Luxembourg Income Study Working Paper Series

Redistribution as an Income Mobility Process: The Identification and Measurement of Redistribution

Juan Rafael Morillas

May 2009

Redistribution as an Income Mobility Process:
The Identification and Measurement of Redistribution

Juan Rafael Morillas
University of Durham
j.r.morillas@durham.ac.uk

Abstract.
How can we evaluate the redistributive effect of welfare states? Do tax and transfer systems reduce the level of inequality generated in the market? In order to answer these questions, we need to be equipped with adequate measures of redistribution. Current measures employed in the sociology and politics of redistribution are seriously flawed. This paper elaborates the reasons why we cannot rely on those measures. Furthermore, it develops a framework to statistically identify redistribution as a micro-level income-mobility process, and develops an index to measure it. Using data from the Luxembourg Income Study, the paper shows that the new measure of redistribution developed in this paper is empirically distinct from the conventional measures that have been used in the literature. The paper concludes by demonstrating the importance of the new measure of redistribution for improving our understanding of the social and political determinants of redistribution. In particular, it shows that the conventional wisdom in the political economy of redistribution does not hold in the light of the new measure developed in this paper.

Keywords: redistribution, inequality, income mobility, political economy, power resources, partisanship, median voter.

Introduction

One key question in the sociology of the welfare state is the role that it plays in the reduction of inequality and poverty. By means of tax and transfer systems, welfare states modify the income stratification that is generated in the market. Typically, households at the bottom of the distribution of market income obtain a higher share of final or disposable income, while those at the top experience a substantial reduction in their share of disposable income -as compared with that of market income. Therefore, the measurement, description and explanation of redistribution are critical for an evaluation of the 'true' effect of the welfare state on the stratification of households' opportunities for income acquisition.

In spite of the importance of redistribution for the assessment of the consequences of different welfare states, our knowledge about it is very limited. This is due mainly to two reasons. First, until recently, reliable and comparative data on market income (income derived from the market) and disposable income (market income, minus direct taxes plus welfare cash transfers from the state) have not been available for most of countries. As an attempt to compensate for the lack of data, the literature has used proxies for redistribution such as social spending as a proportion of GDP (e.g. Hicks, 1999; Huber and Stephens, 2001). However, it is well-known that not all social spending is redistributive (*vid*. Hacker et al., 2004; Lambert, 1993). Social spending as a percentage of GDP does not measure and is not a substitute for redistribution. Indeed, social spending benefits not only the poor but also, and sometimes to a larger extent, the middle-class (Goodin and Le Grand, 1987; Le Grand, 1982).

Second, more recent attempts at measuring the redistributive consequences of welfare states, although have used the adequate data, compare *aggregate* measures of inequality for the distributions of market income and disposable income (e.g. Bradley et al., 2003; Mahler and Jesuit, 2006; Korpi and Palme, 1998) and have assumed that the difference between the two or the proportional reduction of the Gini coefficient is a meaningful measure of the effect of redistribution on the reduction of inequality. However, and this is the main point of this paper, the comparison of aggregate measures of the inequality of market income and disposable income is inappropriate and does not provide a real measure of redistribution. The reason for this, explained in a nutshell, is that current measures are based on the comparison of aggregate figures of inequality, which, by definition, are unable to analyze the *incidence* of taxes and transfers at the *individual level* and, as a consequence, are unable to measure redistribution[1].

The main aim of this paper is to develop a framework for the identification and measurement of redistribution. In order to do this, in section 1, building on the axiomatic theory of inequality measurement, as well as on the characterization of ecological fallacies, I discuss the reasons why that the measures used in very recent

---

[1] There is an additional reason why this approach may provide a biased evaluation of the extent to which tax and transfer systems influence the level of redistribution. As noted by Bergh (2005), this approach assumes that the distribution of market income is not influenced by the level of taxation and transfers. However, individuals and households may adjust their market participation by anticipating how taxes and transfers will influence their final or disposable income. In other words, market income needs to be exogenous to the welfare state. However, households' market income may be endogenous to tax and transfer systems. For this reason, an evaluation of the effect of the welfare state on redistribution requires the construction a counterfactual for the distribution of market income, i.e. what would have been the level of market income for each household if a welfare state had not existed.

papers (Bradley et al., 2003; Kenworthy and Pontusson, 2005; Mahler and Jesuit, 2006) are unable to identify and measure the redistributive consequences of welfare states.

Once we know the reasons why redistribution cannot be evaluated by comparing aggregate figures of market and disposable income inequality, I discuss in section 2 the empirical content of the concept of redistribution and characterize it in a way that will enable us to statistically identify and measure it. The point of this section is to characterize redistribution as an income mobility process. This will allow us to *identify* it and, in a more practical vein, measure it by relying on the available income mobility indexes.

Once the process of redistribution is *identified* and we have the tools to *measure* it, in section 3, using comparative micro-data from the Luxembourg Income Study, the level of redistribution is evaluated for different OECD countries at different years. This provides a systematic description and comparison of the similarities and differences of the process of redistribution across different advanced industrial societies. Furthermore, this section shows that the correlation between the index of redistribution that measure it at the micro-level and the conventional measures of aggregate inequality reduction used by Bradley et al (2003), Iversen and Soskice (2006), and Korpi and Palme (1998) is very low. This is a first step towards showing that our knowledge of redistribution is rather limited due to the fact that it has not been properly measured as of yet.

Equipped with the new measure of redistribution introduced above, I analyse the political determinants of the variability of redistribution across countries in Section 4. In order to do so, the new measure of redistribution developed in this paper is merged with

country-specific measures of political institutions, partisanship, constitutional structure and other macro economic, social and political variables. The findings from these analyses will become crucial for an accurate understanding of the political economy of the welfare state. Using this new measure of redistribution provides results that go against some of the existing interpretations of the politics of redistribution. In particular, these calculations supply a different result on the relationship between partisanship and redistribution to the one offered by proponents of the power-resources model, as shown in Bradley et al. (2003), and against the predictions of the median-voter theorem (Meltzer and Richard, 1981; Kenworthy and Pontusson, 2005).

1. 'Redistribution' in sociology and politics: why they fail to identify it?

How can we statistically assess the extent of redistribution in a society? Do welfare states reduce inequality and poverty? As I wrote in the introduction, the literature in the political economy of redistribution has provided an answer to these questions. According to such a literature, we can assess the extent of redistribution by comparing the gini coefficients of two distributions of income: the gini coefficient of the distribution of market income and the gini of the distribution of disposable income. The actual measures of redistribution consist of the computation of either the proportional reduction (Bradley et al. 2003; Iversen and Soskice, 2006; Korpi and Palme, 1998) or the difference between the two gini indexes (Mahler and Jesuit, 2006; Kenworthy and Pontusson, 2005). The logic underlying this approach is very simple. The inequality of the distribution of disposable income is lower than the one of the distribution of market income. Therefore, the reduction in the gini coefficient, either in absolute or in proportional terms, provides an account of redistribution.

Does the comparison of the *aggregate* measures of inequality –market income and disposable income- really account for redistribution? Can we evaluate the reduction of inequality effected by redistribution on such a comparison of aggregate figures? The answer to this question is "no"[2]. The conventional measures used in the literature do not actually measure the effect of redistribution on the reduction of inequality. And they do not do so because they fail to properly *identify* redistribution as a statistical process. The comparison of aggregate measures of the inequality of market income and disposable income, by calculating either the proportional reduction (Bradley et al. 2003; Iversen and Soskice, 2006; Korpi and Palme, 1998) or the difference between the two (Mahler and Jesuit, 2006; Kenworthy and Pontusson, 2005), is inappropriate and does not provide a real measure of redistribution. The reasons for this are two. First, we cannot obtain conclusions about micro-processes from aggregate variables such as overall inequality -trying to do so amounts to an ecological fallacy. And second, a straightforward comparison of the inequality of market income with that of disposable income may not fulfil the Lorenz dominance criterion, making measures based on such comparison inappropriate for the analysis of redistribution. Let me elaborate these two reasons.

---

[2] Do note that the counterfactual problem of redistribution is independent of the methodological problem identified in this paper. Certainly, the index of redistribution that is going to be formulated in this paper can be applied both to the actual level of market income or to the value of the latter calculated in a counterfactual exercise.

1.1. *The comparison of income distributions: the Lorenz dominance criterion.*

Since Atkinson (1970), it is a well-established criterion in welfare economics to regard one distribution of income *F* as more equal that another one, *F'*, when the first strictly *Lorenz dominates* the latter. In other words, if we want to compare two income distributions, the Lorenz curves associated to each of them have to fulfill one property: one of the two has to dominate the other –alternatively, one curve has to be dominated by the other. More formally, an income distribution *F* is said to Lorenz-dominate another distribution *F'* when the Lorenz curve of the first is above the one of the second:

$$LF(p) > LF'(p) \text{ for all } p \in [0, 1] \tag{1}$$

The graphical implication of the Lorenz dominance criterion is that the distribution of market income and that of disposable income should not cross each other –one should always lie below the other (Cowell, 1977: 34-9). Figures 1 and 2 are the Lorenz curves of hypothetical income distributions to illustrate this. Figure 1 represents the Lorenz curves derived from two distributions of income that can be unambiguously characterized as displaying different levels of inequality. If these curves represent the distribution of market and disposable income, we can affirm that the inequality of market income is more unequal than that of disposable income because the former lies below the later.

[Figure 1 about here]

Figure 2 represents the case of two distributions of income that intersect. Because of this, we cannot establish which distribution is more or less unequal. In this situation, the comparison of the Lorenz curves of the two distributions, and the same applies to the gini coefficient, does *not* unambiguously tells us which of the two distributions is more unequal. In such a case, the comparison of gini indexes is what Cowell (1977: Chapter 1) calls a 'non-decisive' approach to compare the inequality of two distributions.

[Figure 2 about here]

In the papers cited above that measure redistribution in what I have called the *conventional* way, we find no analytical assessment of whether this property, the Lorenz dominance, is satisfied when we compare the distributions of disposable and market income inequality in the cases that they analyze -observations for pairs of country-years. More seriously, even if it is fulfilled in *the* cases that they analyze, there is no guarantee that this property will always be satisfied when comparing other income distributions, making this tool, the comparison of the gini coefficients of disposable and market income distributions, a 'non-decisive' measure of redistribution. If no analytical demonstration is provided that the Lorenz curves of market and disposable income distributions for the same society will *never* intersect, then there is no guarantee that the conventional measures of redistribution provide a valid tool to measure redistribution.

Even if he Lorenz dominance criterion is satisfied, the conventional measures of redistribution face another even more serious challenge. Such measures are based on *aggregate* or summary indexes of the dispersion of the distribution of incomes.

Therefore, by definition, these measures do not tell us *who* improves (worsen) her position in the distribution of final or disposable income, and to *what* extent. They just tell us that, on average, inequality diminishes, but keeps *anonymous* the identity of those who benefit (suffer) from redistribution –something crucial if we want to give a political economy of redistribution. Let me elaborate this point in more detail in the next section.

1.2. *Ecological fallacy: aggregate snapshots vs. micro-level income trajectories.*

The recent comparative literature on redistribution has established that the level of inequality of disposable income is lower that the inequality of market income. For example, Mahler and Jesuit (2006: 497) show that the mean value of the level of market inequality in Sweden for the years under analysis is 0.335, while that of disposable income inequality is 0.220. In the US, the mean value of market income inequality is 0.404 while that of disposable income inequality is 0.339. In all advanced industrial societies, the distribution of disposable income is more compressed than the one generated in the market. Does this imply that the (market) poor are better off? Or does it mean that the rich are worse off? What happens to individuals in and around the middle of the distribution of market income? By comparing the level of aggregate inequality, we simply cannot offer an answer to the former questions. We do not know *who* are those who improve (worsen) their rank in the distribution, or *what* share of the total market and disposable income that they receive.

This is especially troublesome for our ability to provide a political economy explanation of redistribution. Indeed, as Harold Lasswell famously remarked, politics is all about *Who Gets What, When, How* (Lasswell, 1936). The comparison of aggregate

measures of inequality, by definition, abstract away the *who* from the analysis. Standard measures of redistribution do not allow us to identify *who* the winners and losers of redistribution are. Additionally, if we cannot identify their identity, we cannot assess *what* share of one source of income or another, market or disposable, goes to their hands.

For these reasons, we need to analyze redistribution at the micro-level. By so doing can we identify the *who* and the *how* of the process of redistribution. Analyzed from such perspective, we identify that the process of income attainment takes place in two steps. In the first place, individuals engage in market activities, for example in the labor and financial markets, and obtain an income. This income is what the variable 'market income' measures. In a second step, this initial income is transformed into the final or disposable income. After paying taxes and receiving cash transfers from the state, the market income that each household initially obtains becomes *mapped* into a level of disposable income. The mapping rule is defined by the combined effect of cash transfers received by the family and the taxes that it pays. The state collects (direct) income taxes and transfers cash to individuals. These roles of the state taxing and transferring income are not the same for all individuals. Indeed, some individuals and households pay income tax, while some others do not pay. Similarly, some receive income transfers from the state, while others do not receive any.

The crucial issue in the assessment of the consequences of redistribution is that it is a *non-homothetic* process. This is so because the position that individuals and households occupy in the distribution of market income does not parallel the one that they occupy in the distribution of disposable or income. Indeed, many individuals

change their *ranking* in the distribution of it as compared to the one they had in the distribution of market income. In other words, the poorest individual in terms of market income needs not be the poorest in terms of disposable income. This is what technically is called as *re-ranking* or *rank reversal* (Lambert, 1993). Similarly, the shares of total income for each individual needs not to be the same in the two distributions of income, market and disposable. For example, a person who is unemployed and does not obtain any market income commands a 0% share of the total market income. If she receives unemployment benefits, she will have a non-zero share of the overall disposable income in her society.

In summary, if we analyze incomes at the micro-level, we observe that individuals experience changes in both their rank in the distribution of disposable income, as well as in the share of the total income that they receive. By looking at aggregate figures, we are unable to identify *how* redistribution works. Certainly, a given level of overall inequality reduction is compatible with multiple, in fact infinite, combinations of individual income trajectories from market- to disposable-income. Aggregate data do not enable us to *identify* the process of redistribution. It is dissagregated or micro-data what we need in order to evaluate how redistribution affects individuals' income.

Let me illustrate why with the help of a stylized example why we need to adopt a micro-perspective in order to identify the process of redistribution. Let us consider the distributions of market and disposable incomes in a society with two individuals. In Table 1 we find a matrix describing the market and disposable incomes of these two

individuals. The rows corresponds to the two individuals, $i= \{1, 2\}$, and the columns represent market income (first column) and disposable income (second column).

[Table 1 about here]

In the society represented in Table 1, the first individual obtains an income of 1 unit in the market, while the second obtains a market income of 10 units. It is clear that the second individual is ranked first if we consider the distribution of market income. However, if we analyze the distribution of disposable income we find that their rank is reversed. After adding cash transfers and deducting taxes, the first individual gains 9 units and the second one looses the same amount, making their disposable incomes equal to, respectively, 10 and 1. The political economy implications of the redistribution effected in this society are quite obvious. The first individual will support a policy with the redistributive consequences described in the mobility matrix represented in Table 1, while the second one will oppose it. Such a policy has a *winner* and a *looser*. However, if we rely on the conventional measures of redistribution, we fail to identify this. Certainly, as shown in Table 2 below, the gini coefficient of the two distributions of income, market and disposable, is the same; consequently, conventional measures tell us, no redistribution has taken place in this society.

[Table 2 about here]

Therefore, if we rely on the conventional aggregate measures of redistribution, we will be unable to identify the evident process of redistribution summarized in Table 1. It is very obvious that this society has experienced a radical rank-reversal, and a

12

change of the shares of income that go the hands of each member of society. Nevertheless, such a massive redistribution is obscured by the conventional measures used in the literature (e.g. Bradley *et al*., 2003; Kenworthy and Pontuson, 2005; Mahler and Jesuit, 2006). Because such measures rely on *aggregate* indexes of inequality, by definition, they abstract away the micro-level consequences of redistribution. Consequently, they fail to *identify* the *identity* of the winners and losers. This is particularly troublesome for the political economy of redistribution. Certainly, if we want to know who supports (opposes) redistributive policies, we need to identify who is better off (worst off) after redistribution. Only if we analyze it as a process will we be able to identify the social basis of support and opposition to redistributive policies.

2. **Redistribution as an income mobility process: the identification and measurement of redistribution**.

How can we evaluate the redistributive consequences of tax and transfer systems? How can we measure redistribution? The first step that we need to take in order to provide a measure is to *identify* the *process* of redistribution. The main insight underlying this section is to characterize redistribution as just a particular case of an income mobility process. Indeed, as over-time income mobility is a process that maps individuals' incomes at two or more points in time, redistribution, analogously, is a process that, for each individual, maps pre-tax and transfers (market) income into post-tax and transfers (disposable) income. This simple characterization of redistribution allows us to build on the literature on income mobility and obtain a micro-level measure of redistribution.

The conventional measures of redistribution used in the social sciences described in the previous section are all based on a comparison of two *aggregate* 'snapshots': the overall level of aggregate market income inequality and that of disposable income inequality. Such a static and aggregate evaluation of market income and disposable income provides an incomplete and, as will be shown in the two latter empirical sections of this paper, misleading evaluation of redistribution. Indeed, such an approach to redistribution abstracts away the micro-level dynamics that map at the individual level the *initial* income that individuals obtain in the market (market income) into the *final* income that they have at their disposition (disposable income) following the receipt of cash transfers from and the payment of taxes to the welfare state.

In order to overcome this shortcoming, we can conceive the effect of transfers and taxes as an income mobility process. Certainly, in the first place, individuals obtain an income in the market. In the second place, the state collects taxes and transfers cash benefits to citizens. The income obtained at time 1 is the market income (MI), while the one obtained at time 2 is the disposable income (DI). Consequently, redistribution can be defined as the process mapping the original income obtained in the market, MI, into the final or disposable income. Formally, $m= (m_1, m_2, \dots m_n)$ represents the distribution of market income of a n-individuals society, where m_i represents the income that individual *i* obtains in the market (time 1). Such a market income, m_i, becomes mapped into a final or disposable income d_i in the second place. For the *n* individuals in the society under study, the final distribution of disposable income is represented by $d= (d_1, d_2, \dots d_n)$. More formally, redistribution can be defined as the dynamic process mapping *m* into *d*, and can be denoted as: $m \rightarrow d$. It can also be represented, for each individual in society, as pairs of initial and final income: $\{m_1, d_1\}, \{m_2, d_2\}, \dots \{m_n, d_n\}$.

A redistribution process can be described in a mobility matrix such as the one in Table 3. The information contained in such a redistribution matrix can be analyzed in two different ways: as the comparison of two static *snapshots* or as a *dynamic micro-level process*. Graphically, this corresponds to two different readings of the mobility matrix: a *horizontal* and a *vertical* reading. If we decide to analyze redistribution as a dynamic individual-level *process*, we will read *horizontally* the mobility matrix that summarizes the process of redistribution. By definition, this allows us to assess the effect of redistribution at the individual level and therefore establishes the identity of the winners and losers of redistribution[3].

The measures of redistribution currently used in the literature have a different take. These measures are based on a *vertical* reading of the table above. 'Redistribution' is thought to be uncovered by comparing the aggregate measures of market and disposable income inequality. In this approach, the micro-data provided by national surveys on individual and household incomes are aggregated and replaced by an overall

---

[3] The substantive interest in redistribution of the social sciences arises from its (hypothesized) equalizer effect over the distribution of income. This interest is shared between the conventional measures used in the sociology and the political economy of inequality and the measure of redistribution formulated in this paper. The difference between the conventional measures of redistribution (difference or proportional reduction of the gini coefficient of the distribution of market and disposable incomes) and the mobility-based measure of redistribution is that the former only compares two "snapshots", the gini indexes of the distributions of market and disposables incomes, and does not analyze the incidence of taxes and transfers at the micro-level. The mobility-based measure of redistribution, by providing a micro and dynamic analysis of redistribution, overcomes such a serious shortcoming.

summary of the inequality in each of the columns. The obvious first negative consequence of this approach is that we are loosing very valuable information. By using just a summary measure of the dispersion in the distribution of market and disposable income, we loose extremely valuable information to evaluate the consequences of tax and transfer systems at the individual- or household-level. A further consequence of this is that, by relying of aggregate measures, we may come up with a wrong assessment/characterization of the redistributive efforts of different welfare states[4].

In other words, the conventional measures of redistribution (hereafter C-MOR) fail to *identify* the micro-level process of redistribution. In order to *identify* it, we need to take advantage of all the information available to us in a redistribution matrix such as the one in Table 3.

The characterization of redistribution as an income-mobility process provides such a micro-level *identification*. Therefore, in order to measure the consequences of the process of redistribution, we have to 'de-codify' all the relevant information contained in the *law* or *rule* that maps market income is mapped into final/disposable income:

$$R: m = (m_1, m_2, \ldots, m_n) \rightarrow d = (d_2, d_2, \ldots, d_n) \qquad (2)$$

---

[4] Analyzing redistribution with disaggregated or micro-data is specially appropriate because of theoretical reasons. Indeed, political economy theories of redistribution are formulated by specifying the choices that individuals make in reaction to taxes and transfers that affect not the overall or aggregate pattern of inequality, but their own personal income. For this reason, we need a measure of redistribution that assesses the micro-level consequences of taxes and transfers.

How can we 'de-codify' the *law* mapping market into disposable income at the individual level? How can we evaluate the reduction of inequality effected by redistribution? The characterization of redistribution as an income mobility process, in addition to accurately *identify* it, supplies the natural toolkit to measure it. Since redistribution is one particular class of mobility process, the natural way to measure it is by calculating measures of an income mobility. Indeed, the concern of income mobility indexes is to assess the extent to which overtime income mobility reduces the initial level of inequality. In other words, income mobility indexes measure whether societies characterized by an unequal distribution of income at a point in time display high levels of (future) income mobility that reduce such an initial inequality[5].

The parallel of income mobility with redistribution is quite straightforward. Indeed, the *substantive* concern of redistribution and income mobility is the same, namely the extent to which the mobility from market income to disposable income equalizes individuals' opportunities for income acquisition. Given this substantive concern of redistribution, then the natural way to evaluate how redistribution reduces the initial inequality generated in the market is the computation of the Shorrocks index of mobility (Shorrocks, 1978) applied to the process of redistribution, i.e. the income mobility process mapping market into disposable income.

---

[5] It is well known that income mobility provides a superior evaluation of welfare than the one provided by the cross-sectional analysis of inequality (e.g. Gangl, 2005). As Atkinson, Bourgnignon and Morrison (1992) argue, mobility is of interest because it may reduce the inequality in the lifetime sum of earnings relative to that in a single point in time. For this reason, cross-sectional inequality provides an incomplete and potentially misleading picture of welfare.

As the Gini index is the most commonly used measure of cross-sectional inequality, the Shorrocks index is the most common index of income mobility. This makes this index a very suitable candidate to become our mobility-based measure of redistribution (hereafter M-MOR). Furthermore, there is a substantive reason that makes it the most suited measure for becoming our M-MOR. Shorrocks (1978) developed this index in the substantive aim of evaluating how over time income mobility reduces the level of initial inequality. Therefore, it is an index particularly designed to assess the extent to which mobility equalizes incomes over the time period under analysis.

The interpretation of the values of the Shorrocks index (R) is very simple. *R* lies between 0 and 1 and represents the proportion of inequality that is *persistent* in the period under analysis. Equivalently, *M= 1–R* measures the relative reduction of cross-sectional inequality when the accounting period is extended from one cross-section to *T* periods. The following example helps to interpret it. Imagine that we obtain a value of R= 0.9. This means that the process of redistribution contributes to a 10% reduction of market inequality. Alternatively, we could say that in spite of tax and transfer made by the welfare state a 90% of market inequality remains unchanged.

3. **Redistribution in advanced industrial societies**.

Once we have *identified* redistribution as an income mobility process and have obtained an derived a *measure* consistent with such an *identification*, we are ready to evaluate how different welfare states, by taxing market income and providing cash social transfers, reduce the inequality generated in the market. In this section, I calculate the mobility-based measure of redistribution (M-MOR) for a number of advanced industrial societies. In addition to it, I calculate the conventional measures of redistribution (C-MOR) used in the literature and show that the latter and the new measure of redistribution formulated in this paper, what I call the mobility-based measure-of-redistribution (M-MOR) are empirically distinct -indeed, they are very weakly correlated.

The data used in the calculation of the indexes of redistribution presented in this section is provided by the Luxembourg Income Study (LIS). The LIS collects microdata on market and disposable income obtained from national statistical authorities, which are harmonized –'lissified', allowing for cross-country over-time comparisons. The LIS provides nationally representative individual-level data on market and disposable income for the countries listed in Table 4. The period of time for which data are available starts in the late 1970s, although for some countries historical data are available going back to the 1960s (for example, for Sweden and the UK; see Table 4 for further details). Overall, the number of surveys used in the calculations reported in this section is 84 surveys.

[Table 4 about here]

19

The measure of income used in the calculations in this section, as is the case in virtually all the studies of inequality and poverty, is the *equivalent household income*. The reason for this is that individuals live in families, and the latter constitute economies of scale. Since households vary in terms of size (the total number of members of a family) and structure (the mix of adults and children in the family), the total family income needs to be adjusted by calculating the *equivalent household income*. This is the figure obtained by dividing the *total family income* into the *equivalent size* of the household. The equivalent household size is calculated using equivalence scales. The equivalence scale that I have used in the calculations reported in this paper is the square root of the family size. Therefore, the equivalent household income is calculated as the total family income divided into the square root of the family size. This figure, the equivalent household income, allows for comparisons of income at the individual level, taking into consideration that individuals live in households –which constitute economies of scale.

The following choices have been made in order to calculate the measures of income, inequality and redistribution reported in this paper:

1. Zero income values. I have included in the analyses households which reported zero market income, but have disregarded households reporting zero disposable income. The rationale for this is that while it is possible that some households do not obtain any income at all in the market, it is very reasonable to expect that household receive some positive level of income from unreported sources.

2. Confidentiality issues and top coding. For reasons of confidentiality, national surveys top code the highest income values at some maximum value. Furthermore, there may be

national variations in the extent of underreporting high incomes. In order to account for this, I have applied the top-coding rule suggested by the LIS: ten times the median of non-equvalized income. Similarly, I have also bottom-coded household at 1% of equalivalized mean income.

3. The population under analysis. Likewise Bradley et al (2003), Kenworthy and Pontusson (2005), and Iversen and Soskice (2006), the population under analysis in the empirical analyses in this section is the working-age population (the 25–59 age group). The reasons for this choice are two: i) the variability of pension systems across countries, and ii) allowing the comparability of the evaluation of redistribution provided by the C-MOR with the one supplied when using the new M-MOR. I elaborate these reasons in more detail in the next section of the paper.

The value of the C-MOR can be found in Table 5. The columns in Table 5 report, for each country, the mean value (across the time points available from the LIS database) of i) the inequality of aggregate market income (MI) (column 1), ii) the inequality of aggregate disposable income (DI) (column 2), iii) the difference between aggregate market income and disposable income inequality (MI-DI) (column 3), and, finally, iv) the proportional reduction ([MI-DI]/MI) (column 4).

[Table 5 about here]

The measure of inequality used in the calculations summarized in Table 5 is the gini coefficient. This index is the most commonly used measure of inequality. It is a variable that ranges from zero to one. The interpretation of this index is very

straightforward: the higher the value of the gini coefficient, the greater the level of inequality in a society. The left extreme value of the gini coefficient, *G*= 0, accounts for a society where all individuals have the same level of income. The right extreme value, *G*=1, is the one of a society where one individual owns all income and the rest of members of the population have zero income.

The measures of 'redistribution' reported in Table 5 are what I have called the C-MOR. In Table 6 I report the value of the new measure of redistribution developed in this paper: the M-MOR formulated in the previous section. Let us recapitulate the logic and basis of this measure. Thanks to our *identification* of redistribution as an income mobility process, we can measure its consequences in terms of the reduction of market inequality by calculating the Shorrocks index. Since the concern of redistribution is to do with the extent to which it reduces the initial inequality generated in the market, the natural way to evaluate the redistributive consequences of welfare states requires the calculation of the Shorrocks index of mobility for the process mapping, for each individual, the initial market income into her final disposable income. The M-MOR reported in Table 6 is the Shorrocks index of income mobility for the process {market income → disposable income}. To recapitulate, this index measures the extent to which, the individual mobility of income has as a result a reduction in inequality. For example, a value of M= 0.05 indicates that redistribution reduces the level of inequality in a 5%. Table 6 reports the mean value (across the surveys carried at different points in time for each country) of the M-MOR for each country.

[Table 6 about here]

22

As I argued in sections 1 and 2 in this paper, there are substantive and technical reasons why the *conventional measures* of redistribution, based on a straightforward comparison of aggregate measures of inequality, do not provide a valid evaluation of redistribution. A measure of redistribution needs to evaluate the *micro-level* effects of redistribution on individuals' income. From a theoretical point of view, therefore, the new measure of redistribution is absolutely different and distinct from the other two. But, what is the empirical relationship between the three measures of redistribution? Are the M-MOR and the two C-MOR empirically distinct? This question is justified because, after all, it could be that –to my despair!- the new measure of redistribution, M-MOR, is highly correlated with the other two. Is this the case? In order to answer this question, I explore the relationship between the three measures of redistribution. From the correlations presented in Table 7, it is clear that the answer is negative. The correlation between the measure of redistribution that I have put forward, M-MOR, and the other two measures is weak. Obviously, these two measures are highly correlated among themselves –the correlation coefficient is higher than 0.9. However, the correlation of each of them with the M-MOR is very weak: about 0.20 for the difference between the inequality of disposable and market income, and about 0.37 when using the proportional reduction in inequality as a measure of redistribution.

[Table 7 about here]

Therefore, it can be concluded that the M-MOR formulated in this paper provides a *new* assessment of the extent to which welfare states, by collecting taxes and providing cash social transfers, reduce inequality. This assessment is distinct form the one provided by the current measures of redistribution used in the literature on the

social and political determinants of redistribution. This measure, as argued in sections 1 and 2 above, is based on an accurate *identification* of the process of redistribution. Furthermore, this measure is empirically different from the ones currently used in the literature on the sociology and politics of redistribution in advanced industrial societies.

4. **The political economy of redistribution in advanced industrial societies**.

To this point, the article has provided a new measure of redistribution –the M-MOR. This new measure is based on the identification of redistribution as an income mobility process. By analyzing redistribution as such, we have obtained an evaluation of the extent to which redistribution reduces inequality. This measure avoids the problems of conventional measures of redistribution, which are based on the comparison of two aggregate 'snapshots' and, as a consequence, abstract away the micro- or individual-level dynamics of mobility experienced by individuals' incomes as a consequence of taxes and transfers. In addition to provide a measure of redistribution based on the right identification of it, this new measure is empirically different from the conventional ones used in the specialized literature. Indeed, we have seen above that the correlation between the M-MOR and the conventional measures of redistribution is as low as 0.37 (for the proportional reduction in inequality) and 0.20 (difference between the gini of market income distribution and the gini of the disposable income distribution).

The intention of this final section of the article is twofold. In the first place, it aims at showing that issues of measurement are particularly crucial for the evaluation and assessment of the political economy of redistribution. In particular, I shall analyze

whether our knowledge about the determinants of redistribution is contingent on the way redistribution has been (conventionally) measured. Our knowledge of the determinants of redistribution is based on models that use as dependent variables what I have called *conventional measures* of redistribution, derived from the comparison of two aggregate variables (measures of the inequality of market income and of disposable income), suffering from the statistical and substantive problems described in the first section in this paper. Do these findings hold when we use the new measure of redistribution developed in this paper? Does our understanding of the political economy of redistribution changes when we measure it with a proper measure? The second aim of this paper is of a more substantive nature. By assessing the conventional wisdom of the determinants of redistribution when using the M-MOR, this paper will identify the main variables describing the socioeconomic, political and institutional characteristics of advanced industrial societies that account for the variability of redistribution across countries. This will provide a first exploration of the social and political determinants of redistribution.

What do we theoretically know about the socioeconomic, political and institutional fabric of redistribution? Why some democracies redistribute more than others? To explain this variability, we need to adopt a comparative perspective and search for economic, political and institutional differences among advanced industrial societies. The major explanations that have been formulated in the literature can be summarized in three main groups: economic explanations, explanations in terms of political partisanship and public policy, and explanations emphasizing the role of political institutions such as electoral rules and the organizational structure of the state.

The basic logic of the economic explanations of redistribution is provided by the median voter theorem (Roberts, 1977; Romer, 1975; Meltzer and Richard, 1981). According to this theorem, market inequality and redistribution are related as follows: the greater the inequality of market income, the higher the level of redistribution. This is the basic conclusion of Meltzer and Richard (1981). The underlying argument on which it is based departs from the empirical fact that the distribution of income is skewed to the right; in other words, the mean income is higher than the income of the median voter. As a consequence, in democracies, the median voter pushes for redistributive policies. If political competition follows the logic of the Downs' model, the median voter imposes redistributive policies. Although this theorem has provided the basis for the analysis of several economic issues, most notably the relationship between inequality and economic growth (Alesina and Rodrik, 1994; Perotti, 1993; Persson and Tabellini, 1992), the theorem, for very long, has not been tested with the right data. It has not been until very recently that Kenworthy and Pontusson (2005) have provided a systematic cross-country over-time analysis of the relationship between market inequality and the variability of redistribution. They show that the inequality of market income, as measured by the gini coefficient, is positively associated with redistribution. They estimate a model with market income and voter turnout as independent variables and show that both are significantly associated with the difference in the gini coefficient as a measure of redistribution.

A second broad of group of explanations of redistribution is built around the interrelationship between the political color of governments and public policy. There is a long tradition in political sociology and political economy that establishes a link between political partisanship on the one hand, and economic outcomes and welfare

state performance on the other hand. In this tradition, political parties are conceived as the agents of the different economic interests in society. In particular, left or labor parties advance the interests of the working-class, while right-parties advance pro-rich or pro-well-off social and economic policies (Hibbs, 1977; Hibbs and Dennis, 1988; Hicks and Swank, 1984, 1992; Huber and Stephens, 2001).

Within this broad second group of explanations, there is a very well articulated and influential explanation of the variability of welfare state outcomes across countries: the power resources theory (Korpi, 1983; Stephens, 1979). This theory has been applied mainly to explain the origin and the development of the welfare state (*vid*. Korpi, 1989; Esping-Andersen and Korpi, 1984; Esping-Andersen, 1985). More recently, Bradley *et al*. (2005) have argued that the right test of the theory requires an evaluation of the consequences of left parties for levels of income redistribution. In their own words:

"to consider this work on welfare state development as test of power resources theory misses the mark because the theory is really about the causes of distributive outcomes […] different working-class power-resources are mobilized at two points in the distributive process: union strength reduces pre-tax and transfer income inequality while leftists government redistribute income by increasing the size and affecting the distributive profile of taxes and transfers" (Bradley et al, 2003: 195).

Bradley *et al*. (2003) carry out a rigorous empirical analysis in which they asses the determinants of both the level of market inequality and the level of redistribution across advanced industrial societies. Using as a measure of the latter the proportional

reduction of the gini coefficient of the distribution of disposable income as compared with that of the distribution of market income, they show that left parties are associated with higher levels of redistribution. The political color of the government in office matters for the level of redistribution. In particular, i) the cumulative presence of left parties in cabinets is positively and significantly associated with higher levels of redistribution, and ii) the cumulative presence of Christian-democratic parties in cabinets is associated with lower levels of redistribution. This evidence, in addition to the fact that measures of union strength are associated with low levels of market inequality, according to Bradley et al. (2003) offers support to the power-resources theory.

Finally, there is a long tradition of explanations of the development of the welfare state based on the role played by state structures and institutions (Skocpol and Amenta, 1986; Immergut, 1992). Also, there is a growing literature on the role played by electoral rules on welfare policies and economic performance (*e.g.*: Persson and Tabellini, 2003; Austen-Smith, 2000; Rogowski and Kayser, 2002). Building on this literature, Iversen and Soskice (2006) provide an explanation of the variance of redistribution across democracies as a consequence of the type of electoral system used in each democracy to translate votes into representation. They find that proportional systems are statistically associated with the level of redistribution. Their argument is that proportional representation systems increase the likelihood of left parties holding office and, as a consequence, higher levels of redistribution.

To summarize, within what Palme (2006: 388) calls the *third generation* of welfare state studies, namely comparative research using income data to *explicitly*

evaluate the variability of redistribution across countries, a number of complementary explanations have been provided of the variability of redistributive outcomes across welfare states. Kenworthy and Pontusson (2005) find that market inequality and voter turnout are associated with higher levels of redistribution: those economies that produce more inequality in the market also redistribute more. Bradley *et al*. (2003) find that partisanship matters for redistribution: left cabinets redistribute more, and center-Christian cabinets redistribute less. Finally, electoral systems play a role in redistribution: proportional representation systems, by increasing the probability of left-parties to reach the executive power, are associated with higher levels of redistribution (Iversen and Soskice, 2006).

The conclusions above are established on the basis of the estimation of rigorous statistical models that use as dependent variables the C-MOR described above. In particular, among others, Bradley *et al*. (2003) and Iversen and Soskice (2006) use the proportional reduction in inequality, while Kenworthy and Pontusson (2005) use the difference between the gini coefficient of market income and the one for disposable income inequality. Do these findings hold when we use the M-MOR formulated in this papers? Are the conclusions above contingent on the measure of redistribution used? How does our understanding of the socioeconomic and political factors of redistribution changes when we use the M-MOR instead of the C-MOR?

In order to answer the previous questions, this section employs the data introduced in section 3, and combines the indexes of redistribution presented there with variables describing the economic, political and institutional characteristics of advanced industrial societies. A dataset providing information on welfare states, macro economic,

demographic, political and institutional variables is Huber, Ragin and Stephens (1997) –
updated by Brady, Beckfield and Stephens (2004). Combining the two sets of variables
provides rich database with a panel of countries with time-series cross-sectional data.

In exploring empirically whether the conventional wisdom about redistribution
holds, several time-series cross-sectional models, also know as panel data models, are
estimated in what follows. Because of the availability of market and disposable income
from the LIS surveys, the panel data against which models are to be estimated constitute
an unbalanced pool –i.e. the years at which surveys are conducted are neither constant
nor the same across countries. An additional issue to consider when estimating time-
series cross-sectional models is the likely autocorrelation of time-observations for each
country (Beck and Katz, 1995). Because of this, standard errors obtained from the
estimation of a model by OLS (ordinary least squares) may be inaccurate. In order to
obtain robust results, three estimation techniques are going to be used: OLS with robust
standard errors, panel corrected standard errors, and panel corrected standard errors
assuming the existence of an autocorrelation of order one between the time-observations
for each country.

Let us remember that the double aim of this final section of the paper is: i) to
uncover the socioeconomic, political and institutional determinants of redistribution; ii)
to assess the extent to which our understanding of redistribution is contingent on the use
of 'conventional measures' of 'redistribution'. The *modus operandi* that I adopt in order
to achieve these aims is as follows. In the first place, I estimate a set of models using the
M-MOR as a dependent variable. These models are reported in Table 8. This battery of
models identifies the variables that drive the heterogeneity of redistribution found in

different societies. In other words, by estimating the models presented in Table 8, we will uncover the political, social and economic variables that are associated, as well as those that are *not*, with the extent to which different welfare states redistribute income.

Once we identify the determinants of redistribution, we can assess how our knowledge of the political economy of redistribution has been limited as a result of the use of 'conventional measures' of redistribution as a dependent variable –which suffer from the serious problems described in the previous sections of the paper. In order to fulfill this second aim, three models sharing the same independent variables are going to be estimated, each of them using a different measure of redistribution as dependent variable. These models are reported in Table 9.

As I wrote above, likewise Bradley et al (2003), Kenworthy and Pontusson (2005), and Iversen and Soskice (2006), the population under analysis in the empirical analyses in this section is the working-age population –the 25–59 age group. The main reason for this has to do with the variability of pension systems across countries. Because some countries enjoy generous public pension systems, private savings are discouraged and therefore, if we include the non-working age population in the analyses, the degree of redistribution would be exaggerated. There is also a second reason for this choice. Since one of the aims of this section is to show that our understanding of redistribution has been limited by the use of inadequate measures of redistribution, I will be showing that the conventional wisdom on the sociopolitical determinants of redistribution, established in influential papers that have been previously cited, does not hold when we use the right measure of redistribution. In order to make the results in this paper comparable to Bradley *et al*. (2003), Kenworthy and

Pontusson (2005), and Iversen and Soskice (2006) I need to focus on the same demographic group of the population.

In order to find out the determinants of redistribution, I estimate a model to account for its variability across countries, measuring redistribution with M-MOR as dependent variable. In the models in Table 8, I use different explanatory variables to control for the socioeconomic, political and institutional factors that different theories and arguments in the literature put forward as relevant to account the variability of levels of redistribution across countries. I also control for other variables that are commonly assumed to be associated with redistribution. All these variables, together with the rationale for why they are expected to be associated with redistribution, are described next.

Dependent variables.

    M-MOR: mobility based measure of redistribution.

    Difference: Gini(market) – Gini(disposable).

    Proportional: [Gini(market) – Gini(disposable)]/Gini(market).

Independent variables.

    Inequality of market income. This variable measures the inequality in the distribution of market income and is included in order to capture the logic of the median-voter theorem. If Meltzer and Richard (1981) have got the logic of redistribution right, we should expect that the higher the level of market inequality, the higher the level of redistribution.

Wage coordination. In addition to have consequences for the distribution of market income, wage coordination may have consequences for the generosity of social policies (e.g. Bradley et al. (2003): 200). The measure of wage coordination used in the analyses is taken from Brady et al. (2004), and its original source is Kenworthy (2001). The variable has five values, indicating different degrees of wage coordination.

Unemployment. The effect of unemployment is open to empirical assessment. In the first place, unemployment may increase the level of market income inequality. In the second place, such an increase will be translated into higher or lower levels of redistribution depending on the level of generosity of unemployment benefits.

Industrial Employment. The level of employment in the industrial sector of the economy is included in the analyses. This variable is used as an indicator of the extent of deindustrialization –which according to Cusack and Iversen (2000) is a key driver of the expansion of the welfare state in the last decades.

Voter turnout. A number of empirical studies have found an association between electoral participation and the provision of welfare benefits (e.g. Hicks, 1999; Mahler, 2002; Kenworthy and Pontusson, 2005). Because there is a correlation between citizens' socioeconomic status and their probability to turn to vote (Lijphart, 1997), one can expect a positive correlation between levels of voter turnout and redistribution.

Left cabinet. This variable is the cumulative (since 1946) % of seats held by left parties among all government parties in cabinets. In the account of redistribution provided by Bradley *et al*. (2003) this variable is positively and significantly associated with the level of redistribution.

Center Christian cabinet. This variable is the cumulative (since 1946) % of seats held by center Christian parties among all government parties in cabinets. In the account of redistribution provided by Bradley *et al*. (2003) this variable is negatively and significantly associated with the level of redistribution.

Right Christian cabinet. This variable is the cumulative (since 1946) % of seats held by right Christian parties among all government parties in cabinets. In the account of redistribution provided by Bradley *et al*. (2003) this variable is negatively and significantly associated with the level of redistribution.

Federalism. In federal states, it is more difficult to pass progressive legislation. Consistent with this logic, I expect a negative association between federalism and redistribution. The variable of federalism available in Brady et al. (2004) has three values: 0= central state, 1= weak federal state, 2= strong federal state.

Electoral systems. Iversen and Soskice (2006) find an association between electoral institutions and the level of redistribution. Specifically, the find that democracies with proportional electoral systems are more redistributive than those that have majoritarian electoral systems. The variable of electoral systems used in the analyses that follow has three values: 0= proportional representation, 1= modified proportional representation, 2= single-member systems.

Globalization. In order to find out whether globalization is related to the level of redistribution effected in democracies, I include two variables in the analyses: trade openness and capital market liberalization. The first variable is simply the value of export and imports as a % of GDP. The second variable ranges from zero to four and is taken, again, from Brady *et al*. (2004).

***

In Table 8, I estimate a set of models with M-MOR as dependent variable. In Model 1, all the independent variables described above are included as explanatory variables. This model is estimated by OLS with robust standard errors (cluster: country). The most remarkable results of the estimation of this model are highlighted below:

[Table 8 about here]

1. Inequality of pre-tax and transfers income is negatively associated with the level of redistribution. This is statistically significant at a 0.003 level. This finding goes against an expectation based on the Meltzer-Richard model. For the predictions of the M-MOR to be confirmed, we should have find that the level of market inequality is positively associated with the extent of redistribution –just the opposite to the findings of Model 1.

2. The cumulative presence of left parties in the government is not associated to the level of redistribution. Neither left nor center Christian nor right Christian governments account for the variability of redistribution across countries. This result goes against what the power resources theory (Korpi, 1983; Stephens, 1979) would have predicted. This is specially relevant because it shows that, when using M-MOR as dependent variable, the results of Bradley *et al*. (2003), according to which left governments are positively related to levels of redistribution, do not hold any more. This result will be more carefully explored when comparing the results of statistical models using three different dependent variables in Table 9.

3. Political institutions matter for redistribution. In particular, there is a negative association between federalism and redistribution which is statistically

significant. Another political institution, namely the type of electoral system, does not appear to be associated in a statistically significant way with the level of redistribution according to Model 1. Although the coefficients of modified proportional representation and that of majoritarian systems are negative – showing that democracies with any of the two electoral systems are less redistributive than those with proportional systems, the differences are not statistically significant. The reason for this, if Iversen and Soskice (2006) are correct, may be that the prevalence of governments of one or another political color is dependent on the type of electoral system. Their argument is that left parties are more likely to hold office in democracies with proportional representation. This possibility is further explored in Model 4, Table 8.

4. The idea much formulated by economic and political commentators that globalization reduces the capacity of governments to redistribute income and reduce income inequality does not obtain empirical support from Model 1, Table 8. In particular, the measures of commercial and capital market openness show that redistribution is not related to globalization.

5. Other variables in Table 8 that are not statistically significant to account for redistribution are wage coordination[6], unemployment, industrial employment and voter turnout.

---

[6] In models not reported here, I have explored two reasons why wage-coordination is not associated to redistribution. The first reason may be that more open economies, like Scandinavian countries, also display high levels of wage-coordination. The second reason is that wage coordination and unemployment are associated: were there is more wage coordination unemployment is lower. I have estimated models including neither openness nor unemployment and wage coordination is still statistically non-significant. Given that these results are not important for the point of this paper, I do not report them here. Nevertheless, they are available from the author upon request.

In Model 2, I have estimated a new model that includes as explanatory variables those that are statistically significant in Model 1, as well as measures of the political color of cabinets and the type of electoral system. Again, the two latter sets of variables are not statistically significant to account for redistribution. Likewise Model 1, federalism and the level of market income inequality are negatively associated with redistribution at 0.034 and 0.006 significance levels. This reinforces the idea obtained from the previous model according to which the political color of governments is not related to the level of redistribution in advanced industrial democracies. Politics matters, but it is throughout political institutions, not partisanship.

In Model 3 I further explore the role of political institutions to account for redistribution. Once we do not control for the political color of cabinets, the type of electoral system is related to the level of redistribution. Both modified proportional electoral systems and majoritarian institutions are associated with lower levels of redistribution, as compared to electoral systems based on proportional representation. The first difference is significant at a 0.10 and the second at a 0.037 level.

To summarize the findings of the models in Table 8, we can conclude from them that market inequality is *negatively* associated with the level of redistribution in all the estimated models. Politics is important to account for redistribution, but not because of the ideology of cabinets as partisanship or power resources theories would anticipate, but because of the nature of political institutions. Indeed, federalism is negatively associated with the level of redistribution in all models. Electoral systems display signs of association with redistribution. When not controlling for partisanship, like in Model 3

37

above, as compared to proportional systems, both modified proportional and majoritarian electoral systems are less redistributive.

As I wrote at the beginning of this section, one of its aims is to show that our understanding of the political economy of redistribution has been limited by the use of inadequate measures of redistribution. In order to fulfill this aim, I have estimated three models that share the same independent variables. The three models, also, are estimated using the same technique –OLS with robust standard errors. The only difference between the three models is that each uses a different dependent variable: M-MOR, proportional reduction in inequality (hereafter 'proportional'), and the difference between market inequality and disposable income inequality (hereafter 'difference'). The independent variables in the three models are the same ones of Model 2 in Table 8 above. Given that the three models are estimated against the same number of observations (84 observations from 16 countries), we can readily compare the coefficients of each explanatory variable across the three models. The models are reported in Table 9.

[Table 9 about here]

The remarkable differences between the three models in Table 9 have to do with the role of market inequality, the cumulative presence of left parties in the cabinet and federalism. According to the models using the conventional measures of redistribution (Models 2 and 3 in Table 9), the relationship between market income inequality and redistribution is positive –the one expected on the basis of the Meltzer-Richard model: more market inequality is related to higher levels of redistribution. The sign of the

coefficient is positive in Models 2 and 3 and significant at 0.114 and 0.000 respectively. This finding was already advanced by Kenworthy and Pontusson (2005) using the difference between the inequality of market income and that of disposable income as a measure of redistribution. With regards to the role of federalism, both models using C-MOR fail to establish a relationship between federalism and the level of redistribution. Finally, Models 2 and 3, the ones using the C-MOR as dependent variables, establish that left governments are related to the level of redistribution. The relationship between the two, according to both models, is positive and statistically significant at a 2% level: the longer the cumulative presence of left parties in the executive power, the higher the level of redistribution.

When we examine the determinants of redistribution with the M-MOR formulated in this paper, we find that the political color of governments is not relevant for the explanation of redistribution. Also, we find that the Meltzer-Richard model gets the logic of redistribution the other way around: the association between market inequality and redistribution is *negative*. This is consistent with theoretically more sophisticated and realistic models of redistribution like the one formulated by Moene and Wallerstein (2001), that show that under certain very realistic conditions greater inequality is related to less support for redistributive policies. These conclusions also contradict the empirical findings of Kenworthy and Pontusson (2005), who find a positive relationship between the extent of market inequality and the level of redistribution.

In showing the soundness of the former conclusions, we need to rule out the possibility that estimation results are not robust to different techniques. In order to rule out this possibility, the three models in Table 9 have been re-estimated using two

additional estimation techniques: i) panel corrected standard errors, and ii) panel corrected standard errors assuming that errors follow an autoregressive process of order 1 (AR1). The results are reported in Tables 10, 11 and 12.

[Table 10 about here]

Table 10 reports the estimation of a model in which the dependent variable is the M-MOR by OLS with robust standard errors, panel corrected standard errors and panel corrected standard errors with AR1.

[Table 11 about here]

[Table 12 about here]

Table 11 and 12 proceed analogously with the C-MOR as dependent variables. We can see that the similarity in the size of coefficients and significance levels allow us to conclude that the conclusions formulated above are not an artifact of the estimation technique used[7].

In conclusion, we can be confident that if the findings of this section depart from the conventional wisdom, it is because the process of redistribution has been correctly identified as an income mobility process and measured accordingly with the help of the Shorrocks mobility index.

---

[7] There is only one important difference: the significance levels of the type of electoral system. The significance levels are lower when estimating the model by PCSE and even lower when estimating it with PCSE assuming that the errors follow a first-order autocorrelation process. In the later case, compared to proportional representation systems, majoritarian electoral institutions are less redistributive and this difference is statistically significant at a 0.05 level.

Conclusions.

To explain the redistributive consequences of tax and transfer systems, it is essential to be equipped with appropriate measures. Existing measures of redistribution, used in recent research papers such as, among others, Bradley et al (2003), Iversen and Soskice (2006), Kenworthy and Pontusson (2005), and Mahler and Jesuit (2006), assume that we can assess the extent of redistribution by comparing two aggregate figures: the inequality of market income and the inequality of disposable income. This paper has argued that such an approach to measure redistribution is seriously flawed. The reason for this is that such measures are based on a wrong identification of redistribution. Certainly, current measures are based on the comparison of aggregate figures of inequality, which, by definition, are unable to *identify* the *incidence* of taxes and transfers at the *individual level* and, as a consequence, are unable to provide meaningful measures.

In order to overcome this problem, the paper has established that when analyzed at the micro-level, redistribution can be *identified* as an income-mobility process. It is a process that for each individual maps a level of market income into one of disposable income. This characterization of redistribution plays a twofold role. In the first place, it supplies us with the proper *identification* of redistribution. In the second place, it provides us with a natural index to *measure* it. Certainly, the measure of redistribution developed in this paper assesses the extent to which, by taxing income and transferring cash to households, welfare states reduce the level of inequality. Since the substantive interest of redistribution coincides with the one of the Shorrocks index of income mobility, the M-MOR developed in this paper consists of the calculation of the

Shorrocks index to the income mobility embodied in the process of redistribution –the mobility from market to disposable income.

Using data from the LIS, I have evaluated the distribution effected by different welfare states. The first important empirical finding of this paper is that the M-MOR provides an evaluation that is empirically different from the one supplied by C-MOR. Indeed, the correlation between the former and any of the latter C-MOR is very weak. Furthermore, in the last part of the paper I have explored whether our understanding of the social and political determinants of redistribution has been misrepresented as a result of using an inadequate variable as a proxy of redistribution –i.e. the C-MOR. The findings of this last section confirm that our understanding of the political economy of redistribution does not hold when measuring redistribution properly. To summarize, based on the models that use as dependent variables conventional measures, redistribution is driven by market inequality in a Meltzer-Richard fashion and by the presence of left parties in governments as expected by the power-resources theory. The point of this paper is that precisely those conventional measures are inadequate to assess the impact of redistribution on the reduction of inequality because the do not consider the micro dynamics of income mobility embodied in the process of redistribution. In section 3, we have seen that the correlation between conventional measures of redistribution and the one formulated in this paper is rather low. Furthermore, our understanding of the political economy of redistribution has been limited due to the use of inadequate measures of redistribution.

Figures and Tables.

Figure 1. Non Intersecting Lorenz Curves of Market and Disposable Incomes.
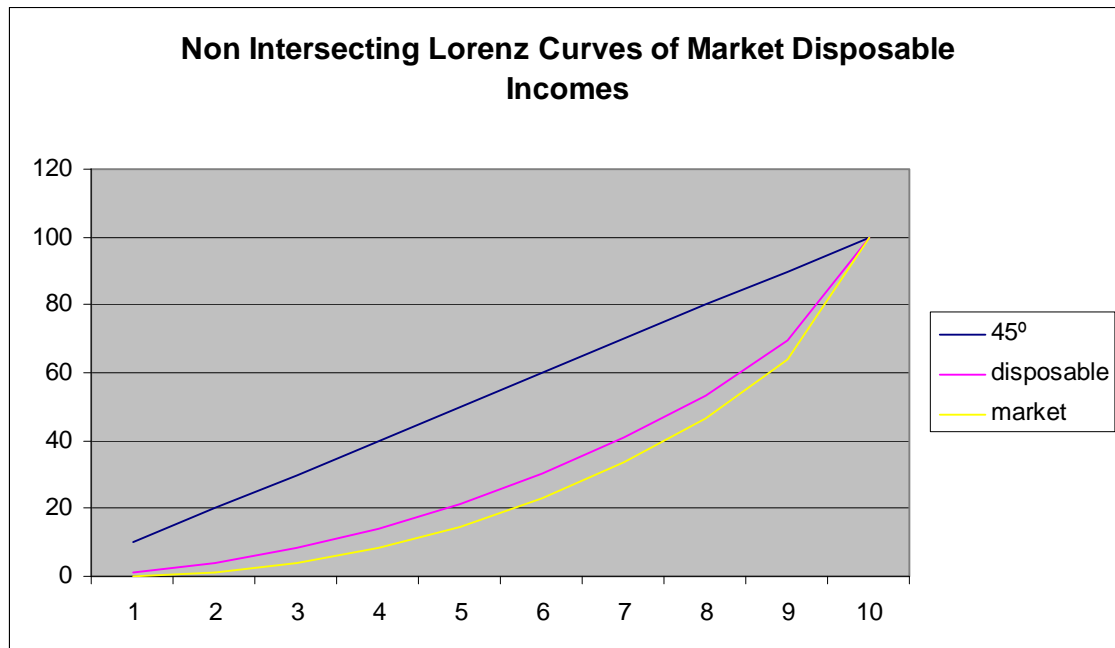
Figure 2. Intersecting Lorenz Curves of Market and Disposable Incomes.
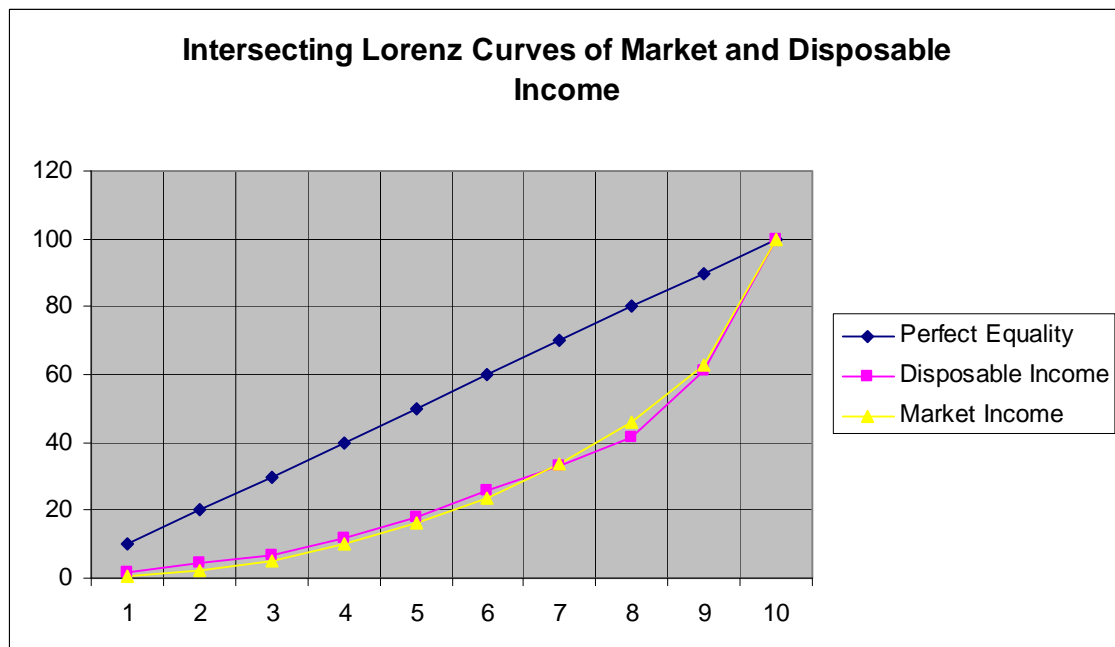
Table 1. **Mobility Matrix of a Stylized Example**.

1	*10*
10	*1*

Table 2. **Inequality Comparison and the Evaluation of Redistribution**.

	Market Income	Disposable Income
Household 1	*1*	*10*
Household 2	*10*	*1*
Gini	*0.41*	*0.41*
Redistribution Gini(M)– G(D)	*0 (No redistribution at all)*	
Reality	*Very considerable redistribution from the rich to the poor* *Rank reversal*	

Table 3. **Mobility Matrix Summarizing the Process of Redistribution**.

m_1	d_1
m_2	d_2
..	..
..	..
m_n	d_n

Table 4. **Surveys of the Luxembourg Income Study Analyzed**.

Country	Years
Australia	1981, 1985, 1989, 1995, 2001, 2003
Austria	1994, 1997
Belgium	1985, 1988, 1992, 1997
Canada	1971, 1975, 1981, 1987, 1991, 1994, 1997, 1998, 2000
Denmark	1987, 1992, 1995, 2000, 2004
Finland	1987, 1991, 1995, 2000, 2004
France	1979, 1981, 1984, 1989, 1994
Germany	1981, 1984, 1989, 1994, 2000
Italy	1986, 1987, 1989, 1991, 1993, 1995
Ireland	1987, 1994, 1995, 1996
Netherlands	1983, 1987, 1991, 1994, 1999
Norway	1979, 1986, 1991, 1995, 2000
Sweden	1967, 1975, 1981, 1987, 1992, 1995, 2000, 2005
Switzerland	1982, 1992, 2000, 2002
United Kingdom	1969, 1974, 1979, 1986, 1991, 1994, 1995, 1999, 2004
United States	1974, 1979, 1986, 1991, 1994, 1997, 2000, 2004

Table 5. **Inequality and Conventional Measures of Redistribution**.

Country	Gini of market income	Gini of disposable income	C-MOR (difference)	C-MOR (proportional)
Australia	.3899733	.28913	.1008433	.256901
Austria	.34745	.270395	.077055	.2217327
Belgium	.34472	.2222075	.1225125	.353954
Canada	.3638978	.2848322	.0790656	.2162051
Denmark	.331966	.204946	.12702	.3808628
Finland	.329332	.208842	.12049	.3642804
France	.379838	.28228	.097558	.2561768
Germany	.331316	.251562	.079754	.2383235
Italy	.3502283	.3158933	.034335	.0983053
Ireland	.44212	.3242075	.1179125	.2658619
Netherlands	.361544	.251578	.109966	.3027255
Norway	.302686	.21545	.087236	.2858195
Sweden	.3361062	.2055987	.1305075	.3853714
Switzerland	.3172925	.2813925	.0359	.1133109
United Kingdom	.3998789	.3063389	.09354	.2305354
United States	.406865	.33439	.072475	.1784025

Table 6. **Mobility Measure of Redistribution**.

Country	M-MOR
Australia	.0052467
Austria	.01631
Belgium	.0194925
Canada	.0077789
Denmark	.030704
Finland	.0149
France	.015442
Germany	.017132
Italy	.0144467
Ireland	.00843
Netherlands	.020086
Norway	.017052
Sweden	.0273225
Switzerland	.01398
United Kingdom	.0116756
United States	.0070575

Table 7. **Correlation Among Conventional and Mobility-Based Measures of Redistribution**.

	M-MOR	C-MOR (difference)	C-MOR (proportional)
M-MOR	1		
C-MOR (difference)	0.20	1	
C-MOR (proportional)	0.37		1

Table 8. **The Determinants of Redistribution**.

	Model 1	Model 2	Model 3
Market inequality	-.0822717*** (.0235059)	-.0731501** (.0313856)	-.0766063** (.0342973)
Wage coordination	.0004845 (.0018934)	-	-
Industrial employment	1.49e-07 (4.60e-07)	-	-
Unemployment	3.83e-07 (1.81e-06)	-	-
Openness of …market	.0000263 (.0000647)	-	-
Capital…	.0008839 (.0018295)	-	-
Voter turnout	.0001486 (.0001205)	-	-
Left cabinets (cumulative)	.0001218 (.0001628)	.0001325 (.0001344)	-
Center Christian cabinets (cumulative)	-.0002802 (.0002965)	-.0002222 (.0003004)	-
Right Christian cabinets (cumulative)	-.0000311 (.000191)	.0001004 (.000101)	-
Federalism	-.0060927** (.0021875)	-.0061868*** (.0019307)	-.0064553** (.0017801)
Single member district	-.0019674 (.0047151)	-.0028263 (.0027852)	-.0036947* (.0021583)
Single member district	-.0014847 (.0043686)	-.0027931 (.0026423)	-.0040878*** (.0017853)
Constant	.0274389* (.0157473)	.0433893*** (.012336)	.0469086*** (.0133271)
N	84	84	84
R^2			
	0.3645	0.3457	0.3288

*p= 0.10, **p=0.05, ***p=0.01

Table 9. **The Measurement of Redistribution and the Political Economy of Redistribution**.

	M-MOR	Proportional reduction Gini coefficient	Difference in the Gini coefficient
Market inequality	-.0731501** (.0313856)	.2850972 (.1698541)	.3587432*** (.062338)
Left cabinets (cumulative)	.0001325 (.0001344)	.0048124** (.0018812)	.0016707** (.0006572)
Center Christian cabinets (cumulative)	-.0002222 (.0003004)	.0029771 (.00371)	.0011138 (.001275)
Right Christian cabinets (cumulative)	.0001004 (.000101)	.0009709 (.0019736)	.0003548 (.0006479)
Federalism	-.0061868*** (.0019307)	-.0217812 (.0395586)	-.0068633 (.0131521)
Single member district	-.0028263 (.0027852)	-.0010576 (.0311785)	-.0006235 (.0106421)
Single member district	-.0027931 (.0026423)	-.0110555 (.0499909)	-.0056419 (.0165972)
Constant	.0433893*** (.012336)	.0992694 (.0892425)	-.0558453* (.0304626)
N	84	84	84
R^2	0.3457	0.4550	0.5030

Table 10. **The Political Economy of Redistribution when Measured as M-MOR: Results from Three Estimation Techniques**.

	M-MOR (Robust std errors)	M-MOR (panel corrected errors)	M-MOR (pcse with ar1)
Market inequality	-.0731501** (.0313856)	-.0731501*** (.0159894)	-.0692306*** (.0169791)
Left cabinets (cumulative)	.0001325 (.0001344)	.0001325 (.0001236)	.0001088 (.0001286)
Center Christian cabinets (cumulative)	-.0002222 (.0003004)	-.0002222 (.0003085)	-.0002704 (.0003095)
Right Christian cabinets (cumulative)	.0001004 (.000101)	.0001004 (.0002119)	.000087 (.0002116)
Federalism	-.0061868*** (.0019307)	-.0061868*** (.0012761)	-.0064106*** (.0013274)
Single member district	-.0028263 (.0027852)	-.0028263 (.0021964)	-.0034469 (.0023091)
Single member district	-.0027931 (.0026423)	-.0027931 (.0017858)	-.0035982** (.0018653)
Constant	.0433893*** (.012336)	.0433893*** (.0065429)	.0428311*** (.0070138)
N	84	84	84
R^2	0.3457	0.3457	0.3776

Table 11. **The Political Economy of Redistribution when Measured as the Proportional Reduction of Inequality: Results from Three Estimation Techniques**

	Proportional reduction Gini (Robust std errors)	Proportional reduction Gini (panel corrected errors)	Proportional reduction Gini (pcse with ar1)
Market inequality	.2850972 (.1698541)	.2850972* (.1518706)	.2953089* (.1650585)
Left cabinets (cumulative)	.0048124** (.0018812)	.0048124*** (.0006565)	.0047176*** (.0006968)
Center Christian cabinets (cumulative)	.0029771 (.00371)	.0029771 (.0025253)	.0026989 (.0024921)
Right Christian cabinets (cumulative)	.0009709 (.0019736)	.0009709 (.0010388)	.0009776 (.0010355)
Federalism	-.0217812 (.0395586)	-.0217812 (.0179592)	-.0246183 (.0181828)
Single member district	-.0010576 (.0311785)	-.0010576 (.023723)	-.0030563 (.0237481)
Single member district	-.0110555 (.0499909)	-.0110555 (.0190472)	-.0131635 (.0192978)
Constant	.0992694 (.0892425)	.0992694* (.0571033)	.0995253* (.0618724)
N	84	84	84
R^2	0.4550	0.4550	0.4906

Table 12. **The Political Economy of Redistribution when Measured as the Difference in Inequality: Results from Three Estimation Techniques**

	Difference in Gini (Robust std errors)	Difference in Gini (panel corrected errors)	Difference in Gini (pcse with ar1)
Market inequality	.3587432*** (.062338)	.3587432*** (.0539435)	.3626004*** (.0586127)
Left cabinets (cumulative)	.0016707** (.0006572)	.0016707*** (.0002283)	.0016342*** (.0002445)
Center Christian cabinets (cumulative)	.0011138 (.001275)	.0011138 (.0009321)	.0010102 (.0009165)
Right Christian cabinets (cumulative)	.0003548 (.0006479)	.0003548 (.0003372)	.0003554 (.0003357)
Federalism	-.0068633 (.0131521)	-.0068633 (.0059175)	-.0078885 (.0059926)
Single member district	-.0006235 (.0106421)	-.0006235 (.0083743)	-.0013964 (.0083817)
Single member district	-.0056419 (.0165972)	-.0056419 (.0064451)	-.0064814 (.0065578)
Constant	-.0558453* (.0304626)	-.0558453*** (.0201085)	-.0557452*** (.0217608)
N	84	84	84
R^2	0.5030	0.5030	0.5208

Bibliography.

Alesina, A. and D. Rodrik (1994), "Distributive politics and economic growth", *Quarterly Journal of Economics*, 109: 465-90.

Atkinson, A. (1970), "On the measurement of inequality. *Journal of Economic Theory,* 2: 244-263.

Atkinson, A.B., Bourguignon, F. and Morrisson, C. (1992), *Empirical Studies of Earnings Mobility,* London: Harwood Academic Publishers.

Austen-Smith, D. (2000), "Redistributing Income Under Proportional Representation", *Journal of Political Economy*, 108: 1235 - 69.

Brady, D., J. Beckfield and J. Stephens (2004), *Comparative Welfare States Data Set*, University of North Carolina, Duke University and Indiana University.

Bradley, D. et al. (2003), "Distribution and redistribution in postindustrial democracies", *World Politics*, 55: 193-228.

Cowell, F. (1977), *Measuring Inequality*, Deddington : Allan.

Esping-Andersen, G. and W. Korpi (1984), "Social Policy as Class Politics in Post-War Capitalism: Scandinavia, Austria, and Germany", in J. Goldthorpe (ed.), *Order and Conflict in Contemporary Capitalism*, Oxford: Clarendon Press.

Esping-Andersen, G. (1985), *Politics against Markets*, Princeton: Princeton University Press.

Gangl, M. (2005), "Income inequality, permanent incomes and income dynamics: Comparing Europe to the United States. *Work and Occupations* 32: 140-162.

Goodin, R. and J. Le Grand (1987), *Not Only the Poor*, London: Allen & Unwin.

Hacker, J., Mettler, S., Pinderhughes, D. and Skocpol, T. (2004), "Inequality and Public Policy", Paper prepared for the Task Force on Inequality and American Democracy of the American Political Science Association (available at http://www.apsanet.org/Inequality/researchreviews.cfm).

Hibbs, D. (1977), "Political Parties and Macroeconomic Policy", *American Political Science Review*, 71: 1467 - 87.

Hibbs, D. and D. Dennis (1988), "Income distribution in the United States", *American Political Science Review*, 71: 1467 - 87.

Hicks, A. (1999), *Social democracy and welfare capitalism: A century of income security policies*, Ithaca, NY: Cornell University Press.

Hicks, A. and D. Swank (1984), "Government redistribution in rich capitalist democracies", *Policy Studies Journal*, 10: 264 – 87.

Hicks, A. and D. Swank (1992), "Politics, Institutions, and Welfare Spending in Industrialized Democracies, 1960-82", *American Political Science Review*, 86: 649 - 74.

Huber, E. and J. Stephens (2001), *Development and crisis of the welfare state: Parties and policies in global markets*, Chicago: University of Chicago Press.

Huber, E., C. Ragin and J. Stephens, , *Comparative Welfare States Data Set*, Northwestern University and University of North Carolina.

Immergut, E. (1992), *The Political Construction of Interests*, Cambridge: Cambridge University Press.

Iversen, T. and T. Cusack (2000), "The Causes of Welfare State Expansion: Deinstustrialization or Globalization?", *World Politics*, 52: 313-49.

Iversen, T. and D. Soskice (2006) "Electoral Systems and the Politics of Coalitions: Why Some Democracies Redistribute More than Others", *American Political Science Review*, 100: 165-181.

Kenworthy, L. and J. Pontusson (2005) "Rising inequality and the politics of redistribution in affluent countries", *Perspectives on Politics*, 3: 449-471.

Korpi, W. (1983), *The Democratic Class Struggle*, London: Routledge.

Korpi, W. (1989), "Power, Politics and States Autonomy in the Development of Social Citizenship: Social Rights during Sickness in 18 OECD Countries since 1930", *American Sociological Review*, 54: 309 – 28.

Korpi, W. and J. Palme (1998), "The Paradox of Redistribution and Strategies of Equality: Welfare State Institutions, Inequality, and Poverty in Western Countries", *American Sociological Review*, 63: 661-87.

Lambert, P. (1993), *The Distribution and Redistribution of Income: A Mathematical Analysis*, Manchester: Manchester University Press.

Lasswell, H. (1936), *Politics: Who Gets What, When, How*, New York: McGraw-Hill

Le Grand, J. (1982), *The Strategy of Equality*, London: Allen & Unwin.

Lijphart, A. (1997), "Unequal Participation: Democracy's Unsolved Dilemma", *American Political Science Review*, 91: 1-14.

Luxembourg Income Study (LIS) Database, http://www.lisproject.org/techdoc.htm (multiple countries; {September, 2008 - January, 2009).

Mahler, V. (2002), "Exploring the Sub-national Dimension of Income Inequality: An Analysis of he Relationship Between Inequality and Electoral Turnout in the Developed Countries", *International Studies Quarterly*, 46: 117-42.

Mahler, V. and D. Jesuit (2006), "Fiscal redistribution in the developed countries: new insights from the Luxemburg Income Study", *Socio-Economic Review*, 4: 483-511.

Meltzer, A. and S. Richard (1981) "A Rational Theory of the Size of Government", *Journal of Political Economy*, 89: 914-27.

Palme, J. (2006), "Welfare states and inequality: Institutional designs and distributive outcome", *Research in Social Stratification and Mobility*, 24: 387-403

Perotti, R. (1993), "Political equilibrium, income distribution, and growth", *Review of Economic Studies*, 60: 755-76.

Persson, T. and G. Tabellini (1992), "Growth, distribution and politics", *European Economic Review*, 36: 593-602.

Persson, T. and G. Tabellini (2003), *The Economic Effects of Constitutions*, Cambridge: MIT Press.

Roberts, K. (1977), "Voting over Income Tax Schedules", *Journal of Public Economics*, 8: 329 - 40.

Rogowski, R. and M. Kayser (2002), "Majoritarian Electoral Systems and Consumer Power: Price-level Evidence from the OECD Countries", *American Journal of Political Science*, 46: 526-39.

Romer, T. (1975), "Individual Welfare, Majority Voting, and the Properties of a Linear Income Tax", *Journal of Public Economics*, 14: 163 - 85.

Shorrocks, A. (1978), "Income inequality and income mobility", *Journal of Economic Theory,* 19: 376–93.

Skocpol, T. and E. Amenta (1986), "States and Social Policies", *Annual Review of Sociology*, 12: 131 - 57.

Stephens, J. (1979), *The Transition from Capitalism to Socialism*, London: Macmillan.