

# Growth, Redistribution, and Poverty

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To what extent do economic growth and government redistribution improve the material well-being of the poor? We explore this question empirically. We examine the impact of per capita gross domestic product (GDP) and redistributive generosity on the incomes of households at the low end of the distribution and on material deprivation. We analyze changes over time in seventeen affluent countries from 1980 to 2005 and variation across these countries at common points in time. The findings suggest that economic growth has been the key to rising incomes among the poor, but its effect is stronger in countries with greater redistributive generosity. Redistribution appears to have had a much larger impact in reducing material deprivation.

We attempt to adjudicate between alternative approaches to a question that has long been central to social scientists and policy makers: What best advances the material well-being of the poor?

One perspective is that a rising tide lifts all boats: the poor fare best when economic growth is strong and hence average income is high (Firebaugh and Beck 1994; Dollar and Kraay 2002; Collier 2007; Rodrik 2007). The rising tide hypothesis predicts that the higher the average income level in a country, the higher the incomes of those at the low end of the distribution, irrespective of how much is redistributed. Affluence, in this view, "trickles down" via more jobs and/or higher wages for those in low-end households.

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However plausible this view, experience suggests that trickle down does not always occur. In the United States, for example, real per capita GDP increased by approximately 67% between 1979 and 2007, yet the real incomes of low-end households rose only minimally (Blank 1997b; Freeman 2001).

An alternative view contends that the well-being of the poor tends to be heavily influenced by government redistributive efforts (Blank 1997a; Kenworthy 1999; Sen 1999; Smeeding, Rainwater, and Burtless 2001; Moller et al. 2003; Scruggs and Allan 2006). In Amartya Sen's (1999, p. 44) words, "the impact of economic growth depends much on how the fruits of economic growth are used."

The redistribution hypothesis focuses on the importance of government transfers for those at the low end of the distribution. Even in the United States, which has a comparatively stingy welfare state, government transfers account for 35% of household income for those in the bottom quintile of the distribution (Mishel, Bernstein, and Allegretto 2005, p. 91). Indeed, 5% of American households with working-age adults have no labor market earnings at all, and the share is larger in some other countries (our calculations from LIS database). These households rely heavily on government benefits for income. Given the importance of such benefits for low-end households, redistributive generosity may be a major determinant of incomes among the poor.

Material well-being is also influenced by government provision of services such as education, medical care, child care, housing, transportation, retraining, and job placement (Ringen 1988; Halleröd 1996; Layte et al. 2001). These not only boost living standards directly; they allow income to be spent on other things that may contribute to material well-being.

In the long run, the living standards of the poor depend more on economic growth than on redistribution. If the pie does not grow, a country could redistribute until everyone has an equal slice, but then no further improvements would be possible. Yet in the short- and medium-term, redistribution can help to compensate for slow growth. Moreover, redistribution can be a conduit for growth; without it, growth may not trickle down.

We examine the effects of average income and redistribution on over-time developments and cross-country differences in the material well-being of the poor.<sup>1</sup> Our analysis is macrocomparative. The countries are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland, the United Kingdom, and the United States. The time period is 1980 to 2005. We consider two indicators of material well-being among the poor: low-end incomes and material deprivation.

<sup>1</sup> We do not go farther back in the causal chain to attempt to identify the determinants of average incomes or of redistribution.

## Data and Method

### *Indicators of the Material Well-Being of Low-End Households*

#### Absolute Low-End Income Level

By far the most common approach to comparing material well-being at the low end of the distribution is via an income-based relative poverty rate measure (Goodin et al. 1999; OECD 2001, 2008; Brady 2003a, 2003b; Moller et al. 2003; Rainwater and Smeeding 2003; DeFina and Thanawala 2004). Researchers typically set an income line — usually 50% of the median household income level within each country — and define the poverty rate as the share of individuals living in households with incomes below that line. However, a relative measure of poverty is essentially a measure of inequality in the bottom half of the income distribution. As such, it can yield strikingly counterintuitive conclusions. For example, Mexico and Russia have relative poverty rates only slightly higher than the United States, and the rates in Poland and Romania are far lower than in the U.S. (LIS 2009). Because the U.S. median income is comparatively high, 50% of its median is high, resulting in a fairly large share of American households having income below that cutoff. In Poland, Romania, Russia, and Mexico, by contrast, the median income is comparatively low, so the poverty line ends up being quite low. Similarly, the relative poverty rate in Mississippi is the same as in Connecticut (Iceland, Kenworthy, and Scopolitti 2005).

We instead use an absolute income measure. This more effectively taps the understanding most people have about what the material well-being of the poor refers to.<sup>2</sup>

<sup>2</sup> Normative considerations also lean toward an emphasis on absolute rather than relative low-end incomes. For instance, Rawls' (1971) distributive principle allows for increases in inequality provided that the absolute income of those at the bottom of the distribution increases. The key concern, in other words, is the absolute level of those at the bottom rather than their relative position. Rawls argued that the most reasonable way to decide upon a fair distributive principle is to imagine that you must make this decision knowing you will be born into the world but not knowing anything about what your assets and characteristics — intelligence, personality traits, parents, neighborhood, gender, skin color, etc. — will be. Experimental evidence suggests that people in this scenario might in fact be more apt to choose a principle in which the average income is maximized with a floor under the incomes of those at the bottom (Frohlich, Oppenheimer, and Eavey 1987). In this view, as long as the poor have "adequate" incomes, an increase in the incomes of the rich need not benefit the poor to be considered just. The results of such experiments are consistent with Rawls, however, in suggesting that the absolute income of the poor is of greater concern than their relative position.

A limitation of poverty rates (whether relative or absolute) as a means of gauging the material well-being of those at the low end of the distribution is that they identify only the share of the population falling below the poverty line. They convey no information about the depth or severity of poverty among those classified as poor (Sen 1976; Citro and Michael 1995; Brady 2003a). We instead compare income levels among households at a common spot in the bottom part of the income distribution (Kenworthy 2004, ch. 6; Brandolini and Smeeding 2006).<sup>3</sup> We focus on the tenth percentile (P10) of the distribution. The tenth percentile is a common reference point in analyses of income distributions,<sup>4</sup> and at points below it there is greater reason to worry about data quality.

Some will object that a household at the tenth percentile of the income distribution in countries such as Norway and Denmark is not really "poor." And according to the conventional relative approach to poverty, that is true (LIS 2009). Our interest is in those at the low end of the distribution in each country; we use "the poor" as shorthand for that group.

We use household income data from the Luxembourg Income Study (LIS), the best available data source for comparing incomes across affluent nations (Atkinson and Brandolini 2001). We adjust household income for household size.<sup>5</sup> The first chart in figure 1 shows tenth-percentile household incomes as of 1980 and 2005 in seventeen affluent countries. Because the incomes are adjusted for household size, the numbers in the chart represent income "per equivalent person." (For a household of four, multiply by two.) The incomes are adjusted for inflation and converted to U.S. dollars using purchasing power parities (PPPs).

#### Absolute Material Deprivation Rate

Poverty researchers and government agencies have long relied on income in measuring the material well-being of the poor. Income is a resource that allows households and individuals to acquire the sorts of things — food, housing, medical care, and so on — that are central to a minimally decent standard of living. Income also is comparatively easy to measure.

<sup>3</sup> An alternative is to multiply the poverty rate by the poverty gap, with the latter defined as the distance between the poverty line and the average income among the poor (Atkinson 1987; Osberg and Xu 2000; Brady 2003; OECD 2008). Kenworthy (2004, ch. 6) finds that these two approaches are very similar in practice.

<sup>4</sup> A frequently-used measure of inequality is the ratio of the income at the ninetieth percentile to the income at the tenth (P90/P10 ratio).

<sup>5</sup> This adjustment presumes economies of scale within households; for instance, a household with four people is assumed to need twice as much income as a household of one, rather than four times as much. We use the LIS equivalence scale: the square root of the number of persons in the household.

Yet as an indicator of resources, income is limited in several respects. First, it usually is measured over a single year. In any given year the incomes of some surveyed households will be atypical, due to illness, temporary unemployment, an unusually generous bonus, overtime work, or other reasons. For these households, single-year income will overstate or understate true income. Second, income measures seldom include the value of government services and in-kind benefits (Garfinkel, Rainwater, and Smeeding 2006). Third, some low-income households have assets — savings, property ownership, and so on — and/or access to credit that enhances their ability to consume. For these households, even accurately-reported income will understate financial resources. Fourth, some low-income households have debt, the financing of which reduces consumption ability. Fifth, survey respondents in low-income households tend to underreport income (Edin and Lein 1997).

Given income's limitations as an indicator of material well-being, some analysts instead examine direct indicators of deprivation, such as inadequate food, housing, and medical care.<sup>6</sup> The inadequacy of income as a measure of resources, at least for those at the low end of the distribution, is suggested by the fact that studies have tended to find only moderate overlap between those with low income and those who suffer material deprivation (Mayer and Jencks 1989; Callan, Nolan, and Whelan 1993; Nolan and Whelan 1996; Gordon and Pantazis 1997; Beverly 2001; Boushey et al. 2001; Perry 2002; Bradshaw and Finch 2003; Muffels and Fourage 2004; Rector and Johnson 2004; Teitler et al. 2004; U.S. Department of Health and Human Services 2004; Saunders and Adelman 2005; Short 2005; Boarini and Mira d'Ercole 2006; Iceland and Bauman 2007).

<sup>6</sup> Contemporary interest in indicators of material deprivation was initiated by Peter Townsend (1979) in the United Kingdom and by Susan Mayer and Christopher Jencks (1989) in the United States. Their studies led to formal and regularized data collection on material hardship in these two countries, via the "Breadline Britain" studies in the U.K. (Mack and Lansley 1985; Gordon and Pantazis 1997; Gordon et al. 2000) and the Census Bureau's Survey of Income and Program Participation (SIPP) in the U.S. (Beverly 2001a; USBC 2003; U.S. Department of Health and Human Services 2004; Short 2005; Iceland and Bauman 2007). Other researchers in Europe further advanced the study of material well-being in the 1990s (Ringen 1988; Callan, Nolan, and Whelan 1993; Halleröd 1995, 1996; Nolan and Whelan 1996). A battery of material deprivation questions was included in the 1994-2001 European Community Household Panel (ECHP) survey. It was replaced in the mid-2000s by the Survey of Income and Living Conditions (EU-SILC). Since the early 1990s interest in indicators of material deprivation has blossomed, with a host of country-specific and comparative studies appearing (Mayer 1993, 1995; Edin and Lein 1997; Rector et al. 1999; Burchardt 2000; Layte et al. 2001; Whelan et al. 2001, 2002, 2003; Perry 2002; Bradshaw and Finch 2003; Dekkers 2003; Muffels and Fourage 2004; Rector and Johnson 2004; Boarini and Mira d'Ercole 2006; OECD 2008, ch. 7).

Romina Boarini and Marco Mira d'Ercole have compiled material deprivation data from the Survey of Living Conditions (EU-SILC) for a number of European nations and from country-specific surveys for Australia and the United States (OECD 2008, ch. 7). For all countries the data refer to the mid-2000s. Each of the surveys asked identical or very similar questions about seven aspects of material deprivation: (1) inability to adequately heat home, (2) constrained food choices, (3) overcrowding, (4) poor environmental conditions (e.g., noise, pollution), (5) arrears in payment of utility bills, (6) arrears in mortgage or rent payment, and (7) difficulty in making ends meet. Boarini and Mira d'Ercole create a summary measure of deprivation by averaging, for each country, the shares reporting deprivation on questions in each of the seven areas.

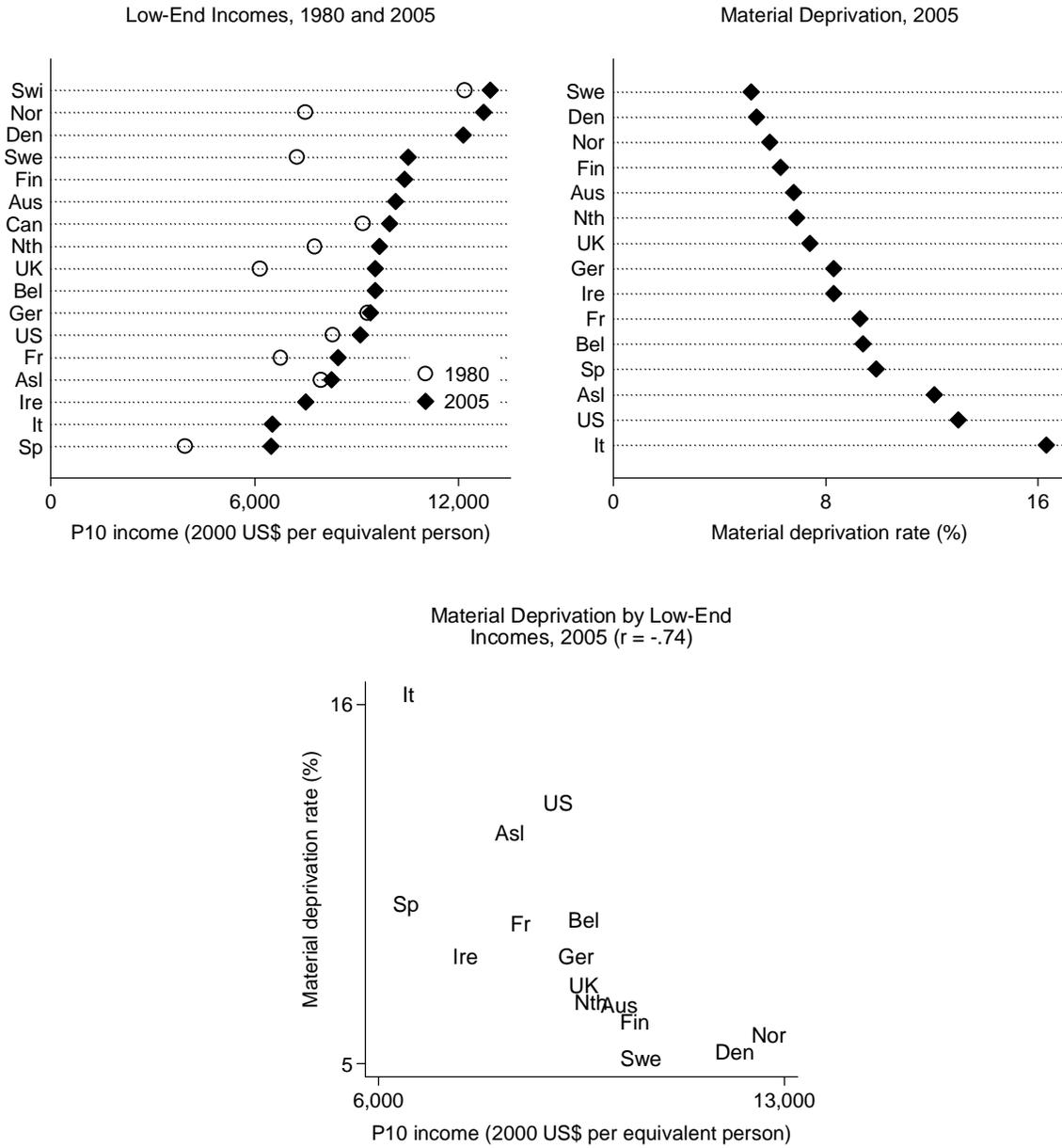
We use Boarini and Mira d'Ercole's material deprivation measure, as shown in the second chart in figure 1. It is a deprivation rate — a measure of the average share of the population experiencing various types of material deprivation. One potential concern is that it does not capture the depth of deprivation. But Boarini and Mira d'Ercole also create a measure of the share reporting deprivation in two or more of the areas (OECD 2008, p. 189), and the two measures correlate very strongly ( $r > .90$ ) across countries.

#### Are These Indicators Measuring the Same Thing?

How similar or different a picture of the material well-being of the poor do our two indicators offer? The third chart in figure 1 shows the relationship between low-end incomes and material deprivation as of 2005. The association between the two is negative, as we would expect, and fairly strong.

Two partial exceptions to the pattern are Sweden and the United States. Neither is especially surprising. Sweden provides more in the way of government services than any other affluent nation, while the United States (with Switzerland) provides the least (our calculations from data in OECD 2009; see also Huber and Stephens 2000, p. 328). Such services are not counted as income, but they are likely to affect deprivation — both directly by increasing access to medical care and housing and indirectly by allowing low-income households to spend their limited income on other necessities. We have an additional reason to suspect that the comparatively high material deprivation rate for the United States is not due to measurement error. The Pew Research Center conducted a survey in the early 2000s that included the following material deprivation questions: "Have there been times during the last year when you did not have enough money (a) to buy food your family needed, (b) to pay for medical and health care your family needed, (c) to buy clothes your family needed?" Among the seven affluent countries included in the Pew survey, measured material hardship was highest in the United States (see Boarini and Mira d'Ercole 2006, p. 18).

Figure 1. Low-End Incomes and Material Deprivation



Note: Axes in the third chart are truncated (do not begin at zero). For data definitions and sources, see the appendix.

### ***Indicators of Average Income and Redistribution***

#### **Average Income**

Per capita gross domestic product (GDP) is the standard measure of a country's economic output, and it is by far the most commonly-used indicator of average income in comparative analyses.<sup>7</sup> As of 2005, GDP per capita ranged from \$23,000 in Spain to \$39,000 in Norway. These data are from the Organization for Economic Cooperation and Development (OECD 2009). They are converted into year-2000 U.S. dollars using PPPs. So that our measures of average income and redistribution (see below) are in the same metric and are easily interpretable, we convert the GDP per capita data from U.S. dollars to a scale ranging from zero to one. The first chart in figure 2 shows levels of GDP per capita for our seventeen countries in 1980 and 2005.

#### **Redistribution**

Our indicator of redistribution is government social expenditures as a share of GDP. This is the most frequently-used indicator of social policy generosity in comparative studies. The data are from the OECD (2009). As of 2005, this ranged from 16% in the United States to 29% in Sweden and France.

The chief weakness of this measure is that it combines intended generosity with need. It will yield larger values when program generosity is high but also when more citizens are elderly, unemployed, ill, and so on. We therefore adjust for two major determinants of need: the share of the population age 65 and over and the unemployment rate. The government social expenditures data are available in five-year intervals from 1980 to 2005. For these six years, we regress government social expenditures as a share of GDP on the elderly population share and unemployment.<sup>8</sup> We take the residuals from this regression — the raw values for government social expenditures minus the predicted values from the regression — and rescale them to range from zero to one.<sup>9</sup> The second chart in figure 2 shows the adjusted measure for our seventeen countries.

<sup>7</sup> An alternative measure is median household income. However, this measure incorporates (to some extent) the degree to which economic growth trickles down, which is what we wish to examine empirically. In any event, GDP per capita and median household income are strongly correlated across countries.

<sup>8</sup> Both the elderly share of the population and the unemployment are strongly related to public social expenditures in the expected direction, and the regression's  $R^2$  is .46.

<sup>9</sup> This "adjusted government social expenditures" measure correlates at .75 with the raw government social expenditures values.

We decided against two alternative measures of redistribution. One is the difference between pretransfer-pretax income inequality and posttransfer-posttax income inequality (Bradley et al. 2003; Kenworthy and Pontusson 2005; Mahler and Jesuit 2006). The other is Lyle Scruggs and James Allan's (2005; Scruggs 2005) decommodification measure — a composite indicator of eligibility rules, benefit duration, and benefit levels for unemployment compensation, sickness compensation, and old-age pensions.<sup>10</sup> Each of these measures has merit, but each has a significant drawback: government services are not included.<sup>11</sup> Like transfers, public services are redistributive (Garfinkel, Rainwater, and Smeeding 2006; OECD 2008, ch. 9). They are equivalent to a flat-rate transfer to all who use them, which increases the well-being of the poor by a larger percentage than that of the rich.

In all countries some government transfers and services go to those in the middle and even the upper part of the income distribution. Our measure is therefore one of social policy generosity rather than redistribution per se; we use the latter as shorthand for the former. Because of the difficulty in quantifying the redistributive impact of public services, it is not possible to create a true measure of redistribution.

#### Are Average Income and Redistribution Correlated?

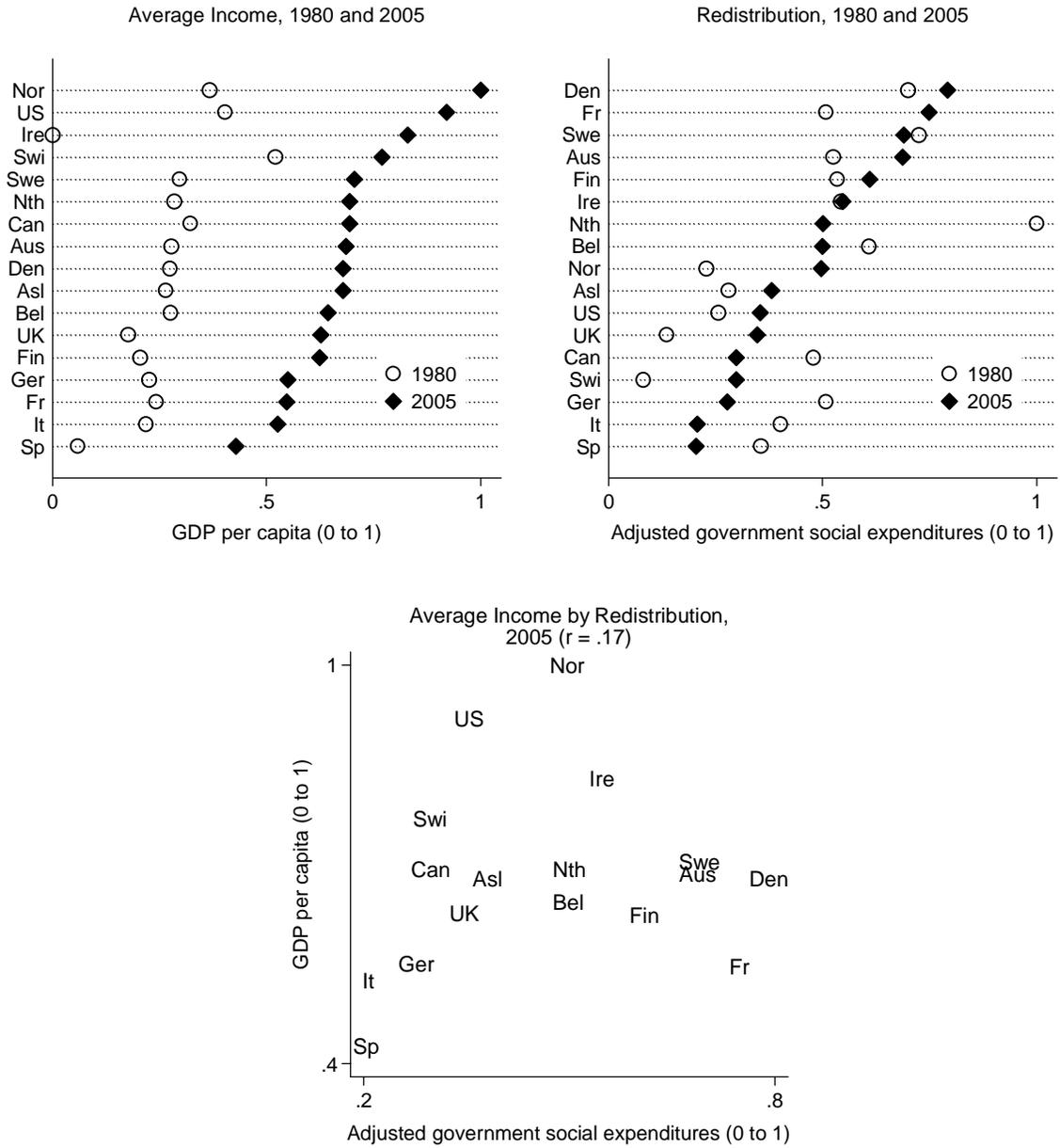
Average income level and the extensiveness of government redistribution might be positively correlated over time and/or across countries, if richer countries feel better able to fund generous social programs. It also is possible that the two are negatively correlated, which could happen if redistributive generosity reduces economic growth or if countries with high per capita GDP opt for less generous government transfers and services.

In practice neither is the case. The third chart in figure 2 shows that there is little association across the affluent nations as of 2005. For that year the correlation is .17, while the pooled correlation over the 1980-2005 period is -.09.

<sup>10</sup>Each country is scored on each of the three programs in each year. The scores for the three programs are then combined into an overall decommodification score.

<sup>11</sup>Also problematic for the decommodification measure is that it includes only three programs.

Figure 2. Average Income and Redistribution



Note: Axes of the third chart are truncated. For data definitions and sources, see the appendix.

## Analysis

We first analyze low-end incomes and then turn to material deprivation.

### *Low-End Incomes*

#### Over Time within Countries

We begin with developments over time within countries. For the period 1980 to 2005 we have 82 observations for low-end (tenth-percentile) household incomes. They are spaced at approximately five-year intervals: 1980, 1985, 1990, 1995, 2000, and 2005. Each of the seventeen countries has at least three observations, and some have six. We estimate a pooled regression of low-end incomes on GDP per capita, adjusted government social expenditures, and a set of control variables, with country dummy variables included in order to focus on the within-country over-time variation. Each of the independent variables is measured as an average over the contemporaneous year and the preceding five years; for the tenth-percentile income level in 2005, for example, the predictors are averages over 2000 to 2005. Because the GDP per capita and redistributive generosity measures each range from zero to one, the regression coefficients for these two variables can be compared to gauge the relative magnitude of their impact.

We control for education, unemployment, wage-bargaining coverage, imports, and employment in agriculture. Data definitions and sources are listed in the appendix. Each may influence material well-being among the poor independent of economic growth or redistribution. In countries with better-educated adults, lower unemployment rates, a larger share of employees covered by collectively-bargained wages, fewer imports, and less employment in agriculture, the wages and hence household incomes of those at the low end of the income distribution are likely to be higher. Education may also help by boosting employment in low-end households, while imports may hurt by reducing employment. On the other hand, imports can reduce material deprivation among the poor by lowering the prices they pay for goods and services.

We considered but elected not to include several additional controls: employment in manufacturing, single-parent households, and elderly households. None of these had the expected sign in the regressions, and they did not noticeably alter the findings for our two variables of interest.

Figure 3 presents our regression results. We want to assess the robustness of the findings for average income and redistribution, and we do not have strong theoretical grounds for prioritizing a particular model specification. We therefore report the coefficients for the average income and redistribution variables from an assortment of regressions that include different combinations of control variables, countries, and years. The figure summarizes the coefficients for average income and redistribution via boxplots. The vertical white line is the median

coefficient. The edges of the box indicate the 25th- and 75th-percentile coefficients. The "whiskers" refer to the minimum and maximum coefficients. Separate dots indicate outliers — coefficients that are substantially larger or smaller than the others.

The findings for the over-time analyses are in the first section of the figure. A regression with no controls and all seventeen countries yields a coefficient of 5,059 for the average income variable and a coefficient of 900 for the redistribution variable. In the regressions reported in figure 3, the median coefficient is 4,364 for average income and 788 for redistribution. The former suggests that growth in average incomes has tended to boost low-end incomes in these countries over the past two decades, while the latter suggests that the impact of changes in redistribution has been small or nil.

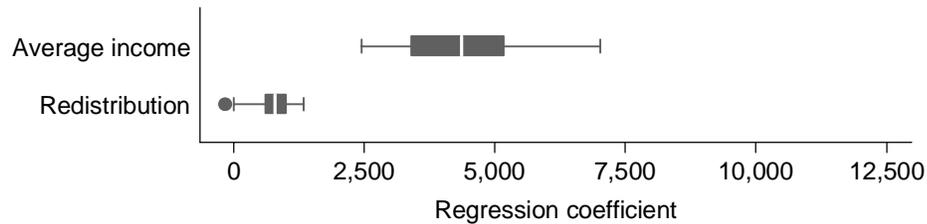
Figure 4 shows the bivariate over-time patterns. It contains two scatterplots for each country. The vertical axis of each scatterplot has tenth-percentile income levels. On the horizontal axis, the first graph for each country has average income and the second has redistribution. The data points are years.

Average income is positively associated with the tenth-percentile household income level over time in nearly all of the countries. In some — Australia, Austria, Canada, Germany, Italy, Switzerland, the United Kingdom (1980-95), and the United States (1980-95 and 2000-05) — the association is weak. But in others it is quite strong. The median coefficient of 4,364 in the pooled regression suggests that moving from the low end to the high end of the range in GDP per capita (zero to one) would boost household income at the tenth percentile by more than two standard deviations.

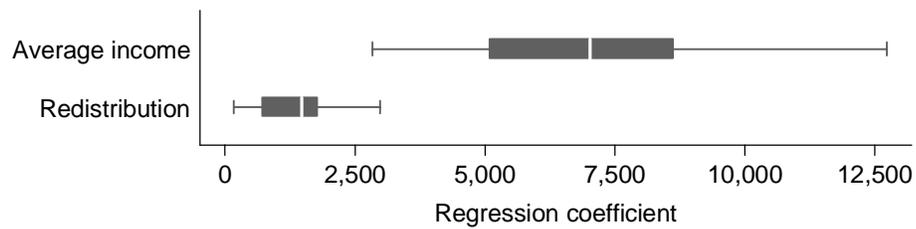
For redistribution the scatterplots in figure 4 suggest a mixed story. In some nations we see a positive over-time association. But in many countries the slope is flat. This is due in part to the fact that in some of these countries there has been little change in government social expenditures as a share of GDP since the 1970s. Most of the cross-country variation in redistributive generosity was already in place by then (Hicks 1999; Huber and Stephens 2001; Pierson 2001; Castles 2004). In a few countries the slope is negative. In two of those nations, Ireland and Spain, the negative over-time association is a product of rapid economic growth. Per capita GDP is the denominator for our redistribution measure (government social expenditures as a share of GDP); when it increases sharply, this measure of redistribution is almost certain to decrease. The Netherlands too has a negative over-time association. Here redistribution truly did decrease, but that was a result of a sharp increase in employment. The employment rise helped both to boost low-end incomes and to permit a reduction in government expenditures on benefits (Visser and Hemerijck 1997).

Figure 3. Regression Results: Low-End Incomes

Pooled over-time: 1980-2005 <sup>a</sup>



Pooled across countries: 1980, 1985, 1990, 1995, 2000, and 2005 <sup>b</sup>



Note: Ordinary least squares (OLS) regression coefficients. The dependent variable is tenth-percentile household incomes. The vertical white line is the median coefficient. The edges of the box indicate the 25th- and 75th-percentile coefficients. The "whiskers" refer to the minimum and maximum coefficients. Separate dots indicate outliers — coefficients that are substantially larger or smaller than the others in that set. The average income (GDP per capita) and redistribution (adjusted government social expenditures) variables are measured in the same metric, so their coefficients can be compared directly. The standard errors are robust clustered. For data definitions and sources, see the appendix.

<sup>a</sup> 100 regressions. The coefficient for average income is always statistically significant at the .10 level and usually at the .01 level (one-tailed test). The coefficient for redistribution never reaches statistical significance at even the .10 level (one-tailed test). The  $R^2$  for the regressions ranges from a low of .90 to a high of .93. The number of observations ranges from a low of 66 to a high of 82. Results for control variables and country dummies are not shown here.

<sup>b</sup> 100 regressions. The coefficient for average income is always statistically significant at the .10 level and usually at the .05 level (one-tailed test). The coefficient for redistribution is statistically significant at the .10 level in approximately two thirds of the regressions and sometimes at the .05 level (one-tailed test). The  $R^2$  for the regressions ranges from a low of .59 to a high of .78. The number of observations ranges from a low of 66 to a high of 82. Results for control variables and year dummies are not shown here.

Figure 4. Low-End Incomes by Average Income and by Redistribution: Over Time within Countries

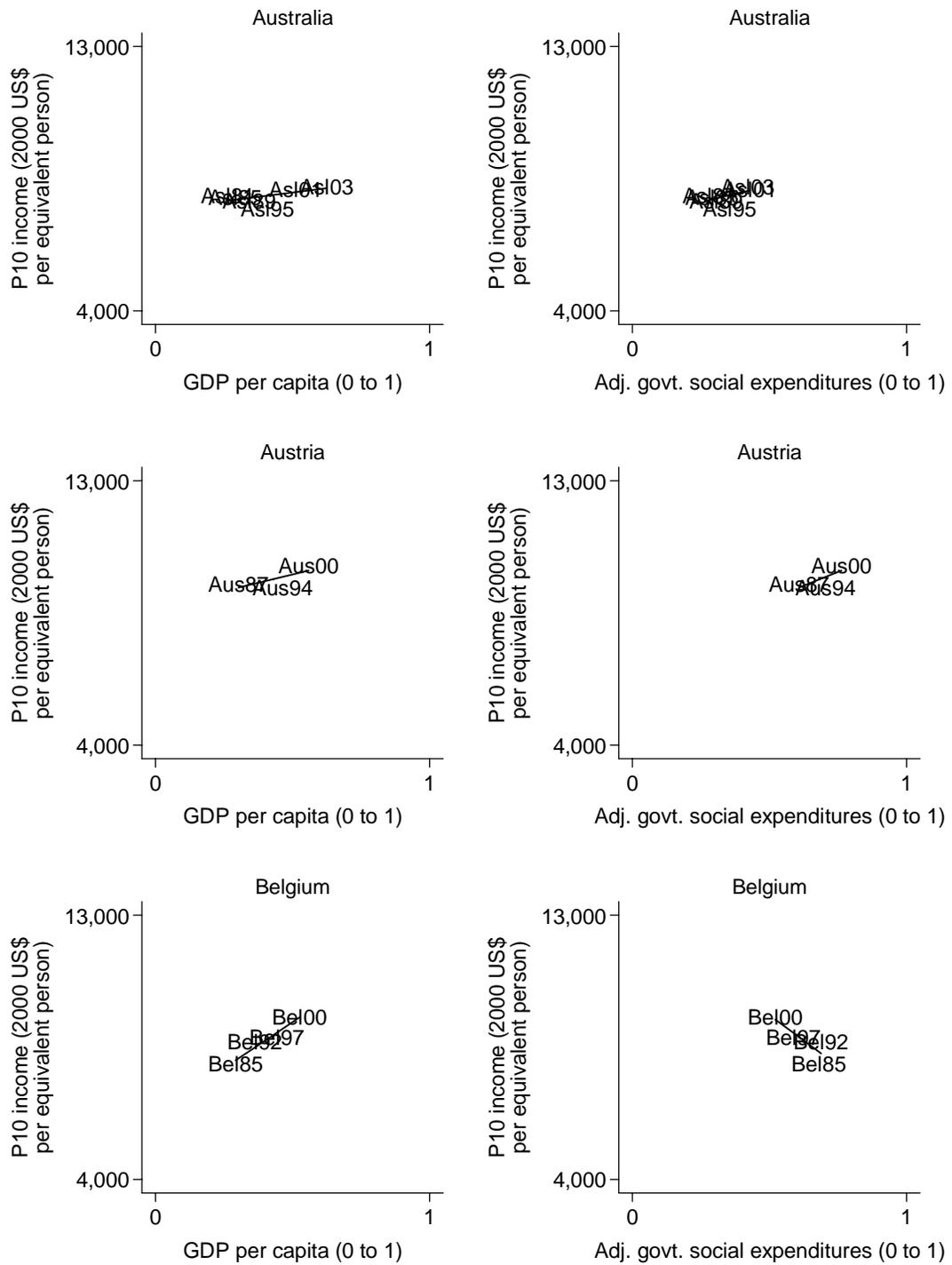


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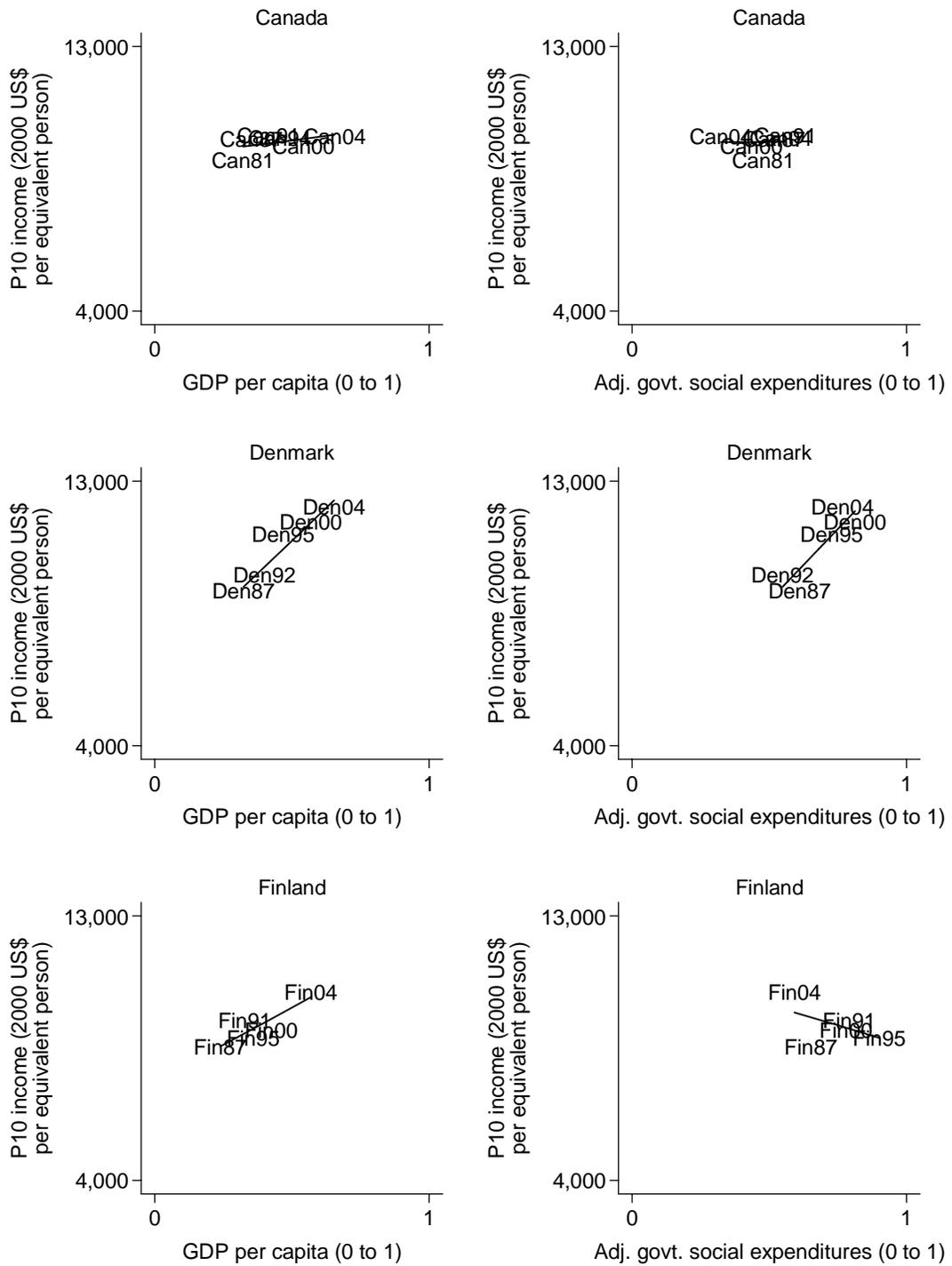


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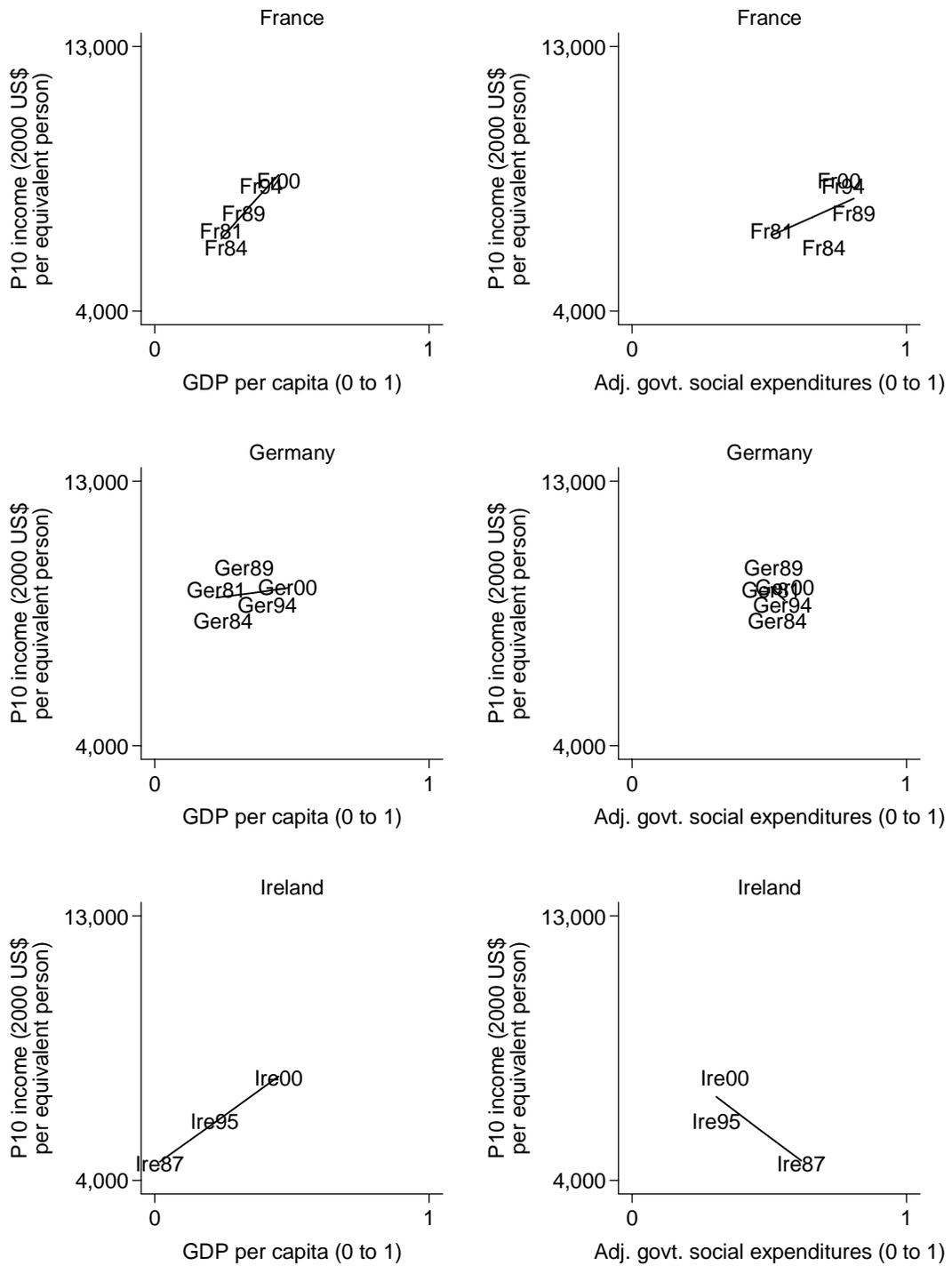


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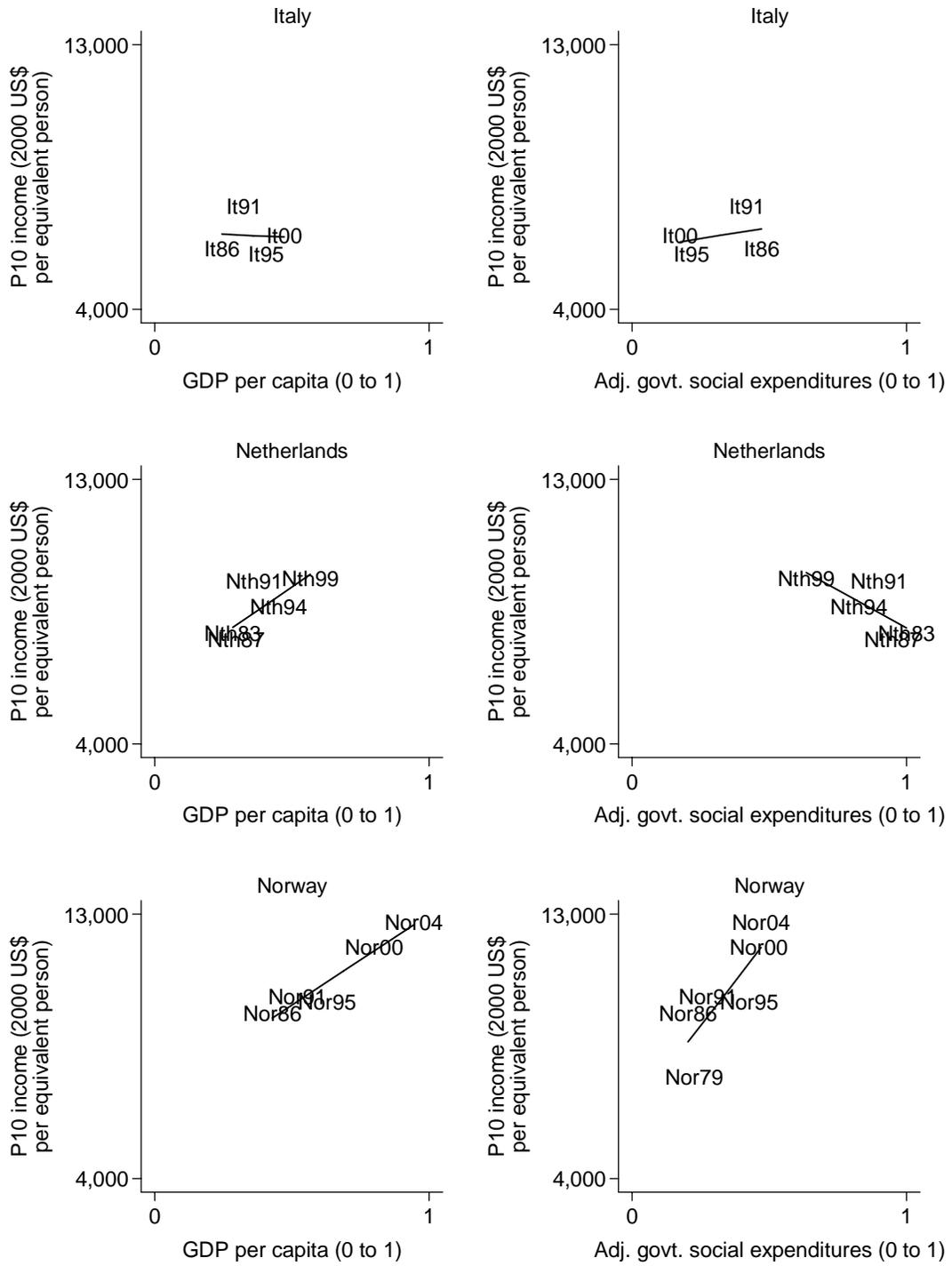


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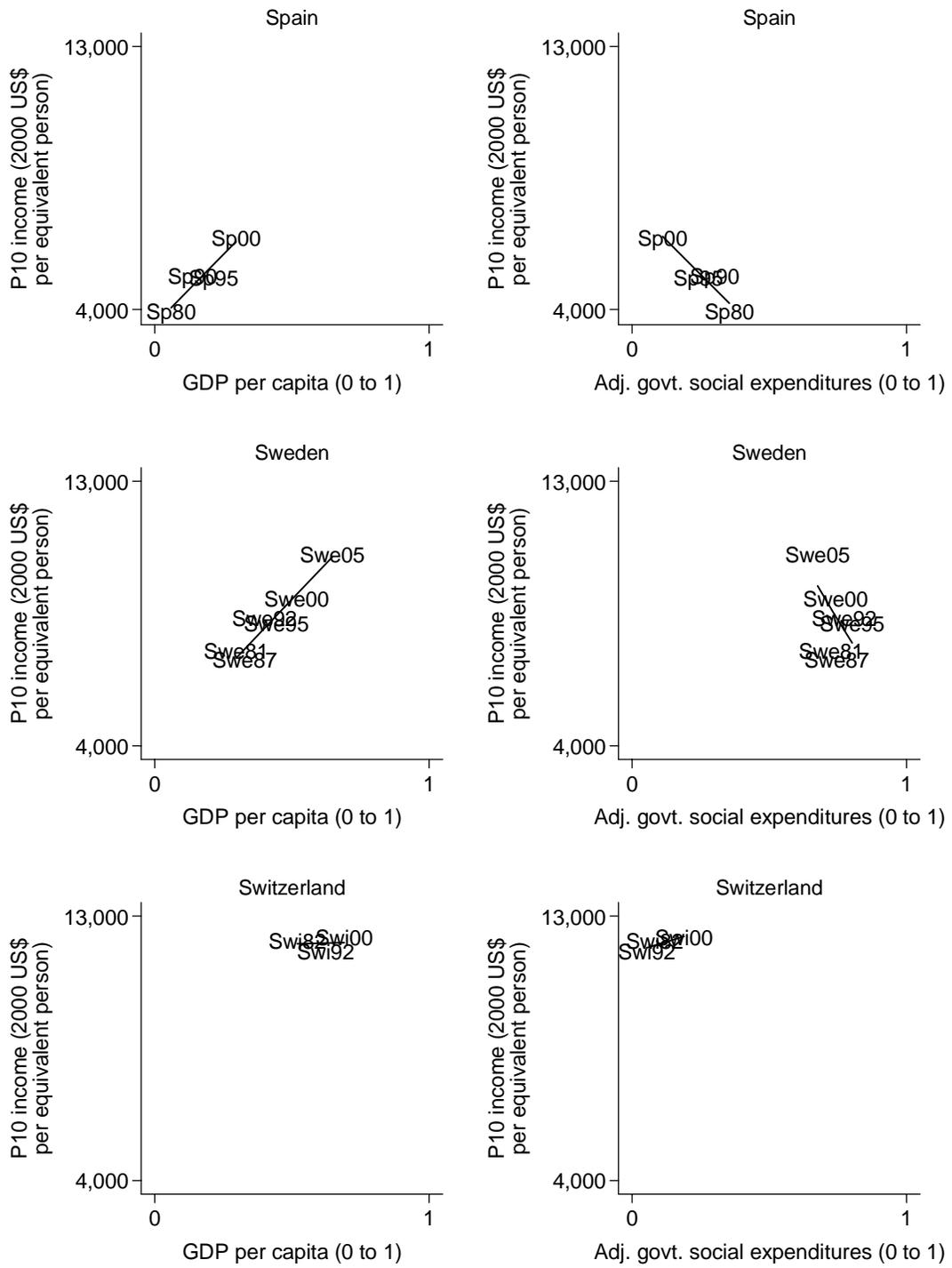
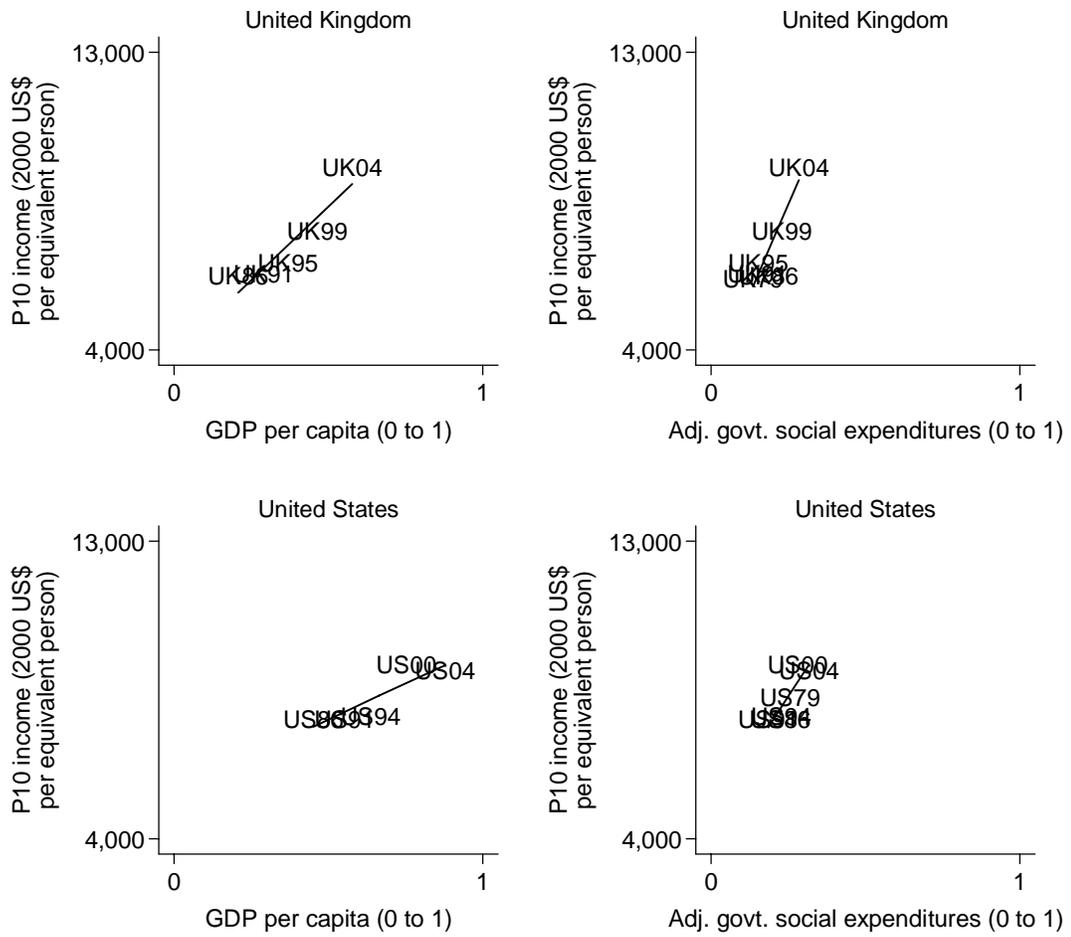


Figure 4 continued



Note: For data definitions and sources, see the appendix.

### Does the Level of Redistribution Affect the Impact of Economic Growth on Low-End Incomes?

As noted earlier, in some countries — Australia, Austria, Canada, Germany, Italy, Switzerland, the United Kingdom (aside from 1995-2005), and the United States (aside from 1995-2000) — tenth-percentile household incomes increased only minimally or not at all despite rising per capita GDP. All but one of these countries are comparatively low in redistributive generosity.

Does the impact of economic growth on low-end incomes vary depending on nations' redistributive generosity? We can test this by splitting the countries into two groups. The redistribution chart in figure 2 (above) suggests a reasonable cut point is between Norway and Australia. The high-redistribution group includes Austria, Belgium, Denmark, Finland, France, Ireland, the Netherlands, Norway, and Sweden. The low-redistribution group consists of Australia, Canada, Germany, Spain, Switzerland, the United Kingdom, and the United States. A regression focused on over-time patterns with all of the control variables and all seventeen countries yields a coefficient of 5,059 for average income. When we replicate this regression including only the high-redistribution countries, the coefficient for average income is 6,732.<sup>12</sup> With only the low-redistribution nations, the coefficient is negative, though small (and not statistically significant), at -1,255.<sup>13</sup> This suggests that greater redistributive generosity boosts the effect of economic growth on low-end household incomes.<sup>14</sup>

What is the causal mechanism? One is transfers. In most of these countries 20-35% of all households have no earnings, and some of these are in the bottom decile of the income distribution. As of the early-to-middle 2000s, the share of bottom-income-decile households with zero earnings was 40% in Finland and Norway, 55% in France and the Netherlands, 60% in Denmark and Sweden, 75% in Ireland, and 80% in Belgium (our calculations from LIS database). Some of

<sup>12</sup>Ireland is a questionable member of this group; it is not typically considered a high-redistribution nation. But omitting Ireland has virtually no effect on the coefficient for GDP per capita.

<sup>13</sup>Germany is a question mark, both because it is usually considered to have among the more generous redistributive systems and because unification may have contributed to its slow tenth-percentile income growth. But removing Germany produces an even smaller coefficient for average income for the low-redistribution group.

<sup>14</sup>An alternative way to see this is via a regression of the country over-time slopes of low-end incomes on GDP per capita (shown in the first chart for each country in figure 3) on redistribution averaged over the period 1980 to 2005. This regression yields a coefficient of 5,327. Moving from the low end on redistributive generosity (zero) to the high end (one) is estimated to increase the impact of GDP per capita on low-end incomes by approximately \$5,000.

these are elderly households with savings and pensions as the main source of income. Others are households with working-age adults whose chief income source is government benefits such as social assistance, unemployment, sickness, or disability compensation. For households with no earnings, economic growth trickles down chiefly via government transfers. Transfers are therefore critical to poverty alleviation (Marx and Verbist 2009).

A growing economy allows policy makers to boost benefit levels for transfer programs. When this happens, the incomes of benefit recipients increase, even if government social expenditures as a share of GDP remain constant. With the exception of the Netherlands, government transfers (government social expenditures minus expenditures on services) per person tended to increase more rapidly in high-redistribution countries than in low-redistribution ones.<sup>15</sup>

What we observe is that countries with high *levels* of redistributive generosity tend to pass on more of that growth to households at the low end of the income distribution via *increases* in transfers. There is nothing automatic about this. We might expect policy makers in such countries to pass on less, on the grounds that transfers are already sufficiently generous. Similarly, we might predict that policy makers in low-redistribution nations would want to pass on more, in order to bring their social policies more into line with those of their high-redistribution counterparts. That, however, has not happened.

Is the pattern we observe due to a "catch-up" process? Is it countries in which the income of low-end households were comparatively low in the early 1980s that have increased their transfers more in order to help growth trickle down more to the poor? No; there is no association to speak of between the level of tenth-percentile incomes early in the period we are examining and the low-end incomes-by-GDP per capita slopes in the first charts in figure 4.

For low-end households that receive little or no government transfers, public services is likely the mechanism through which redistribution helps economic growth to raise low-end incomes. A schooling system that provides knowledge and skills to a large share of children increases the probability that growth will trickle down to those at the bottom of the distribution via employment and higher wages. Government retraining and job placement efforts (active labor market policy) are likely to have similar effects. Government funding of health care and child care better enables women, especially single mothers, to enter and remain

<sup>15</sup>With the Netherlands omitted, a regression of the country over-time slopes of government transfers per person (in 2000 U.S. dollars) on GDP per capita on average redistributive generosity yields a coefficient of 2,681. Moving from the low end on redistributive generosity (zero) to the high end (one) is estimated to increase the impact of GDP per capita on government transfers by approximately \$2,681. Our measure of government transfers excludes three of the nine categories of government social expenditures (see the appendix): health, active labor market programs, and housing.

in the labor force. To the extent these services boost the employment rate, they may also help indirectly: a tighter labor market pushes up wages at the low end of the distribution.

A closer look at the individual experiences of the high-redistribution countries in which economic growth has produced rising tenth-percentile incomes suggests that the causal process has not been the same everywhere. We examined over-time data from the LIS database on the share of bottom-income-decile households with and without earnings and on the earnings of tenth-percentile households and data from the OECD on tenth-percentile earnings and on government social expenditures per person.

In Denmark, Finland, Norway, and Sweden, the story appears to center on benefit increases and to some extent rising low-end wages. In Ireland wage growth was quite strong and government transfers increased only modestly, but the latter had a sizeable impact because three in four Irish households in the bottom income decile had no earnings. In the Netherlands the improvement in low-end household incomes occurred via an increase in employment. Low-end wages increased only slightly and government transfers per person decreased, but the share of households in the bottom income decile with no earnings fell steadily from 70% in 1983 to 55% in 1999. In the two other high-redistribution countries that experienced a rapid rise in low-end incomes, Belgium and France, the available data on wages and household earnings are not good enough for us to draw a conclusion about developments. Government transfers seem likely to have been central, though, as they increased rapidly in both countries.

Where increased employment and/or rising low-end wages are part of the causal story, we cannot be certain that high redistribution played a role. Across the rich countries, redistributive generosity is correlated with other policies and institutions that may contribute to wage and employment growth. For example, many high-redistribution countries also have high levels of wage-bargaining coverage. The larger the share of the workforce whose wages are set via collective bargaining, the more likely it is that a strong economy will produce growth in wages. It could, in other words, be wage-bargaining coverage rather than redistribution that has enhanced the impact of economic growth on low-end incomes.

What accounts for low-end income growth in the United Kingdom from 1995 to 2005 and in the United States from 1995 to 2000? The employment rate increased in both countries, but that had little impact on low-end incomes. The share of bottom-income-decile households with zero earnings is approximately 80% in the U.K. and 50% in the U.S., and in both countries the percentage barely budged during the period of tenth-percentile household income growth. Wages did rise at the low end, and that helped households that had some earnings. These two countries are among those with comparatively low redistributive generosity, but beginning in the mid-to-late 1990s each sharply increased the benefit level

for a particular transfer program that supplements the incomes of households with low earnings: the Earned Income Tax Credit in the United States and the Working Tax Credit in the United Kingdom. As in the Nordic countries, then, although for a more limited portion of past few decades, the story in these two nations is largely one of increases in transfers coupled with rising wages.

In sum, redistributive generosity appears to be a key channel through which economic growth has boosted the incomes of low-end households. This works partly through increases in transfers and partly via the impact of government services on employment and earnings, with the specific causal path(s) differing across countries.

#### Across Countries at a Common Point in Time

What happens when we switch the focus over-time developments within nations to differences between nations? For the most part, causality is better assessed with over-time data than by looking across units at a single point in time. However, when a key causal factor changes only minimally over time, its impact may be best revealed by cross-sectional patterns (Jackman 1985). Given the limited degree to which redistributive generosity (as a share of GDP) has changed in these nations over the past several decades, this may be an instance in which cross-sectional assessment is a useful analytical strategy.

The second section of figure 3 shows the pooled regression results. Here we use the same 82 observations, but now with time (year) dummy variables rather than country dummies. This focuses the analysis on the cross-national variation.

For average income, the regressions again suggest a strong positive effect. Here the coefficient tends to be even larger than in the over-time analysis. Figure 5 shows the bivariate patterns for each of the six years for which data are available. Consistent with the regression estimates, the patterns in the average income charts show strong positive associations with low-end income levels.

For redistribution, the regression coefficients tend to be larger than in the over-time analysis, but still quite a bit smaller than those for average income. The patterns in the redistribution scatterplots in figure 5 are interesting. For the first three years — 1980, 1985, and 1990 — we observe no association between redistributive generosity and tenth-percentile household income levels. But in the most recent three years — 1995, 2000, and 2005 — there is a fairly strong positive relationship. This is partly a function of data availability; more countries are represented in later LIS years than in earlier ones. Substantively, it is a product of the pattern highlighted in the previous subsection: over the past several decades, economic growth has produced a larger boost to low-end household incomes in countries with greater redistributive generosity. Low-end incomes in the high-redistribution countries have thus risen more rapidly than those of their counterparts in low-redistribution countries.

Figure 5. Low-End Incomes by Average Income and by Redistribution: Across Countries at a Common Point in Time

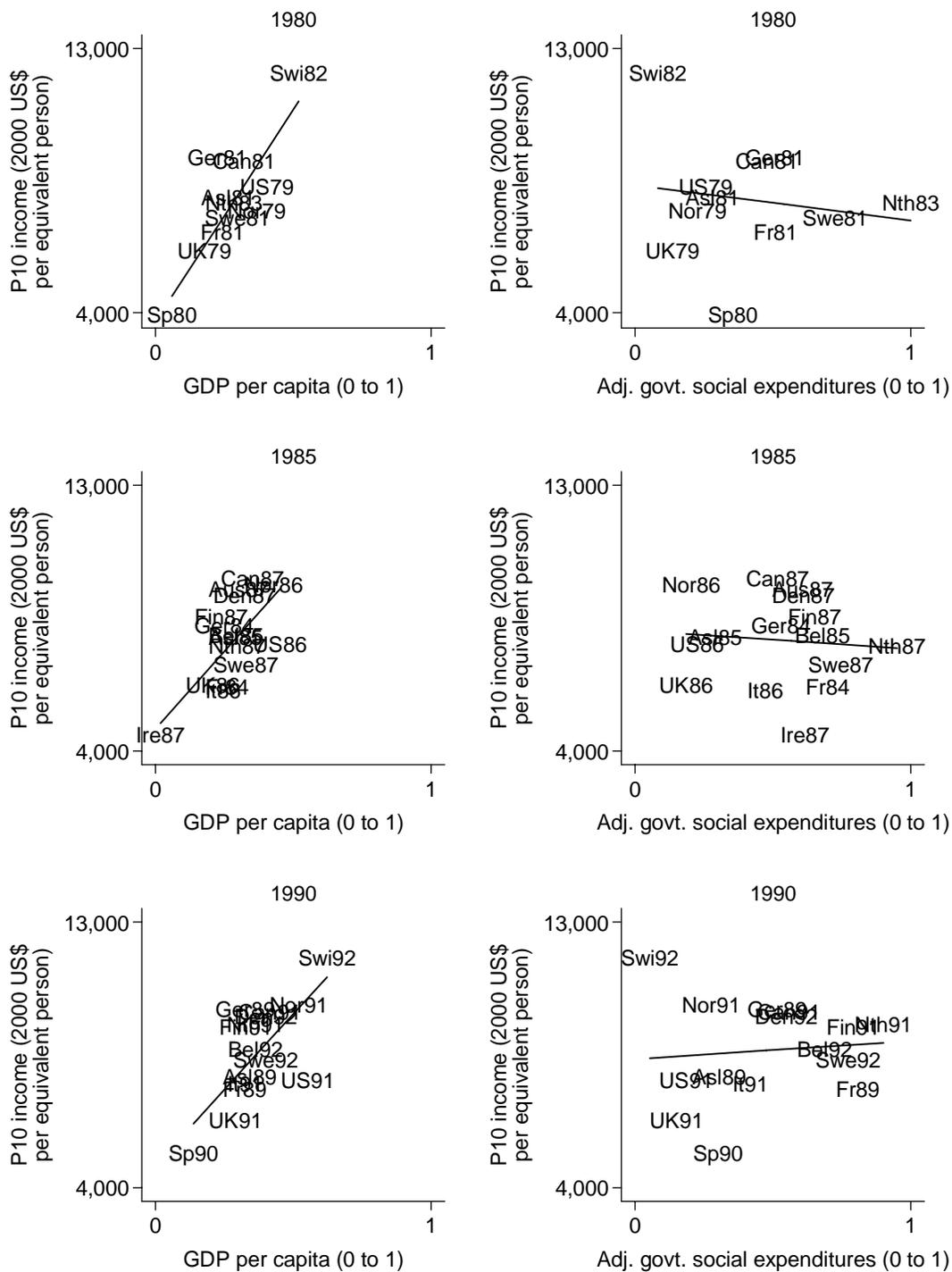
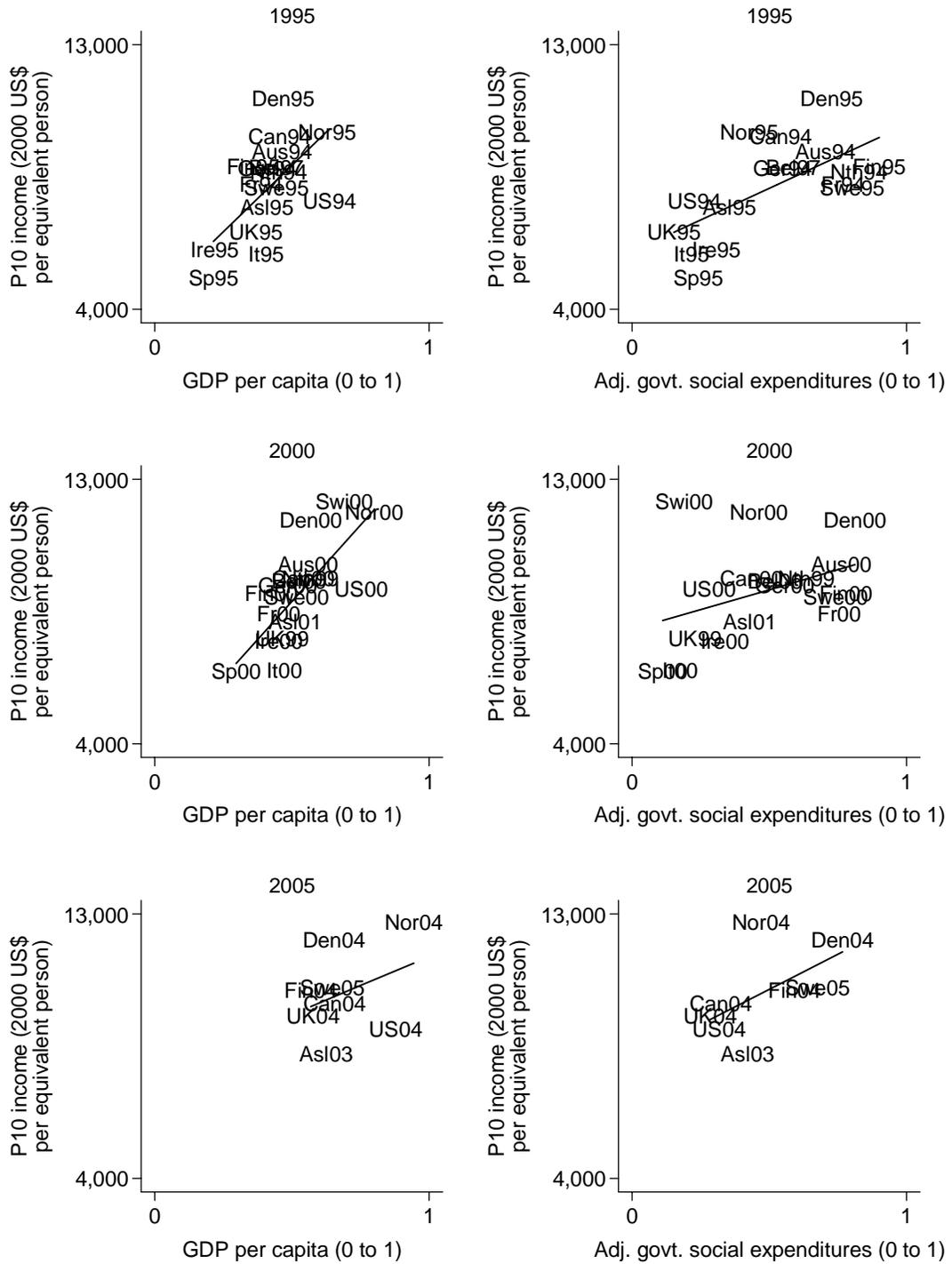


Figure 5 continued



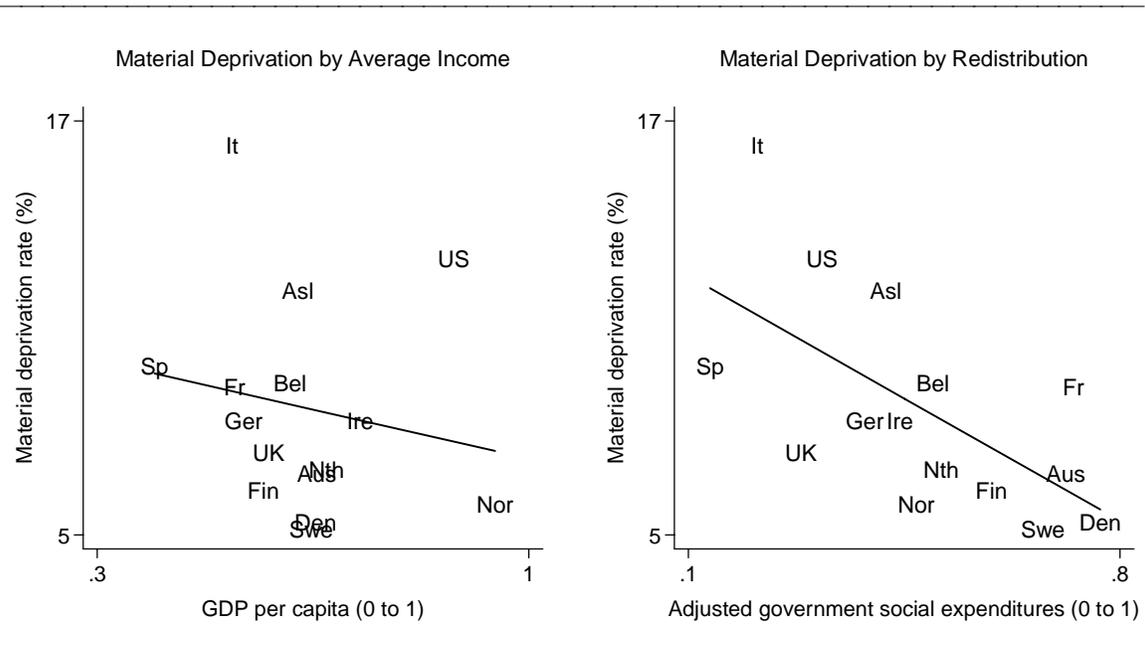
Note: For data definitions and sources, see the appendix.

**Material Deprivation**

As noted earlier, we have cross-nationally comparable data on material deprivation for only one year. Consequently, our analyses here are cross-sectional. We examine the relationship between material well-being measured as of 2005 and average incomes and redistributive generosity measured over 2000-05. Cross-sectional analyses are vulnerable to the influence of country fixed effects — unmeasured country-specific features that may have an impact on the outcome of interest. All we can do is note this concern; data limitations make it impossible to address in the analyses. Reverse causality is another potential problem, though it should be attenuated somewhat by the fact that we measure the causal variables as averages over years preceding measurement of the outcome.

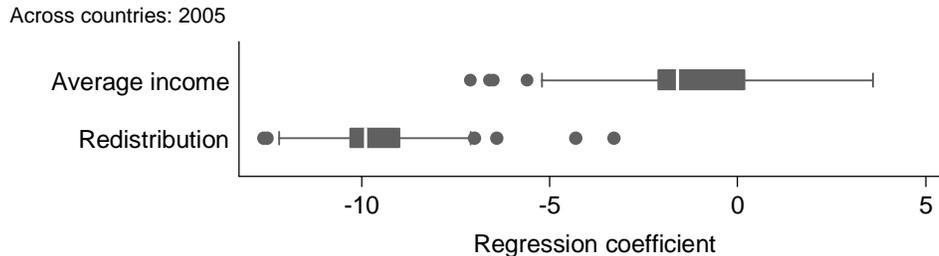
Figure 6 shows bivariate scatterplots of material deprivation by average income and by redistribution. Unlike what we observed for low-end incomes, here we see a steeper slope and better fit for redistribution than for average income.

Figure 6. Material Deprivation by Average Income and by Redistribution: Across Countries in 2005



Note: Axes are truncated. Material deprivation is measured in 2005. GDP per capita and government social expenditures are measured as 2000-05 averages. Due to lack of material deprivation data, Canada and Switzerland are not included. For data definitions and sources, see the appendix.

Figure 7. Regression Results: Material Deprivation



*Note:* Ordinary least squares (OLS) regression coefficients. Dependent variable is the material deprivation rate in 2005. The vertical white line is the median coefficient. The edges of the box indicate the 25th- and 75th-percentile coefficients. The "whiskers" refer to the minimum and maximum coefficients. Separate dots indicate outliers — coefficients that are substantially larger or smaller than the others in that set. The average income (GDP per capita) and redistribution (adjusted government social expenditures) variables are measured in the same metric, so their coefficients can be compared directly. 35 regressions. The coefficient for average income is statistically significant at the .10 level in only five of the 35 regressions (one-tailed test). The coefficient for redistribution is always statistically significant at the .10 level and nearly always at the .05 level (one-tailed test). The standard errors are robust. The  $R^2$  for the regressions ranges from a low of .28 to a high of .51. The number of observations ranges from a low of 12 to a high of 15; Canada and Switzerland are missing from all of the regressions due to lack of material deprivation data. Results for control variables are not shown here. For data definitions and sources, see the appendix.

This is reinforced by regression analyses, the results of which are shown in figure 7. Most of the coefficients for average income have the expected negative sign, but they tend to be small. The coefficients for redistribution are consistently large. The median redistribution coefficient of -10 suggests that moving from the low end to the high end on redistributive generosity would reduce material deprivation by more than three standard deviations.

Our regression analysis here is hindered by the small number of observations and, perhaps more importantly, by multicollinearity. For the early 2000s our average income measure is strongly correlated with both education and unemployment, and our redistribution measure is strongly correlated with wage-bargaining coverage. This leaves us with only imports and employment in manufacturing as usable controls. We again estimate a series of regressions, but they differ mainly by the countries included rather than by the combination of control variables.

Why does GDP per capita seemingly have so little influence on absolute material deprivation when it is strongly associated with absolute low-end income levels? And why does redistribution apparently have such a strong impact on deprivation when it is only weakly related to low-end incomes?

One possibility is measurement error. However, the material deprivation data for thirteen of the fifteen countries come from the same questions in the same survey, the EU-SILC, administered in the same year. The data for the other two countries, Australia and the United States, come from similarly-worded questions

in country-specific surveys. There is little reason to assume more measurement error for the material deprivation data than for the low-end income data. And the results hold up when Australia and/or the United States is omitted.

Another is the lack of over-time data for material deprivation. Given the findings for low-end incomes, it seems likely that if we had longitudinal material deprivation data we would observe a beneficial effect of economic growth. The extent and degree of material deprivation in all affluent nations is much smaller than it was a century or even half a century ago (Lebergott 1976; Cox and Alm 1999), and that improvement rests heavily on the shoulders of rising average income. The same appears to be true of Ireland in the period from the early 1990s through the mid-2000s (Whelan, Noland, and Maître 2007).<sup>16</sup>

Yet the cross-sectional findings for 2005 are striking, and there is a plausible substantive reason why they differ from those for low-end incomes: the role of government services in alleviating material hardship among those with low incomes. Services counted in the government social expenditures measure include those for medical care, child care, retraining, job placement, housing, and special assistance for the elderly and disabled. Service provision both directly improves material well-being and also frees up income for use in purchasing other goods and services.

## **Conclusion**

Citizens, policy makers, and social scientists have long been concerned about the material well-being of the poor, and rightly so. Our aim in this paper has been to examine how the poor fare in affluent countries and to explore the utility of two approaches to advancing their well-being. The "rising tide lifts all boats" perspective suggests that the poor benefit most when average income is high. The "redistribution" view holds that government transfers and services are key.

We find clear indication that economic growth tends to be good for the poor.<sup>17</sup> Over the period from 1980 to 2005, improvements in low-end (tenth-percentile) absolute incomes in the affluent countries for which data are available have been driven by increases in GDP per capita rather than by redistribution.

<sup>16</sup>Relatedly, Boarini and Mira d'Ercole (OECD 2008, ch. 7) find that across the full set of European countries, including the less affluent ones, there is a fairly strong negative association between per capita GDP and material deprivation.

<sup>17</sup>This contrasts with Scruggs and Allan's (2006, pp. 900-01) conclusion. But they misleadingly interpret a lack of association between changes (growth) in GDP per capita and levels of absolute poverty as implying no impact of economic growth.

Economic growth does not, however, automatically translate into improved material well-being among the poor. Some rich nations — Australia, Austria, Canada, Germany, Italy, Switzerland, the United Kingdom (1980-95), and the United States (1980-95 and 2000-05) — have experienced lengthy periods of economic growth with little or no rise in the incomes of low-end households. Most of these countries are among those with comparatively low redistribution. In nations where social policy is more generous, economic growth has been much more likely to translate into income growth for low-end households. Government transfers act as a conduit through which economic growth trickles down to households with no labor market earnings, and public services may contribute to rising employment and wages for those in low-end households.

When we turn to cross-sectional patterns at a point in time, we again find that GDP per capita is much more strongly associated with tenth-percentile household income levels than is redistribution. However, with economic growth tending to trickle down to a greater degree in countries with more generous redistributive programs, the cross-sectional association between redistribution and low-end incomes has been getting steadily stronger over time.

For material deprivation we can only examine the cross-sectional pattern at a single point in time, the mid-2000s. The data suggest that redistribution is very important here. The difference between this finding and that for low-end incomes is due in part to lack of over-time data but also to the fact that government services matter directly for material well-being but only indirectly for household incomes.

Our findings, then, suggest that both economic growth and redistribution have been good for low-end households in affluent nations. What does this imply for future improvements in the material well-being of the poor in these countries?

For all of these nations economic growth will continue to be vital. That seems particularly true for countries such as the Nordic ones, which already are heavily redistributive. In Denmark and Sweden, for example, about 50% of GDP is collected in taxes and spent by the government. There is room for enhanced redistribution; transfers and services could be targeted more toward the poor. This would not be easy politically, however, as high levels of taxation are possible in these countries in part because government benefits and services go to a large share of the population. The universalistic nature of these programs heightens the willingness of the middle class and the wealthy to be heavily taxed (Korpi and Palme 1998; Rothstein 1998).

In the nations that currently have less generous social policies, our findings suggest that redistribution may be of help in two ways. One is direct: transfers and services reduce material deprivation. The other is indirect: generous redistributive programs boost the impact of economic growth on low-end household incomes.

Will these countries increase redistribution? Three obstacles are commonly noted. First, globalization is widely thought to require low taxes. The evidence thus far, however, does not support this hypothesis; there has been little reduction in taxation in the rich countries in recent decades (Genschel 2002; Ganghof 2005). Second, redistribution is believed to impede economic growth (Okun 1975). This is a source of longstanding disagreement among researchers. Though it is by no means the final answer, the pattern in the third chart in figure 2 suggests reason for skepticism about the tradeoff notion (Atkinson 1995; Lindert 2004). A third potential obstacle is public opinion. Yet even in the United States, which has the political culture least favorable to redistributive generosity, surveys suggest considerable public support for government programs that work, including redistributive ones (Gilens 1999; Page and Jacobs 2009).

We do not know whether and to what extent redistributive generosity will be increased in coming years. Our findings, though, suggest that a movement in this direction might well improve the material well-being of society's least fortunate.

## **Appendix: Data Definitions and Sources**

*Average income.* Gross domestic product (GDP) per capita, adjusted for inflation and converted into U.S. dollars using purchasing power parities (PPPs). Rescaled to range from zero to one. Source: Authors' calculations from data in OECD (2009).

*Education.* Average years of schooling completed among the population age 25 and over. Source: Barro and Lee (n.d.).

*Employment in agriculture.* Employment in agriculture as a share of the population age 15 to 64. Source: Authors' calculations from data in OECD (2009).

*Imports.* Imports as a share of GDP. Source: Authors' calculations from data in OECD (2009).

*Low-end incomes.* Tenth-percentile (P10) household income per equivalent person. Incomes are adjusted for inflation and converted into year-2000 U.S. dollars using purchasing power parities (PPPs), adjusted for household size using the square root of the number of persons in the household as the equivalence scale, top-coded at 10 times the unequivalized median, and bottom-coded at 1% of the equivalized mean. Source: Authors' calculations from Luxembourg Income Study household income data (variable: DPI) and OECD (2009) inflation and PPP data.

*Material deprivation.* Average share of respondents reporting deprivation as of the mid-2000s in seven areas: inability to adequately heat home, constrained food choices, overcrowding, poor environmental conditions, arrears in payments of utility bills, arrears in mortgage or rent payments, and difficulty making ends meet. Source: OECD (2008, pp. 186-88), using data from the

Survey on Income and Living Conditions (EU-SILC) for European countries, the Household Income and Labour Dynamics in Australia survey (HILDA) for Australia, and the Survey of Income and Program Participation (SIPP) for the United States.

*Redistribution.* Government social expenditures as a share of GDP, adjusted (see the text for details) for the share of the population age 65 and over and for the unemployment rate. Rescaled to range from zero to one. The data include public spending in nine areas of social policy: old age, survivors, incapacity-related benefits, health, family, active labor market programs, unemployment, housing, and other. Source: Authors' calculations from data in OECD (2009).

*Unemployment.* Unemployed persons as a share of the labor force. Source: OECD (2009).

*Wage-bargaining coverage.* Share of employees whose wages are determined by collective bargaining. Source: Visser (2009).

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