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# **Luxembourg Income Study Working Paper Series**

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**Income Distribution in 14 OECD Nations, 1967-2000:  
Evidence from the Luxembourg Income Study**

**Thomas Volscho, Jr.**

**August 2004**



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**Luxembourg Income Study (LIS), asbl**

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**Income Distribution in 14 OECD Nations, 1967-2000: Evidence from the  
Luxembourg Income Study**

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August 2004

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## **Introduction**

The distribution of income has long been of concern to sociologists. Increasing levels of income inequality in industrialized nations such as the United States have redirected sociological attention to the underlying causes of income inequality (Harrison and Bluestone 1988; Nielsen and Alderson 1997; Morris and Western 1999; Chevan and Stokes 2000; McCall 2001). While inequality in the distribution of income among nations has been diminishing, income inequality within nations has been increasing (Goesling 2001; Firebaugh 2003). Importantly, the growth of inequality has increased at a higher rate in some countries than others and there exist distinct income inequality trajectories for individual OECD nations (Atkinson, Rainwater, and Smeeding 1995; Gottschalk and Smeeding 1997; Alderson and Nielsen 2002). For instance, the United States and the United Kingdom have witnessed substantial increases in income inequality (Johnson and Webb 1993; Jenkins 2000), while nations such as Sweden have only seen small increases in income inequality (Eriksson and Pettersson 2000). What explains variation across space and time in the distribution of income within OECD nations?

Several explanations of income inequality have been offered by comparative researchers in sociology, economics, and political science. Economists have long used macroeconomic factors such as development, unemployment, and inflation to explain the distribution of income (Kuznets 1955; Blinder and Esaki 1978; Blank and Blinder 1986; Blank and Card 1993; Mocan 1999). Sociologists have typically controlled for macroeconomic variables and focused on measures of class struggle to explain income inequality (Kalleberg, Wallace, and Raffalovich 1984; Rubin 1986; 1988; Raffalovich, Leicht, and Wallace 1992; Wallace, Leicht and Raffalovich 1999). Recently, researchers

have begun estimating the impact of trade with less developed nations and manufacturing's employment share on income inequality in OECD nations (Gustafsson and Johansson 1999; Alderson and Nielsen 2002; Bradley et al. 2003; Moller et al. 2003). In recent years, there has also been an increased interest in the effects of welfare spending (Korpi and Palme 1998; Gustafsson and Johansson 1999; Kenworthy 1999; Brady 2003a; 2003b; Bradley et al. 2003; Moller et al. 2003). While such studies have advanced our understanding of income inequality, various unanswered questions remain.

#### Discrepant Findings, Unresolved Questions and Summary Measures of Inequality

Several discrepant findings from recent studies of OECD nations require attention. The effect of unemployment has been found to increase pre-tax and transfer income inequality and poverty and reduce income inequality and poverty after taxes and transfers (Brady 2003a; Bradley et al. 2003; Moller et al. 2003) with little support for a link between unemployment and after-tax and transfer income inequality found in other studies (e.g., Gustafsson and Johansson 1999). Similarly, some analyses have found that manufacturing employment reduces income inequality (Gustafsson and Johansson 1999; Moller et al. 2003), while other studies have found no effect (Alderson and Nielsen 2002; Bradley et al. 2003). Related to this, the impact of trade with less developed countries has been the subject of conflicting findings. Some analyses find a positive and significant impact of trade with less developed countries (Gustafsson and Johansson 1999; Alderson and Nielsen 2002), while other studies find no effect of trade (Mahler 2001; Bradley et al. 2003; Moller et al. 2003).

Another problem is that most of the aforementioned studies have used a summary measure of income inequality such as the Gini index. While the Gini index and other summary measures are useful statistics for characterizing the degree of income inequality, such measures do not exploit the full range of information contained in the micro-data from which they are computed. Summary indices may be useful for testing whether a variable increases or decreases income inequality, but such measures do not yield precise estimates of the magnitude of the effect a given variable has on the distribution of income. Additionally, measures such as the Gini index are overly sensitive to the middle of the income distribution and less sensitive to other parts of the income distribution (Allison 1978; Schwarz and Winship 1980; Firebaugh 2003). If a variable has a stronger effect on the bottom than on the middle of the income distribution, then it is possible that analyses using the Gini index as a dependent variable may not detect the effects of such factors.<sup>1</sup>

### Scope of Present Research

In this paper, I advance our understanding of income inequality by examining quintile shares of income among households headed by someone age 25-59 in 14 OECD nations. In examining quintile shares, I hope to resolve the contradictory findings from past research. Furthermore, the analysis is restricted to working-age households for two reasons: 1) many of the theoretical explanations considered in this paper are premised

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<sup>1</sup> Ambiguity in the ranking of nations as to their degree of income inequality frequently occurs when Lorenz curves cross (e.g., Schwartz and Winship 1980). The Gini coefficient places more weight on the middle of the distribution, whereas measures such as the Mean Logarithmic Deviation (MLD) place more weight on the bottom of the distribution. Society A could have a higher Gini index than Society B indicating greater inequality in Society A. However, Society B may have a greater MLD than Society A indicating greater inequality in Society B. This may produce a problem in regression analyses on the inequality index as some factors (independent variables) may not be important for all parts of the income distribution. Therefore not all inequality indices will covary with all independent variables that influence income inequality.

upon labor market conditions (e.g., the role of imports from less developed countries, unemployment) and 2) recent analyses have examined this population because some analysts contend that the welfare state redistributes income among age groups (see e.g., Bradley et al. 2003; Moller et al. 2003). Following the lead of these recent studies (Brady 2003b; Bradley et al. 2003; Moller et al. 2003), I examine two concepts of income: 1) market-generated income and 2) all income after taxes and transfers. By focusing on market-generated income and income after taxes and transfers, my analyses can provide insight into how various factors influence the distribution of income obtained in the market as well as how these same factors influence the distribution of income after government mediation through taxes and transfers

I focus on the several explanations of income inequality mentioned at the beginning of this paper: macroeconomic, trade and industrial sector, class struggle, government wage setting, and welfare spending. As a departure from past research, I examine quintile shares instead of summary indices of income inequality.<sup>2</sup> By examining quintile shares I argue that we may 1) resolve some of the discrepant findings in past literature, 2) gain a better sense of the location in the distribution at which different variables impact income inequality, and 3) obtain estimates of the magnitude of the effect different factors have on income inequality.

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<sup>2</sup> As past researchers have examined summary measures of income inequality, they have employed the language of “positive” (inequality increasing) and “negative” (inequality decreasing) effects, when referring to the effects of independent variables. Instead, I employ the language of “progressive” and “regressive” effects. Regressive means that higher levels of a variable redistribute income from households in poorer quintiles to households in wealthier quintiles, while progressive means that higher levels of a variable redistribute income from households in wealthier quintiles to households in poorer quintiles.

## **Theories of Income Inequality**

### Macroeconomic Theories

The link between a nation's level of economic development and its level of income inequality has long been shown to be curvilinear---at first rising with development, peaking, and then decreasing at the highest levels of economic development (Kuznets 1955; Williamson and Lindert 1980; Nielsen 1994). In recent years, analysts have uncovered a third trend at the tail of the Kuznets curve, in highly developed societies, sometimes referred to as "The Great U-turn" (Harrison and Bluestone 1988; Nielsen and Alderson 1997). With increasing economic development, income inequality decreases, but at the highest levels of development, income inequality begins to increase.

Past studies focusing on advanced industrial nations suggest that increases in economic development generate greater levels of income inequality (Nielsen and Alderson 1995; Gustafsson and Johansson 1999; Bradley et al. 2003). Based on theory and previous literature, I predict economic development to have a progressive then regressive effect on the distribution of income.

Macroeconomists working with time-series data have focused on two other factors as an explanation of income inequality: unemployment and inflation. As unemployment increases, the degree of income inequality increases. As the rate of inflation increases, income inequality decreases (Blinder and Esaki 1978; Blank and Blinder 1986; Jantti 1994). The decline in income inequality in the United States after World War II has long been attributed, by many scholars, to the pursuit of full-employment policies (Atkinson 1975; Galbraith 1998; Bluestone and Harrison 2000).



The link between the unemployment rate and income inequality arises because a disproportionate share of household income comes from wages and salaries.

In a society with high unemployment, many households are likely to have their wage and salary income cut off or substantially reduced. Additionally, an accumulating body of evidence suggests that average wages are lower in the context of high unemployment (Blanchflower and Oswald 1994). If the relation between lower average wages and unemployment is linked to bargaining conditions, then it is likely that employers are advantaged in such a situation. If high income households obtain a large share of their income from ownership of firms and bargaining conditions favor employers, then in high unemployment contexts, high income households are likely to obtain a larger proportion of society's income. As such, one study of the effect of unemployment on income inequality, using data on the United Kingdom, found that the share of the top 10 percent increased with increases in unemployment (Nolan 1986). Similarly, Blank and Blinder's (1986) time-series study of the United States suggested that families in the lowest quintile suffered the most from the effects of unemployment.

Recent cross-national research has found that unemployment increases the inequality in income generated by the market, but unemployment creates pressures for income redistribution (Brady 2003a; 2003b; Bradley et al. 2003; Moller et al. 2003). Analyses of the level of income inequality after taxes and transfers, however, have found no significant effect of unemployment on income inequality (Gustafsson and Johansson 1999). Based on the results from most of the previous analyses, I hypothesize that 1) unemployment has a regressive impact on the distribution of market-generated income

and 2) unemployment has a progressive impact on the distribution of income after taxes and transfers.

Inflation has typically been found to be progressive in its effects on income inequality (Blinder and Esaki 1978; Jantti 1994). In some studies, however, the evidence has been moderate for this relationship (Blank and Blinder 1986) or not significantly different than zero (Gustafsson and Johansson 1999). The link between inflation and income inequality is not theorized clearly. Some observers suggest that inflation reduces income inequality because greater inflation, assuming a progressive income tax, pushes higher income individuals or households into higher tax brackets resulting in a more equal distribution of income after taxes and transfers (Osberg 1984; Gustafsson and Johansson 1999). However, this would not explain why inflation reduces income inequality in pre-tax income (e.g., Blank and Blinder 1986). Nonetheless, based on the findings of previous research, I expect inflation to have a progressive effect on income inequality.

### International Trade and the Industrial Manufacturing Sector

Trade has long been posited as a potential factor generating income inequality in advanced industrial nations. Although most of the imports that advanced industrial nations receive are from other advanced industrial nations (Galbraith 1998; Alderson and Nielsen 2002), there exists significant variation across OECD nations in the proportion of imports from Less Developed Countries (LDCs). For instance, in Australia in 1994, 28.6 percent of all imports were from LDCs, while in the United States in 1997 46.8 percent of all imports were from LDCs (IMF, Direction of Trade Statistics Yearbook, various

issues). The link between income inequality and trade, many theorize, is because trade with LDCs disadvantages unskilled labor in OECD nations and this generates inequality between the skilled and unskilled within OECD nations (Wood 1994; Tonelson 2000). Firms, some evidence suggests, respond to import competition by outsourcing production to LDCs such that the share of wages going to skilled labor in OECD nations increases (Feenstra and Hanson 1996; Strauss-Kahn 2004). Cross-national studies of LDC imports and household income inequality have generated conflicting findings.

Examining the distribution of income among households after taxes and transfers, two studies found a strong positive association between LDC imports and income inequality (Gustafsson and Johansson 1999; Alderson and Nielsen 2002). Conversely, several recent studies of income inequality and poverty, restricting their analysis to households with a head between the ages of 25 and 59, found little evidence for a positive association between LDC imports and market income inequality, market income poverty, or the reduction in income inequality or poverty after taxes and transfers (Mahler 2001; Bradley et al. 2003; Moller et al. 2003). Despite the null results from recent analyses, I expect trade with LDCs to have a regressive effect on the distribution of income.

Another explanation of income inequality concerns deindustrialization: the vanishing manufacturing sector in advanced capitalist nations. Most OECD nations have experienced a relative decline in manufacturing employment (Bluestone and Harrison 1982; Alderson 1999). The loss of manufacturing imports is salient because wages for unskilled workers in manufacturing tend to be higher than for unskilled workers in other sectors. Additionally, manufacturing has long had a more compressed distribution of earnings (Ryscavage 1999). Comparative studies of U.S. cities suggest that service

sector expansion increases earnings inequality (Nord 1990; Lorence and Nelson 1993). Analyses of county-level U.S. data indicate that the effect of manufacturing employment on income inequality diminished steadily over a twenty year period (Nielsen and Alderson 1997; Chevan and Stokes 2000). Some cross-national studies find a significant inverse association between manufacturing employment and household income inequality or poverty (Gustafsson and Johansson 1999; Moller et al. 2003; Brady 2004), while others find little evidence for its effect on market-generated household income inequality (Bradley et al. 2003) or income inequality after taxes and transfers in fully specified models (Alderson and Nielsen 2002). Despite these contradictory findings, I expect that nations with a greater percentage employed in manufacturing to have lower levels of income inequality.

### Class Struggle Views of Income Inequality

Sociological theorists and political scientists have long reasoned that conflict occurs over the distribution of resources in society and that the final distribution of valued resources is the outcome of conflict (Stephens 1979; Wright 2000). Consideration of union effects is important as some analysts suggest the power of labor has weakened in advanced industrial nations (e.g., Western 1995). Aggregate class mobilization allows workers to obtain a variety of pecuniary and non-pecuniary rewards (Kalleberg, Wallace, and Althaus 1981; Wallace, Leicht, and Raffalovich 1999). Applications of the class struggle view in sociology yield general hypotheses such that "...increases in capital's power will decrease labor's share of income by increasing profits and decreasing or simply maintaining wages and compensation." (Kalleberg, et al., 1984: 391). Political

scientists have drawn from Power Resources Theory (Stephens 1976; Korpi 1983) and applied it as an explanation of income inequality and poverty (Bradley et al. 2003; Moller et al. 2003). The distribution of income in the market and the ability of the state to redistribute income are hypothesized to be a function of the power of labor in democracies. This power is expressed as union membership and the degree to which a country's cabinet positions have been occupied by left parties (Huber, Ragin, and Stephens 1993; Bradley et al. 2003; Moller et al. 2003). Left parties in government "...bypass the market precisely in order to counteract inequalities stemming from position in the labor market," (Huber, Ragin, and Stephens 1993: 717), while unions function to achieve a greater equality in the distribution of market income.

In the labor market, unions may function to decrease the level of income inequality by increasing wages for unskilled workers. Increases in unionization have long been found to redistribute income from capital to labor (Freeman and Medoff 1984; Kalleberg et al. 1984; Raffalovich et al. 1992; Wallace et al. 1999). A mechanism by which unions may translate their power into income redistribution is through a "threat effect" in that, even if not all workers are organized, greater relative contextual presence of union members signals to capital a heightened probability that unorganized workers may become organized (Leicht 1989). Therefore, capital decides to increase the wages of unorganized workers so they do not form unions. Unions have routinely been linked to lower levels of wage inequality in OECD nations (e.g., Stephens 1976; Rueda and Pontusson 2000). Market-generated income inequality is lower in nations with greater union density (Rubin 1988; Gustafsson and Johansson 1999; Alderson and Nielsen 2002;

Bradley et al. 2003). Therefore, I expect union membership to have a progressive effect on the distribution of market income.

Longer periods of left cabinet rule has been found to increase the redistribution of income after taxes and transfers (Bradley et al. 2003; Moller et al. 2003). One recent study of poverty found that left government rule is channeled through the welfare state to reduce poverty after taxes and transfers (Brady 2003b). The arguments of Korpi and Stephens suggest that, "...longer periods of rule by the left will be associated with greater social spending ceteris paribus and that the distributive profile of the welfare state will be more favorable to lower-income groups," (Bradley et al. 2003: 197). Therefore, greater cumulative left cabinet share should have a progressive effect on the distribution of income after taxes and transfers.

### Welfare Effort and Government Wage Setting

Sociologists have long advanced arguments concerning welfare state formation and development (e.g., Esping-Andersen 1990; Hicks 1999). While formation and development are undoubtedly important, scholars have redirected their attention to the central intended function of the welfare state: the redistribution of income (Korpi and Palme 1998; Kenworthy 1999; Brady 2003a).

Earlier, and sometimes overlooked, research in sociology considered the redistributive impact of the welfare state. For instance, Devine (1983) used U.S. time series data and advanced an understanding of how the welfare state influences labor's income relative to capital's income and Treas (1983) examined the distribution of income within different family types (married couple, female-headed, single householders).

Written during the tide of rising conservatism in the 1980s, both of these analysts sought to test how the welfare state and government extraction (i.e. taxation) influence income inequality in comparison to the potential impact of economic growth. Using labor-capital income ratios, Devine found that "...the American state's extractive mechanism has a decidedly procapital bias...however, the overall impact of state spending serves to benefit labor relative to capital..." (1983: 618). Looking at the distribution of income within various family types, welfare benefits played a crucial role in determining the distribution of income in the postwar years while economic growth had effects on most family types statistically indistinguishable from zero (Treas 1983).

Nations that spend a large percentage of GDP on social security transfers are those most likely to focus their redistributive efforts universally as opposed to targeting specific segments of the population through means-testing (Korpi and Palme 1998). Universal benefit payment systems are more likely to reduce inequality and poverty than targeting benefits specifically at particular segments of the population (Korpi and Palme 1998). A larger welfare state with a more universalistic benefit structure increases the well-being of a larger share of the population while the bottom-targeted means-tested welfare system (e.g., United States) does not gain popular support because it is seen as benefiting some at the expense of others (Moene and Wallerstein 1997).

Second generation research using data from the Luxembourg Income Study (LIS) has recently begun to examine welfare spending effects using cross-national data (Korpi and Palme 1998; Gustafsson and Johansson 1999; Kenworthy 1999; Brady 2003a; 2003b; Bradley et al. 2003; Moller et al. 2003; Brady 2004). These studies have generally found that increases in the percentage of GDP spent on social security transfers coincide with

lower levels of income inequality and poverty. Therefore, I expect nations with greater levels of GDP spent on social security transfers to have lower levels of income inequality. One question such analyses leave unanswered is what part of the income distribution benefits from increases in social security spending and by how much do they benefit? The methodology used in this paper allows us to answer these questions.

The last dimension of welfare effort I address concerns the extent of government involvement in wage setting. While past studies have examined the effects of wage coordination among business, labor, and the state on income inequality (e.g., Alderson and Nielsen 2002; Bradley et al. 2003), they have overlooked the impact of the degree of direct government involvement in wage setting. Much variation exists in the degree to which governments are involved in the setting of wages across nations (Wallerstein 1999). The notion of government involvement in the wage-setting process implies influences on wages other than supply and demand. From a neoclassical standpoint, government wage setting may increase the inequality of market income because labor demand would be lower in contexts where it is not set by market forces. Of course, if trade unions can compel employers not to engage in massive layoffs to compensate for greater government involvement, then government intervention may increase wages and thereby reduce income inequality.

### **Data and Methods**

This study assesses hypotheses from the aforementioned theoretical perspectives using information from several sources. The dataset represents an unbalanced panel of 74



observations based on 14 OECD nations covering 1967 through 2000.<sup>3</sup> The dependent variables were computed from the Luxembourg Income Study (LIS) database. The LIS offers users the ability to construct their own definitions and measures of income. Following the lead of recent research, I examine the distribution of income among households headed by someone in the age range (25-59) of those likely to be in the labor force (e.g., Bradley et al. 2003). While most of the previous cross-national research has examined the Gini index of income inequality (Korpi and Palme 1998; Gustafsson and Johansson 1999; Alderson and Nielsen 2002; Bradley et al. 2003), I break from this tradition and examine quintile shares of income (e.g., Blinder and Esaki 1978; Blank and Blinder 1986; Rubin 1988; Jantti 1994). Quintile shares represent the aggregate percentage of income received by households within five groups ranging from the poorest 20 percent to the richest 20 percent of the income distribution.

### Dependent Variables

I examine the distribution of market-generated income and the distribution of income after taxes and transfers. Market-generated income consists of wage and salary income<sup>4</sup>, self-employment income, cash property income, private pensions, alimony and child support, and other regular private income. Income after taxes and transfers includes market income plus all social welfare transfers, less taxes. Income is adjusted for

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<sup>3</sup> The nations and number of observations included are: Australia (4), Belgium (3), Canada (8), Denmark (4), Finland (4), France (5), Germany (8), Italy (7), Netherlands (4), Norway (5), Sweden (7), Switzerland (1), United Kingdom (8), and United States (6). Market-generated income was not available for Austria and Government Wage Setting measures were not available for Ireland, therefore these nations are not used in the analyses.

<sup>4</sup> For a handful of observations, the LIS only contains data on net wage and salary income (Belgium 1985 and 1988; France 1981, 1984, 1989, and 1994; Italy 1986, 1987, 1989, 1991, 1993, 1995, and 1998). Past research has also used market-generated income and it is unclear if the authors took into consideration the fact that only net wage and salary income was available for certain cases. I use a dummy variable for country-years where only net wage and salary income is available. In supplementary analyses, I removed the cases listed above and the substantive results were the same as the substantive results of the analyses reported in this paper.

household size by taking household income over the square root of household size (Smeeding 1991; Atkinson, et al. 1995). I computed quintile shares for market income and income after taxes and transfers from the LIS database for households 25-59 with nonzero positive incomes after taxes and transfers. All estimates use the available sampling weights to achieve population estimates.

### Independent Variables

Macroeconomic theories of income inequality are measured with three variables used in past research. The economic development component, Log GDP per capita, is measured as the natural logarithm of gross domestic product in purchasing power parity (PPP) dollars divided by population size (OECD 2003).<sup>5</sup> Following the U-turn arguments (e.g., Harrison and Bluestone 1988), I enter Log GDP per capita as a second degree polynomial. Unemployment is the unemployment rate for different nations and is standardized to permit comparable cross-national and temporal comparison (Armingeon, Beyeler, and Menegale 2002). Inflation is the annual percentage change in the consumer price index (OECD 2003).

The variable for international trade, LDC Imports, is expressed as the dollar value of imports from less developed countries as a percentage of the dollar value of all imports. This measure was computed from various issues of the International Monetary Fund's *Direction of Trade Statistics Yearbook*. Industrial manufacturing employment, Industrial Employment, is measured as the percentage of civilian labor force employment in manufacturing, mining, quarrying, and utilities (computed from data in Armingeon et al. 2002; see also Gustafsson and Johansson 1999; Moller et al. 2003).

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<sup>5</sup> The PPP adjustment allows for comparable assessment of GDP across time and space (Firebaugh 1999; Brady 2003b).

Class struggle variables include, Log Union Density, the natural log of union members as a percentage of the labor force (see Scruggs 2002).<sup>6</sup> To measure the effect of left political parties, Cumulative Left Cabinet Share, measures the cumulative percentage of cabinet positions inhabited by left parties since the year 1960 (computed from Armingeon et al. 2002; see also Brady 2003b; Bradley et al. 2003; Moller et al. 2003).<sup>7</sup>

The welfare effort measure is Social Security Transfers, the aggregate government expenditure on benefits for sickness, old-age, family allowances, and other benefits expressed as a percentage of GDP (Armingeon et al. 2002). Government wage setting, Gov't Wage Setting, is measured with a 15 level index moving from lower to higher levels of wage setting (Golden, Lange, and Wallerstein and Wallerstein 1995).<sup>8</sup> Preliminary examination of scatterplots between Gov't Wage Setting and each quintile share suggested a curvilinear relation. Therefore, I enter this variable as a second degree polynomial.<sup>9</sup>

Two control variables are also entered into the regressions. The proportion of female-headed households has long been shown to increase income inequality (Nielsen and Alderson 1997). I computed this measure from the LIS database and it represents the percentage of female-headed (no married couple present, head age 25-59) of all

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<sup>6</sup> Measures of union membership were kindly provided by Lyle Scruggs. Union density is logged to stabilize its variance as raw union membership exhibited positive skewness.

<sup>7</sup> The distribution of this variable does not exhibit as much skewness as union membership, therefore no transformation was applied. See Appendix I for the complete data matrix.

<sup>8</sup> The 15 level scores represent: 1=No government involvement, 2=government establishes minimum wage(s), 3=government extends collective agreements, 4=government provides economic forecasts to bargaining partners, 5=government recommends wage guidelines or norms, 6=government and unions negotiate wage guidelines, 7=government imposes wage controls in selected industries, 8=government imposes cost of living adjustment, 9=formal tripartite agreement for national wage schedule without sanctions, 10=formal tripartite agreement for national wage schedule with sanctions, 11=government arbitrator imposes wage schedules without sanctions on unions, 12=government arbitrator imposes national wage schedule with sanctions, 13=government imposes national wage schedule with sanctions, 14=formal tripartite agreement for national wage schedule with supplementary local bargaining prohibited, 15=government imposes wage freeze and prohibits supplementary local bargaining.

<sup>9</sup> I also experimented with Lane Kenworthy's wage coordination measure, but found no significant relation.

households (head 25-59). In some countries only net wage and salary income is available so I include a binary indicator (1=yes) to account for this.<sup>10</sup> Descriptive statistics are included in Table 1.

### Estimation Method

The dataset represents an unbalanced panel based on a small sample (N=74). Ordinary Least Squares (OLS) estimation is thought to be problematic because of the possibility that unobserved country-specific effects are present (Hsiao 2003). Detailed discussions of panel data techniques have been outlined in various papers (e.g., Alderson and Nielsen 1999; Gustafsson and Johansson 1999; Teachman et al. 2001). I first estimated Random Effects Models (REM) with Generalized Least Squares, however rho was equal to zero, therefore the REM estimates became equivalent to pooled OLS. Additionally, REM imposes more restrictive assumptions than pooled OLS (Wooldridge 2002: 257).<sup>11,12</sup> Therefore, I estimate pooled OLS models in combination with robust-cluster standard errors (Wooldridge 2002; see also Bradley et al. 2003; Moller et al. 2003). These standard errors adjust for the non-independence of error terms within countries and are robust to heteroskedasticity.<sup>13</sup>

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<sup>10</sup> I also estimated equations that deleted country-years (12 datapoints) where only net wage and salary income was available and the results were substantively similar to what is reported in this paper.

<sup>11</sup> REM imposes the assumptions of strict exogeneity (effects of independent variables are exogenous conditional on the unobserved effect) and the assumption of orthogonality (expected value of the unobserved effect conditional on the independent variables equals zero).

<sup>12</sup> Seemingly Unrelated Regression (SUR) methods are another way to estimate these models, however, when all right hand side variables are the same, SUR reduces to OLS.

<sup>13</sup> I also conducted statistical inference based on “hc3” standard errors (as per Long and Ervin 2000). The conclusions are the same regardless of standard error technique.

## Results

Table 2 presents the results for market-generated income inequality. All right hand side variables are the same in each of the five equations permitting an analysis of a given variable's influence on different parts of the income distribution.<sup>14</sup> Given the nature of the dependent variable, we can also obtain estimates of the magnitude of the effect—the expected percentage of income transferred to or away from a quintile given a specified change in an independent variable.

### Market-Generated Income Shares

The results from the regressions in Table 2 for market-generated income inequality suggest that one macroeconomic factor, unemployment, has a significant regressive effect on market income inequality. In nations with higher levels of unemployment, the share of market income accruing to the bottom 40 percent declines with increases in unemployment. Each 1 percent increase in unemployment reduces the bottom 20 percent's share of market income by 0.317 percent and the second quintile's share of income by 0.159 percent. Some observers have suggested that unemployment disproportionately impacts those at the bottom of the income distribution (Blank and Blinder 1986). The bottom 20 percent would see their share of income drop by 1 percent

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<sup>14</sup> I examined variance inflation factor scores for each independent variable. Only the independent variables with second degree polynomials have VIFs greater than 5 (which is to be expected when the squared term of a variable is included). All other variables have VIFs less than 5.0—half the cutoff of 10.0 suggested by Gujarati as overly problematic (2003). Additionally, I examined a host of other regression diagnostics to detect influential observations: hat values, studentized residuals, Cook's D, and covariance ratios (Fox 1991). Belgium in 1988 and Switzerland in 1982, consistently had values for the various diagnostics that were above cutoff points suggested in Fox (1991). Additionally, I estimated a series of robust regressions using iteratively re-weighted least squares in STATA 7.0. This estimation technique is robust to influential cases and gives less weight to influential observations based on their values of Cook's D. The results were similar to the pooled OLS results after dropping Belgium in 1988 and Switzerland in 1982. For the sake of familiarity and given the availability of the robust-cluster standard error estimates, all analyses in this paper use pooled OLS estimation with robust-cluster standard errors.

given approximately a 3.15 percent increase in unemployment, while it would take about a 6.3 percent increase in unemployment to reduce the second quintile's income share by 1 percent.

Clearly, this suggests that unemployment disproportionately harms households at the bottom of the income distribution. The top 40 percent of the income distribution gain a greater share of the nation's market income in the context of high unemployment. Each 1 percent increase in unemployment raises the share of market income going to the fourth quintile by 0.108 percent and the share going to the fifth quintile by 0.383 percent. The results in Table 2 imply some support for the argument that inflation has a progressive effect on the income distribution: the bottom quintile gains from increases in inflation while the top quintile loses a small portion of income with greater rates of inflation.

The non-linear relation between economic development and income inequality is more salient for the upper reaches of the income distribution. Support for the U-shaped relation between development and inequality in highly developed societies is associated with redistribution from the top quintile to the third and fourth quintiles. Of all macroeconomic considerations, unemployment clearly has the largest impact on the distribution of income generated by the market.

Turning to factors related to globalization, international trade with less developed countries increases market-generated income inequality. The bottom three quintiles' share of market-generated income is lower in nations with a greater percentage of imports from less developed countries. Trade with less developed nations results in a redistribution of income away from households in the bottom three quintiles to households in the top quintile. A standard deviation increase in LDC imports would

reduce the share going to the bottom quintile by 0.560, the share going to the second quintile by 0.510, and the share going to the third quintile by 0.284 percentage points, respectively. As with unemployment, the effect of LDC imports disproportionately impacts the bottom of the income distribution.

Similarly, the percent of the civilian labor force employed in industry is associated with a lower level of market-generated income inequality. Greater industrial employment is associated with redistribution away from the top two quintiles to the bottom two quintiles. These results suggest that increases in trade with less developed nations can increase the income inequality generated by the market and that a reduction in industrial employment can increase income inequality.

The class struggle view of income inequality posits that unions and the cumulative share of left parties in cabinet posts both influence income inequality. Unions have most of their effect on redistribution among the upper quintiles of the market income distribution. Increases in union membership redistribute market income from the top quintile to the third quintile. The effect of a 10 percent increase in union membership raises the third quintile's market income share by 0.063 percentage points while lowering the top quintile's share by 0.165 percentage points.

The cumulative share of cabinet seats held by left parties since 1960 has a small regressive impact on the distribution of market income. The share accruing to the bottom quintiles decreases slightly with increases in cumulative left party cabinet memberships while the fifth quintile's share of market income increases slightly with higher cumulative left party incumbency. Consistent with power resources theory, then, the distribution of income generated by the market is, partially, a function of the relative size

of the labor force in labor unions. Increases in the cumulative proportion of seats held by left parties have a small regressive impact on the distribution of market income as some households may take left party incumbency as a signal that governmental redistribution will be greater and members of households in these quintiles possibly forgo labor effort reducing their share of market income.

The results in Table 2 suggest that market-generated income is a function of government involvement in wage setting. Government wage setting has a nonlinear impact on the distribution of market income. The inflection point for the first quintile is 9.46, 9.58 for the second quintile, 8.6 for the fourth quintile and 10.2 for the top quintile. The average of these inflection points is about 9.5, therefore the inflection point where wage setting shifts in influence is between 9 and 10. Sixty-four cases have wage setting scores below 10 with the remainder (10 cases) greater than 9. Cases with lower shares of market-generated income going to the bottom quintile (e.g., Canada, United Kingdom, United States) tend to have lower scores on government wage setting (scores of 1 to 2 indicating no government involvement and that the government only sets a minimum wage, respectively). The share of market-generated income going to the bottom quintile is higher in nations such as Finland, Italy, and Norway where wage setting scores range from 6 to 9 (6=government and unions negotiate wage guidelines, 7=government imposes wage controls in selected industries, 8=government imposes cost of living adjustment, 9=formal tripartite agreement for national wage schedules without sanctions). These results suggest low to intermediate levels of government involvement in wage setting may reduce the inequality in the distribution of income generated by the market,



but that there may be a diminishing return to increasing levels of government involvement.

The mean share of income going to the bottom quintile at levels of government wage setting of 9 or less is 4.84 while observations with government wage setting scores of 10 or greater, have 4.82 percent of market income, on average, going to the bottom quintile. For the second quintile, the average percentage of income received when government wage setting is 9 or less is 12.73 percent, and observations with wage setting scores of 10 or greater is 13.03. The mean share going to the fourth quintile at levels of government wage setting of 9 or less is 24.19 and the mean share going to this quintile at levels of 10 or greater is 24.50. At the top quintile, observations with government wage setting scores of 9 or less have a mean share of market income of 40.27 while observations with wage setting scores of 10 or greater have an average total share of market income of 39.29 going to the top twenty percent.

Since 64 cases percent (86.5 percent) of the cases have wage setting scores less than or equal to the inflection point (of approximately 9), and there does not seem to be much difference in the average quintile shares above and below the inflection point, I interpret the negative slope on the squared term for quintiles 1 and 2 and the positive slope for quintiles 4 and 5 as a diminishing redistributive return to increasingly greater levels of government involvement in wage setting.<sup>15</sup> While there seems to be a diminishing return to government involvement in wage setting at very high levels, the estimates suggest that greater government involvement in wage setting works to

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<sup>15</sup> In supplementary analyses I re-estimated the equations after dropping the 10 cases with government wage setting scores of 10 or greater. In these equations the squared term was also significant and yielded an inflection point that rounded to about 8 or 9 (the highest levels of wage setting in this sub-sample of country-years). This further supports the interpretation of a diminishing return to government wage setting.

redistribute income from the upper portions of the income distribution to the lower portions of the income distribution.

The coefficients for social security transfers in Table 2 indicates that greater values increase the share going to the third quintile but this variable has no slope statistically distinguishable from zero in any of the other equations. Thus, there is little evidence that social security transfer spending necessarily increases the inequality in household income generated by the market.

The distribution of income generated by the market is influenced by a diverse set of factors. Unemployment and trade with less developed countries have significant regressive impacts. Union density, the percentage employed in industry, and government wage setting all have an independent progressive impact on the distribution of market income. Additionally, there is some support for a nonlinear U-shaped relation between development and market income inequality and a slight progressive impact of inflation.

#### Income Inequality after Taxes and Transfers

Since the first part of the analysis examined the distribution of market income, the second step involves an analysis of the total distribution of income (market income plus social welfare transfers less taxes). Table 3 presents equations estimating the effects of various factors on the distribution of income after taxes and transfers. All equations in Table 3 enter market-generated quintile share as a regressor. Therefore, the estimates for all the other independent variables in Table 3 can be considered net effects (i.e. net of the effect of market-generated income).

Unemployment is associated with a greater share of income, after taxes and transfers, for the bottom two quintiles, consistent with recent research (e.g., Bradley et al.

2003). The other two macroeconomic factors, economic development and inflation have no impact on the total distribution of income. The effect of LDC imports is negative for the bottom two quintiles indicating that greater relative LDC imports are associated with a lower share of total income accruing to the bottom 40 percent of households and this is independent of the effect of market income. Each 1 percent increase in LDC imports is associated with approximately a 0.02 percentage point decline in the share going to the bottom two quintiles. Households in the fourth quintile experience approximately a 0.02 percentage point increase in their share of income, given a 1 percent increase in LDC imports.

The hypothesized nonlinear relation between economic development (GDP) and income inequality is not supported for income after taxes and transfers. Given the estimates from Table 2 the U-shaped relation between development and income inequality is salient for the distribution of market income only. Additionally, no progressive effect of inflation is found for income inequality after taxes and transfers.

Contrary to the finding for market-generated income, the percent of the civilian labor force employed in industry has a regressive impact on the final distribution of income. The top 20 percent has a higher share of income when the proportion employed in industry is greater. Net of the effect of market income, each 1 percent increase in industrial employment is associated with 0.040 percent reduction in the share of the bottom quintile and a 0.049 increase in the share of the top quintile. One possible explanation for the regressive effect after taxes and transfers is because the progressive effects of industrial employment in the market are strong enough to slightly reduce the

need for the state to redistribute income; however, I am unaware of any theoretical literature that advances this argument.

Past research (e.g. Rubin 1988), experimentation with functional form, and a thorough examination of scatterplots suggested that the log of union membership should be entered as a second degree polynomial.<sup>16</sup> The empirical results in Table 3 suggest that unions have a decreasing then increasing impact on income inequality after taxes and transfers, net of market income. We can solve for the antilog of the inflection point to obtain an estimate of the percentage in a labor union where the shift in slope occurs.<sup>17</sup> The inflection point for the first quintile corresponds to 29.7 percent of the labor force in a union, 29.1 percent for the second quintile, 23.1 percent for the third quintile, 37 percent for the fourth quintile, and 30.3 percent for the top 20 percent. Nineteen observations have union membership levels below 29 percent (ranging from 8.8 for France in 1994 to 28.9 for Canada in 1971), while the remaining fifty-five observations have union membership levels ranging from 29.2 (Canada in 1998) to 90.9 percent (Sweden in 2000).

Nations with low union density such as the United States and France tend to have the lowest shares of income accruing to the bottom two quintiles. For instance, the mean union density level of the United States over this period is 17.1 percent and the mean share of income after taxes and transfers for the bottom quintile is 6.5 percent and 12.8 percent for the second quintile. Similarly, mean union density is 13.2 percent for France

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<sup>16</sup> Furthermore, I used Akaike's Information Criterion (AIC) and the Bayesian Information Criterion (BIC) to assess whether or not the second degree polynomial was warranted. In both cases the AIC and BIC provided strong evidence of a better model fit when the quadratic specification of log union density was included in the models as opposed to just the linear term.

<sup>17</sup> The inflection points are 3.39 for the first quintile, 3.37 for the second quintile, 3.14 for the third quintile, 3.61 for the fourth quintile, and 3.41 for the fifth quintile share.

and the mean share of income accruing to the bottom two quintiles are 8.6 percent and 13.8 percent, respectively. Compare this to Finland with mean union density of 75 percent and mean share going to the bottom two quintiles of 11.2 percent and 15.8 percent, respectively. Likewise Sweden has a mean union density of 80.9 percent and average share of income after taxes and transfers going to the bottom quintile is 11 percent with 16.1 percent accruing to the second quintile.

Approximately twenty-one cases (28 percent of sample) have union membership levels less than 30 percent while the remaining 54 cases have union membership levels of 30 percent or greater. When union membership levels increase to 30 percent or greater, the result is an increasingly greater redistribution of after tax and transfer income.

Table 3 also demonstrates support for the hypothesis that a greater cumulative share of left government incumbency increase the redistribution of income.<sup>18</sup> Greater cumulative shares of left party government are associated with a redistribution of income from the third and fourth quintiles to the bottom quintile. Once again, nations without left party rule (the United States and Canada) tend to have lower shares of income going to the bottom quintile. Nations with high levels of cumulative left party incumbency tend to have greater shares going to the bottom quintile (Denmark, Norway, Finland, and Sweden). A standard deviation increase in left party incumbency is expected to increase the share going to the bottom quintile by 0.45 percentage points. This suggests income inequality is lower in nations with a greater cumulative share of government posts held by left parties, consistent with power resources theory.

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<sup>18</sup> I also examined the impact of Total Christian Democratic cabinet and found no significant effects (as per Bradley et al. 2003).

Social security spending is measured as a percentage of GDP. Increases in the percentage of GDP spent on social security transfers results in a redistribution of income away from the top two quintiles and towards the bottom quintile. Each 1 percent increase in GDP spent on social security transfers is associated with a 0.131 percentage point increase in the share of income going to the bottom fifth of all households. Each 7.6 percent increase in GDP spent on social security transfers results in a 1 percentage point increase in the share of income going to the bottom quintile, reducing the fourth quintile's share by 0.364 percentage points and the top quintile's share by 0.676 percentage points.

The predicted share of the bottom quintile, using the estimates in Table 3, for the United States in 1997 is 6.35 percent and the United States spent 12.6 percent of GDP on social transfers. If the United States instead had spending on social welfare transfers equal to Denmark in 1997 (18.9 percent), then the expected share going to the bottom quintile would increase to 7.2 percent, all else constant. Social security spending has a progressive influence on the distribution of income. When a greater proportion of GDP is spent on social security transfers, the result is a redistribution of income towards the bottom of the income distribution.

These results suggest that the distribution of income after taxes and transfers, net of market income, is influenced by a variety of factors. Most importantly, class struggle factors such as union density and left party government influence the distribution of income after taxes and transfers. The percentage of GDP spent on social security transfers, also has a large progressive impact on the distribution of income. As found in past research (Bradley et al. 2003; Moller et al. 2003), greater levels of unemployment

create pressures for income redistribution. However, trade with LDCs and greater levels of industrial employment reduce the shares going to the bottom quintiles after taxes and transfers. This suggests that international trade may reduce the ability of the taxes and transfers to redistribute income.

## **Summary**

This study contributes to our understanding of cross-national income inequality in 14 wealthy OECD nations by examining quintile shares of market-generated income and quintile shares of income after taxes and transfers. While past research has used summary measures of income inequality, the approach used in this paper allows for an assessment of the location and magnitude of the impact that various factors have on the distribution of income.

The distribution of market-generated income is influenced primarily by economic conditions such as unemployment, trade with less developed countries, industrial employment, and development, but also institutional factors such as unions and government wage setting. While much research has examined the impact of inflation and unemployment on income inequality (Blinder and Esaki 1978; Blank and Blinder 1986; Jantti 1994), across wealthy OECD nations, unemployment is most strongly related to income inequality—while unemployment generates greater market income inequality, it is associated with a redistribution of total income after taxes and transfers. The idea that unemployment is “the cruelest tax” (Blank and Blinder 1986) is not necessarily supported by the cross-national evidence used in this analysis. The “cruelty” of unemployment likely depends on the extent to which households in some nations are more or less

dependent on wage and salary income and the extent to which the welfare state responds to unemployment by redistributing income. Unemployment may be interpreted as a cruel tax in the United States, but less cruel of a tax in Denmark or Sweden.

Much research suggests a nonlinear relation between income inequality and development, typically deemed “the Great U-Turn” (Harrison and Bluestone 1988; Nielsen and Alderson 1997). I find that the U-shaped relation between development and income inequality within OECD nations results in a redistribution of market income among the upper quintiles. Low to intermediate levels of development redistribute income from the top quintile to the fourth quintile whereas intermediate to high levels of development shift income from the fourth to fifth quintile. There is no relation between development and income inequality after taxes and transfers.

The effect of trade with less developed nations on income inequality has been the subject of recurring debate among scholars (Wood 1994; Mahler 2001). I find strong evidence that trade with less developed nations increases the inequality in the distribution of market income by reducing the market income shares of the bottom sixty percent of households, in contrast to the non-effects reported in recent research using summary measures of income inequality and poverty (Mahler 2001; Bradley et al. 2003; Moller et al. 2003). Secondly, greater imports from less developed nations slightly reduce the share going to the bottom quintiles of the income distribution after taxes and transfers. Some evidence indicates that firms respond to import competition by outsourcing production (Strauss-Kahn 2004). Outsourcing likely impacts unskilled workers resulting in the diminished share of market income received by households in the bottom quintiles of the income distribution. Households higher in the income distribution likely contain



skilled workers and their share of wages typically increases with greater outsourcing of unskilled production (Feenstra and Hanson 1996). Globalization, in terms of trade with less developed nations, results in greater inequality in the distribution of income.

A large industrial sector is associated with the redistribution of market income from the top to bottom quintile. This is consistent with research suggesting that greater employment in manufacturing reduces income inequality (Nielsen and Alderson 1997). Inequality of income after taxes and transfers, net of market income, is increased slightly, in nations with greater industrial employment. One interpretation is that the state redistributes less income in the context of high industrial employment because greater industrial employment is associated with redistribution in the market. Another interpretation is that in the context of deindustrialization (Alderson 1999), nations attempt to retain industry by giving tax concessions to households in the top of the distribution and these tax breaks reduce the income available to redistribute to the bottom of the distribution. In general, these results imply that a declining industrial sector may generate greater household income inequality.

I find robust support for the political class struggle explanation of income inequality (Stephens 1976; Korpi 1983; Huber, Ragin, and Stephens 1993; Bradley et al. 2003). Unions reduce the inequality of market income and the inequality in total income after taxes and transfers. Most of the union effect in the market is redistribution from the top quintile to the middle quintile. Across wealthy OECD nations, unions impact the distribution of income after taxes and transfers most strongly. Simultaneously, greater left party incumbency increases the redistribution of income from the middle quintiles to the bottom quintile after taxes and transfers. These results suggest that two dimensions

of working class power---unions and formal left political institutions, are forces acting on the state to redistribute income. In contrast to past studies (e.g., Bradley et al. 2003), I find a simultaneous impact of cumulative left cabinet representation and unions that combines with social security spending (e.g., Brady 2003b). Generally, union membership levels must be greater than 30 percent to have a strong progressive impact on the distribution of income after taxes and transfers. Increases in cumulative left party incumbency function to redistribute income to the bottom quintile. Nations with greater levels of organization into unions and formal left political parties achieve a more equitable distribution of income.

Government welfare state measures have strong effects on income inequality. Government wage setting has a strong redistributive effect in the market. Generally, we see that a greater degree of government involvement in wage-setting has a progressive effect on the income distribution. Ranging from no involvement in wage setting to formal tripartite agreements for a national wage schedule without sanctions on unions, nations have lower levels of market income inequality. At high levels of wage setting with greater government involvement (typically characterized by the ability to levy sanctions on unions and prohibit local bargaining) the redistributive effect diminishes. This suggests that government interventions in the labor market can reduce the level of income inequality. Secondly, after taxes and transfers and net of market income, social security spending has a strong redistributive impact. The percentage of GDP spent on social security transfers is closely associated with a redistribution of income from the top two quintiles to the bottom quintile. Net of market income, the share of income accruing to the bottom quintile is most strongly affected by spending on social security transfers.

Such results provide a strong counterargument to critics of the welfare state who argue that the welfare state is ineffective.

The distribution of market income and the distribution of income after taxes and transfers are influenced by various factors. The results of this study suggest that it is too early to rule out trade with less developed nations, unemployment, and deindustrialization as causes of income inequality. Furthermore institutional factors such as governmental wage setting, welfare spending, unions, and left party government rule are important factors in achieving a society with less income inequality.

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**Table 1** Variable Descriptions and Descriptive Statistics

Dependent Variables	Description	Mean	SD
Market Quintile 1	Share of income going to quintile	4.8	1.8
Market Quintile 2		12.8	1.2
Market Quintile 3		18.0	0.76
Market Quintile 4		24.2	0.74
Market Quintile 5		40.1	2.8
After Tax/Transfer Quintile 1		9.0	1.7
After Tax/Transfer Quintile 2		14.3	1.3
After Tax/Transfer Quintile 3		18.2	0.7
After Tax/Transfer Quintile 4		23.0	0.6
After Tax/Transfer Quintile 5		35.5	3.1
<u>Independent Variables</u>			
Log GDP per capita	natural log GDP per capita (constant PPP) <sup>a</sup>	9.6	0.5
Unemployment	rate of unemployment <sup>b</sup>	7.0	3.0
Inflation	annual % change in consumer price index <sup>f</sup>	4.8	3.5
LDC Imports	total value of LDC imports/value all imports <sup>c</sup>	20.5	8.4
Industrial Employment	% civilian employment in industry <sup>b</sup>	30.4	6.0
Log Union Density	log % labor force in labor union <sup>d</sup>	3.6	0.6
Cumulative Left Cabinet	cumulative % of cabinet seats held by left <sup>b</sup>	917.4	744.4
Share since 1960			
Government Wage Setting	15 level index of government wage setting <sup>d</sup>	5.4	3.6
Social Security Transfers	% of GDP spent on social security transfers <sup>b</sup>	15.8	4.6
Female-Headed Families	% households 25-59 female-headed <sup>e</sup>	16.1	4.0
Net Wages	Binary indicator if only net wages (1=yes) <sup>e</sup>	(1=yes, 83.7%)	

<sup>a</sup>OECD Health Data (2003), <sup>b</sup>Armingeon et al. (2002), <sup>c</sup>IMF, Direction of Trade Statistics Yearbook, <sup>d</sup>Lyle Scruggs (see Scruggs 2002), <sup>e</sup>Golden, Lange, and Wallerstein (2002), <sup>f</sup>OECD Economic Outlook, No. 73.

**Table 2: Distribution of Market Generated Income by Quintile for Households (Head age 25-59) in 14 OECD Nations, 1967-2000.**

	1	2	3	4	5
<b>Macroeconomic</b>					
Log GDP per capita	8.806 (8.491)	6.414 (4.291)	4.704* (2.610)	6.191* (3.270)	-25.065** (10.708)
Log GDP per capita <sup>2</sup>	-0.443 (0.446)	-0.346 (0.231)	-0.252 (0.149)	-0.335* (0.179)	1.320** (0.569)
Unemployment	-0.317*** (0.104)	-0.159*** (0.038)	-0.017 (0.031)	0.108** (0.044)	0.383*** (0.106)
Inflation	0.054* (0.030)	0.047 (0.029)	0.035 (0.026)	0.003 (0.019)	-0.143* (0.070)
<b>International Trade/Industry</b>					
LDC Imports	-0.067*** (0.017)	-0.061*** (0.008)	-0.034*** (0.009)	0.011 (0.009)	0.149*** (0.020)
Industrial Employment	0.197*** (0.046)	0.061* (0.031)	0.003 (0.019)	-0.067*** (0.014)	-0.182** (0.081)
<b>Class Struggle</b>					
Log Union Density	0.281 (0.523)	0.367 (0.289)	0.656** (0.294)	0.424 (0.246)	-1.726*** (0.710)
Cumulative Left Cabinet Share since 1960	-0.0010** (0.0005)	-0.0005* (0.0002)	-0.0002 (0.0002)	0.0002 (0.0001)	0.0017** (0.0007)
<b>Welfare Effort</b>					
Social Security Transfers	-0.028 (0.042)	0.038 (0.022)	0.032** (0.013)	0.015 (0.018)	-0.062 (0.047)
Gov't Wage Setting	0.795*** (0.249)	0.594*** (0.170)	0.024 (0.100)	-0.345*** (0.078)	-1.077** (0.449)
Gov't Wage Setting <sup>2</sup>	-0.042** (0.014)	-0.031** (0.010)	0.0005 (0.006)	0.020*** (0.004)	0.053* (0.026)
<b>Controls</b>					
Female-Headed Families	0.215*** (0.066)	0.124*** (0.037)	0.079** (0.033)	-0.070** (0.031)	-0.340*** (0.093)
Net Wage (1=Yes)	1.735*** (0.542)	0.088 (0.405)	-0.078 (0.366)	-0.402 (0.325)	-1.269 (1.052)
Constant	-47.231	-21.845	-7.398	-2.925	174.141
R <sup>2</sup>	.743	.768	.687	.654	.754

\*p<.10, \*\*p<.05, \*\*\*p<.01 (two-tailed tests).

Unstandardized OLS coefficients (robust-cluster standard errors). Data represent an unbalanced panel.

N=74.

**Table 3: Distribution of Income after Taxes and Transfers by Quintile for Households (Head age 25-59) in 14 OECD Nations, 1967-2000.**

	1	2	3	4	5
<b>Macroeconomic</b>					
Log GDP per capita	-0.105 (3.820)	-0.476 (2.070)	0.372 (1.410)	2.865 (2.231)	0.716 (5.713)
Log GDP per capita <sup>2</sup>	-0.017 (0.206)	0.024 (0.116)	-0.017 (0.077)	-0.156 (0.121)	-0.009 (0.317)
Unemployment	0.158** (0.053)	0.071* (0.033)	-0.026 (0.024)	-0.038 (0.025)	-0.241*** (0.074)
Inflation	0.020 (0.025)	0.036 (0.032)	0.003 (0.014)	-0.023 (0.016)	0.011 (0.050)
<b>International Trade/Industry</b>					
LDC Imports	-0.022* (0.012)	-0.021** (0.008)	0.005 (0.006)	0.021*** (0.003)	-0.0009 (0.016)
Industrial Employment	-0.043* (0.023)	0.005 (0.013)	0.007 (0.007)	-0.004 (0.010)	0.049** (0.023)
<b>Class Struggle</b>					
Log Union Density	-8.174*** (2.553)	-7.579*** (1.360)	-2.086* (1.040)	2.569** (1.153)	16.315*** (3.018)
Log Union Density <sup>2</sup>	1.205*** (0.462)	1.124*** (0.204)	0.332* (0.160)	-0.355* (0.167)	-2.393*** (0.468)
Cumulative Left Cabinet Share since 1960	0.0006** (0.0002)	0.00003 (0.0001)	-0.0002* (0.0001)	-0.0003*** (0.00009)	-0.0003 (0.0003)
<b>Welfare Effort</b>					
Social Security Transfers	0.131*** (0.015)	0.029 (0.019)	-0.005 (0.008)	-0.048*** (0.009)	-0.089*** (0.028)
<b>Controls</b>					
Market-generated Quintile Share	0.647*** (0.062)	0.760*** (0.078)	0.782*** (0.149)	0.509*** (0.095)	0.879*** (0.059)
Female-Headed Families	-0.082* (0.038)	0.023 (0.030)	0.015 (0.018)	0.016 (0.016)	0.040 (0.081)
Net Wage (1=Yes)	-2.450*** (0.546)	-0.880** (0.323)	0.083 (0.184)	0.478* (0.238)	3.059*** (0.676)
Constant	21.492	18.326	5.135	-6.167	-32.060
R <sup>2</sup>	.891	.926	.860	.793	.936

\*p<.10, \*\*p<.05, \*\*\*p<.01 (two-tailed tests).

Unstandardized OLS coefficients (robust-cluster standard errors). Data represent an unbalanced panel.

N=74.