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Abstract

This article explores the determinants of relative market income poverty and poverty reduction in advanced industrial democracies; that is, pre-tax and transfer relative poverty and reduction in poverty rates due to the tax and transfer system. Using data from twenty countries between 1969 and 2014, we show that the primary determinants of market income poverty are the availability of work, deindustrialization, and union involvement in minimum wage setting. Contrary to expectations, we find that wage dispersion in the lower half of the income distribution does not affect household poverty. We then show that the main determinant of poverty reduction is social spending on the non-aged. These results suggest that the main way in which states affect poverty via social policy is through the tax and transfer system, and that market income poverty is primarily the result of factors affecting volume of work and remuneration levels at the bottom of the distribution.

1. Introduction

This study seeks to explain differences in working age poverty rates across both time and space in post-industrial democracies. We look specifically at working age poverty because including the entire population would over-estimate poverty in countries with generous pension systems. Our interest is in working age poverty as a function of income disparity within rather than across countries. We are interested in relative rather than absolute poverty, with poverty lines that differ depending on country context. It is Luxembourg Income Study (LIS), OECD, and European Union (EU) convention to analyze poverty by relative rather than absolute poverty; thus, we are making our study comparable to almost all other comparative studies of poverty in post-industrial countries.[1] Relative income poverty is thus conceptually related to

[1] By contrast, studies of developing countries usually measure poverty in absolute terms, most often by using the World Banks poverty and extreme poverty definitions.

wage inequality (income ratios) and market income inequality (Gini coefficients), as all are concerned with economic disparities within countries.

We focus on households because poverty only has meaning at the level of households; that is, for example, it makes no sense to say the stay-at-home spouse of a CEO is poor. Our ultimate interest is in disposable income poverty because that measures best the lived everyday experience of individuals. Therefore, following Moller et al. (2003), we analyze disposable income poverty as a two-stage process. First, we analyze variation in market income poverty rates. Market income is pre-tax and transfer, and consists only of the sum of capital and labor income as well as private transfers such as inter-household transfers. This income is pre-redistribution, but not 'pre-government,' as the structure of markets and their attendant distributional outcomes are undoubtedly the products of political choices. Second, we examine variations in the extent to which the tax and transfer system reduces poverty.

The LIS data series for our 18 countries (1) have different numbers of time points for each country, (2) have different time points in irregular intervals for different countries, and (3) begin and end at different years (see www.lisdatacenter.org). For these reasons, it is difficult to get a sense of the time trends in particular countries or welfare state regimes by examining plots of country year observations, as on can see from Figures A1 and A2 in the appendix, though the figures do make it clear enough that the overall trend in market income poverty is upward and that this upward trend is reduced in many countries by taxes and transfers. Table 1 provides a summary of the trends in poverty and poverty reduction by welfare state regimes that is more readable. We estimate the 1985 and 2015 levels and average change per decade by regressing poverty and poverty reduction on time measured in decades, setting 1985 to zero within groups of countries with common welfare state regime types. The table is largely self-explanatory, but it is worthwhile pointing out a couple of features of the comparative data highlighted by the table. First, the differences between the continental and Nordic welfare states are small, in contrast to the large differences between these two regimes in market income equality and redistribution (Huber and Stephens 2014). Second, the large increases in market income poverty in the Nordic and Anglo-American countries are offset by increases in poverty reduction in the Nordic countries but not in the Anglo-American countries.

[TABLE 1]

In this article, we integrate economic, demographic, and political perspectives to explain differences between countries and over time in the level of before tax and transfer poverty in advanced industrial societies. We show that wage dispersion in the lower half of the income distribution does not affect household poverty, but that the key drivers are the volume of work in the household and remuneration levels at the bottom of the wage scale. In our analysis of poverty reduction, we find that social spending on the non-aged is the most important variable explaining variation in the extent of poverty reduction.

2. Literature Review and Theory

2.1 Market Income Poverty

Brady (forthcoming) identifies three families of theories of poverty – behavioral, structural, and political. The behavioral theories focus on traits and behaviors of the poor as shaped by incentives and culture to explain who is poor. Structural theories base their explanations on variation in economic and demographic contexts to explain behavior and/or variation in poverty levels among social groups or countries. Political theories emphasize power and institutions that shape policy and modify the behavior/ poverty link and the structural contexts themselves. Here we employ structural and political theoretical perspectives and place our variables into five categories. These are: globalization explanations driven by the changing global economic context, demographic and labor market explanations, changing political power relations and institutions, policy explanations regarding welfare state benefits, and policy explanations regarding human capital. As noted above, wage dispersion should be a proximate cause of relative market income poverty, as wages represent the majority of pre-tax and transfer income. We therefore expect that wage dispersion will affect pre-tax and transfer relative poverty as well.

Since the 1970s, several global economic transformations have changed the structure of the labor market, which has seen a decline in industrial employment and a subsequent rise of the service sector and a transition to the knowledge economy. This has led to sector dualization in the developed world, a phenomenon which has long been tied to increasing inequality (Nollmann 2006; Rohrbach 2009). Rising inequality has accompanied this shift, as the transition to the knowledge economy increases demand for high-skill workers while deindustrialization destroys

relatively well-paying jobs for low-skill workers. In addition, scholars have linked deindustrialization to poverty directly (Brady 2009; Moller et al. 2003).

Rising wage inequality can be reduced via the tax and transfer system (redistribution), or it may be mitigated by policies which affect wages directly (predistribution). 'Predistribution' refers to policies and/or features of political economic structure that shape the pre-tax and transfer income distribution (Chwalisz and Diamond 2015). This includes social investment as well as the structure of wage bargaining. Social investment consists of spending on education as well as spending on job training and retraining schemes, with the goal of improving human capital. Higher levels of human capital then render a country's workforce more adaptable to a changing labor market.

The coincidence of deindustrialization and the transition to the knowledge economy results in a rising number of unemployed industrial workers who are unqualified for the new types of jobs being created. This then leads to a skills mismatch in the labor force, which drives up unemployment among the former-industrial worker population. Social investment can offset this skills mismatch, since it allows for greater adaptability of the workforce to these types of large-scale sectoral distributional shifts. Goldin and Katz (2008) argue that the increase in inequality in the US has been a direct result of the fact that drastic technological change and subsequent demand for highly skilled labor has not been matched by increased human capital spending. Thus, under this framework, lack of social investment creates a shortage of skilled/educated workers which increases the skills wage premium and therefore the dispersion of wages (Weisstanner and Armingeon 2018). We therefore expect that human capital investment will be associated with less market income poverty. By the same token, we would expect higher average levels of education in the adult population to be associated with lower poverty levels.

Closely tied to deindustrialization is a decline in union density, as industrial workers have traditionally comprised the core of union strength. Unions have the power to bolster the wages of workers via a variety of channels, thus decreasing working poverty. The first channel is via collective negotiations with employers, thus forcing employers to pay higher wages to all workers. Another channel is by influencing policy directly. In particular, unions can be involved in minimum wage setting. Relative market income poverty is closely tied to the minimum wage,

as market income among those at the bottom of the income distribution will be higher when the minimum wage is higher. Because of this, we expect that union involvement in setting the minimum wage will be associated with a lower market income poverty rate.

Countries with strong unions also tend to have systems in place to facilitate wage coordination; that is, unions, employers and the state may come together and engage in wage bargaining. This not only drives up wages overall by giving workers a seat at the table with respect to wage determination but it can help reduce the wage disparity between higher-skilled and lower-skilled work. Therefore, we expect both union strength and high levels of coordination of wage setting to be inversely related to market income poverty.

Union strength is also directly related to politics, as collective action can allow workers to challenge the political power wielded by business interests (Huber & Stephens 2001; Wallerstein 1999; Pontusson et al. 2002). This is important, since policy influence and wage bargaining take place in the political sphere, and political processes are an essential piece of the puzzle with respect to socioeconomic outcomes such as inequality and poverty. There is a large body of work showing that partisan politics impacts redistributional outcomes as well as the pre-tax and transfer income distribution (Pontusson et al. 2002; Huber & Stephens 2014, Bradley et al. 2003, Esping-Anderson 1985). Both social democratic and Christian democratic parties have long-standing traditions of supporting strong welfare states, though with different distributional profiles. Left government strength, particularly cumulative left government strength, has been associated with higher levels of spending on education and active labor market policies and therefore we expect it to be associated with lower market income poverty.

Another important set of factors involves the impact globalization has had on both national and international economies. Globalization involves an increase in both the flows of capital and goods across borders as well as the movement of labor. There are, of course, greater de facto barriers to the movement of labor than of capital, even among countries in which there are little to no legal barriers to immigration (e.g. within the European Union). Both components, however, have important theoretical implications for market poverty in advanced capitalist societies.

Increasing international flows of goods are also referred to as trade globalization. In the early 1990's, scholars argued that increasing imports from developing to developed countries

would subsequently lead to a decrease in demand for relatively unskilled labor in the developed world (Wood 1994). This debate was widely considered closed by the early 2000's, as this traditional theory of trade globalization was eclipsed by explanations centered on the explosion of technological change, upon which Goldin and Katz (2009) built their theory outlined above. In addition, the empirical support for the argument that third world imports led to increased inequality was spotty.

This debate has been rekindled, however, in recent years (Acemoglu et al. 2016; Cassette, Fleury & Petit 2012). Wood (2018) shows that trade globalization decreases demand for unskilled labor but increases demand for skilled labor. This means that globalization may have different effects on people at different points on the distribution of skills. Thus, trade globalization may work in much the same way as skill-biased technological change, driving up the skills wage premium and driving down the demand for unskilled labor and thus increasing the dispersion of wages. Under this framework, rather than being two competing explanations of rising inequality, globalization and technological shifts are complementary, working in tandem via the same channel (van Reenen 2011). We therefore expect that higher levels of manufacturing imports from developing countries will be associated with higher levels of market income poverty.

Capital controls may decrease the bargaining power of capital relative to labor. Power resource theory holds that this balance is determined in part by wealth, in part by organizational capacity, and in part by relative mobility of the factors of production. Just as union density can increase the bargaining power of labor as discussed above, unfettered capital flows can similarly augment the bargaining power of capital. (Huber & Stephens 2001; Garrett 1995; Pontusson et al. 2002; Piazza 2001). If companies have the power to move capital overseas, they have leverage over governments who want to keep capital within their borders and over workers who then need to compete with workers from other countries for jobs.

Outward foreign direct investment (FDI) is an indicator of actual decisions of companies and investors to move capital abroad. Typically, we expect outward FDI to be attracted by cheap labor and thus to lower demand for unskilled labor at home. Thus, we expect it to be associated with higher levels of poverty.

Another aspect of globalization is increased movement of people across borders. Immigration, particularly low-skilled immigration, theoretically functions similarly to trade globalization as outlined above. An influx of lower-skilled workers will increase the supply of relatively unskilled labor, thus exerting downward pressure on the wages of the unskilled. This, again, results in higher wage differentials. Because of this, we expect that higher shares of immigrants in a given country will be associated with higher market income poverty rates.

Another important explanatory factor affecting relative pre-tax and transfer poverty is household composition. Household composition refers to the number of household members and their characteristics, including members' ages, marital status and number of dependents. Because we are concerned with market income poverty, the number of earners within a household has a clear and direct bearing on the market income of that household. Evidently, dual-earner households will have higher market income than single-earner households. This is especially relevant for households headed by single mothers, who on top of being single-earners are also less likely to work full time. We thus expect that higher percentages of children in single mother households will be associated with higher relative market income poverty rates (Bradley et al. 2003; Kenworthy & Pontusson 2005).

As noted, we expect volume of work by household members and thus the availability of jobs to influence market income poverty. As unemployed people have no market income, higher unemployment rates necessarily lead to higher levels of market income poverty. We therefore hypothesize that higher unemployment will be associated with higher relative pre-tax and transfer poverty rates. Another, related dimension of volume of work is total employment. Higher total employment levels increase the likelihood that low-skilled people will find jobs. This in turn increases the probability that the volume of work in the household will increase. Thus, we expect that higher levels of employment will be associated with higher relative market income poverty rates.

Finally, welfare state benefits can influence behavior on the labor market that in turn influences market income poverty. Specifically, if a country has generous parental leave benefits, more parents are likely to opt for taking such leave, and a higher take-up rate for parental leave in turn means that more households have temporarily low market incomes, which pushes up the market income poverty rate. Accordingly, we expect generous parental leave

benefits to be associated with higher market income poverty. Unemployment benefits are more complex. Generous unemployment benefits on the one hand enable people to hold out longer to find a suitable job, rather than accepting just any job, which will push up market income poverty. On the other hand, generous unemployment benefits raise the reservation wage, which will reduce market income poverty. Thus, we adopt a non-directional hypothesis for the generosity of unemployment benefits.

2.2 Poverty Reduction

We now turn to determinants of poverty reduction, which is the difference between pre- and post-tax and transfer relative poverty. The extent of poverty reduction is a function of redistribution and thus directly connected to social expenditure. The explanatory factors influencing poverty reduction may be broadly discussed in terms of social policy, need, and the political sphere.

The key to poverty reduction is the nature of the tax and transfer system. The size or generosity of the tax and transfer system directly impacts the extent to which that system can redistribute income. Because welfare states are complex arrangements of institutions, policy profiles and benefit structures, the effect of welfare generosity on working age poverty reduction depends also on the allocation of expenditures. In particular, generous pension plans are not expected to have any effect on the reduction of working age poverty. We do expect, however, that social spending on the non-aged will be associated with higher levels of poverty reduction.

In addition to this aggregate measure of spending on the working-age population, there are some specific social benefits that should result in greater working-age poverty reduction. Most obviously, generous unemployment benefits can help pull the unemployed out of poverty, compensating for the fact that they have no market income; so we expect that more generous unemployment benefits will be associated with greater poverty reduction. Similarly, parents on leave have no market income. Generous parental leave policies induce more people to take time off and have reduced market incomes, which then are compensated for by parental leave benefits that pull these families above the poverty line post-tax and transfer. We thus expect that parental leave generosity will be associated with more poverty reduction. Sick pay should have a similar

effect, since people on sick leave also have no market income. We therefore expect that more generous sick pay benefits will be associated with greater poverty reduction as well.

Welfare state generosity is also strongly tied to partisan politics, since these benefit structures and institutions are typically built up and entrenched by governments over long periods of time. Left parties in particular have long been strong supporters of redistribution and egalitarianism, and left partisanship is associated with lower poverty rates overall (Nelson 2012). Because of this, we expect stronger histories of left government incumbency to be associated with more poverty reduction. Further, and in line with earlier work (Bradley et al. 2003), we expect this to hold true even holding the various types of benefit generosity constant, since it is impossible to capture the full profile of benefit structure and institutions via the generosity measures alone.

Christian democratic parties have also traditionally be very strong supporters of the welfare state (Huber & Stephens 2001; van Kersbergen 1995). Although they have historically held less egalitarian values than social democratic parties (Esping-Andersen 1990), they have tended to have strong interests in preserving status in the labor market through social insurance. This extends to unemployment benefits, a key policy expected to influence poverty reduction as discussed above. Because of this, we expect that Christian democratic incumbency will be associated with more poverty reduction as well.

In addition to representatives from social democratic and Christian democratic parties, women lawmakers have been more likely to promote generous welfare states than their male counterparts. In fact, previous research has found more women in government to be associated with more redistribution and lower poverty rates (Moller et al.2003). Accordingly, we expect that women in parliament will be positively associated with poverty reduction.

At any given level of welfare state generosity, we expect the extent of poverty reduction to be dependent upon the extent of need; that is, the more market poverty there is pre-tax and transfer, the more redistribution will be effected through the welfare state. An example of this is unemployment. Higher unemployment levels, holding welfare institutions constant, will mean higher social spending on unemployment benefits and thus more poverty reduction. Therefore, we expect that higher unemployment levels and lower employment levels will be associated with

more poverty reduction as a result of the tax and transfer scheme. The same is true for industrial employment. Higher levels of industrial employment will reduce the need for poverty reduction.

The same logic holds for family composition. Holding welfare generosity constant, fewer single-parent families will mean that fewer people will need to be pulled out of poverty; in other words, there will be less need for poverty reduction. Therefore, we expect that the percentage of children in single-mother households will be positively associated with poverty reduction.

All of the above hypotheses regarding both market income poverty and poverty reduction are summarized in Table 2.

[TABLE 2]

3. Data and Measurement

3.1 Dependent Variables

The dependent variables in this paper are market income poverty rates of households with members of working age, with or without children, and poverty reduction effected by direct taxes and transfers among these households. We define the working age as those between the ages of 18 and 64. We drop all households which include elderly household members, as this would exaggerate the market poverty rates in countries with generous pension systems. These variables are calculated using the LIS database, which includes detailed, individual- and household-level data on income, labor market and demographic characteristics. A harmonization process makes these data comparable across both space and time. We then used these microdata to create country-year-level variables; our analysis includes 122 country-year observations for each of these dependent variables.

Market income is defined as all income from labor (all wages and salaries as well as self-employment income), from capital (financial interest and dividends and real estate income), and from private transfers (inter-household transfers and transfers from non-profit institutions). Although the LIS harmonization process is very thorough, they ultimately rely on microdata collected by countries in sometimes different manners. In some country-years, market income is pre-transfer but post-tax, and in others some taxes may be included but others not. In order to account for this, we include two dummy variables; one which indicates if a specific country-year

observation is pre-transfer but post-tax (post-tax data), and one which indicates if a specific country-year observation is pre-transfer but a mix of pre- and post-tax (mixed data).

Disposable household income includes market income plus all public transfers and less all direct taxes. Market income is bottom-coded at zero; and disposable household income is bottom-coded at 1% of the mean of disposable income and top-coded at ten times the median of disposable income. In the case of both market and disposable income, the standard International Labor Organization (ILO) recommended equivalency scale is used, in which a household's income is divided by the square root of the number of household members ($Household\ Income/\sqrt{\#\ Household\ Members}$).

In this analysis, the working-age market income poverty rate is defined as the percentage of working-age households whose market incomes (pre-tax and transfer) fall below 50% of the median disposable household income level in that particular country-year context. We use a relative poverty rate centered around disposable household income so that we may study poverty reduction using the same poverty line. Poverty reduction as defined in this analysis is simply the difference between the relative (working-age) market income poverty rate and the relative (working-age) disposable household income poverty rate – that is, the reduction in working-age relative poverty as a result of the tax and transfer system.

3.2 Independent Variables

The independent variables in our analysis are taken from the Comparative Welfare States Dataset (CWSD), which has a variety of original sources. Left government and Christian democratic government are defined as the proportion of seats held by Left and Christian Democratic parties, respectively, relative to the number of seats held by all governing parties. In the cases of both of these variables, we use a cumulative measure from 1946 to the year of observation. Percentage of seats in the legislature held by women as a proportion of the total number of parliamentary seats as of the most recent election for each observation comes from the Inter-Parliamentary Union.

Sick leave benefits are measured as the average replacement rate for sick leave insurance, and come from Scruggs's (2014) Comparative Welfare Entitlements Dataset (CWED2).

Unemployment benefits, or average replacement rate for unemployment insurance, come from van Vliet and Caminada's (2012) Unemployment Replacement Rates Dataset and measure the average of the replacement rates for a single average production worker and for a married average production worker with children and a non-working spouse. Parental leave benefits come from Gauthier's (2011) Comparative Family Policy Database, and are defined as the average replacement rate of parental leave benefits in the first year. The measure is taken for the first year alone to discern between long-term, low-replacement leave benefits and short-term, high-replacement leaves. This is an important distinction, as there is evidence that long-term, low-replacement leaves can have the effect of hindering women's reintegration into the labor force and thus their lifetime earnings projections (Morgan & Zippel 2003; Mandel & Semyonov 2005).

Wage dispersion is measured as the ratio of earnings received by a full-time worker at the 50^{th} percentile to those received by a full-time worker at the 10^{th} percentile. Third-world imports refer to manufacturing imports from developing countries, as a percentage of GDP. Non-aged spending is the sum of public and mandatory private social spending on the non-aged (<65) as a percentage of GDP. Human capital spending is a composite measure we created by adding public expenditure on daycare, education and active labor market policies, as a percentage of GDP. The data for all these measures come from the OECD.

Minimum wage setting (coded 0-3), union density (union membership as a percentage of employed workers) and wage coordination (coded 1-5) come from Visser's (2011) Database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts (ICTWSS). Percent of children living in single-mother households comes from the LIS key figures. The education variable in our analysis is Barro and Lee's (2010) measure of average years of education for the population aged 25 and over.

Trade openness refers to the sum of exports and imports, as a percentage of GDP, and comes from the Penn World Tables (Feenstra et al. 2015). Outward FDI is measured as a percentage of GDP as well, and comes from the International Monetary Fund (IMF). Immigration is defined as the percentage of the population that are international migrants, and is sourced originally from the World Bank's statistics.

Variables related to employment come originally from the OECD. This includes the unemployment rate, defined as the percentage of the civilian labor force that is unemployed; industrial employment, defined as the percentage of the working age population employed in the industrial sector; and civilian employment, defined as the percentage of the civilian working age population who are employed or self-employed.

4. Model Specification

We address serial correlation by correcting for first order auto-regressiveness rather than by adding a lagged dependent variable. Beck and Katz (Beck and Katz 2004; Nathaniel Beck and Katz 2011) have shown that this strategy (ar1 corrections) actually does include a lagged dependent variable on the right hand side of the equation (PCSE and ar1 corrections are known as Prais Winsten estimations). Thus, it deals with the problem of serial correlation but without, as our results show, suppressing the power of other independent variables. We hypothesize that our causes operate over long periods of time and changes in the dependent variable occur gradually, much like in the case of cumulative causes in Pierson's (2003:198) typology of causes and effects. Moreover, in almost all pooled time series studies of the determinants of poverty or inequality, the dependent variable is measured as a level. Thus, it is appropriate to measure the dependent and independent variables as levels.[2]

We estimate our Prais Winsten models in Stata 14.1 using Vernby and Lindgren's (2009) dvgreg package. Dvgreg is specifically designed to estimate dynamic panel data models with gaps in the dependent variable but complete or nearly complete data on the independent variables. It generates an estimate of the value of the dependent variable at t-1 for each gap, based on the values of the dependent variable at the previous actual observation and the values of the independent variables. This then makes it possible to derive a corrected estimate of AR1.

5. Results

[2] For this reason, error correction estimation in which the dependent variable is measured as a first difference is not an appropriate technique to model the hypothesized causal processes.

5.1 Market Income Poverty

[TABLE 3]

The results of the analysis of the determinants of market income poverty are shown in Table 3. Model 1 shows that left government and union density are not significant predictors of market income poverty rates, whereas wage coordination has the expected negative effect. The lack of significance of union density and left government is surprising, as these variables are well-documented determinants of wage dispersion (Wallerstein 1999; Rueda & Pontusson 2000; Pontusson et al. 2002), which we would expect to be closely linked to relative market poverty rates. Model 2, then, places wage dispersion on the right-hand side of the equation – surprisingly, wage dispersion is not a predictor of pre-tax and transfer relative poverty. This means that market income poverty is not primarily affected by wage differentials, but rather by the volume of work done by household members and the minimum remuneration of such work and thus indirectly by unemployment and minimum wages.

Because of this, the availability of work, deindustrialization, and union involvement in minimum wage setting are key to understanding variation in relative market income poverty. The results presented in Models 3, 5 and 7 here illustrate this. The unemployment rate is significantly positively related to the market poverty rate, both substantively and statistically. Inversely, industrial employment is significantly negatively related to poverty; higher levels of industrial employment offer more chances for well-paid employment and thus are associated with a lower relative pre-tax and transfer poverty rate. Union involvement in minimum wage setting is negatively related to poverty, indicating that the level of remuneration at the bottom matters significantly. Household composition (% of children in single-mother households), however, is not significant, and neither is overall employment.

The hypotheses linking globalization and market poverty rely on wage dispersion as the primary mechanism. We expected to find that globalization, particularly immigration and third-world imports, would be associated with higher levels of pre-tax and transfer poverty via wider wage differentials. Model 4 tests these hypotheses. We find no significant relationship between any of the globalization variables and relative market poverty. The human capital/skills wage premium hypotheses also rely on wage dispersion as the primary mechanism. Model 6 shows that average years of education among the adult population and human capital spending are not

statistically significantly related to relative market income poverty either. Both of these sets of results are less surprising given our finding that wage dispersion is not a significant factor influencing pre-tax and transfer poverty. This highlights again the importance of volume of work in the household and minimum remuneration of such work in explaining variation in relative market poverty rates.

Model 3 is concerned with the explanatory power of policy variables – the effect of different social benefits – and of union involvement in wage setting on market poverty. Parental leave benefits have a significant and positive effect on poverty. Generous parental leave schemes allow parents to drop out of the labor force temporarily to care for children, and thus these people have no market income. During this period, all of their income is via the tax and transfer system. In contrast, unemployment benefit generosity has the opposite impact on market poverty rates, indicating that these benefits raise the reservation wage. As noted, union involvement in minimum wage setting significantly depresses poverty, indicating that unions use their influence to raise the minimum wage.

Model 7 is the combined model with all the variables that were significant in the previous models. Here wage coordination loses significance, whereas all the other variables remain significant. This suggests that wage coordination is less important because of its general effect on wage compression, but because of its effect on lifting up the bottom, a finding that is in line with the lack of significance of wage dispersion. Union involvement in minimum wage setting captures the lifting up of the bottom and remains significant in this equation. So, the combined model confirms our argument that the key to relative household market income poverty is the volume of work available to household members and the level of remuneration of this work at the bottom of the wage scale.

5.2 Poverty Reduction

[TABLE 4]

We now turn to our analysis of determinants of poverty reduction. Table 4 shows the results of this analysis. In Model 1, we include the different types of specific social benefits hypothesized to effect poverty reduction separately, along with the need variables. Thus, we are

holding welfare state generosity constant and assess the effect of need for redistribution. The only need variable that reaches significance is employment; the higher overall employment levels in the society, the less poverty reduction is needed and occurs. This is in contrast to earlier, related work identifying need as a predictor of redistribution with respect to inequality (Huber & Stephens 2014). Parental leave benefits are significantly positively associated with poverty reduction, which is not surprising as they were significantly associated with pre-tax and transfer poverty. Unemployment and sickness benefits are not significantly related to poverty reduction. A possible interpretation for the latter finding is that sickness rates on average are too low to make a difference for poverty rates and therefore for poverty reduction.

Model 2 tests the relationship between total spending on the non-aged and poverty reduction. As expected, we find that more social spending overall on the non-aged population is in fact associated with higher reductions in poverty.

We test the hypotheses related to the political sphere in Model 3. Women in parliament is not found to be significantly associated with reductions in poverty. As hypothesized, however, we find that both social democratic and Christian democratic party incumbency are significantly associated with higher levels of poverty reduction. In line with earlier work on redistribution (Huber & Stephens 2014), the substantive effect of left government incumbency is higher than that of Christian democratic incumbency. Both Christian democratic and social democratic partisan control of government lose significance in Model 4, however, which includes non-aged spending. In fact, Model 4 shows that only non-aged spending is significantly associated with poverty reduction. This means that the substantive effects of historical partisanship on poverty reduction work entirely through social spending on the non-aged.

6. Conclusion

In this study, we show that pre-tax and transfer poverty is not a phenomenon driven by rising wage differentials, contrary to pre-tax and transfer inequality (Huber and Stephens 2014). Our findings highlight the importance of structural, institutional, policy and political factors for shaping pre-tax and transfer poverty and poverty reduction. They also illustrate the necessity of studying poverty separately from inequality. Contrary to expectations, we find that wage dispersion and the factors that drive it up, such as LDC imports, outward FDI, and immigration,

do not account for variation in household market income poverty. Along the same lines, we find that social investment and average levels of education also do not account for this variation. In a companion paper (author cite), we find that precisely these globalization variables drive up wage dispersion and public investment in education depresses it. Thus, the non-finding regarding effects of globalization and of social investment on pre-tax and transfer poverty is fully consistent with the non-finding regarding an effect of wage dispersion on pre-tax and transfer poverty.

Instead, pre-tax and transfer poverty is a function of the volume of work by household members and remuneration levels at the bottom. Economic downturns decrease the volume of work available in a given country, driving up unemployment and poverty. Deindustrialization has led to a dearth of well-paying jobs for low-skilled workers, lowering average remuneration levels for work available to workers on the low end of the skills distribution. On the other hand, where unions are involved in minimum wage setting, remuneration levels at the bottom are higher and thus poverty levels are kept lower.

Governments, however, can still reduce post-tax and transfer poverty via the welfare state, so politics and policy matter greatly. Historical control of government by social democratic and Christian democratic parties does predict variation in poverty reduction. They effect poverty reduction through the tax and transfer system. This is captured most directly through social spending. We show that total spending on the non-aged has a highly significant effect on poverty reduction, indicating that it is capable of counterbalancing the effects of changing structural contexts.

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Table 1: Trends in poverty by regime

	Estimated	Average change	Estimated	
Market income poverty	1985 Level	per decade	2015 Level	N
Nordic	14.9	2.2	23.7	28
Continental Europe	16.5	.4	18.1	48
Southern Europe	18.4	1.0	22.4	24
Anglo-American countries	16.5	2.7	27.3	45
Reduction in poverty				
Nordic	58.60	3.4	72.2	28
Continental Europe	60.40	-3.3	47.2	48
Southern Europe	51.60	-6.0	27.6	24
Anglo-American countries	43.00	.4	44.6	41
Disposable income poverty				
Nordic	5.8	.4	7.4	32
Continental Europe	5.9	.1	6.3	50
Southern Europe	9.5	.7	12.3	26
Anglo-American countries	9.7	1.0	13.7	52

Table 2. Variable definitions and sources

	Definition	Original data source	Market income poverty	Poverty reduction
Dependent variables				
Market income poverty	Relative market income poverty rate (%) of the working age population.	LIS		
Poverty reduction	Reduction in relative poverty rate (%) of the working age population, as a result of taxes and	LIS		
Independent variables				
Left government	Seats of leftist parties as proportion of the seats of all governing parties, cumulative from 1945 to date of observation	Brady et al. (2014)	-	+
Christian democratic government	Seats of Christian and Catholic right and center parties as proportion of the seats of all governing parties, cumulative from 1945 to date of observation	Brady et al. (2014)		+
Women in parliament	Share of seats in parliament held by women after the most recent election.	Inter-parliamentary Union		+
Union density	Net union membership as a percentage of employed wage and salary earners.	Visser (2011)	-	
Wage coordination	Coordination of wage setting. Coded 1 (most fragmented) to 5 (most centralized).	Visser (2011)	-	
Wage dispersion	Ratio of gross earnings received by a worker at the 50th earnings percentile to that received by a worker at the 10th percentile.	OECD	+	
Parental leave benefits	Average replacement rate in parental leave for the first year	Gauthier (2011)	+	+
Sick leave benefits	Average net replacement rate of the benefit of sick leave insurance.	Scruggs (2014)		+
Unemployment benefits	Net replacement rate of the benefit from unemployment insurance for an average production worker, average of replacement rate for single worker and married worker with two children.	van Vliet & Caminada (2012)	+/-	+
Nonaged spending	Public and mandatory private social spending on the non-aged.	OECD		+
Minimum wage setting	Minimum wage setting, government involvement. 0 = no minimum wage, 1=minimum wage is set by government without fixed rule, 2=minimum wage set by government or courts, 3=set by negotiations with union involvement.	Visser (2011)	-	
Third World imports	Manufacturing imports from developing countries as a % of GDP.	OECD	+	
Trade openness	Sum of exports and imports as a percentage of GDP.	Penn World Tables	+	
Outward FDI	Outward direct investment flows as a % of GDP.	IMF	+	
Immigration	International migrant stock as a percentage of the population	World Bank	+	
Unemployment rate	The number of unemployed persons as a percentage of the civilian labour force.	OECD	+	+
% children in single mother households	Children living in single-mother households, as a percentage of total children.	LIS	+	+
Industrial employment	Industrial employment as a percent of total working age population.	OECD	-	-
Employment	Civilian employment as a percent of total working age population.	OECD	-	-
Human capital spending	Public spending education, daycare, and active labor market policies as a % of GDP.	OECD	-	
Education	Average years of education for the population aged 25 and over.	Barro & Lee (2010)	-	
Post-tax data	Market income data is pre-transfer but post tax	LIS		
Mixed data	Market income data is pre-transfer but a mix of pre and post tax	LIS		

All indendent variables are available in Brady, Huber, and Stephens (2014)

Table 3. Determinants of Market Income Poverty

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
Left government	-.034													
Union density	.042													
Wage coordination	-.687	*											.204	
Wage dispersion			-1.870											
Parental leave benefits					.103	***							.074	***
Unemployment benefits					-7.273	***							-3.960	**
Minimum wage setting					-2.935	***							-2.231	***
Third World imports							.158							
Trade openness							.021							
Outward FDI							-.046							
immigration							-.092							
Unemployment rate									.526	***			.356	***
% children in single mother households									.143					
Industrial employment									-.447	***			-.252	**
Employment									.005					
Human capital spending											.793			
Education											-.175			
Post-tax data													1.655	
Mixed data													1.568	
Constant	19.751	***	22.895	***	27.847	***	17.630		21.555	**	15.741	***	25.600	***
Common ρ	.80		.20		.70		.70		.90		.90		.90	
R^2	.01		-.01		.48	***	0.00		.38	***	.01		.59	***
Observations	122		77		103		92		119		90		103	

* significant at .05; **significant at .01; ***significant at .001; ^ significant opposite hypothesized direction.

Table 4. Determinants of Poverty Reduction

	Model 1		Model 2		Model 3		Model 4	
Parental leave benefits	.488	***					.030	
Sick leave benefits	-69.431	^						
Unemployment benefits	-10.266							
Unemployment rate	-.174							
% children in single mother households	.305							
Industrial employment	.194							
Employment	-1.015	***					-.139	
Nonaged spending			3.143	***			2.960	***
Left government					.807	***	.222	
Christian democratic government					.310	***	.055	
Women in parliament					-.200			
Post-tax data							15.099	^
Mixed data							9.514	
Constant	133.026	***	4.725		39.830	***	8.561	
Common ρ	.80		.80		.90		.90	
R^2	.47		.40		0.21		.53	
Observations	93		102		122		101	

* significant at .05; **significant at .01; ***significant at .001; ^ significant opposite hypothesized direction.