECD, LIS, and Eurostat, latest available year

	LIS (around 2001)			OECD (2003-2005)			EUROSTAT (2007)			
	PL 40	PL 50	PL 60	PL 40	PL 50	PL 60	PL 40	PL 50	PL 60	PL 70
Australia	4.6	12.4	20.3	5.4	12.2	20.4				
Austria	3.4	6.6	13.4	3.6	7.7	13.4	3	6	12	19
Belgium	3.1	8.8	16.2	3.7	8.1	16.1	4	8	15	23
Canada	7.0	12.0	19.0	7.7	13.0	19.9				
Czech Republic	3.0	5.8	11.5	2.0	4.9	10.5	2	5	10	17
Denmark	2.1	5.3	12.3	2.3	5.6	13.2	3	6	12	19
Finland	2.8	7.3	14.8	2.5	6.5	13.5	2	5	13	22
France	2.8	7.1	14.1	2.8	7.3	13.7	3	7	13	21
Germany	6.3	11.0	17.2	4.6	8.4	13.4	5	10	15	23
Greece	7.0	12.6	19.6	8.6	14.3	21.4	8	13	20	28
Hungary	3.7	7.1	12.3	3.1	6.4	12.7	3	7	12	20
Ireland	7.0	14.8	23.3	7.4	16.2	22.5	4	9	18	26
Italy	6.6	11.4	19.7	7.4	12.8	20.0	7	12	20	27
Japan	9.5	14.9	20.8							
Luxembourg	3.1	8.1	13.2	3.2	8.8	13.7	2	7	14	22
Mexico	12.7	18.4	25.3	12.6	18.4	25.3				
Netherlands	4.0	7.7	14.4	2.5	4.9	11.1	3	5	10	19
New Zealand		10.8	22.7							
Norway	3.5	6.8	12.4	3.7	7.1	12.8	5	8	12	19
Poland	9.3	14.6	20.8	6.4	11.5	17.7	6	11	17	25
Portugal	7.4	12.9	20.7				6	12	18	26
Slovakia	4.5	8.1	13.7	3.9	7.0	12.1	3	6	11	18
Spain	8.1	14.1	21.0	7.6	14.2	20.8	7	13	20	28
Sweden	2.5	5.3	11.4	2.6	5.6	12.0	4	6	11	18
Switzerland	4.8	8.7	15.2	3.5	7.6	14.4				
Turkey	11.4	17.5	24.3							
United Kingdom	3.7	8.3	15.5	5.4	11.6	19.2	6	12	19	27
United States	11.4	17.1	23.9	11.4	17.3	24.1				
Mean	5.7	10.6	17.5	5.2	9.9	16.4	4.3	8.4	14.6	22.4
N (= 28)	27	28	28	24	24	24	20	20	20	20
Mean EU15	4.7	9.4	16.4	4.6	9.4	16.0	4.5	8.7	15.3	23.2
N EU15 (=15)	15	15	15	14	14	14	15	15	15	15
Mean Non-EU15	7.1	11.9	18.6	6.0	10.5	17.0	3.8	7.4	12.4	19.8
N non-EU15 (=13)	12	13	13	10	10	10	5	5	5	5

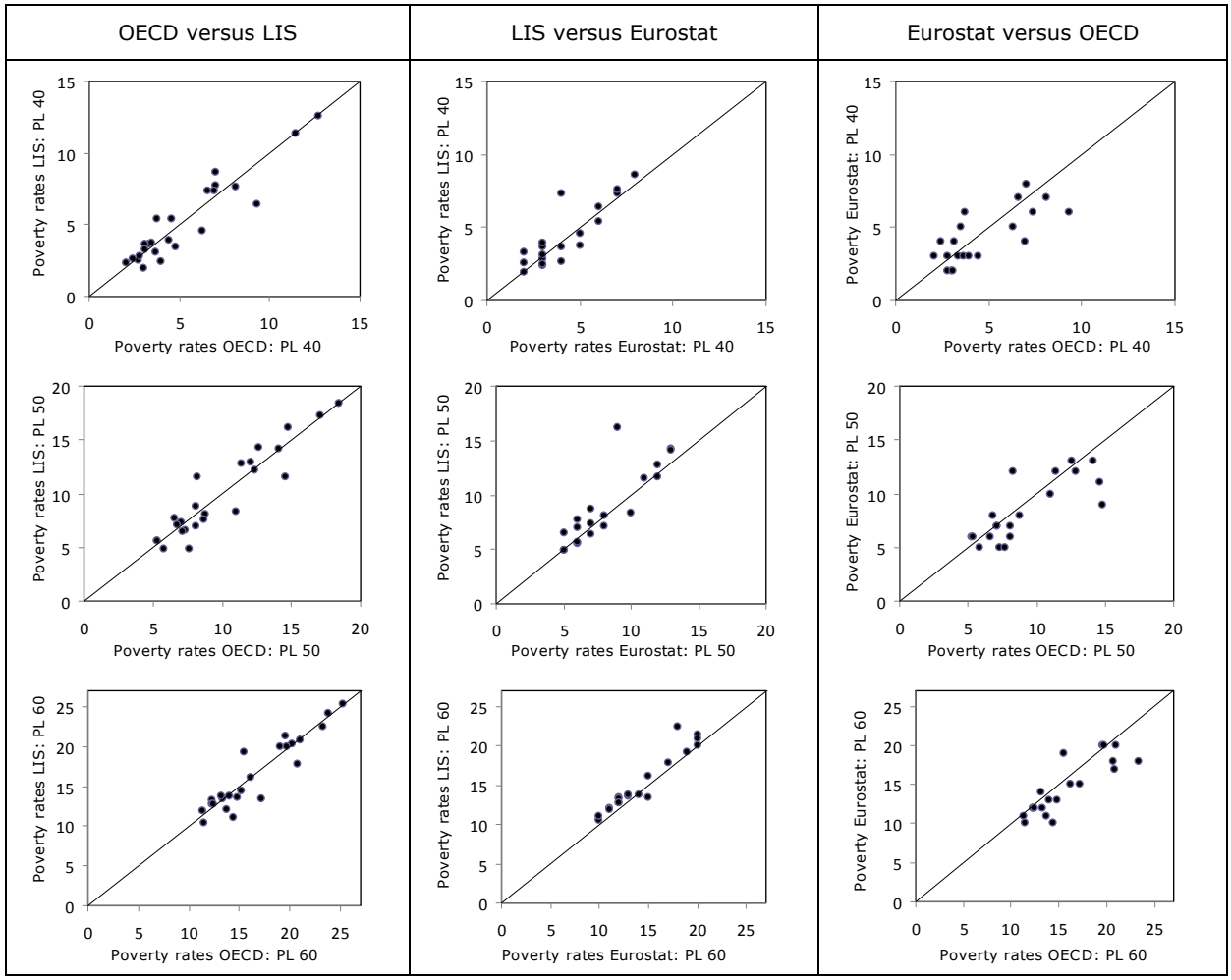
Note: Poverty rates are measured as the proportion of individuals with equivalized disposable income less than 40, 50, and 60 percent of the median income of the entire population.

Source: LIS (2009), OECD (2008), and Eurostat: ECHP/EU-SILC (2009)

A considerable share of the population lives in relative income poverty in all industrialized welfare states, yet with a large variation of poverty rates and structure across countries. All countries in this sample display poverty rates in a range of 10.0 to 25.3 percent of the household population if the poverty line is set at 60 percent of median equivalent household income. When large proportions of the population are clustered just around the threshold of 60 percent, small changes in their income can lead to large changes in poverty. To examine the sensitivity of these results to alternative choices of the poverty line, Table 1 also shows poverty rates measured with lower thresholds. It turns out that, in all countries reviewed, a significant share of the population is clustered between the 50 and 60 percent thresholds. This explains also why poverty statistics with a threshold of 50 percent are much lower compared to the official EU-indicator (with a threshold of 60 percent of median equivalized income).

Note that poverty indices from different sources alter the country-ranking to some extent. There are minor differences with regard to the methodology applied. The concept of disposable income is quasi-identical between the three data sources (OECD, 2008, p. 153). The equivalence scale used by Eurostat differs only slightly from the one used by the OECD and LIS, giving a somewhat higher weight to additional household members and distinguishing between adults and children.[17] Figure 1 shows estimates of poverty indicators from OECD, LIS, and Eurostat. Poverty data of OECD and LIS are highly correlated (around .94). Correlation coefficients for poverty rates between Eurostat and both OECD and LIS are lower and range from .73 to .96, depending on the poverty threshold applied. For most countries differences in poverty rates from OECD and from LIS do not exceed 2 percentage points, with exceptions for Germany, the Netherlands, Poland, and the United Kingdom. However, between Eurostat and both OECD and LIS, we find rather large differences in poverty rates exceeding 2 percentage points for Germany, Ireland, Netherlands, Poland, Slovakia, and the United Kingdom.

Figure 1: Correlation data on poverty rates OECD, LIS, and Eurostat, most recent data year



Source: LIS (2009), OECD (2008), Eurostat: ECHP/EU-SILC (2009), and own calculations

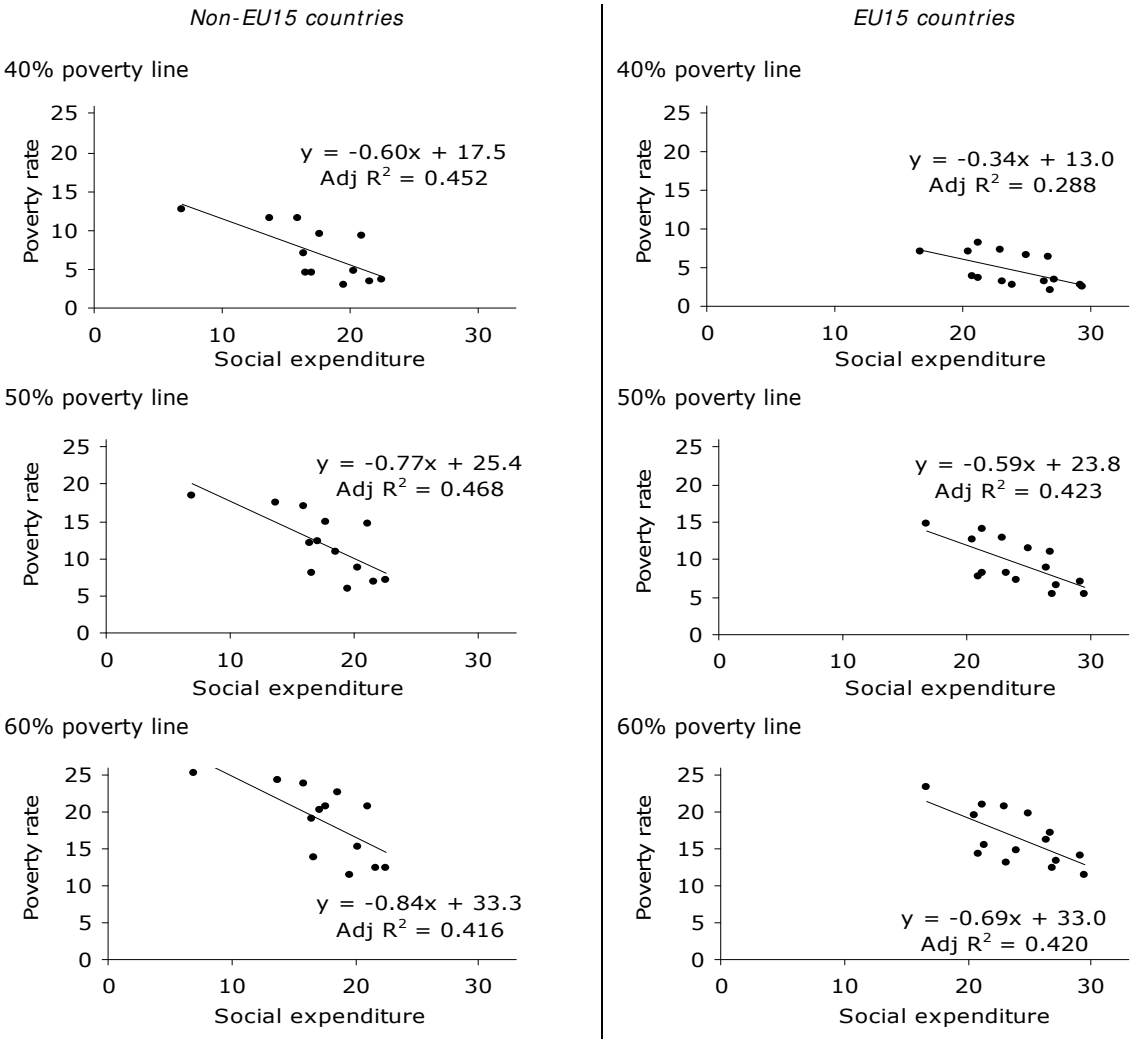
17 OECD and LIS use a consistent single parameter scale with a square-root-of-household-size scale factor. Adjusted disposable income (ADPI) is equal to *un*adjusted household income (DPI) divided by household size (S) raised to an exponential value (*e*), ADPI=DPI/S^e. OECD and LIS assume the value of *e* is 0.5. Eurostat (2005, p. 63) use the so-called 'modified OECD' equivalence scale. This scale gives a weight of 1.0 to the first adult, 0.5 to any other household member aged 14 and over and 0.3 to each child. The resulting figure is attributed to each member of the household, whether adult or children. The equivalent size of a household that consists of 2 adults and 2 children below the age of 14 is therefore: 1.0 + 0.5 + (2*0.3) = 2.1.

3.2 Linkages between poverty rates and gross social spending

As mentioned earlier, quantitative studies have found a strong negative relationship between poverty rates and the level of social expenditure over the last 25 years; this finding has now been well established in empirical studies.[18] In other words, countries with a higher level of welfare expenditure are likely to have lower poverty rates.

Figure 2 illustrates that there is indeed a strong significant correlation between the level of *gross public* social expenditure as a percentage of GDP in 2005 and poverty rates across countries around the years 2003-2005 ($p<.01$). Countries with higher *gross public* social expenditure ratios in 2005 tend to have lower poverty rates than countries with lower expenditure ratios.

Figure 2: Linkage between gross public social expenditure and OECD poverty rates across 28 countries, around 2003-2005



Non-EU15 countries: Australia, Canada, Czech Republic, Hungary, Japan, Mexico, New Zealand, Norway, Poland, Slovak Republic, Switzerland, Turkey, and the United States

EU15 countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and the United Kingdom

Source: OECD (2008), SOCX (2008), and own calculations

18 See Förster (1993), Kenworthy (1999), Kangas and Palme (2000), Kim (2000), Sainsbury and Morissens (2002), Cantillon et al (2002), Behrendt (2002), Förster and Pearson (2002), Brady (2004), Scruggs and Allen (2005), Smeeding (2005 and 2006), Förster and Mira d'Ercole (2005), and Pestieau (2006, pp.16-17).

Our simple linkage exercise confirms the general finding that more social spending generates less poverty across countries. However, our results are less clear-cut than earlier findings. We find an effect which is less strong in EU15 countries compared to non-EU15 countries, possibly under the influence of welfare state reforms (cf. Adelantado and Caldéron Cuevas, 2006). This result does not depend on the poverty line applied (40, 50 or 60-percent-of-median-income poverty threshold); see Figure 3. Moreover, we did a sensitivity analysis with the LIS poverty data – reported in Table A2 of the Appendix - and found the same result: higher *gross public* social expenditure ratios generates less poverty across countries, although this effect is less strong in EU15 countries compared to non-EU15 countries.

3.3 The impact of private social expenditure

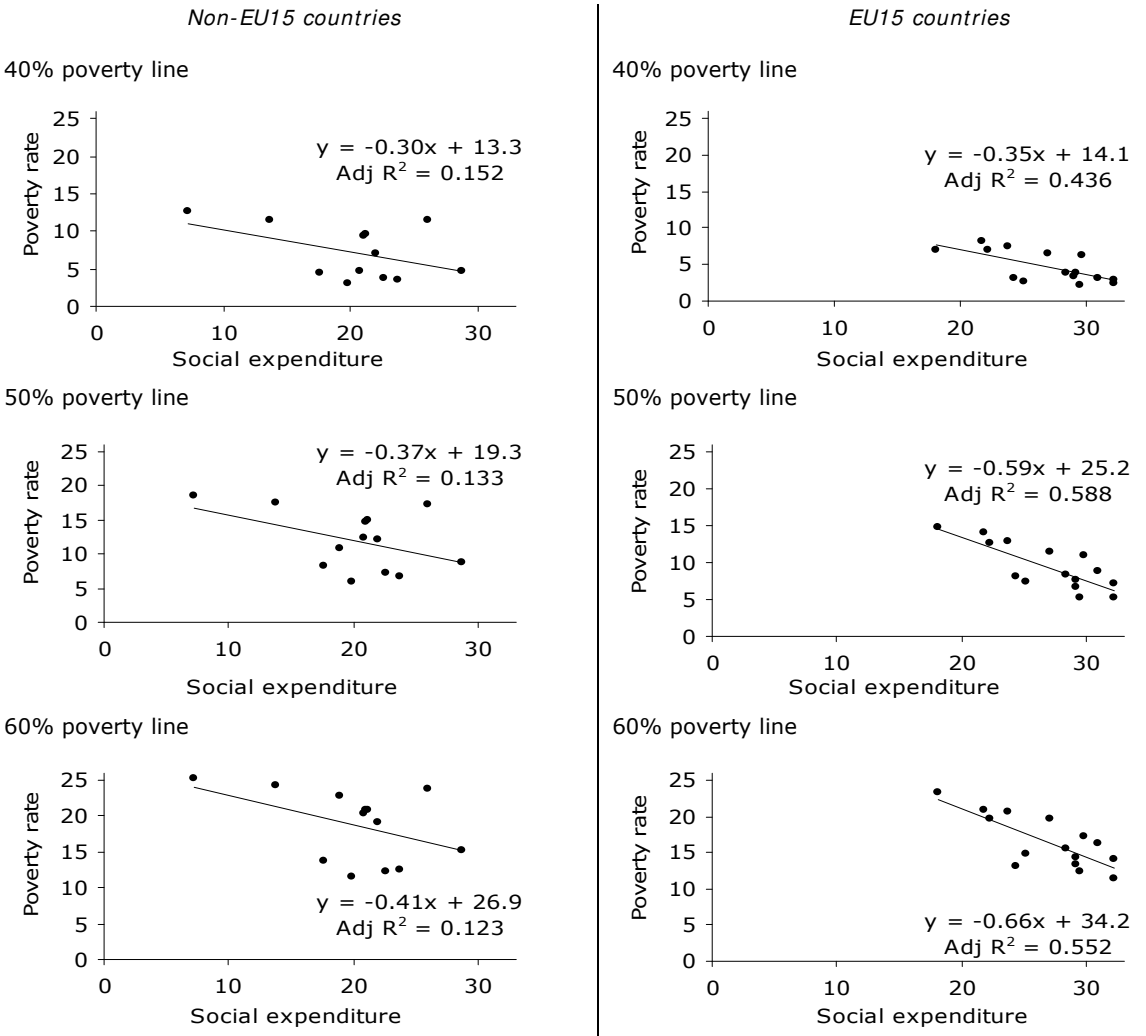
In recent years considerable progress has been made in empirical research on the impact of social protection systems on income inequality and poverty, but most analyses focused on public arrangements (e.g. Swabish et al, 2006; Smeeding, 2005 and 2006). Up till now, also our results support the conventional view that extensive social-welfare programs reduce poverty. These findings may be influenced by ignoring the impact of private social arrangements.

Our sample shows that the share of public social benefits in total social expenditures exceeds 85 percent in most countries. The role of private arrangements of varying nature in providing close substitutes to public social protection expenditure is considerable in some OECD countries. In the Canada, the Netherlands, Switzerland, and the United Kingdom, the share of private social expenditure is more than 25 percent, while in the US this share is almost 40 percent. Moreover, in all countries other than Austria and Ireland private social expenditures have risen in the period 1985-2005 – in some countries rather rapidly. There may be various explanations for this increase in private social expenditure (Caminada and Goudswaard, 2005). Lower public protection may induce private social arrangements of a different nature. But a shift from public to private provision of social protection can also be an explicit policy objective, to alleviate public budgets, or to strengthen incentives in the system (Super, 2008). Anyway, accounting for private social expenditures is important for judging the social effort and the level of social protection in countries.

But what about the effect of private social arrangements on poverty rates? It is plausible that the redistributive effects of transfers are weaker in countries where the social transfer system mostly relies on (partly private) earnings-related schemes compared to countries with mostly (public) means-tested provisions of transfers. Means tested public transfers are, almost by definition, better targeted to the poor. In general, we expect poverty to be relatively high (low) in countries where the share of private arrangement in the total social benefits is relatively high (low).

In Figure 3, we have included private social arrangements in our social expenditure indicator for 2005, using the OECD data as developed by Adema (2001). Again, we apply the 40-, 50-, and 60-percent-of-median-income poverty thresholds, and use the OECD-data on poverty.

Figure 3: Linkage between gross total social expenditure and OECD poverty rates across 28 countries, around 2003-2005



Non-EU15 countries: Australia, Canada, Czech Republic, Hungary, Japan, Mexico, New Zealand, Norway, Poland, Slovak Republic, Switzerland, Turkey, and the United States

EU15 countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and the United Kingdom

Source: OECD (2008), SOCX (2008), and own calculations

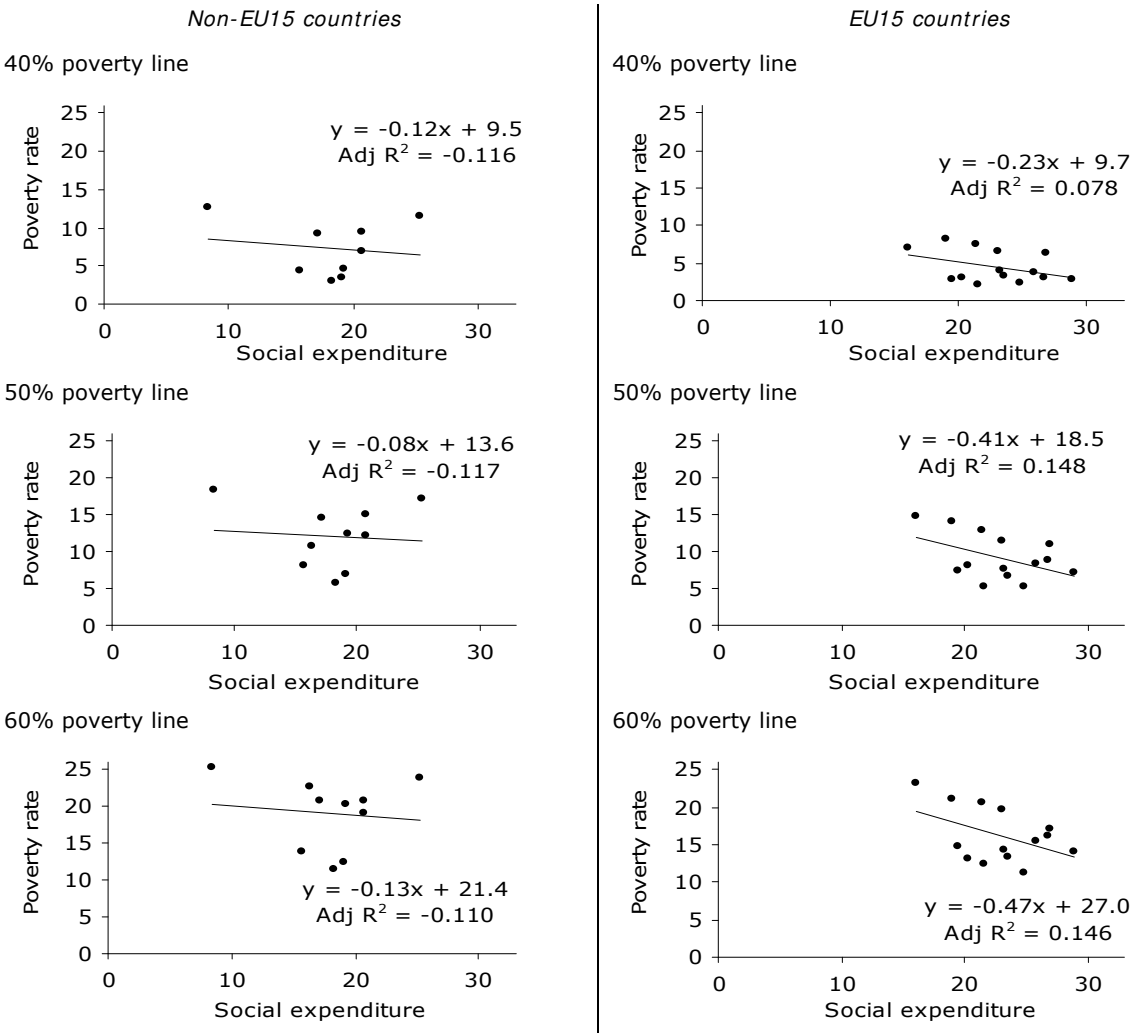
The results alter considerably if private social expenditures are included as well. For non-EU15 countries in our sample, we do not find evidence for a negative correlation between the level of gross *total* social spending and the incidence of poverty ($p>.10$): Adjusted R^2 ranges from .12 to .15, depending on the poverty line applied. Since there is no clear and strong negative link, more social spending does not offer an easy route to less poverty within these countries. In contrast, for the group of EU15 countries, we find a significant fit ($p<.01$): Adjusted R^2 ranges from .44 to .59, depending on the poverty line applied. Cross country data show evidence that private social expenditure does seem to matter as far as poverty alleviation in EU15 is concerned (higher adjusted correlation coefficients R^2 compared to the gross *public* social expenditure ratio in Figure 2). Apparently, private social arrangements have more redistributive impact in EU15 than in other OECD countries.

To test for robustness of the relationship between poverty rates and *gross total* social expenditures across countries, we employed a sensitivity analysis. The results are independent of both the poverty line applied and the source of poverty data (OECD or LIS). See Tables A1 and A2 of the Appendix for details.

3.4 The impact of the tax system

Another problem with social expenditure as an indicator for differences in social protection across countries is related to ignoring the impact of the tax system. In Figure 4, we have corrected the expenditure ratios for the impact of the tax system, using the OECD data mentioned earlier.[19] We have linked the poverty rates around 2003-2005 to *net total* social expenditures of 2005. At one moment in time, the linkage effect of *net total* social expenditure ratios and poverty rates across countries turns out to be less strong compared to the effect of *gross total* spending (much lower adjusted correlation coefficients R^2 in all cases). Moreover, if social expenditures are corrected for the impact of tax systems, we do not find a significant correlation for the EU15 countries and the non-EU15 countries separately. Also for all countries together, we do not find a good fit (p>.10). We conclude that the conventional view that welfare spending goes along with less poverty must at least be mitigated (cf. Esping-Andersen, 2009, p. 644). The linkage between the two variables becomes substantially weaker – and even turns out to be insignificant - if the expenditure data are corrected for relevant tax features, which gives a more realistic picture.

Figure 4: Linkage between net total social expenditure and OECD poverty rates across 24 countries, around 2003-2005



Non-EU15 countries: Australia, Canada, Czech Republic, Japan, Mexico, New Zealand, Norway, Poland, Slovak Republic, and the United States

EU15 countries: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and the United Kingdom

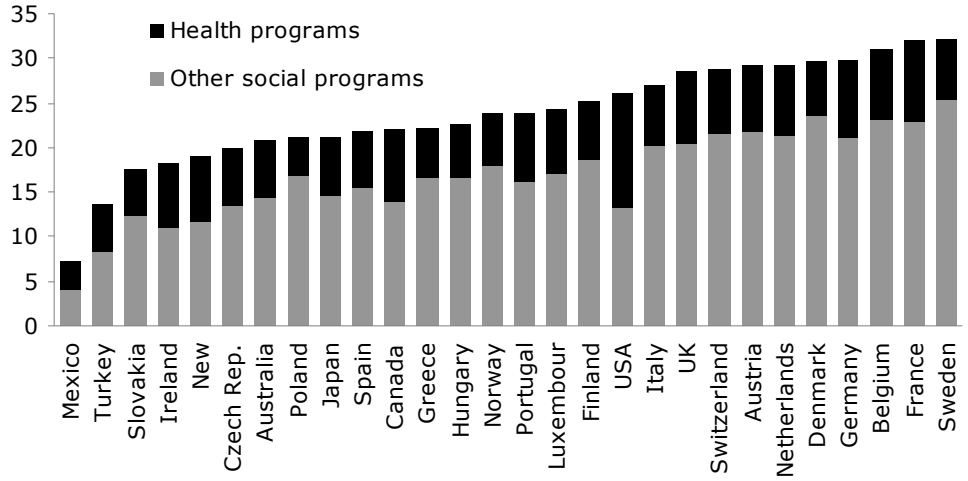
Source: OECD (2008), SOCX (2008), and own calculations

19 Excluding Greece, Hungary, Switzerland, and Turkey; SOCX (2008) does not report data of *net* social expenditures for these countries.

3.5 The impact of social expenditures for health programs

Cross-national comparison of social spending is rather sensitive with respect to expenditures related to health care programs, especially when EU15 countries and non-EU15 countries are evaluated. For example, among all countries the United States spends most on health programs (49 percent of public and private social expenditure), while figures for EU15 are much lower, ranging from 20 percent in Denmark to 39 percent in Ireland (EU15-average is 27 percent); see Figure 5.

Figure 5: Composition of gross social expenditure, 2005



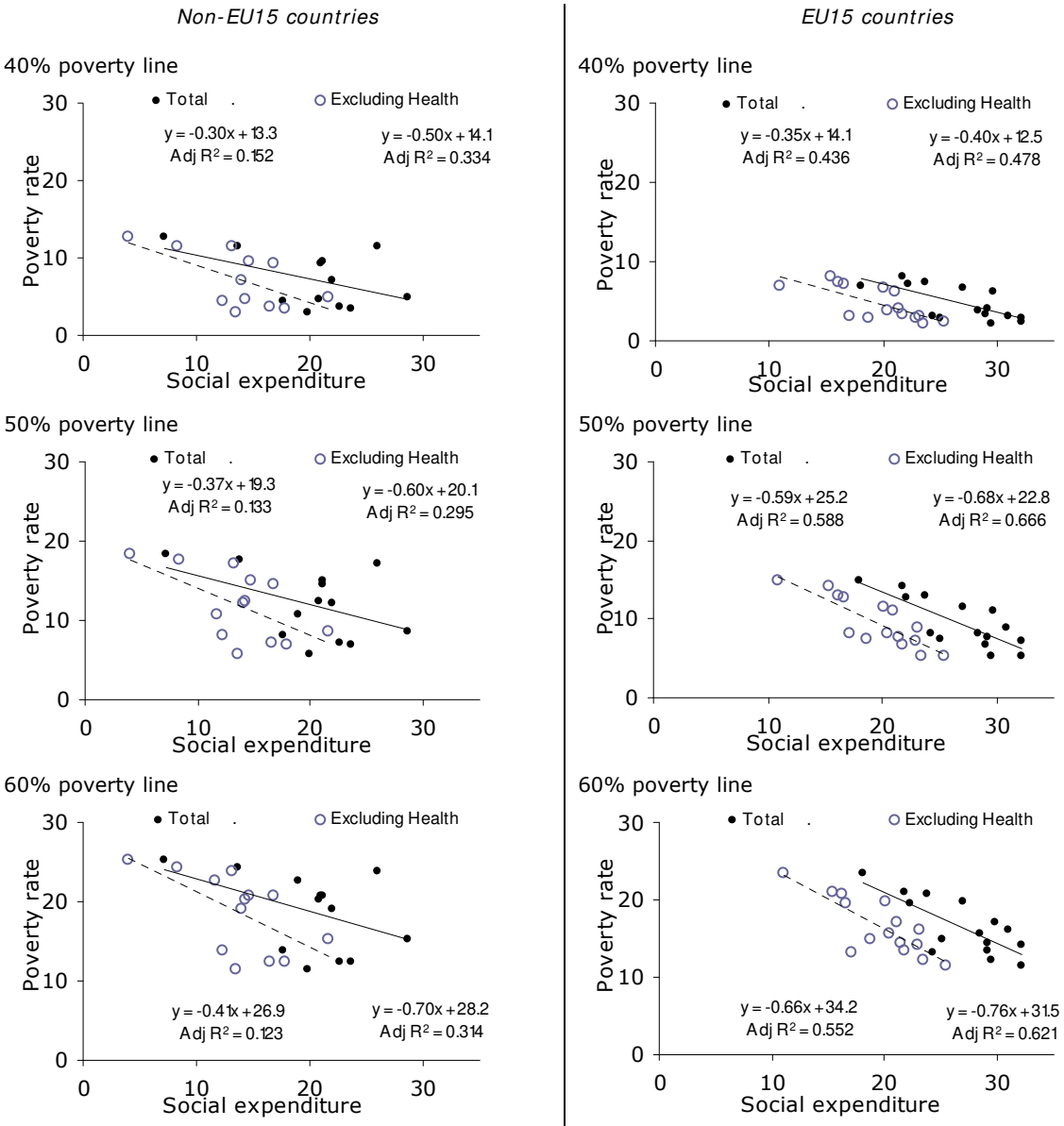
Source: SOCX (2008) and own calculations

One could argue either way: health expenditures generally do not qualify as income transfers; at the same time health programs are an important element of the safety net in most countries, probably generating large antipoverty effects through benefits in kinds and taxes (contributions). We undertake a pragmatic approach, because including or neglecting health expenditure will affect our empirical analysis to a large extent. We employ a sensitive analysis for social spending other than for health programs as well.[20] To exclude health expenditures, we unfortunately have to use gross rather than net social expenditures for this analysis, however, both gross public and gross private social arrangement are taken into account.

For EU15 countries the treatment of health expenditures does not alter the prior result that much; see Figure 6. However, excluding health expenditures generate considerable better fits for non-EU15 countries, especially because the United States is an outlier with relatively high social expenditures for (private) health programs. Converting the point estimates to elasticities implies that a one percent increase of gross public and private social spending other than health expenditures decrease poverty rates by approximately .5-.7 percent in the group non-EU15 countries, depending on the poverty line applied. The elasticity estimate is somewhat higher and show more variation for EU15 countries (-.4-.8), indicating that social programs are not yet targeted well to the ones around the EU-agreed 60 percent poverty line.

20 Following SOCX (2008) "health" comprises all public expenditure on health is included (not total health expenditure): current expenditure on health, personal and collective services and investment. Expenditure in this category encompasses, among other things, expenditure on in-patient care, ambulatory medical services and pharmaceutical goods. (Individual health expenditure, insofar as it is not reimbursed by a public institution, is not included; cash benefits related to sickness are recorded under sickness benefits). Voluntary private social health expenditure are estimates on the benefits to recipients that derive from private health plans which contain an element of redistribution, such private health insurance plan are often employment-based and/or tax-advantaged.

Figure 6: Linkage between gross total social expenditure (excluding Health) and OECD poverty rates across 28 countries, around 2003-2005



Non-EU15 countries: Australia, Canada, Czech Republic, Hungary, Japan, Mexico, New Zealand, Norway, Poland, Slovak Republic, Switzerland, Turkey, and the United States

EU15 countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and the United Kingdom

Source: OECD (2008), SOCX (2008), and own calculations

3.6 Other social spending indicators. Is the United States different?

In several recent contributions Smeeding (2005 and 2006) has analyzed why the United States is different from other countries. Government policies and social spending have lesser effects in the United States than in any other rich nations, and both low spending and low wages have a great impact on the final income distribution, especially among the non-elderly (Smeeding, 2005, p. 955). His analysis points to American institutions and lack of spending effort on behalf of low-income working families. Indeed, the United States stands out in the relative position of those at the bottom of the income distribution. But does it also reflect the relative weakness of the income support system in the United States? The answer to this

question heavily depends on the social expenditure indicator used.[21] Smeeding examined the generosity of income transfer programs by tracing the trend in non-elderly cash and near-cash (food, housing) benefits for OECD countries over the past 20 years. He concludes (p. 970): "Even before the 'Bush revolution', we are a distinct lower-bound outlier in social spending on the non-elderly." Moreover, his thoroughly analysis shows that higher levels of government spending (as in Scandinavia and northern Europe) and more careful targeting of government transfers at the poor (as in Canada, Sweden, and Finland) produce lower poverty rates. Smeeding finds that the effects of the income package accounted for over 90 percent of the differences in income inequality across nations. He claims that the U.S. redistributive package is the prime explainer of the differences.

This conclusion seems to contradict our finding in this paper so far: there is no clear relation between (high) social expenditures and (low) poverty rates across countries. Indeed, different nations use different instruments and different 'income packages' to reduce poverty. For this reason, we analyzed the 'whole' package (total social spending), with the only exception for excluding health expenditure on one occasion. It should be noted that the United States scores both very high and very low when counties are ranked according to their levels of social spending, depending on the specific indicator used. We examined 28 countries for the year 2005. The United States ranks fifth (!) in case net total (public and private) social expenditures are used as an indicator. So, America *cannot* be classified as a lower-bound outlier. However, if we look at gross public social expenditure only Turkey and Mexico allocate less to social spending, independent whether health programs are included. Notably, the United States spent most of all countries on private social expenditures! Their private/public-ratio increased sharply during the last decades; this may be an explanation why America has lesser redistribution (less effective as an anti-poverty device) than other rich nations. The importance of this public/private-shift mechanism is acknowledged by Swabish, Smeeding and Osberg (2005, p. 33): as 'rich' become more distant from the middle and lower class – such as in the United States – they find it easier to opt out of public programs and to buy substitutes for social insurance in the private market.

3.7 Summing-up

Table 2 summarizes our results. It shows the adjusted correlation coefficients and significance of all linkages between social expenditure and poverty rates across countries around 2001-2005 if different poverty lines and /or data sets (OECD or LIS) are employed. This sensitivity analysis shows more or less the same results when different poverty lines and/or different datasets for income poverty rates are employed. However, the results are sensitive to the social indicator used.

Note that we find pretty good fits for gross *public* social expenditures, both for non-EU15 and EU15 countries. The inclusion of *private* social expenditure alters the picture. Still, we find a significant negative relationship between gross public and private spending and poverty rates for all countries, but not for non-EU15 countries separately. In contrast, including private social benefits helps to reduce poverty levels in EU15 countries. Excluding social expenditures for health programs improves the correlation between (high) social spending and (low) poverty rates for non-EU15 countries, however, still this relationship is much weaker than for EU15 countries. For all countries it appears that taking into account private arrangements considerably lowers the impact of social expenditures on poverty levels. Furthermore, the impact of the tax systems is important. We do not find a significant linkage for non-EU15 countries and EU15 countries separately. So, the linkage between *net total* social expenditure and poverty levels is much weaker than in case the traditional indicator *gross public* social spending is used. We find ample evidence for a relationship between (high) net total social expenditure and (low) poverty across countries.

21 Alesina and Glaeser (2004), and Martin and Caminada (2009) analyse why anti-poverty outcomes in the United States are so different compared to European countries.

We believe that our comparison of the impact of several social expenditure ratios on poverty levels in the United States and other non-EU15 and EU15 countries has emphasized that taking into account the public/private-mix really matters for comparative welfare state research.

Table 2: Adjusted R^2 and significance of linkages between social expenditure and poverty rates across countries around 2001-2005

	Non-EU15 countries	EU15 countries	All countries
Gross public social expenditure			
- PL 40, OECD data	0.452 **	0.288 **	0.491 **
- PL 50, OECD data	0.468 **	0.423 **	0.480 **
- PL 60, OECD data	0.416 **	0.420 **	0.412 **
- PL 40, LIS data	0.585 **	0.314 *	0.443 **
- PL 50, LIS data	0.528 **	0.422 **	0.386 **
- PL 60, LIS data	0.474 *	0.382 *	0.336 **
Gross public + private social expenditure			
- PL 40, OECD data	0.152 --	0.436 **	0.395 **
- PL 50, OECD data	0.133 --	0.588 **	0.382 **
- PL 60, OECD data	0.123 --	0.552 **	0.331 **
- PL 40, LIS data	0.088 --	0.439 **	0.291 *
- PL 50, LIS data	0.037 --	0.585 **	0.264 *
- PL 60, LIS data	-0.00 --	0.480 **	0.196 *
Idem, excluding health programs			
- PL 40, OECD data	0.334 *	0.478 **	0.503 **
- PL 50, OECD data	0.295 *	0.666 **	0.494 **
- PL 60, OECD data	0.314 *	0.621 **	0.451 **
- PL 40, LIS data	0.377 *	0.422 **	0.424 **
- PL 50, LIS data	0.293 --	0.614 **	0.400 **
- PL 60, LIS data	0.224 --	0.471 **	0.306 **
Net public + private social expenditure			
- PL 40, OECD data	-0.116 --	0.078 --	0.143 *
- PL 50, OECD data	-0.117 --	0.148 --	0.128 *
- PL 60, OECD data	-0.110 --	0.146 --	0.120 --
- PL 40, LIS data	-0.151 --	0.059 --	0.101 --
- PL 50, LIS data	-0.159 --	0.140 --	0.080 --
- PL 60, LIS data	-0.164 --	0.096 --	0.041 --

Note: OLS-regressions; ** Social expenditure variable significant at the .01 level; * Social expenditure variable significant at .05 level, -- Social expenditure variable insignificant at .05 level.

Source: Appendix

4 DOES THE POVERTY-SOCIAL-SPENDING RELATIONSHIP PERSIST OVER TIME?

One could argue that the results presented so far are sensitive to the data year chosen (around 2005). Therefore, we performed a sensitivity analysis for those countries where data for social spending and measures of income poverty around 1985, 1995 and 2005 are available. We are able to include 24 countries in our sample, however, data for *net* social spending is lacking. Therefore, we perform our sensitivity analysis with several gross social indicators.

4.1 Poverty over time

First, we show cross-national trends in poverty indicators. Table 3 presents the poverty rates of the national population in the early 1980s and around 2005. It should be noted that the

specific time interval varies by country, because LIS does not contain data for every country each year. Nonetheless, LIS is well suited to compare the trend in poverty over time because of the high quality of the comparability of the data due to their extensive data collection method. Poverty rates across the selected LIS-countries - we apply a 50 percent poverty line for further comparison - increased 1.6 percentage points on average during this period. Poverty rates in the EU15 even show a higher increase: in 75 percent of EU15 countries poverty rose. Using the OECD definition of poverty indicate an increase in poverty rates in most countries from the mid-1980s until the mid-2000's as well. Poverty rates increased in two-thirds of the OECD countries (exceptions being Belgium, Denmark, France, Greece, Mexico, Portugal, Spain, and the United States). The increase was largest in Finland, Germany, Ireland, Japan, Luxembourg, the Netherlands, New Zealand, Sweden and the United Kingdom. OECD data shows also that poverty rose at a higher rate in EU15 member states than elsewhere. Although this trend is independent of the source used (LIS or OECD), Belgium seems to be a specific case. Among LIS-countries Belgium experienced a relatively sharp increase of poverty rates (+3.6 points), while OECD-data showed a notable decline (-4.2 points).[22]

In general, relative poverty is higher in most nations at the end of the period compared to the beginning.[23] Over time, cross-country variation, as measured by the coefficient of variation, decreased modestly on average.

22 OECD (2008, p. 148) reports that data for Belgium are based on fiscal data and are not strictly comparable over time. Alternative estimates based on household surveys from the University of Antwerp suggest broad stability of poverty rates in the late 1980s and a slight increase in the first half of the 1990s.

23 Here, we do not breakdown poverty rate of total population into vulnerable (age) groups. Indeed, some (age) groups are typically over-represented among the poor - the vulnerable for whom social programs are supposed to guarantee a minimum income – as children and the elderly. Caminada and Goudswaard (2009a) analyze on a cross-country basis how social income transfers affect their poverty status.

Table 3: Change of poverty scores over time of total population; LIS and OECD

	LIS Poverty rates 1979-2005					OECD poverty rates mid 1980s - mid 2000s		
	Interval		Begin	End	Change	Mid-1980s	Mid-2000s	Change mid-2000s - mid 1980's
	Begin	End	PL 50	PL 50	PL 50	PL 50	PL 50	PL 50
Australia	1981	2003	11.3	12.2	0.9	n.a.	12.4	
Austria	1987	2000	6.7	7.7	1.1	6.1	6.6	3.2
Belgium	1985	2000	4.5	8.1	3.6	14.6	8.8	-4.2
Canada	1981	2004	12.4	13.0	0.6	10.7	12.0	1.3
Czech Republic	1992	1996	2.3	4.9	2.6	4.8	5.8	1.1
Denmark	1987	2004	10.1	5.6	-4.6	6.0	5.3	-0.7
Finland	1987	2004	5.4	6.5	1.2	5.1	7.3	2.2
France	1981	2000	7.3	7.3	0.0	8.2	7.1	-1.1
Germany	1981	2000	5.3	8.4	3.1	6.3	11.0	4.8
Greece	1995	2000	15.4	14.3	-1.2	13.4	12.6	-0.8
Hungary	1991	1999	8.2	6.4	-1.8	n.a.	7.1	
Ireland	1987	2000	11.1	16.2	5.0	10.6	14.8	4.8
Italy	1986	2000	10.5	12.8	2.3	10.3	11.4	1.1
Japan	n.a.	n.a.				12.0	14.9	2.9
Luxembourg	1985	2004	5.3	8.8	3.5	5.4	8.1	2.7
Mexico	1984	2004	20.8	18.4	-2.4	20.7	18.4	-2.3
Netherlands	1983	1999	3.9	4.9	1.0	3.5	7.7	4.2
New Zealand	n.a.	n.a.				6.2	10.8	4.6
Norway	1979	2004	4.9	7.1	2.2	6.4	6.8	0.4
Poland	1986	2004	9.7	11.5	1.8	n.a.	14.6	
Portugal	n.a.	n.a.				13.0	12.9	-0.2
Slovakia	1992	1996	2.0	7.0	5.0	n.a.	8.1	
Spain	1980	2000	12.1	14.2	2.0	14.1	14.1	-0.4
Sweden	1981	2005	5.3	5.6	0.3	3.3	5.3	2.0
Switzerland	1982	2002	7.6	7.6	-0.1	n.a.	8.7	
Turkey	n.a.	n.a.				16.4	17.5	1.1
United Kingdom	1979	2004	9.2	11.6	2.4	6.2	8.3	2.1
United States	1979	2004	15.8	17.3	1.5	17.9	17.1	-0.8
Mean [a]	1985	2002	8.8	910.3	1.6	9.4	10.7	1.3
Coefficient of variation			0.52	0.40	-0.11	0.51	0.38	-0.13
Mean EU15 [a]	1985	2001	8.3	11.1	2.8	7.0	8.3	1.2
Coefficient of variation			0.40	0.38	-0.02	0.56	0.41	-0.16
Mean Non-EU15 [a]	1985	2002	9.5	9.3	-0.2	11.9	12.9	1.0
Coefficient of variation			0.59	0.41	-0.18	0.47	0.35	-0.12

a Calculated for those countries for with data points at the beginning and at the end of the time interval are available; excluding Belgium.

Source: LIS (2009), OECD (2008), and own calculations

4.2 Linkages between poverty rates and gross social spending over time

To test for (in)stability over time, we investigate the relationship between poverty rates and several gross social expenditure indicators for a few moments in time for all countries. We regressed level of poverty rates across countries with the level of several social expenditure ratios. The coefficients are estimated using a linear ordinary least square regression model of cross-sectional data of the following form:

$$Y_{i,t} = A + \beta X_{i,t} + u_{i,t} \qquad (1)$$

The term on the left-hand side of equation (1) is the level of the poverty indicator of country *i* at time-period *t*. The level of gross social expenditure as percentage of GDP in country *i* at period *t* is given by $X_{i,t}$, and $u_{i,t}$ is a disturbance term. If the coefficient β is negative, we say that gross social expenditures alleviate poverty across countries. A is the intercept. The

higher the value of β, the stronger the antipoverty effect of an additional point of GDP spend on social expenditure.

Table 4 presents the results of our simple OLS-regression analysis for three moments in time; around the mid-1980's, the mid-1990's, and the mid-2000's. Here a 50 percent-of-median-income poverty threshold is applied to OECD poverty rates; the analogous regressions using LIS poverty rates with a 60 percent poverty line are reported in Appendix Tables A3. Our findings for both OECD and LIS poverty rates are rather similar, and steady over time. The results are sensitive to the social indicator used. We find pretty good fits for gross public social expenditures, both for non-EU15 and EU15 countries. However, the inclusion of private social expenditures alters the picture. Still, we find a significant negative relationship between social spending and poverty rates for all countries and for EU15 countries, but not for non-EU15 countries separately. We find a fit again for non-EU15 countries when social expenditures for health programs are excluded from social spending ratios.

We conclude that the relationship between poverty rates and gross social spending across countries is rather insensitive to the business cycle, but does depend on the social spending indicator used.

Table 4: Linkages between OECD poverty rates (PL 50) and several social spending ratios, around 1985, 1995 and 2005

		Non-EU15			*EU15*			*All 24 countries*		
		Int.	X1	Adj R^2	Int.	X1	Adj R^2	Int.	X1	Adj R^2
1985	*Gross public social expenditure*	21.6** (7.92)	-0.731* (-3.58)	0.663	18.6** (4.30)	-0.469* (-2.40)	0.254	19.7** (9.64)	-0.530** (-5.14)	0.548
1995		24.2** (11.86)	-0.741** (-5.82)	0.825	22.1** (7.62)	-0.550** (-4.61)	0.591	22.1** (14.40)	-0.564** (-7.99)	0.741
2005		26.6** (7.62)	-0.810** (-3.96)	0.647	24.2** (5.82)	-0.609** (-3.59)	0.460	23.5** (11.68)	-0.593** (-6.49)	0.641
1985	*Gross total social expenditure*	19.5** (5.13)	-0.495 (-1.96)	0.320	19.6** (5.16)	-0.483** (-3.02)	0.367	19.4** (9.11)	-0.474** (-4.77)	0.509
1995		21.6** (6.64)	-0.486* (-2.82)	0.498	21.7** (6.53)	-0.481** (-3.88)	0.502	21.5** (11.29)	-0.475** (-6.08)	0.621
2005		21.2** (5.27)	-0.395 (-2.08)	0.294	26.1** (7.62)	-0.615** (-4.93)	0.624	23.3** (10.59)	-0.508** (-5.83)	0.589
1985	*Idem, excluding Health*	20.1** (6.34)	-0.795* (-2.59)	0.488	18.8** (5.33)	-0.589** (-3.03)	0.369	18.9** (9.98)	-0.604** (-5.14)	0.548
1995		21.6** (9.98)	-0.714** (-4.34)	0.718	20.0** (7.07)	-0.540** (-3.97)	0.514	20.2** (13.47)	-0.564** (-6.95)	0.682
2005		21.8** (8.15)	-0.645* (-3.42)	0.572	19.4** (9.42)	-0.519** (-4.99)	0.631	20.8** (14.73)	-0.586** (-7.43)	0.702

Notes:
- Dependent variable: OECD poverty rate (poverty line 50 percent of median income).
- N = 24. OLS-regression; standardized regression coefficients are reported; t-statistics in parentheses. ** Significant at the 0.01 level; * significant at the 0.05 level. Data years: around 1985, around 1995, and around 2005. Adj R^2 refers to the adjusted correlation coefficient.
- Selected countries: Australia (missing value for 1985), Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland (missing values for 1985 and 1995), Turkey, the UK, and the United States.

Source: OECD (2008), SOCX (2008), and own calculations

5 TAKING INTO ACCOUNT DEMOGRAPHIC AND OTHER EFFECTS, 1985-2005

All OECD countries have experienced changes in their demographic profiles and the living arrangements of their populations over the last few decades. These changes have major implications not only for public budgets and other macro-economic aggregates, but also for income inequality and the distribution of economic risks between individuals. This is because these changes alter the size of different demographic groups and the ways income is shared

within households. Changes in demographic structures and smaller household sizes have dampened the economic welfare of OECD populations (OECD, 2008, p. 57). The European Commission (2009, p. 25) notes that besides the generosity of the social protection system (in terms of both level and coverage), some of the factors that influence the level and development of social protection spending in the Member States are the demographic structure of the population, particularly in terms of age, the level of unemployment/non-employment, and the role of private social services. Indeed, at the aggregate level the social expenditure indicator has its limitations in empirical research. Changes in expenditure ratios may be caused by numerous factors, including the number of beneficiaries as a result of an ageing population or changes in unemployment levels due to cyclical factors. For this reason, we ideally would control for demographic and cyclical factors. However, several methods to 'standardize' total social expenditures to control for changes in welfare demand (the number of beneficiaries) are criticized because of bias.[24]

5.1 General framework

To see whether demographic and other factors play a role, we include independent variables in respective regression estimations measuring the ratio of the elderly population (for old age pensions), the unemployment rate of total labor force (for the business cycle), and GDP per capita US dollars current prices and PPS (as a proxy of rich countries). These seem to be the most relevant (control) variables to be examined in a cross country perspective.[25] We begin by specifying a reduced form equation to explore the relationship between social expenditures and poverty rates:

Poverty rates = f { Social expenditure, Proportion elderly, Unemployment rate, GDP per capita} .

Again, we regress level of poverty rates across countries (Y) with the level of gross social expenditure as percentage of GDP (X1), with and without all other variable mentioned (X2 … Xn). Coefficients are estimated using a linear ordinary least square regression model of cross-sectional data of the following form:

$$Y_{i,t} = A + \beta X1_{i,t} + \delta X2_{i,t} + \ldots + \zeta Xn_{i,t} + u_{i,t} \qquad (2)$$

The term on the left-hand side of equation (2) is the level of the poverty indicator of country *i* at time-period *t*. The level of gross social expenditure as percentage of GDP in country *i* at period *t* is given by $X1_{i,t}$, the percentage of population aged 65 and above $X2_{i,t}$, and so forth. $u_{i,t}$ is a disturbance term. If the coefficient β is negative, we say that social expenditures alleviate poverty across countries. A is the intercept. The higher the value of β, the larger will be the antipoverty effect of an additional point of GDP spend on social expenditure.

We are interested in the effects that social expenditure have on poverty rates; the remaining covariates are included as controls for various social, demographic, and economic institutions. For the empirical model comparable poverty rates are directly generated from OECD (2008); a 50 percent median income poverty line is applied. SOCX (2008) offers us practical options for dependent variables: gross total social expenditures (total; public; private), and gross total social expenditures other than for health programs. Our control variables come from OECD (2009). It should be noted that some control variables are reasonable proxies for factors that would almost automatically produce demand for social spending. One could argue that demographic variables- such as the percent elderly - contaminate other covariates and should thus not be included in the empirical specifications below. Indeed, because the elderly receive a disproportionate share of the largest social expenditure categories - pensions and health care - there are spillover effects to the other covariates and to social spending; see

24 See Castles (2002 and 2004)), Clayton and Pontusson (1998), Van Vliet and Kaeding (2007) and Van Vliet (2010).

25 See among others Cantillon et al (2003), Kenworthy (1999, p. 12), OECD (2008, p. 147), Noland and Marx (2009, p. 329). It should be noted that other factors could to be examined as well in a cross-country analysis of poverty (for example individual and household characteristics, family structure and the number of workers in the household), but are not included in the empirical analysis due to lack of data.

Table A5 of the Appendix for details. Nevertheless, we do include this variable in the regressions that follow.

Clearly, quite a few problems are involved in a single equation cross-sectional model. For example, our framework addresses the effects of social spending on poverty rates, although the reverse causality begs our attention. For reasons explained below, we employ two approaches. We start with a straightforward approach: the relationship between poverty rates and social spending across countries is analyzed for several moments in time (section 5.2). This approach allows us to test for (in)stability over the business cycle. However, the small N problem applies to this analysis. Outliers and other influential circumstances have to be dealt with, especially in empirical analyses comprising statistical techniques based on standard deviations, such as OLS-regressions. Moreover, we would like to distinguish between non-EU15 countries and EU-15 countries to test the hypothesis if the results that we capture are merely reflections of the EU15 countries alone, or of other nations as well. For this investigation, we construct and employ a new model with a sampled set containing all data for 1985-2005 for all countries (section 5.3). Finally, we will employ a panel analysis to take into account spill-over effects of social spending to several other covariates (section 5.4). All these approaches provide evidence that social spending appears to be a driving force as far as differences in poverty levels across countries is concerned, although other factors may have some effect too.

5.2 Straightforward approach for several moments in time

Our first estimation strategy is uncomplicated as we use a OLS approach to test the significance of the estimated coefficients, for around 1985, around 1995 and for around 2005. The estimations are presented in Table 5. Note that the model – shown in Column 1 - generate similar results for the gross total social expenditure variable, which is significant (adjusted R^2>.59; p<.01), during last two decades. Social spending appears to be important as far as differences in poverty levels across countries are concerned, although the proportion elderly (in 1985) and unemployment rates (in 1985) seem to have some effect too; compare columns 1 and 2.

Table 5: Regression analysis for OECD poverty rates (PL 50) and gross total social expenditure, taken into account demographic and cyclical effects

	Mid-1980s		Mid-1990s		Mid-2000s	
	(1a)	(2a)	(1b)	(2b)	(1c)	(2c)
Gross total expenditure	-0.567** (-3.25)		-0.498** (-3.74)		-0.591** (-4.29)	
Population over 65 year (%)	-0.225 (-0.62)	-0.984* (-2.87)	0.227 (0.72)	-0.531 (-1.71)	0.139 (0.65)	-0.456 (-2.08)
Unemployment rate	0.454* (2.76)	0.199 (1.11)	0.057 (0.36)	-0.058 (-0.29)	0.320 (1.17)	0.091 (0.25)
GDP per capita, PPS	0.368 (1.26)	-0.065 (-0.20)	-0.137 (-1.04)	-0.256 (-1.54)	-0.013 (-0.21)	-0.107 (-1.39)
Intercept	15.8** (4.51)	21.1** (5.48)	21.2** (7.05)	23.3** (6.11)	21.6** (7.55)	20.5** (5.24)
Adj R^2	0.620	0.418	0.609	0.342	0.598	0.248
F-statistic	9.57**	6.04*	9.56**	4.81*	9.55**	3.52*

Notes:
- Dependent variable: OECD poverty rate (poverty line 50 percent of median income).
- N = 24. OLS-regression; standardized regression coefficients are reported; t-statistics in parentheses. ** Significant at the 0.01 level; * significant at the 0.05 level. Adj R^2 refers to the adjusted correlation coefficient.
- Selected countries: Australia (missing value for 1985), Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland (missing values for 1985 and 1995), Turkey, the United Kingdom, and the United States.

Source: OECD (2008), SOCX (2008), OECD.StatsExtracts (2010); and own calculations

Separately, most variables are significantly correlated with poverty levels across countries for all data years (1985, 1995, and 2005), with the exception of the unemployment rate; see Table A4 of the Appendix for details. Across countries unemployment is not well correlated with either market income poverty or disposable income poverty (Smeeding, 2005, p. 973, and Nolan and Marx, 2009, p. 328)). Moreover, we hardly find any significant coefficients if gross total social expenditure is taken into account as well. For example, we still find a pretty good fit for the social expenditure ratio in case a demographic control variable is taken into account, but the effect of the percentage of population aged 65 and above does *not* significantly differ from 0 (with the exception for the mid-1980's). This means that developments in the ageing of the population do not add that much to an explanation for differences in poverty outcomes across countries, although multicollinearity is involved in our multiple regression. The same holds for GDP per capita, and for several other insignificant control proxies we have applied (e.g. migration as percentage of total population as measured by the UN International Migration Report 2006; not shown). For the mid-1980's, we find a significant coefficient for the unemployment rate variable, but this result is not repeated for later years, probably due to both lower unemployment rates and more generous benefits since. All other results are rather steady over time (1985, 1995 and 2005).

5.3 Sampled data set model approach: decomposition of regions

In line with the work of Swabish et al (2006), we have constructed a sample with 103 different sets of observations for our 24 countries, using data from OECD (2008, on poverty rates), SOCX (2008, on social expenditures), and OECD.StatsExtracts (2010, on control variables). 21 countries enter with four or five observations (around 1985, around 1990, around 1995, around 2000 and around 2005), and 3 countries enter with less observations (Australia, Switzerland, and Turkey). This sampled data set model improves the degree of freedom substantially (N*T=103), allowing us to distinguish between non-EU15 countries (N*T=34) and EU15 countries (N*T=69).

Following the single equation format outlined in the previous section, we present Pearson correlation coefficients for poverty rates with a set of several social expenditures ratios, and on a set of demographic and macroeconomic covariates; see Table 6. We ran several Pearson correlation tests with a breakdown of public and private social expenditure, also correcting for social health expenditures. The results provide clear evidence: social spending does seem to matter as far as differences in poverty levels across countries is concerned, although the ageing of the population, unemployment rates and GDP per capita may have some effect too.

Table 6: Sampled data set model: Pearson Correlation Tests of OECD poverty rates (PL 50) and gross social expenditure, taken into account demographic and cyclical effects

	Non-EU15	*EU15*	*All 24 countries*
Gross total social expenditure	-0.612**	-0.667**	-0.716**
Gross public social expenditure	-0.817**	-0.664**	-0.785**
Gross private social expenditure	0.037	-0.176	-0.005
Gross total social expenditure other than Health	-0.761**	-0.703**	-0.784*
Population over 65 (%)	-0.582**	-0.064	-0.496**
Unemployment % of total labor force	0.045	0.352**	0.076
GDP per capita US dollars, PPS	-0.364*	-0.181	-0.237
N*T	34	69	103

Notes:
- Dependent variable: OECD poverty rate (poverty line 50 percent of median income).
- Pearson Correlation Coefficient are reported. ** Significant at the 0.01 level; * significant at the 0.05 level.
- N*T = 103. Sampled dataset with observations around 1985 (N=22), around 1990 (N=11), around 1995 (N=23), around 2000 (N=23), and around 2005 (N=24).
- Selected countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States.

Source: OECD (2008), SOCX (2008), OECD.StatsExtracts (2010); and own calculations

Table 6 reports some profound differences between non-EU15 and EU15 countries. For non-EU15 countries the correlation coefficient of poverty and public social spending is higher compared to EU15 countries, indicating that especially public programs are more targeted to the ones in need outside Europe. Moreover, an increase of private social arrangements by one percent of GDP alleviate poverty in EU15 countries, while private arrangements increases poverty in non-EU15 countries (although both correlation coefficients are not significant).
The correlation coefficient of the unemployment rate is statistically significant, although solely for the group of EU15 countries. The coefficient is positive, suggesting that (higher) poverty rates and (higher) unemployment rates goes along in EU15. This is an interesting finding, because other studies including non-EU15 countries do find that unemployment is not well correlated with either market income poverty or disposable income poverty (Smeeding, 2005, p. 973).
Our other control variable - GDP per capita as a proxy of rich countries – does not affect poverty levels in EU15 countries, although this correlation coefficient is significant for non-EU15 countries.
Note that the correlation coefficient for the proportion of elderly does not statistically differs from zero in EU15 countries. This may come as a surprise, because it was expected that the ageing of the population increases poverty. Even in Europe minimum safety nets are rarely sufficient to protect people from poverty; only a few countries provide workless households with a minimum income and related (i.e. housing) benefits that are sufficient to lift them close to or above the poverty line. However, this result fit in with empirical findings by others. Osberg (2000), for example, showed that the fraction of elderly households in a nation does not affect income distribution comparisons across countries largely, because the elderly have

levels of inequality that are similar to those of the non-elderly. A comprehensive study of demographic effects was carried out by Rainwater and Smeeding (2003). They took the demography of each nation (relative numbers of single parents, elders, families with children, childless adults, etc.) and its income package (taxes and benefits) and simulated the U.S. demography with the packages of each nation. The effects of demography were very small - the effects of the income package accounted for over 90 percent of the differences across nations.
It should however be noted that establishing causation is problematic in such a single equation cross-sectional model. One could argue that causation plausibly runs from the right hand side and thus a higher level of poverty rates may well produce greater needs for social expenditures. Moreover, our multiple Pearson correlation matrix in Table A5 of the Appendix illustrates that several independent variables are highly correlated, especially social expenditure ratios with the proportion of elderly among total population. Since the elderly receive a large share of the largest social expenditure categories - social retirement and health care - there are spill-over effects to the other covariates of social spending. To tackle this problem, we will employ a method of ordinary least squares with panel-corrected standard errors and a first-order autocorrelation correction.

5.4 Panel analysis

So far, we analyzed the data in different parts, either per year of per region. To get a better understanding of the relationship between poverty and gross social expenditure, while taking into account the demographic features and economic cycles, the study uses a pooled time series analysis of the 24 countries and the five points in time. We analyze the data using Beck and Katz's (1995) method of ordinary least squares with panel-corrected standard errors (OLS-PCSE) and a first-order autocorrelation correction (AR1). We construct models for various kinds of social expenditure. Model 1 includes gross total social expenditure, Model 2 adds in gross public social expenditure, Model 3 contains both public and private social expenditures, and Model 4 examines gross total social expenditure other than health.
The results of the pooled time series analysis are reported in Table 7 (the models do include country and period dummies, but these are not included in the table). With regards to the effects of ageing, unemployment, and GDP per capita, the following can be concluded. First, there is a positive and significant relationship between ageing and poverty levels. Secondly, although unemployment has a positive sign in all models, its effect is not always significant. This may indicate that the relationship between unemployment and poverty is related to the type of social expenditure. Thirdly, GDP per capita turns out not to be significantly related to poverty levels if the other variables are also included in the model. Overall, the models shows that gross total social expenditure and gross public social expenditure are negatively related to poverty, but that private social expenditure and gross total social expenditure other than health are not significantly related to levels of poverty. Moreover, the resulting outcomes do differ compared to the earlier findings reported in this paper; the coefficients are lower, because they are controlled for demographic and cyclical factors.

Table 7: OLS-PCSE Models of OECD poverty rates (PL 50)

	Model 1	Model 2	Model 3	Model 4
Gross total social expenditure	-0.268** (-3.23)			
Gross public social expenditure		-0.230** (-3.27)	-0.258** (-3.33)	
Gross private social expenditure			-0.349 (-1.75)	
Gross total social expenditure other than Health				-0.203 (-1.66)
Population over 65 (%)	0.263** (2.63)	0.232** (2.66)	0.260** (2.73)	0.201** (2.60)
Unemployment % of total civilian labor force	0.089** (2.75)	0.071* (2.24)	0.086** (2.72)	0.057 (1.01)
GDP per capita US dollars, PPS	0.042 (0.93)	0.040 (0.93)	0.044 (0.90)	0.053 (1.20)
Intercept	12.050** (17.08)	11.052** (12.10)	12.190** (21.43)	10.611** (11.15)
R^2	0.939	0.934	0.939	0.931
Wald	221.19**	396.13**	127.74**	511.99**
N*T	103	103	103	103

Notes:
- Dependent variable: OECD poverty rate (poverty line 50 percent of median income).
- Standardized Coefficients are reported. Standard Errors between brackets. ** Significant at the 0.01 level; * significant at the 0.05 level.
- N*T = 103. Sampled dataset with observations around 1985 (N=22), around 1990 (N=11), around 1995 (N=23), around 2000 (N=23), and around 2005 (N=24).
- Country and period dummies are included.
- Selected countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States.

Source: OECD (2008), SOCX (2008), OECD.StatsExtracts (2010); and own calculations

6. CONCLUSION

Poverty alleviation is an important objective of many countries. This paper analyzes the effect of social transfer policies on poverty. A vast literature claims that high social effort goes along with low poverty levels across countries. This paper systematically analyzes this claim. We take into account 28 OECD countries and distinguish between EU15 countries and non-EU15 countries – with special attention to the United States - to investigate whether both groups of countries generate (dis)similar results with their systems of income transfers. We employ several social expenditure ratios (as a proxy for social effort) and correct for the impact of the tax system and for private social arrangements, using OECD methodology. Other institutional features considering social spending are taken into account too (health programs). And finally ,we control for demographic and macro-economic differences across countries. We performed several tests with the most recent data (LIS, OECD, and SOCX) for the period 1985-2005.
Our results are less clear-cut than earlier findings. We still find a quite strong negative relationship between the level of *public* social expenditure and poverty among 28 OECD countries. However, for non-EU15 countries this relationship is stronger - even when expenditures for health programs are excluded. The results alter considerably if *private* social expenditures are included as well. For non-EU15 countries in our sample, we do not find

evidence for a negative correlation between the level of *total* social spending and the incidence of poverty. In contrast, for the group of EU15 countries private social arrangements do matter as far as poverty alleviation is concerned. These results did not alter over the last two decades.

Demographic and macro-economic (control) variables are important as well. We developed and employed multiple linear regression models to control for these complex interrelationships. Our results point at one direction: *gross* social spending is *the* driving force as far as differences in poverty levels across countries are concerned, although the ageing of the population and unemployment rates have some explanatory power, both for non-EU15 countries and for EU15 countries..

Our analysis captures another effect as well. It is essential to control for the impact of taxes on the social expenditure ratios used. After controlling for taxes, the linkage between social effort and poverty levels across countries becomes insignificant. Considering that we have a much better – although still not perfect - measure of what governments really devote to social spending with these corrections on expenditure statistics, the familiar claim that higher social expenditure goes along with lower poverty levels does *not* hold across the 28 examined countries examined. We believe that our comparison of the impact of several social expenditure ratios on poverty levels in EU15 countries and in other non-EU15 and the United States emphasize that taking into account both the public/private-mix and the impact of the tax system on social expenditure ratios really matters for comparative welfare state research and for policy makers who want to reduce poverty.

REFERENCES

Adelantado, J., and E. Calderón Cuevas (2006), 'Globalization and the welfare state: the same strategies for similar problems?', *Journal of European Social Policy*, 16(4), pp. 374-386.

Adema, W. (2001), 'Net Social Expenditure: 2nd edition', *Labour Market and Social Policy - Occasional Papers*, No. 52, Paris: OECD.

Adema, W., and M. Ladaique (2005), 'Net Social Expenditure, 2005 edition', *OECD Social, Employment and Migration Working Paper* 29, Paris: OECD.

Alesina, A., and E.L. Glaeser (2004), *Fighting Poverty in the US and Europe: A World of Difference*, Oxford: Oxford University Press.

Armstrong, K.A. (2006), 'The 'Europeanisation' of Social Exclusion: British Adaption to EU Co-ordination', *British Journal of Politics & International Relations* 8 (1), pp. 79-100.

Atkinson, A.B. (1987), 'On the measurement of poverty', *Econometrica* 55 (4), pp. 749-764.

Atkinson, T. (2002), 'Social Inclusion and the European Union', *Journal of Common Market Studies* 40 (4), pp. 625-643.

Atkinson, A.B. (2003), 'Income Inequality in OECD Countries: Data and Explanations', *CESifo Economic Studies* 49(4), pp. 479-513.

Atkinson, A.B., and A. Brandolini (2001), 'Promise and Pitfalls in the Use of Secondary Data-Sets: Income Inequality in OECD Countries as a Case Study', *Journal of Economic Literature* 39 (3) (September), pp. 771-800.

Atkinson, T., B. Cantillon, E. Marlier and B. Nolan (2002), *Social Indicators. The EU and Social Inclusion*, Oxford: University Press.

Atkinson, A.B., L. Rainwater and T.M. Smeeding (1995), 'Income Distribution in OECD Countries: Evidence from the Luxembourg Income Study', OECD Social Policy Studies 18, Paris.

Beck, N., and J.N. Katz (1995), 'What to Do (and Not to Do) With Time-Series Cross-Section Data', *American Political Science Review* 89(3), pp. 634-647.

Behrendt, Ch. (2000), 'Is there income poverty in Western Europe? Methodological pitfalls in the measurement of poverty in a comparative perspective', *Luxembourg Income Study Working Paper Series* 258, Luxembourg.

Behrendt, Ch. (2002), 'Holes in the safety net? Social security and the alleviation of poverty in a comparative perspective', in: R. Sigg and Chr. Behrendt (eds.) *Social Security in the Global Village,* International Social Security Series, Volume 8, New Brunswick / London: Transaction Publishers, pp. 333-358.

Bourguignon, F., L. Pereira da Silva and N. Stern (2002), 'Evaluating the Poverty Impact of Economic Policies: Some Analytical Challenges', Stern - Washington DC: The World Bank (Mimeo), 2002.

Brady, D. (2004), 'The welfare state and relative poverty in rich western democracies, 1967-1997', *Luxembourg Income Study Working Paper Series* 390, Luxembourg.

Brandolini, A. (2006), 'Measurement of income distribution in supranational entities: The case of the European Union', *Luxembourg Income Study Working Paper Series* 452, Luxembourg.

Brandolini, A., and T.M. Smeeding (2007), 'Inequality Patterns in Western-Type Democracies: Cross-Country Differences and Time Changes', *Luxembourg Income Study Working Paper Series* 458, Luxembourg.

Brandolini, A., and T.M. Smeeding (2008), 'Inequality: International Evidence', in: S.N. Durlauf and L.E. Blume (eds.), *The New Palgrave Dictionary of Economics*, Basingstoke: Palgrave Macmillan, pp. 1013-1021.

Caminada, K., and K.P. Goudswaard (2001), 'International Trends in Income Inequality and Social Policy', *International Tax and Public Finance* 8 (4), pp. 395-415.

Caminada, K., and K. Goudswaard (2002), 'Income Distribution and Social Security in an OECD Perspective', in: R. Sigg and Chr. Behrendt (eds.), *Social Security in the Global Village*, International Social Security Series, Volume 8, New Brunswick / London: Transaction Publishers, pp. 163-188.

Caminada, K., and K.P. Goudswaard (2005), 'Are Public and Private Social Expenditures Complementary?', *International Advances in Economic Research* 11 (2), pp. 175-189.

Caminada, K. and K.P. Goudswaard (2009a), 'Effectiveness of Poverty Reduction in the EU: a Descriptive Analysis', *Poverty & Public Policy*, 1 (2), Article 5, pp. 1-51.

Caminada, K., and K.P. Goudswaard (2009b), 'Social expenditure and poverty reduction in the EU15 and other OECD countries', *Research Memorandum Department of Economics 2009.02*, Leiden University.

Cantillon, B., I. Marx and K. Van den Bosch (2003), 'The puzzle of egalitarianism: About the relationships between employment, wage inequality, social expenditures and poverty', *European Journal of Social Security*, 5(2), pp.108-127.

Castles, F.G. (2002), 'Developing New Measures of Welfare State Change and Reform', *European Journal of Political Research* 41(5), pp. 613-641.

Castles, F.G. (2004), *The Future of the Welfare State: Crisis Myths and Crisis Realities*, Oxford: University Press.

Clayton, R., and J. Pontusson (1998), 'Welfare-State Retrenchment Revisited: Entitlement Cuts, Public Sector Restructuring, and Inegalitarian Trends in Advanced Capitalist Societies', *World Politics* 51(1), pp. 67-98.

Danziger, S., R. Haveman and R. Plotnick (1981), 'How Income Transfer Programs Affect Work, Savings and Income Distribution: A Critical Assessment', *Journal of Economic Literature* 19 (September), pp. 975-1028.

Duclos, J-Y, D.E. Sahn and S.D. Younger (2007), 'Using Ordinal Approach to Multidimensional Poverty Analysis', in: N. Kakwani and J. Silber (eds.), *The Many Dimensions of Poverty*, New York: Palgrave Macmillan, pp. 244-261.

Esping-Andersen, G., and J. Myles (2009), 'Economic Inequality and the Welfare State', in: W. Salverda, B. Nolan and T.M. Smeeding (eds.), *The Oxford Handbook of Economic Inequality*, New York: Oxford University Press, pp. 639-664.

European Commission (2008), *Joint Report on Social protection and social inclusion 2008. Social inclusion, pensions, healthcare and long term care*, Luxembourg: Office for Official Publications of the European Communities.

European Commission (2009), *Social protection and social inclusion 2008: EU indicators*, Commission Staff Working Document, Brussels: European Commission, Directorate-General for Employment, Social Affairs and Equal Opportunities.

Eurostat (2005), 'The continuity of indicators during the transition between ECHP and EU-SILC', Working Paper and Studies, Eurostat.

Eurostat (2009), Structural Indicators EU - Social Cohesion, http://epp.eurostat.ec.europa.eu/.

Förster, M. (1993), 'Comparing Poverty in 13 OECD Countries: Traditional and Synthetic Approaches,' *Luxembourg Income Study Working Paper* 100, Luxembourg.

Förster, M., and M. Pearson (2002), 'Income distribution and poverty in the OECD area: trends and driving forces', *OECD Economic Studies*, No. 34, 2002/1, Paris: OECD, pp. 7-39.

Förster, M., and M. Mira d'Ercole (2005), 'Income Distribution and Poverty in OECD Countries in the Second Half of the 1990s', *OECD Social, Employment and Migration Working Papers*, no. 22.

Gottschalk, P. and T.M. Smeeding (2000), 'Empirical Evidence on Income Inequality in Industrialized Countries', in: A.B. Atkinson and Bourgignon, F. (eds), *Handbook of Income Distribution*, New York: Elsevier-North Holland Publishers, pp. 261-308.

Gottschalk, P., and T.M. Smeeding (1997), 'Cross-National Comparisons of Earnings and Income Inequality', *Journal of Economic Literature* 35 (June), pp. 633-687.

Guio, A.-C. (2005), 'Income poverty and social exclusion in the EU25', *Statistics in focus: population and social conditions*, 13/2005, pp. 1-7.

Hagenaars, A. J. M (1986), *The Perception of Poverty*, Amsterdam: North-Holland.

Hagenaars, A., and K. de Vos (1987), 'The definition and measurement of poverty', *The Journal of Human Resources* 23 (2), pp. 211-221.

Haveman, R. (2008), 'What Does It Mean to Be Poor in a Rich Society?', *Institute for Research on Poverty Discussion Paper* 1356-08, Madison.

Kakwani, N., and J. Silber (2007), 'Introduction: On Quantitative Approaches to Multidimensional Poverty Measurement', in: N. Kakwani and J. Silber (eds.), *The Many Dimensions of Poverty*, New York: Palgrave Macmillan, pp. xviii-xxiv.

Kakwani, N., and J. Silber (eds.) (2007), *The Many Dimensions of Poverty*, New York: Palgrave Macmillan.

Kakwani, N., and J. Silber (eds.) (2008), *Quantitative Approaches to Multidimensional Poverty Measurement*, New York: Palgrave Macmillan.

Kangas, O., and J. Palme (2000), 'Does Social Policy Matter? Poverty Cycles in OECD Countries', *International Journal of Health Services* 30(2), pp. 335-352.

Kenworthy, L. (1999), 'Do Social Welfare Policies Reduce Poverty? A Cross-National Assessment', *Social Forces* 77 (3), pp. 1119-1139.

Kim, H. (2000), 'Anti-Poverty Effectiveness of Taxes and Income Transfers in Welfare States', *International Social Security Review* 53 (4) , pp. 105–129.

Kühner, S. (2007), 'Country-Level Comparisons of Welfare State Change Measures: Another Facet of the Dependent Variable Problem within the Comparative Analysis of the Welfare State?', *Journal of European Social Policy* 17 (1), pp. 5-18.

Luxembourg Income Study (2009), *LIS Key Figures on Poverty*, Luxembourg (www.lisproject.org).

Marcus, J. and S. Danziger (2000), 'Income Poverty in Advanced Countries', in: A.B. Atkinson, and Bourguignon, F. (eds.), *Handbook of Income Distribution*, New York: Elsevier-North Holland Publishers.

Martin, M., and K. Caminada (2009), 'Welfare Reform in the United States. A descriptive policy analysis'. *Department of Economics Research Memorandum 2009.03*, Leiden University.

Nolan, B., and I. Marx (2009), 'Economic Inequality, Poverty, and Social Exclusion' in: W. Salverda, B. Nolan and T.M. Smeeding (eds.), *The Oxford Handbook of Economic Inequality*, New York: Oxford University Press, pp. 315-341.

Notten, G., and C. de Neuborg (2007), 'Relative or absolute poverty in the US and EU? The battle of the rates', *MPRA Working Paper* 5313, Munich.

OECD (2007), *$ocial €xpenditure 1980-2003. Interpretative guide of SOCX*, available at www.oecd.org/els/social/expenditure.

OECD (2008), *Growing unequal? Income distribution and Poverty in OECD Countries*, Paris: OECD.

Osberg, L. (2000), 'Long Run Trends in Economic Inequality in Five Countries—A Birth Cohort View', *Luxembourg Income Study Working Paper Series* 222, Luxembourg

Pestieau, P. (2006), *The Welfare State in the European Union: Economic and Social Perspectives,* Oxford: University Press.

Praag, B.M.S. van (1968), *Individual Welfare Functions and Human Behavior*, Amsterdam: North-Holland.

Praag, B.M.S. van, A.J. M. Hagenaars, and H. van Weeren (1982), 'Poverty in Europe', *Review of Income and Wealth* 28 (3), pp. 345–359.

Rainwater, L., and T. Smeeding (2003), *Poor Kids in a Rich Country*, New York: Russell Sage Foundation.

Sainsbury, D., and A. Morissens (2002), 'European anti-poverty policies in the 1990s: Toward a common safety net', *Luxembourg Income Study Working Paper Series* 307, Luxembourg.

Scruggs, L., and J.P. Allan (2006), 'The Material Consequences of Welfare States: Benefit Generosity and Absolute Poverty in 16 OECD Countries', *Comparative Political Studies* 39, pp. 880-904.

Smeeding, T. M. (2005), 'Public Policy, Economic Inequality, and Poverty: The United States in Comparative Perspective', *Social Science Quarterly*, vol. 86 (supplement), pp. 955-983.

Smeeding, T. (2006), 'Poor People in Rich Nations: The United States in Comparative Perspective', *Journal of Economic Perspectives* 20 (1), pp. 69-90.

Smeeding, T., L. Rainwater, and G. Burtless (2000), 'United States Poverty in a Cross-National Context', *Luxembourg Income Study Working Paper Series* 244, Luxembourg.

SOCX OECD (2008), *Social Expenditure Database 1980-2005* (www.oecd.org/els/social/expenditure).

Super, D.A. (2008), 'Privatization, Policy Paralysis, and the Poor', *California Law Review* 96 (393), pp. 393-469.

Swabish, J., T.M. Smeeding and L. Osberg (2006), 'Income Distribution and Social Expenditures: A Cross National Perspective', in: D.B. Papadimitriou (ed.), *The Distributional Effects of Government Spending and Taxation*, Northampton MA: Edward Elgar Publishing, pp. 247-288.

Thorbecke, E. (2007), 'Multidimensional Poverty: Conceptual and Measurement Issues', in: N. Kakwani and J. Silber (eds.), *The Many Dimensions of Poverty*, New York: Palgrave Macmillan, pp. 3-19.

Vliet, O. van, M. Kaeding (2007), 'Globalisation, European Integration and Social Protection – Patterns of Change or Continuity?', *Department of Economics Research Memorandum 2007.06*, Leiden University.

Vliet, O. van (2010), 'Divergence within Convergence: Europeanisation of Social and Labour Market Policies', *Journal of European Integration*, forthcoming.

APPENDIX: DATA AND CORRELATION TESTS ACROSS COUNTRIES

LIS Key Figures on Poverty

- Over 30 countries
- Data years: between 1979 and 2005 (over 130 LIS surveys conducted in 31 countries between 1979-2005)
    - Poverty rates at PL 40, at PL 50, and at PL 60
- Source: Luxembourg Income Study (LIS 2009)
- URL: http://www.lisproject.org

OECD Poverty Rates

- OECD-30 and EU-15
- Data years: 2003, 2004, and 2005
    - Poverty rates at PL 40, at PL 50, and at PL 60
    - Poverty gap at PL 50
- OECD-26, and EU-15
- Data years: mid-1980s, 1990, mid-1990s, 2000, mid-2000's
    - Poverty rates at PL 50
- Source: OECD (2008)
- Download: January 10th, 2010

Structural Indicators EU - Social Cohesion

- EU-15 and EU-27
- Data years: 1995, 2000, 2005, and 2007
    - At-risk-of-poverty rate after social transfers at PL 40, PL 50, PL 60, and PL 70
- Source: Eurostat: ECHP/EU-SILC (2009)
- URL: http://epp.eurostat.ec.europa.eu/
- Download: April 13th, 2009

Gross public and private social expenditure (% GDP)

- OECD-30 and EU-15
- Data years: 1985-2005
    - Total
    - Old age
    - Survivors
    - Family
    - Health
    - Other social policy areas
- Source: OECD Social Expenditure Database (SOCX 2008)
- URL: www.oecd.org/els/social/expenditure
- Download: April 13th, 2009

Gross and net social expenditure (% GDP)

- OECD-26 and EU-14
- Data years: 1993, 1995, 1997, 2001, 2003, and 2005
    - Gross public social expenditure
    - Net public social expenditure
    - Gross total social expenditure
    - Net total social expenditure
- Source: Adema (2001); Adema and Ladaique (2005); Net Social Expenditure, 2008 edition
- URL: www.oecd.org/els/social/expenditure
- Download: April 13th, 2009

Controls

Population over 65 as % of population, Unemployment rate as % of total civilian labor force, and GDP per capita, US dollars (current prices and PPS)

- Data years: 1985, 1990, 1995, 2000 and 2005
- Source: OECD.StatsExtracts (2010)
- URL: http://webnet.oecd.org/wbos/
- Download: January 10th, 2010

KEY DATA 2001-2005

	Poverty total population						Social expenditure in % GDP, 2005				
	LIS (around 2001)			OECD (2003-2005)			Gross public	Net public	Gross total	Idem, excluding Health	Net total
	PL40	PL50	PL60	PL40	PL50	PL60					
EU15											
Austria	3.6	7.7	13.4	3.4	6.6	13.4	27.2	22.2	29.1	21.8	23.5
Belgium	3.7	8.1	16.1	3.1	8.8	16.2	26.4	23.1	30.9	23.1	26.8
Denmark	2.3	5.6	13.2	2.1	5.3	12.3	26.9	20.2	29.5	23.5	21.6
Finland	2.5	6.5	13.5	2.8	7.3	14.8	24.0	18.8	25.1	18.7	19.5
France	2.8	7.3	13.7	2.8	7.1	14.1	29.2	26.2	32.2	23.0	29.0
Germany	4.6	8.4	13.4	6.3	11.0	17.2	26.7	25.1	29.7	21.0	27.0
Greece	8.6	14.3	21.4	7.0	12.6	19.6	20.5	n.a.	22.2	16.6	n.a.
Ireland	7.4	16.2	22.5	7.0	14.8	23.3	16.7	15.2	18.1	11.0	16.1
Italy	7.4	12.8	20.0	6.6	11.4	19.7	25.0	21.5	27.0	20.1	23.1
Luxembourg	3.2	8.8	13.7	3.1	8.1	13.2	23.2	19.4	24.3	17.1	20.3
Netherlands	2.5	4.9	11.1	4.0	7.7	14.4	20.9	17.7	29.2	21.4	23.3
Portugal	n.a.	n.a.	n.a.	7.4	12.9	20.7	22.9	20.8	23.8	16.2	21.4
Spain	7.6	14.2	20.8	8.1	14.1	21.0	21.2	18.9	21.7	15.4	19.1
Sweden	2.6	5.6	12.0	2.5	5.3	11.4	29.4	23.1	32.2	25.4	24.8
United Kingdom	5.4	11.6	19.2	3.7	8.3	15.5	21.3	20.1	28.4	20.4	25.9
Non-EU15											
Australia	5.4	12.2	20.4	4.6	12.4	20.3	17.1	16.5	20.8	14.3	19.3
Canada	7.7	13.0	19.9	7.0	12.0	19.0	16.5	16.6	22.0	14.0	20.7
Czech Republic	2.0	4.9	10.5	3.0	5.8	11.5	19.5	18.0	19.9	13.6	18.2
Hungary	3.1	6.4	12.7	3.7	7.1	12.3	22.5	n.a.	22.6	16.5	
Japan	n.a.	n.a.	n.a.	9.5	14.9	20.8	17.7	17.6	21.2	14.7	20.7
Mexico	12.6	18.4	25.3	12.7	18.4	25.3	7.0	8.2	7.2	4.1	8.4
New Zealand	n.a.	n.a.	n.a.	n.a.	10.8	22.7	18.5	16.0	19.0	11.7	16.4
Norway	3.7	7.1	12.8	3.5	6.8	12.4	21.6	17.9	23.7	17.9	19.1
Poland	6.4	11.5	17.7	9.3	14.6	20.8	21.0	17.2	21.1	16.8	17.2
Slovakia	3.9	7.0	12.1	4.5	8.1	13.7	16.6	14.9	17.6	12.3	15.7
Switzerland	3.5	7.6	14.4	4.8	8.7	15.2	20.3	n.a.	28.7	21.6	n.a.
Turkey	n.a.	n.a.	n.a.	11.4	17.5	24.3	13.7	n.a.	13.7	8.3	n.a.
United States	11.4	17.3	24.1	11.4	17.1	23.9	15.9	17.1	26.0	13.2	25.3
Mean	5.2	9.9	16.4	5.7	10.6	17.5	21.1	18.8	23.8	16.9	20.9
Max =	12.6	18.4	25.3	12.7	18.4	25.3	29.4	26.2	32.2	25.4	29.0
Min =	2.0	4.9	10.5	2.1	5.3	11.4	7.0	8.2	7.2	4.1	8.4
Coefficient of variation	0.56	0.41	0.27	0.53	0.37	0.25	0.24	0.20	0.24	0.29	0.22
N	24	24	24	27	28	28	28	24	28	28	24
Mean EU15	4.6	9.4	16.0	4.7	9.4	16.4	24.1	20.9	26.9	19.6	23.0
Max =	8.6	16.2	22.5	8.1	14.8	23.3	29.4	26.2	32.2	25.4	29.0
Min =	2.3	4.9	11.1	2.1	5.3	11.4	16.7	15.2	18.1	11.0	16.1
Coefficient of variation	0.47	0.38	0.24	0.44	0.32	0.21	0.14	0.14	0.15	0.19	0.15
N	14	14	14	15	15	15	15	14	15	15	14
Mean Non-EU15	6.0	10.5	17.0	7.1	11.9	18.6	17.5	16.0	20.3	13.8	18.1
Max =	12.6	18.4	25.3	12.7	18.4	25.3	23	18	29	21.6	25
Min =	2.0	4.9	10.5	3.0	5.8	11.5	7	8	7	4.1	8
Coefficient of variation	0.57	0.42	0.29	0.48	0.35	0.26	0.22	0.17	0.26	0.30	0.23
N	10	10	10	12	13	13	13	10	13	13	10

Source: LIS (2009), OECD (2008), SOCX (2008); and own calculations.

KEY DATA 1985-2005

	Poverty rates (OECD, PL 50)						Gross total social expenditure in % GDP				
	around 1985	around 1990	around 1995	around 2000	around 2005		1985	1990	1995	2000	2005
Australia	n.a.	n.a.	11.4	12.2	12.4		13.2	14.4	21.1	23.2	20.8
Austria	6.1	n.a.	7.4	9.3	6.6		26.1	26.1	28.6	28.3	29.1
Belgium	14.6	n.a.	10.8	10.4	8.8		26.9	26.5	28.4	27.7	30.9
Canada	10.7	n.a.	9.5	10.3	12.0		19.3	21.4	23.3	21.5	22.0
Denmark	6.0	6.2	4.7	5.1	5.3		24.6	27.2	31.3	28.2	29.7
Finland	5.1	n.a.	4.9	6.4	7.3		23.5	25.2	32.2	25.5	27.2
France	8.3	7.2	7.5	7.2	7.1		26.7	27.0	30.6	30.3	32.2
Germany	6.3	6.6	8.5	9.2	11.0		26.1	25.4	29.6	29.2	29.7
Greece	13.4	n.a.	13.9	13.5	12.6		16.0	18.6	19.3	21.5	22.2
Ireland	10.6	n.a.	11.0	15.4	14.8		22.9	16.4	17.3	14.9	18.1
Italy	10.3	10.7	14.2	11.8	11.4		21.7	23.9	24.1	25.5	27.0
Japan	12.0	n.a.	13.7	15.3	14.9		11.7	11.8	14.8	20.3	21.6
Luxembourg	5.4	n.a.	5.5	5.5	8.1		20.2	19.1	20.8	19.8	24.3
Mexico	20.7	n.a.	21.7	21.5	18.4		1.9	3.6	4.8	5.9	7.6
Netherlands	3.5	5.9	6.3	6.8	7.7		30.2	31.6	30.5	27.1	29.2
New Zealand	6.2	9.0	8.4	9.8	10.8		18.0	22.0	19.3	19.8	19.0
Norway	6.4	n.a.	7.1	6.3	6.8		18.6	24.2	25.0	23.4	23.7
Portugal	13.0	13.8	14.6	13.7	12.9		11.2	13.8	18.1	21.1	25.0
Spain	14.1	10.7	11.8	13.7	14.1		18.0	20.2	21.7	20.6	21.7
Sweden	3.3	3.6	3.7	5.3	5.3		30.5	31.4	34.5	31.2	32.2
Switzerland	n.a.	n.a.	n.a.	7.5	8.7		17.5	18.6	25.1	26.2	28.7
Turkey	16.4	n.a.	16.2	n.a.	17.5		4.2	7.6	7.5	n.a.	13.7
United Kingdom	6.2	12.7	10.9	10.2	8.3		24.4	22.2	26.9	27.0	28.4
United States	17.9	18.1	16.7	17.1	17.1		19.4	21.0	23.6	23.7	26.0
N	22	11	23	23	24		24	24	24	24	24

Source: OECD (2008) and SOCX (2008).

GROSS PUBLIC AND PRIVATE SOCIAL EXPENDITURE % GDP, 1985-2005

	Gross public social expenditure % GDP					Gross private social expenditure % GDP					Gross total other than health expenditure % GDP				
	1985	1990	1995	2000	2005	1985	1990	1995	2000	2005	1985	1990	1995	2000	2005
Australia	12.5	13.6	16.6	17.8	17.1	0.7	0.9	4.5	5.4	3.7	7.9	9.0	15.4	17.1	14.3
Austria	23.8	23.9	26.5	26.4	27.2	2.3	2.2	2.1	1.9	1.9	20.5	20.1	22.1	21.3	21.8
Belgium	26.0	24.9	26.2	25.3	26.4	0.8	1.6	2.1	2.4	4.5	21.2	20.0	21.9	21.1	23.1
Canada	17.0	18.1	18.9	16.5	16.5	2.3	3.3	4.4	5.0	5.5	12.7	14.1	16.0	14.3	13.9
Denmark	23.2	25.1	28.9	25.8	27.1	1.3	2.1	2.4	2.4	2.6	19.5	22.5	26.7	23.0	23.7
Finland	22.5	24.2	30.9	24.3	26.1	1.0	1.1	1.3	1.2	1.1	17.8	18.8	26.3	20.2	20.8
France	26.0	25.1	28.6	27.9	29.2	0.7	1.9	2.0	2.4	3.0	20.0	19.7	22.1	21.9	22.9
Germany	23.2	22.3	26.5	26.2	26.7	2.9	3.1	3.1	3.1	3.0	18.5	18.3	20.7	20.7	21.1
Greece	16.0	16.5	17.3	19.2	20.5	0.0	2.1	1.9	2.3	1.7	11.4	15.0	14.8	16.5	16.6
Ireland	21.3	14.9	15.7	13.6	16.7	1.6	1.4	1.7	1.3	1.3	16.6	11.5	11.9	9.8	11.0
Italy	20.8	20.0	19.9	23.3	25.0	0.9	4.0	4.2	2.2	2.1	16.4	17.7	18.8	19.5	20.1
Japan	11.4	11.4	14.3	16.5	18.6	0.4	0.3	0.5	3.8	3.0	7.0	7.2	9.1	14.3	15.1
Luxembourg	20.2	19.1	20.8	19.7	23.2	0.0	0.0	0.0	0.1	1.1	15.6	14.2	15.6	14.5	17.1
Mexico	1.9	3.6	4.7	5.8	7.4	0.0	0.1	0.1	0.1	0.2	0.9	1.6	2.3	3.2	4.5
Netherlands	25.3	25.6	23.8	19.8	20.9	4.9	6.1	6.7	7.3	8.3	24.2	25.3	23.7	20.9	21.4
New Zealand	17.9	21.8	18.9	19.4	18.5	0.1	0.2	0.5	0.5	0.4	13.5	16.1	13.4	13.3	11.6
Norway	17.8	22.3	23.3	21.3	21.6	0.8	1.9	1.7	2.0	2.1	14.1	19.9	20.7	18.4	17.9
Portugal	10.4	12.9	17.0	19.6	23.1	0.8	0.9	1.2	1.6	1.9	8.1	9.9	13.2	14.5	7.6
Spain	17.8	19.9	21.4	20.3	21.2	0.2	0.2	0.3	0.3	0.5	13.5	14.8	16.0	15.1	15.4
Sweden	29.4	30.2	32.1	28.5	29.4	1.1	1.2	2.4	2.7	2.8	22.8	24.0	28.3	24.9	25.5
Switzerland	14.5	13.4	17.5	17.9	20.3	3.0	5.3	7.6	8.3	8.4	12.8	13.8	19.2	19.9	21.6
Turkey	4.2	7.6	7.5	n.a.	13.7	0.0	0.0	0.0	n.a.	0.0	3.1	5.4	5.2	n.a.	8.3
United Kingdom	19.8	17.0	20.2	19.2	21.3	4.7	5.1	6.7	7.8	7.1	19.4	17.0	21.0	21.0	20.4
United States	13.1	13.4	15.3	14.5	15.9	6.3	7.6	8.3	9.2	10.1	12.1	11.9	12.9	13.0	13.3
N	24	24	24	23	24	24	24	24	23	24	24	24	24	23	24

Source: SOCX (2008)

CONTROLS 1985-2005

	Population over 65 as % of population					Unemployment rate (% of civilian labor force)					GDP per capita US dollars, current prices and PPS				
	1985	1990	1995	2000	2005	1985	1990	1995	2000	2005	1985	1990	1995	2000	2005
Australia	10.3	11.1	11.9	12.4	12.9	8.3	6.9	8.5	6.3	5.0	13,958	17,225	21,541	27,266	33,963
Austria	14.3	15.1	15.1	15.5	16.2	3.6	3.2	3.7	3.6	5.2	14,597	19,457	23,502	28,773	33,409
Belgium	13.8	14.9	15.9	16.8	17.2	12.6	8.9	13.0	7.0	8.4	13,831	18,687	22,450	27,628	32,141
Canada	10.2	11.3	12.0	12.6	13.1	10.6	8.1	9.5	6.8	6.8	15,504	19,569	22,737	28,485	35,106
Denmark	15.1	15.6	15.2	14.8	15.1	7.3	8.4	7.1	4.6	5.0	14,742	18,462	22,993	28,826	33,196
Finland	12.5	13.4	14.2	14.9	15.9	5.0	3.2	15.4	9.8	8.4	13,017	17,699	18,773	25,671	30,644
France	12.9	14.1	15.2	16.1	16.5	9.5	8.3	10.4	8.6	8.9	12,885	17,277	20,222	25,276	29,692
Germany	14.8	15.3	16.1	17.2	19.2	7.3	4.8	8.2	7.8	11.2	13,611	18,389	22,493	25,952	31,366
Greece	13.4	14.0	15.1	16.6	18.3	7.8	7.0	10.0	11.2	9.6	10,304	12,574	14,679	18,412	24,641
Ireland	10.8	11.4	11.4	11.2	11.1	16.7	13.0	12.2	4.3	4.3	8,709	12,991	17,908	28,680	38,675
Italy	12.9	14.6	16.2	17.7	19.3	10.4	11.5	11.7	10.7	7.8	12,877	17,595	21,112	25,597	28,144
Japan	10.3	12.1	14.6	17.4	20.2	2.6	2.1	3.2	4.7	4.4	12,934	18,786	22,512	25,608	30,312
Luxembourg	13.2	13.4	14.1	14.1	14.1	1.6	1.1	2.3	1.9	3.1	18,823	30,408	38,842	53,383	68,313
Mexico	4.0	4.1	4.3	4.7	5.2	3.0	2.7	6.9	2.6	3.5	6,014	6,939	7,536	10,046	12,462
Netherlands	12.1	12.8	13.2	13.6	14.2	11.1	7.6	7.1	2.7	4.7	13,145	17,630	21,552	29,409	35,111
New Zealand	10.3	11.1	11.5	11.8	12.0	4.2	7.8	6.3	6.0	3.7	12,483	13,822	17,143	20,706	24,626
Norway	15.7	16.3	15.9	15.2	14.7	2.6	5.3	5.0	3.5	4.6	14,303	17,887	23,597	36,130	47,319
Portugal	12.0	13.6	14.8	16.4	17.0	8.7	4.6	7.2	4.0	7.7	6,828	10,678	13,071	17,089	20,656
Spain	12.0	13.6	15.3	16.8	16.7	21.6	16.3	23.0	13.9	9.2	9,175	13,269	15,989	21,323	27,377
Sweden	17.2	17.8	17.5	17.3	17.3	3.1	1.8	9.2	5.9	7.8	14,876	19,319	21,867	27,761	32,298
Switzerland	14.6	15.0	15.2	15.8	15.9	0.9	0.5	3.4	2.6	4.3	18,774	24,448	26,622	31,622	35,478
Turkey	4.2	4.5	5.0	5.4	5.9	7.1	8.0	7.6	6.5	10.3	4,163	5,843	7,126	9,171	11,391
United Kingdom	15.2	15.7	15.8	15.8	16.0	11.3	6.9	8.6	5.5	4.7	11,954	16,322	19,716	26,074	32,724
United States	11.9	12.5	12.7	12.4	12.4	7.2	5.6	5.6	4.0	5.1	17,546	23,003	27,606	35,051	42,494
N	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24

Source: OECD.StatsExtracts (2010)

BI-VARIATE CORRELATION TESTS ACROSS COUNTRIES

A1: REGRESSION ANALYSIS FOR OECD POVERTY RATES AND GROSS AND NET SOCIAL SPENDING, AROUND 2003-2005

		Non-EU15			*EU15*			*All 28 countries*		
		Int.	X1	Adj R^2	Int.	X1	Adj R^2	Int.	X1	Adj R^2
PL 40	*Gross public social expenditure*	17.5**	-0.597**	0.452	13.0**	-0.345*	0.288	14.8**	-0.430**	0.491
		(5.21)	(-3.18)		(3.99)	(-2.58)		(8.11)	(-5.11)	
PL 50		25.4**	-0.772**	0.468	23.8**	-0.595**	0.423	22.1**	-0.549**	0.480
		(6.23)	(-3.40)		(5.51)	(-3.36)		(9.49)	(-5.09)	
PL 60		33.3**	-0.837**	0.416	33.0**	-0.685**	0.420	29.5**	-0.574**	0.412
		(6.84)	(-3.09)		(6.60)	(-3.34)		(10.63)	(-4.46)	
PL 40	*Net public social expenditure*	17.0*	-0.608	0.161	8.4	-0.189	-0.01	14.0**	-0.445**	0.277
		(2.74)	(-1.59)		(2.03)	(-0.96)		(5.01)	(-3.07)	
PL 50		23.7*	-0.723	0.141	17.2*	-0.382	0.059	20.8**	-0.551**	0.259
		(3.17)	(-1.57)		(2.87)	(-1.34)		(5.91)	(-3.01)	
PL 60		31.6**	-0.787	0.119	26.2**	-0.477	0.078	28.5**	-0.590**	0.231
		(3.69)	(-1.49)		(3.78)	(-1.45)		(7.07)	(-2.81)	
PL 40	*Gross total social expenditure*	13.3**	-0.303	0.152	14.1**	-0.350**	0.436	13.9**	-0.340**	0.395
		(3.59)	(-1.72)		(5.08)	(-3.44)		(7.03)	(-4.24)	
PL 50		19.3**	-0.367	0.133	25.2**	-0.587**	0.588	20.8**	-0.428**	0.382
		(4.24)	(-1.69)		(7.23)	(-4.58)		(8.33)	(-4.21)	
PL 60		26.9**	-0.408	0.123	34.2**	-0.660**	0.552	28.2**	-0.450**	0.331
		(5.16)	(-1.64)		(8.14)	(-4.27)		(9.68)	(-3.79)	
PL 40	*Gross total social expenditure other than Health*	14.1**	-0.498*	0.334	12.5**	-0.400**	0.478	13.4**	-0.444**	0.503
		(4.94)	(-2.55)		(5.82)	(-3.72)		(8.83)	(-5.23)	
PL 50		20.1**	-0.599*	0.295	22.8**	-0.682**	0.666	20.0**	-0.559**	0.494
		(5.74)	(-2.46)		(8.99)	(-5.37)		(10.64)	(-5.23)	
PL 60		28.2**	-0.698*	0.314	31.5**	-0.764**	0.621	27.6**	-0.601**	0.451
		(7.17)	(-2.55)		(10.1)	(-4.89)		(12.57)	(-4.82)	
PL 40	*Net total social expenditure* [a]	9.5	-0.120	-0.12	9.7*	-0.227	0.078	11.6**	-0.286*	0.143
		(1.73)	(-0.41)		(2.66)	(-1.45)		(4.07)	(-2.16)	
PL 50		13.6	-0.084	-0.12	18.5**	-0.405	0.148	17.6**	-0.345*	0.128
		(2.13)	(-0.24)		(3.55)	(-1.81)		(5.00)	(-2.09)	
PL 60		21.4*	-0.130	-0.11	27.0**	-0.471	0.146	25.3**	-0.380	0.120
		(2.95)	(-0.33)		(4.44)	(-1.80)		(6.35)	(-2.03)	

Notes:
[a] *Net* social expenditures are not available for Greece, Hungary, Switzerland, and Turkey.
- Dependent variable: OECD poverty rate (poverty line 40, 50 or 60 percent of median income).
- N = 28. OLS-regression; standardized regression coefficients are reported; t-statistics in parentheses. ** Significant at the 0.01 level; * significant at the 0.05 level. Adj R^2 refers to the adjusted correlation coefficient.
- Selected countries: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Luxembourg, Mexico, Netherlands, New Zealand (missing value PL 40), Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and United States.

Source: LIS (2009), SOCX (2008), and own calculations

A2: REGRESSION ANALYSIS FOR LIS POVERTY RATES AND GROSS AND NET SOCIAL SPENDING, AROUND 2001-2005

		Non-EU15			*EU15*			*All 24 countries*		
		Int.	X1	Adj R^2	Int.	X1	Adj R^2	Int.	X1	Adj R^2
PL 40	*Gross public social expenditure*	17.3** (5.49)	-0.639** (-3.70)	0.585	13.5** (3.96)	-0.367* (-2.64)	0.314	13.5** (6.92)	-0.389** (-4.39)	0.443
PL 50		24.8** (5.62)	-0.800** (-3.32)	0.528	25.8** (5.05)	-0.678** (-3.24)	0.422	21.0** (7.25)	-0.514** (-3.93)	0.386
PL 60		32.2** (6.20)	-0.857* (-3.02)	0.474	32.7** (5.82)	-0.691* (-3.00)	0.382	27.7** (8.48)	-0.527** (-3.56)	0.336
PL 40	*Net public social expenditure*	15.8* (2.82)	-0.609 (-1.67)	0.205	8.5 (2.17)	-0.204 (-1.09)	0.016	12.5** (4.99)	-0.390** (-2.99)	0.284
PL 50		22.6* (3.00)	-0.740 (-1.52)	0.156	18.8* (2.81)	-0.468 (-1.47)	0.089	19.3** (5.29)	-0.503* (-2.63)	0.229
PL 60		29.4* (3.32)	-0.769 (-1.34)	0.101	25.9** (3.65)	-0.492 (-1.46)	0.087	25.9** (6.34)	-0.507* (-2.37)	0.188
PL 40	*Gross total social expenditure*	11.7* (2.71)	-0.272 (-1.37)	0.088	14.5** (4.83)	-0.367** (-3.35)	0.439	12.2** (5.46)	-0.287** (-3.23)	0.291
PL 50		17.0* (2.94)	-0.310 (-1.16)	0.037	27.8** (6.57)	-0.679** (-4.40)	0.585	19.4** (6.05)	-0.387** (-3.04)	0.264
PL 60		23.3** (3.54)	-0.303 (-1.00)	-0.00	34.0** (6.74)	-0.663** (-3.61)	0.480	25.5** (7.00)	-0.372* (-2.57)	0.196
PL 40	*Gross total social expenditure other than Health*	13.6** (4.34)	-0.527* (-2.54)	0.377	12.6** (5.02)	-0.401** (-3.24)	0.422	12.2** (7.11)	-0.397** (-4.24)	0.424
PL 50		19.6** (4.50)	-0.629 (-2.18)	0.293	24.8** (7.39)	-0.771** (-4.66)	0.614	19.5** (7.93)	-0.543** (-4.04)	0.400
PL 60		26.2** (5.14)	-0.643 (-1.90)	0.224	30.6** (7.32)	-0.732** (-3.55)	0.471	25.7** (8.93)	-0.526** (-3.34)	0.306
PL 40	*Net total social expenditure* [a]	7.9 (1.71)	-0.074 (-0.29)	-0.15	8.9* (2.51)	-0.202 (-1.33)	0.059	9.5** (3.85)	-0.207 (-1.80)	0.101
PL 50		12.6 (2.08)	-0.068 (-0.20)	-0.16	19.3** (3.20)	-0.443 (-1.72)	0.140	15.6** (4.44)	-0.271 (-1.65)	0.080
PL 60		18.6* (2.69)	-0.043 (-0.11)	-0.16	25.3** (3.89)	-0.422 (-1.51)	0.096	21.6** (5.54)	-0.249 (-1.36)	0.041

Notes:

[a] *Net* social expenditures are not available for Greece, Hungary, Switzerland, and Turkey.

- Dependent variable: LIS poverty rate (poverty line 40, 50 or 60 percent of median income).
- N = 24. OLS-regression; standardized regression coefficients are reported; t-statistics in parentheses. ** Significant at the 0.01 level; * significant at the 0.05 level. Adj R^2 refers to the adjusted correlation coefficient.
- Selected countries: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Mexico, Netherlands, Norway, Poland, Slovak Republic, Spain, Sweden, Switzerland, the United Kingdom, and the United States

Source: LIS (2009), SOCX (2008), and own calculations

A3: REGRESSION ANALYSIS FOR POVERTY RATES AND GROSS SOCIAL SPENDING OVER TIME

To test for (in)stability over the business cycle, we present the linkage between poverty rates and several social expenditure indicators for a few moments in time for all countries where all relevant data items are available. Our findings are rather steady over time. Note that the correlation coefficients and significance of all linkages between social expenditure and poverty rates across countries are rather insensitive for poverty lines and/or data sets employed. However, the results are sensitive for the social indicator used. We find pretty good fits for gross public social expenditures, both for non-EU15 and EU15 countries. However, the inclusion of private social expenditures alters the picture. Still, we find a significant negative relationship between social spending and poverty rates for all countries and for EU15 countries, but not for non-EU15 countries separately. We find a fit again for non-EU15 countries when social expenditures for health programs are excluded from social spending ratios.

Panel (a): Correlation OECD poverty rates (PL 50) and gross social expenditure ratios

		Non-EU15			*EU15*			*All 24 countries*		
		Int.	X1	Adj R^2	Int.	X1	Adj R^2	Int.	X1	Adj R^2
1985	*Gross public social expenditure*	21.6** (7.92)	-0.731* (-3.58)	0.663	18.6** (4.30)	-0.469* (-2.40)	0.254	19.7** (9.64)	-0.530** (-5.14)	0.548
1995		24.2** (11.86)	-0.741** (-5.82)	0.825	22.1** (7.62)	-0.550** (-4.61)	0.591	22.1** (14.40)	-0.564** (-7.99)	0.741
2005		26.6** (7.62)	-0.810** (-3.96)	0.647	24.2** (5.82)	-0.609** (-3.59)	0.460	23.5** (11.68)	-0.593** (-6.49)	0.641
1985	*Gross total social expenditure*	19.5** (5.13)	-0.495 (-1.96)	0.320	19.6** (5.16)	-0.483** (-3.02)	0.367	19.4** (9.11)	-0.474** (-4.77)	0.509
1995		21.6** (6.64)	-0.486* (-2.82)	0.498	21.7** (6.53)	-0.481** (-3.88)	0.502	21.5** (11.29)	-0.475** (-6.08)	0.621
2005		21.2** (5.27)	-0.395 (-2.08)	0.294	26.1** (7.62)	-0.615** (-4.93)	0.624	23.3** (10.59)	-0.508** (-5.83)	0.589
1985	*Idem, excluding Health*	20.1** (6.34)	-0.795* (-2.59)	0.488	18.8** (5.33)	-0.589** (-3.03)	0.369	18.9** (9.98)	-0.604** (-5.14)	0.548
1995		21.6** (9.98)	-0.714** (-4.34)	0.718	20.0** (7.07)	-0.540** (-3.97)	0.514	20.2** (13.47)	-0.564** (-6.95)	0.682
2005		21.8** (8.15)	-0.645* (-3.42)	0.572	19.4** (9.42)	-0.519** (-4.99)	0.631	20.8** (14.73)	-0.586** (-7.43)	0.702

Selected countries (24): Australia (missing value for 1985), Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland (missing values for 1985 and 1995), Turkey, the United KingdomK, and United States.

Panel (b): Correlation LIS poverty rates (PL 60) and gross social expenditure ratios

		Non-EU15			*EU15*			*All 20 countries*		
		Int.	X1	Adj R^2	Int.	X1	Adj R^2	Int.	X1	Adj R^2
1985	*Gross public social expenditure*	29.3** (8.24)	-0.832* (-3.24)	0.655	35.9** (6.57)	-0.966** (-4.02)	0.539	28.4** (11.39)	-0.658** (-5.41)	0.598
2005		33.3** (7.72)	-0.844* (-3.34)	0.670	33.2** (6.09)	-0.707** (-3.19)	0.414	30.5** (10.95)	-0.614** (-4.98)	0.556
1985	*Gross total social expenditure*	27.7** (6.11)	-0.604 (-2.16)	0.424	34.0** (6.84)	-0.824** (-4.05)	0.542	28.7** (10.95)	-0.616** (-5.25)	0.583
2005		28.1** (4.66)	-0.404 (-1.51)	0.202	35.0** (7.21)	-0.696** (-3.96)	0.530	31.0** (9.66)	-0.547** (-4.46)	0.499
1985	*Idem, excluding Health*	28.1** (8.12)	-0.935** (-3.00)	0.615	32.2** (6.94)	-0.980** (-3.95)	0.529	27.4** (11.99)	-0.747** (-5.48)	0.605
2005		27.7** (5.38)	-0.524 (-1.70)	0.273	31.7** (8.14)	-0.762** (-4.10)	0.548	29.6** (11.10)	-0.655** (-4.86)	0.543

Selected countries (20): Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Mexico, Netherlands, Norway, Spain, Sweden, Switzerland, the United Kingdom, and United States.

Note:
Dependent variable: Poverty rate (several sources and poverty lines). OLS-regression; standardized regression coefficients are reported; t-statistics in parentheses. ** Significant at the 0.01 level; * significant at the 0.05 level. Data years: around 1985, around 1995, and around 2005. Adj R^2 refers to the adjusted correlation coefficient.

Source: LIS (2009), OECD (2008), SOCX (2008), and own calculations

A4: STRAIGHTFORWARD APPROACH FOR SEVERAL MOMENTS IN TIME: MEANS, STANDARD DEVIATIONS AND PEARSON CORRELATIONS

	Mean	s.d.	1.	2.	3.	4.	5.	6.	7.
Around 1985 (N=22)									
1. Poverty rate (OECD; PL 50)	9.8	4.9	1.000						
2. Gross public social expenditure	18.6	7.0	-0.754**	1.000					
3. Gross private social expenditure	1.5	1.8	-0.141	0.214	1.000				
4. Gross total social expenditure	20.1	7.5	-0.730**	0.974**	0.431*	1.000			
5. Gross total other than Health expenditure	15.0	6.1	-0.755**	0.973**	0.384	0.989**	1.000		
6. Proportion elderly	12.2	3.2	-0.674**	0.805**	0.261	0.805**	0.792**	1.000	
7. Unemployment rate	8.0	4.9	0.210	0.168	0.160	0.192	0.192	0.006	1.000
8. GDP per capita (*1,000)	12.4	0.4	-0.520*	0.603**	0.376	0.644**	0.591**	0.643**	-0.289
Around 1995 (N=23)									
1. Poverty rate (OECD; PL 50)	10.4	4.5	1.000						
2. Gross public social expenditure	20.7	6.9	-0.867**	1.000					
3. Gross private social expenditure	2.5	2.3	-0.016	0.124	1.000				
4. Gross total social expenditure	23.2	7.6	-0.799**	0.953**	0.419*	1.000			
5. Gross total other than Health expenditure	17.3	6.7	-0.835**	0.962**	0.307	0.974**	1.000		
6. Proportion elderly	13.6	3.3	-0.593**	0.787**	0.224	0.788**	0.771**	1.000	
7. Unemployment rate	8.8	4.4	0.005	0.211	-0.085	0.167	0.186	0.150	1.000
8. GDP per capita (*1,000)	20.2	0.6	-0.556**	0.466*	0.293	0.516*	0.444*	0.542**	-0.329
Around 2005 (N=24)									
1. Poverty rate (OECD; PL 50)	10.8	3.9	1.000						
2. Gross public social expenditure	21.4	5.3	-0.810**	1.000					
3. Gross private social expenditure	3.2	2.8	-0.121	-0.016	1.000				
4. Gross total social expenditure	24.6	6.0	-0.779**	0.884**	0.453*	1.000			
5. Gross total other than Health expenditure	17.0	5.6	-0.846**	0.835**	0.316	0.893**	1.000		
6. Proportion elderly	14.9	3.7	-0.487*	0.750**	0.152	0.740**	0.658**	1.000	
7. Unemployment rate	6.4	2.4	0.054	0.365	-0.229	0.218	0.173	0.306	1.000
8. GDP per capita (*1,000)	32.1	11.1	-0.430*	0.274	0.281	0.376	0.366	0.229	-0.426*

Notes:
- N = 24. Data years: around 1985, around 1995, and around 2005.
- ** Significant at the 0.01 level; * significant at the 0.05 level.
- Selected countries: Australia (missing value for 1985), Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland (missing values for 1985 and 1995), Turkey, the United Kingdom, and the United States.

Source: OECD (2008), SOCX (2008), OECD.StatsExtracts (2010); and own calculations

A5: SAMPLED DATA SET MODEL: MEANS, STANDARD DEVIATIONS AND PEARSON CORRELATIONS

	Mean	s.d.	1.	2.	3.	4.	5.	6.	7.
Non-EU15 (N=34)									
1. Poverty rate (OECD; PL 50)	13.0	4.7	1.000						
2. Gross public social expenditure	15.2	5.4	-0.817**	1.000					
3. Gross private social expenditure	3.1	3.2	0.037	0.271	1.000				
4. Gross total social expenditure	18.3	7.0	-0.612**	0.896**	0.671**	1.000			
5. Gross total other than Health expenditure	12.4	5.3	-0.761**	0.934**	0.499**	0.950**	1.000		
6. Proportion elderly	11.6	4.1	-0.582**	0.810**	0.462**	0.837**	0.844**	1.000	
7. Unemployment rate	5.5	2.2	0.045	0.062	-0.002	0.047	0.016	-0.241	1.000
8. GDP per capita (*1,000)	22.3	10.9	-0.364*	0.642**	0.670**	0.804**	0.722**	0.727**	-0.195
EU15 (N=69)									
1. Poverty rate (OECD; PL 50)	9.0	3.5	1.000						
2. Gross public social expenditure	22.9	4.5	-0.664**	1.000					
3. Gross private social expenditure	2.4	2.0	-0.176	0.051	1.000				
4. Gross total social expenditure	25.4	5.1	-0.667**	0.919**	0.440**	1.000			
5. Gross total other than Health expenditure	19.0	4.6	-0.703**	0.855**	0.413**	0.932**	1.000		
6. Proportion elderly	15.1	1.9	-0.064	0.484**	0.108	0.478**	0.385**	1.000	
7. Unemployment rate	8.2	4.3	0.352**	-0.046	-0.170	-0.108	-0.074	-0.077	1.000
8. GDP per capita (*1,000)	22.6	10.2	-0.181	0.203	0.101	0.222	0.154	0.225	-0.432**
All 24 countries (N=103)									
1. Poverty rate (OECD; PL 50)	10.3	4.3	1.000						
2. Gross public social expenditure	20.4	6.0	-0.785**	1.000					
3. Gross private social expenditure	2.6	2.5	-0.005	0.046	1.000				
4. Gross total social expenditure	23.0	6.6	-0.716**	0.928**	0.416**	1.000			
5. Gross total other than Health expenditure	16.8	5.7	-0.784**	0.922**	0.303**	0.953**	1.000		
6. Proportion elderly	13.9	3.3	-0.496**	0.744**	0.215*	0.758**	0.717**	1.000	
7. Unemployment rate	7.3	3.9	0.076	0.180	-0.141	0.112	0.137	0.076	1.000
8. GDP per capita (*1,000)	22.5	10.4	-0.237*	0.305**	0.349**	0.408**	0.317**	0.405**	-0.341**

Notes:
- N*T = 103. Sampled dataset with observations around 1985 (N=22), around 1990 (N=11), around 1995 (N=23), around 2000 (N=23), and around 2005 (N=24).
- ** Significant at the 0.01 level; * significant at the 0.05 level.
- Selected countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States.

Source: OECD (2008), SOCX (2008), OECD.StatsExtracts (2010); and own calculations

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