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To Aid, Insure, Transfer, or Control: What Drives the Welfare State?

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To Aid, Insure, Transfer, or Control: What Drives the Welfare State?

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Abstract:
The paper uses panel data on OECD countries to assess four theories about the forces that generate social spending. The four theories are: Aid: the Welfare State is about helping the poor. Insure: the Welfare State insures the consumption of middle-class voters. Transfer: the Welfare State transfers money to politically-powerful entitled groups. Control: the Welfare State is about controlling the behavior of the underclass. The data give the following grades: Aid D-, Insure C+, Transfer A-, Control D. This assessment is made by regressing the share of social spending in GDP on a vector of country characteristics. The methods involve simultaneous equation fixed-effects models, and they take advantage of some recent innovations in the growth literature involving the treatment of country-level panel data.

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I. What explains the level of social spending?

Most people probably associate social spending most strongly with compassionate aid for the poor, but social scientists have come up with many other theories of its origin and intent. This paper distills them into four major headings and then uses a large database of social spending in developed countries from 1960 to 1994 to assess the coherence of the theories with the data. This is not the first attempt at this kind of assessment, but it makes a new contribution on several levels. First, the methods here pay more attention to econometric problems, especially endogeneity (the challenge of inferring how one variable is affecting another when many variables are jointly determined), and the presence of fixed effects (unobservable permanent and historical differences between countries). If these issues are relevant but ignored, regression coefficients cannot be interpreted as estimates of causal forces. Nonetheless, few papers on social spending at the country level have applied the appropriate corrections; these involve procedures that are fairly common in the growth literature, such as simultaneous equations and fixed effects regression.

Second, this paper, unlike most others, makes an important actor out of income risk. Recent theories have proposed that the true motive for the Welfare State is to insure income and possibly promote growth through risk-taking. Yet despite a great deal of theoretical research suggesting that income risk should lead to more income-insuring social programs, it appears that no one has studied the impact of risk on social spending at the national level.

Third, this paper addresses several theories all at once, with a view to comparing which ones do better, under multiple variations in empirical method. This is in contrast to

many efforts to explain social spending, which propose one theory and then seek evidence for it. The contemporary Welfare State is the survivor of a century of institutional evolution, and not a calm century at that. We should therefore be surprised if it had a simple explanation. The objective here is not to find the single overarching motivation for social spending but rather to expose nuances in the relative power of different motivations. As it turns out, some of these nuances are surprising.

After a review of the literature in this section, and a conceptual overview of four Welfare State theories in Section II, the paper continues with a discussion of methods and data to be used (Sections III and IV), and then presents the results (Section V) and an interpretive conclusion (Section VI).

Literature. The objective of the paper is to determine which social forces have the greatest causal impact on the level of social spending in a given country. The level of social spending is not the same thing as 'The Welfare State,' but it is reasonable to assume that where social spending is high, the impact of the Welfare State, however defined, is broad and deep; hereafter, the term 'Welfare State' will be used to refer to the level of social spending. The origins and causes of this spending are undoubtedly complex and there are many theories about them, some of them formal, many of them not. There is, however, no formal theory that is both general enough to encompass a significant number of different motivations, and that yields estimable equations, so a rigorous modeling and estimation strategy is not possible.

As a result, empirical research on the overall size of the Welfare State has adopted a different strategy. First, general concepts are laid out in order to identify the kinds of variables that ought to covary at the country level. Then basic regressions are estimated

in order to test the predicted relationships. There are many such approaches in the literature; Esping-Anderson (1990), for example, traces the causes of the Welfare State to generalized historical 'worlds' or mind-sets involving the degree of conservatism, labor market institutions, and devotion to free-market capitalism. He then argues for this grouping on the basis of a large number of simply-specified OLS regressions on OECD cross-sections. Pampel and Williamson (1989) propose informal theories based on class, voting groups, institutions, politics, and macroeconomic indicators; their supporting evidence comes from a series of GLS regressions. In these they have taken account of serial correlation problems, but not endogeneity or fixed effects. Similarly, Hicks and Swank (1992) assume that social spending is driven mostly by the structure of the political process and national institutions and run regressions of social spending on a series of political variables. Contributors in Flora and Heidenheimer (1981) also look for sources of the Welfare State in the intensity of left politics and general economic conditions. This research is most successful in laying out general notions of Welfare State motivations, some of which will be reconsidered in Section II.[1] Still, none of these papers make use of what is now a very large literature in public choice economics in which social spending is traced to the rational decisions of individual agents.

The empirical methods, moreover, suffer from serious problems: there is little attention paid to problems of causality, and the presence of unobserved fixed effects is ignored. As for the first issue, in most of these simple regression approaches, social spending is treated as the only endogenous variable, with everything else in society assumed to be an exogenous causal force. In reality, social spending is co-determined with other important social conditions, including the level of income, the degree of

income risk, the amount of private investment, and possibly even the degree of inequality. When endogenous variables are treated as exogenous, coefficients reflect a simple correlation only; they indicate neither the size nor direction of causation from the RHS variable to the dependent variable.

As for the fixed effects problem, ignoring fixed effects in country-level data is effectively to ignore the existence of unobserved history: unobservable events, institutions, and forces that have an impact on the dependent variable. Ignoring them can lead to a misinterpretation of historical correlations as true causal forces. For example, the US has had historically higher levels of risk and historically lower levels of social spending than countries such as France and Sweden. Unless all of these historical differences are accounted for by some variable in the data set, a simple cross-country regression using contemporary data will lead one to conclude that the correlation between spending and risk is negative. It may be the case, however, that in all the countries and at all times within the current data set, an increase in social spending from its historical norm will lead to an increase in risk from *its* historical norm. Thus, the cross-country pattern endowed to the data set by history suggests a negative correlation, but the causal flow is actually positive. As a result, ignoring fixed effects can lead to biased conclusions about contemporary influences.

Some papers do take account of some of these problems. For example, Peter Lindert uses methods that account for the endogeneity problem. He has two papers on the level of social spending, one using a remarkably extensive data set from 1880-1930 (Lindert 1994), and another with a more contemporary data set from 1960 to 1981 (Lindert, 1996). He consistently assumes that social spending is jointly determined with

income growth. Focusing in both papers on a political pressure-group theory of social spending, Lindert finds that democracy, demography (i.e. age-group sizes), and the income distribution have the most influence. Surprisingly, the deadweight costs of social spending are found to have little impact on growth. The main differences between Lindert's work and this paper are 1) the post-war panel here is more extensive (more years, more variables), 2) more theories are contrasted here, including a theory of risk-taking, and 3) the methods here account for fixed effects.[2]

In sum, there has been broad interest in determining the empirical causes of social spending at the national level, but more work can be done on the details and rigor of the empirical modeling. A strategy of formal modeling and testing still seems impractical, because the Welfare State has too many complex explanations to synthesize in a single testable model. Nevertheless, more rigorous analytical attention can be paid to the way that even broad and informal theories of social spending translate into specific empirical implications.

II. Four theories of the Welfare State

This section lays out four broad theories of social spending culled from the literature and then discusses how these theories might be translated into a coherent empirical model of the Welfare State. The focus is on theories that have a basis in public choice economics; all of these theories are ultimately derived from a theory of voter motivation. The four theories are distinguished by their claims about the primary purpose of the Welfare State: to aid, to insure, to transfer, or to control.

1. **To Aid:** The Welfare State's main goal is to reduce inequality and poverty. The motivation is compassion for the unfortunate.
2. **To Insure:** The Welfare State's main goal is to insure middle class incomes against the variance inherent in contemporary risk-taking economies. The motivation is the risk-aversion of the middle class.
3. **To Transfer:** The Welfare State's main goal is to transfer money from the all taxpayers as a whole to politically effective middle-class groups who have some entitlement claim. The motivation is simply the self-interest of these groups.
4. **To Control:** The Welfare State's main goal is to structure and control the behavior of the lower class. The motivation is to prevent social disruptions and violent rebellion, and to support dominant moral values.

The theories will now be discussed in turn, with a view toward drawing out their empirical implications.

1. **Aid** leads the list because in media and everyday discussion it is usually assumed to be the main motivation for social spending. In the US, for example, large majorities consistently report a belief that more than half of their tax dollars go to support the poor ('welfare' in US parlance), when in fact only a small percentage of the budget is spent directly on poverty relief. In all countries, a frequent criticism launched at those who try to cut spending is that they lack of compassion for the unfortunate. Histories of the Welfare State do not start with Bismarck and social insurance, but with the Elizabethan poor law (e.g. Trattner, 1999). The spirit of the times in which the large Welfare States were founded was one of scientific charity (Himmelfarb, 1992), in which

the unnoticed but dominant paradigm was of enlightened technocrats inventing sophisticated programs to reduce the poverty of the unfortunate people in a lower class. The same atmosphere pervades later innovations such as the US War on Poverty (Bird, 1999). From its beginning onwards, the public face of the Welfare State has consistently evoked one overriding purpose: to reduce the gap in well-being between rich and poor.

This argument is plausible in that many of the recipients of social spending are in fact poor or lower class people. There are many formal theories suggesting that altruism leads to redistribution (Hochman and Rodgers, 1969; see Bird, 1999 for a review). However, in practice, many recipients of social spending are not actually poor (i.e. wealthy recipients of old-age pensions). Moreover, if the Welfare State were mostly a matter of poor relief, it is hard to see how it would be politically viable, given the minimal political effectiveness of the poor.

Nonetheless the empirical implications of the aid motivation are simple. If the Welfare State is about inequality and poverty, then social spending should be higher in periods when inequality and poverty are higher, other things being equal. More generally, social spending should respond to evidence of distress among the poor, such as infant mortality.

2. Reducing inequality can also **Insure** income among the middle class, as many authors have noted recently (see Bird, 2000 for an extended list). Many middle-income households face some risk of falling into poverty; poverty relief programs reduce the extent to which the income would fall in that event, and hence reduces the variance of future income in much the same way that auto insurance reduces the variance of accident costs. The money value of the income variance reduction is not insubstantial (Bird,

1995). The tax bill then serves as a corresponding 'premium' for this poverty insurance. Thus poverty relief programs can be viewed as income insurance; social insurance programs, of course, are explicitly designed as insurance, with premiums or contributions and with payouts conditional on explicit events. Taken together, poverty relief and social insurance make up virtually the entirety of Welfare State expenditures, so it is not misleading to think of the whole system of social spending as a vast income insurance scheme.

The argument, by pointing out the self-interest of the middle class in social spending, provides a much more credible explanation of the political viability of the Welfare State. The insuring function was much in the minds of some of the early designers and promoters of the main programs (von Schmoller, Churchill, Commons). Currently, the insurance argument is put forth mostly in academic circles, where it has been used to explain why social spending has persisted at fairly high levels despite an obvious decline in public compassion for the poor. In the 1980s, it became hard to view the Welfare State as mainly a matter of poor relief, because right-wing governments seemed to declare war on the poor but, at the same time, maintain or even increase social spending (Pierson, 1996). Searching for explanations, and perhaps more powerful arguments in favor of social spending in an era when compassion did not sell, academics proposed that the Welfare State was really for the benefit of the middle-class (e.g. LeGrand, 1987) and they used the insurance argument extensively (Atkinson, 1995). If such arguments are true, the main cause of social spending is not compassion for the poor, which may have waned in the 1980s, but the self interest of a risk-averse middle class – which seems to be more constant.

The argument has received formal theoretical exposition in a model by Hans-Werner Sinn (1995). Sinn's approach provides several empirical predictions and forms the backbone of the empirical work in the later sections of this paper. Briefly, in the Sinn model, the level of income, income risk, and social spending are jointly determined in a general political-economic equilibrium. Society is conceived as a unitary actor, whose well-being rises with income and falls with risk. Risk-taking, however, generates higher incomes. In the absence of government, society would choose a bundle of risk and income that maximizes its well-being given the amount of risk-aversion in the utility function. The government then offers a balanced-budget (i.e. fair) insurance against income loss; it allows higher incomes to be obtained at the same post-fisc level of risk. With the insurance, Society will certainly choose higher incomes, but it may or may not choose higher risks. Societies with low risk-aversion may respond to increases in social spending by increasing risk-taking, thereby obtaining even greater income levels (there is evidence that this is what happens: Bird, 2000). If indeed the Welfare State does promote risk-taking and thereby growth, this would help explain why research on growth and social spending has not turned up a negative relationship (Lindert, 1996): the Welfare State counters its deadweight losses with risk-based income gains.

The Sinn model provides specific requirements for an empirical model of the risk motivation. First, the Welfare State should be seen as an endogenous variable, chosen jointly with the level of income and the level of risk. Second, the results ought to show that income rises with the level of risk. Third, the Welfare State should be larger when risks are larger; in the political economy of the insurance argument, rising risks should lead to calls for more insurance.

3. A simple political economy argument sees the Welfare State as a way for self-interested middle class groups to **Transfer** money to themselves from others. Formal versions of the argument can be found in models by Becker (1985), Kristov, Lindert and McClelland (1992), and Meltzer and Richard (1981). These models set up a democratic framework and then ask which bundle of transfers and tax rates is politically dominant. The answer depends on the distribution of income and other factors, but in general it involves positive transfers from taxpayers as a whole, and disproportionately the rich, to members of effective pressure groups. The core idea is that if voters are given the opportunity to support programs that transfer money in their own direction, they will of course support them, and the structure of the political system will determine who gains and who loses. Similar arguments have been made in much less formal terms, explaining the Welfare State as the outcome of self-interested alliances between recipient populations, special-interest groups, and well-placed politicians. In favor of these arguments is the fact that public debate about social programs to tends to focus on who is receiving (not really who is paying), with many of the recipients being not from the politically impotent poor but from the vocal and organized middle class.

On the other hand, while such a line of reasoning might explain a great deal of social spending, it cannot explain all of it. The funds of the Welfare State do not all end up in the hands of politically powerful groups. The poor and weak do receive transfers that are paid for by the middle class. Altruism and insurance can explain why the middle class might transfer income to the poor, but the self-interested transfer motivation cannot.

Nonetheless, there are some simple empirical implications of the transfer motive. If the Welfare State is mostly driven by the power politics of entitled populations, then

social spending should be higher where there are large numbers of people who are both entitled and politically powerful. The aged constitute one such group; the unemployed another.

4. Bismarck founded the first large-scale Welfare State entirely out of a desire to **Control** discontented elements within the Reich. Piven and Cloward (1971) argue for a continuing controlling function in the more recent context of US poverty programs. By spending money on the poor, the unemployed, and the insecure, the Welfare State reduces the incentive of these have-nots to make trouble for the secure and well-off, whether it be outright rebellion in the German imperial case, or merely a radicalized politics in the US case. The argument assumes that government money either directly pacifies the violent spirit, or that it induces recipients into a subservient relationship with agents of the State, who can then structure recipient behavior into modes that are valuable (or at least not damaging) to the mainstream. Evidence in political-social analyses such as Hicks and Misra (1993) suggest that social unrest does lead to social spending.

The control argument has not been given much attention, as most of those who support social spending prefer to argue that they are being compassionate, not controlling. Ironically, however, the control argument has received a great deal of support in recent years from those who generally oppose social spending. The paternalism movement (Mead, 1997) advances the idea that social programs effectively remove clients from the controls of mainstream society -- controls which benefit society (i.e. the work ethic) and which society therefore has every right to impose on anyone. Social programs should be restructured explicitly to induce greater control over the behavior of client populations, covering everything from work to marriage to consumption (of mind-

altering substances, specifically).[3] In recent years a wave of policy changes in the Anglo-American Welfare State has imposed this new spirit of behavioral demands, especially the requirement to seek work.

Although the control motivation has recently become a popular rallying cry for Welfare State reform, there are good reasons to doubt whether it explains the Welfare State's growth to its current size. After all, direct anti-poverty spending is dwarfed by spending on the aged; would one argue that old-age pensions are designed to prevent laziness, irresponsibility, moral decay, and violent revolutions among the older set? Of course, perhaps pensions are intended to mollify and de-radicalize younger workers; Bismarck certainly hoped so, but the growth of the Social Democrats was not hampered by the growth of the Old Age Pension System.

Still, the control argument has distinct empirical implications. Social spending should rise when social stress is highest. Finding measures of social stress is not easy, but there are candidates. A society with a large number of days lost to strikes faces the kind of social stress that the Welfare State would try to reduce. Data on riots would be helpful but (as of this writing) none are available for the length of time in this dataset. An argument can be made for military spending, however, in that military budgets would tend to reflect threats and demands that are external; they then indicate situations in which there is a greater need for internal peace, hence a great need for the pacifying function of social spending. Purely political variables are of interest in this category as well; if the vote share of left-wing parties indicates potential social unrest, then this share should predict spending increases. Similarly, positive correlations between voter turnout

(perhaps a sign of rising political intensity) and social spending could be considered consistent with the control argument.

It should be noted before going on that these motives are not exclusive. Spending on the unemployed, for example, could be explained under all four theoretical headings. With theory offering no clear-cut distinctions, the data do not exist which would determine which of these motives is the best explanation of the Welfare State. They all may be equally important. The object of empirical work is to determine which empirical relationships seem to appear consistently and powerfully across many countries and years and methods, and then to infer from these robust relationships the likely power of the various motives.

III. Empirical methods

These broad theoretical considerations dictate certain parts of the empirical approach. First, within most of these theories, social spending is only one of several endogenous variables. From the insurance perspective, for example, spending is co-determined with aggregate income and the level of income risk. Most models of aggregate income would also have aggregate investment as an endogenous variable. Inequality might also be viewed as endogenous. To allow for the possibility that many variables are jointly determined and influence one another, a simultaneous equations approach is necessary.

Second, these theories identify general social forces only, so it will be necessary to specify a number of exogenous variables to measure these forces in a number of ways. Then the object is to determine which kinds of social shocks have the most powerful

influence on social spending. In order to do that in a reliable and convincing way, it will be important to explore many variations in the empirical methods.

A basic system of simultaneous equations can be built up out of the Sinn (1995) theoretical model of risk taking, income generation, and balanced-budget political equilibrium. The unit of observation is a country-year; let y_{it} denote the income level in country i in year t, r_{it} the level of income risk (i.e. the variance), and s_{it} the level of social spending (empirical definitions of these variables in the data at hand will be given below). Each of these three variables is endogenous:

$$y_{it} = \alpha_{yi} + \beta_{yr} r_{it} + \beta_{ys} s_{it} + \beta_{y3} x_{yit} + \beta_{y4} k_{it} + \varepsilon_{yit}$$

$$r_{it} = \alpha_{ri} + \beta_{ry} y_{it} + \beta_{rs} s_{it} + \beta_{r3} x_{rit} + \varepsilon_{rit}$$

$$s_{it} = \alpha_{si} + \beta_{sy} y_{it} + \beta_{sr} r_{it} + \beta_{s3} x_{sit} + \varepsilon_{sit}$$

where the x_{*it} terms refer to exogenous variables, k is a measure of the (endogenous) capital stock or investment level, the α and β terms are parameters, and the ε terms are random errors. The intercepts are country-specific, which will call for a fixed-effects estimation strategy. The first equation is a fairly standard aggregate income equation, familiar from the growth literature (Temple, 1999). The important parameters are β_{yr}, which measures the presumably positive impact of risk-taking on the income level, and β_{ys}, which shows how social spending directly affects income. If deadweight costs are substantial, this should be negative. In the second equation, β_{ry} indicates the impact of higher incomes on the willingness to take risks; if r and y are defined in levels, declining absolute risk aversion would imply $\beta_{ry} > 0$. The other risk coefficient, β_{rs} measures the impact of social spending on risk – if the Welfare State

encourages risk-taking, then $\beta_{rs} > 0$. Thus while β_{ys} shows the direct impact of the state on incomes, and presumably is dominated by deadweight costs, β_{rs} and β_{yr} show an indirect and presumably positive effect: the state encourages risk-taking, and risk-taking encourages growth. In the spending equation, β_{sy} measures the reaction of social spending to income; if the Welfare State is a normal good, $\beta_{sy} > 0$. Finally, β_{sr} shows how spending responds to the risk level. If voters facing higher risks are inclined to call for more income insurance (as the risk motive suggests they should), then $\beta_{sr} > 0$.

The structural coefficients in the model already provide useful information about the validity of the risk motive for the Welfare State. To provide information on the other motives, key exogenous variables will be added to the social spending equation (and the other equations where it seems theoretically appropriate). The added variables (limited to some extent by the data – see the next section) will include:

- the gini coefficient (which may be treated as an endogenous variable) and a measure of infant mortality, to estimate how spending responds to inequality and the plight of the poor;

- measures of the size of entitled voting-age populations, such as the aged and the unemployed, as well as a unionization score to account for the political power of labor, all in order to estimate how spending responds to large blocs of entitled voters;

- data on the number of strike days lost, the extent of military expenditures, the vote share of left parties, and the degree of voter turnout, all to estimate how spending responds to indicators of social stress.[4]

By altering how these variables are defined and used, it should be possible to get a sense of which relationships are robust in the data. There are some serious limitations in

the kinds of variables that can be used, however, because of the difficulty of finding comparable cross-national data. These limitations and other aspects of the data will be discussed in the next section.

Assuming that the data come in the form of a panel of countries over several years, the data can be transformed by calculating the time average of the dependent variable, $\bar{y}$, and then subtract it from y_{it} for each observation. Applying the same process to the right-hand side of the regression equations sweeps out the fixed effect terms α_y, α_r, and α_s. In effect, this ensures that the parameter estimates will take account of (and be unbiased by) any country-specific factor that is constant throughout the time frame of the panel. This would include any historical forces, observable or not, whose effects occurred before 1960. Thus, historical differences in inequality, civil liberties, war experience, political culture, and religious traditions are all fully accounted for in these results. All of these forces have created historically normal levels for all of the variables, from which each variable in the data evolves from 1960 onward in the course of the panel. What is measured here is the effect of this contemporary evolution of independent variables on the contemporary evolution of the dependent variables. In fully accounting for history, then, these results provide the most accurate estimate of contemporary causality.[5]

With the transformed data, it is then possible to apply standard 2SLS techniques to the simultaneous equations. The coefficients will be identified if each of the endogenous variables (at a minimum y, r, s, and k) is instrumented by exogenous variables that do not appear in the other equations. As Temple (1999) has pointed out, with panel data on countries, each endogenous variable can be instrumented by its own

lags. This seems to be an almost unavoidable choice, since the possibility of finding good instruments among contemporary variables – in other words, national aggregates that one is forced to assume do affect one thing currently but not some other thing currently – would seem to be slim. It is much more plausible that past values of a current variable do affect it strongly but do not have a strong affect on other current variables. In what follows, then, all endogenous variables are instrumented with three lag variables, in addition to other exogenous variables where exclusion seems plausible.

The subject of lagged variables brings up another methodological wrinkle: with national aggregate data, how does one account for the fact that years may pass before a shock to one variable has its causal influence on another? One approach is to apply and then explicitly analyze the pattern of lag effects, but this is needlessly complicated (especially so in a multiple-equation system with multiple lags). A simpler response is to define all the variables as averages within fixed time windows. Thus, effects are not interpreted as the instant effect of a shock to one variable upon another, but as the sustained effect on one variable of a sustained change in the other. For example, because of political bottlenecks and implementation problems it is unlikely that an increase in income risk will immediately cause an increase in social insurance, even if the pressure for change is present. However, if the risk shock is sustained for, say, three years, spending has time to respond. To allow for these lagged effects, then, all variables are expressed as three-year averages.

In sum, we will estimate three equations of deviations-from-the-mean, where both the mean and the deviations are constructed from variables that are defined as averages over three-year time windows. Variables that are endogenous variables are instrumented

by lagged values, and estimates are obtained using 2SLS. Because of the distinct possibility that the error terms in the equations might be correlated within countries, the reported standard errors are huber-white robust standard errors with clustering by country. As it turns out, taking account of clustering reveals that the usual standard errors are strongly biased downward.

IV. Data

The study makes use of country-year panel data and is collected from two sources. The main source of data is the Comparative Welfare States (CWS) data set, compiled by Evelyne Huber, Charles Ragin, and John D. Stephens (Huber, Ragin, and Stephens 1997). The CWS contains comparable country time series from 1960 to 1994 for 19 developed countries (including Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Luxembourg, Netherlands, Norway, New Zealand, Sweden, Switzerland, the UK, and the US). Together these countries constitute virtually a census of the developed western world in the post-WWII period, including representatives from all of the major Welfare State 'models' (scandanavian, conservative-corporatist, laissez-faire), as well as other countries (Japan, Ireland) that do not fit these nice categories. The CWS provides a wealth of social spending categories as well as demographic data, macroeconomic data (including a subset of data from the Penn World Tables), and political data. The initial source for most of the series used in the paper is either the ILO or the OECD. The results also make use of some unionization data compiled by Jelle Visser (Visser, 1996).

In addition to the CWS, the paper makes use of the Deininger and Squire compilation of inequality estimates (Deininger and Squire, 1996). The Deininger and Squire data have recently been subjected to criticism (Atkinson and Brandolini, 2001). Compared to more extensive and higher-quality data within specific devleoped countries, the DS series can differ in both magnitude and trend over several periods. Using fixed effects regressions or dummies for time period and country (as is done here) may not fully correct for the various institutional and historical factors that cause the data series to deviate. As a result, Atkinson and Brandolini caution against using the DS data mechanically; rather, the researcher should carefully adjust each series in the DS data according to some standardized requirements. At the same time, they note that any such choice of standards may affect the conclusions of the study. Adjusting the DS data according to these requirements is a weighty task; Atkinson and Brandolini's efforts occupy 29 pages in the *Journal of Economic Literature*. Rather than make a similar effort here, I will instead caution the reader that the inequality data have been criticized and may be extraordinarily inaccurate. At the same time, as Atkinson and Brandolini point out, we do not live in a world where such data sets are easy to find and assemble. The DS data are still the most comprehensive and accurate available; hopefully, since this paper focuses entirely on well-developed countries, any inaccuracies in their inequality data will be minimal.

Estimates of the gini coefficient in the DS data are much more extensive than of other inequality and poverty measures, so the gini will be taken as the most accurate available measure of inequality and poverty. The gini data is collected from many different data sources using different methods, so the comparability across countries and

years is questionable. Rather than omit the gini variable entirely, it seems more prudent to handle it as an errors-in-variables problem, to be solved by instrumenting.

Table 1 presents a list of all the variables used in the study and a brief description of how they are defined. In the base case, income (y) is defined as the level of real per capita income in 1985 $US, in thousands, and social spending (s) is defined as the share of social spending (as identified by the OECD) in GDP, in percent. The variables have been defined so as to be about the same order of magnitude (10-100), to facilitate the assessment of substantive significance in the results.

The third dependent variable is risk (r), and it requires an extensive discussion here in the text because it is not generally observable in the usual data sets. Following a line of research into the welfare consequences of risky incomes (see Bird, 1995), let income risk be defined generally as the time variance of income. More specifically, suppose that income follows a standard permanent/transitory income process:

$$y_t = p_t + u_t$$

$$p_t = p_{t-1} + v_t$$

where y_t is income in period t, p_t is the expectation of income in period t (i.e. 'permanent income'), and u_t and v_t are error terms that are uncorrelated (both serially and with respect to one another), with zero means and variances σ_u^2 and σ_v^2 respectively. Rewriting expresses income as a function of its own lag and error terms:

$$y_t = y_{t-1} + (u_t - u_{t-1}) + v_t$$

With y_{t-1} predetermined, the variance of income is $\sigma_y^2 = 2\sigma_u^2 + \sigma_v^2$ σ^2_y. With this framework one could distinguish in principal between the variance of permanent (v) as opposed to transitory (u) shocks, but here we are interested in the overall risks to income

as presented by σ_y^2. To ease interpretation, results will be discussed in terms of the standard error, σ_y.

So defined, risk can be estimated in many ways. In the base case of this paper, a GARCH(1,1) model is applied to the panel of real per capita income values y_{it}, with the one explanatory variable y_{it-1}. The GARCH model estimates the parameters of a variance model in which the variance is time-specific and has one autoregressive and one moving-average term. Even though the parametrization is thin, GARCH(1,1) has been shown to provide robust and accurate measures of the time-specific variance (Greene, 1993, p. 568). Applied in the panel data, it estimates time- and country-specific variances. The GARCH(1,1) method was used for most of the results in the paper, with risk being defined as the standard deviation of annual real per capita income (σ_y).[6] To test sensitivity to the GARCH(1,1) approach, variance is also estimated for one set of estimates in the simplest way possible, as squared deviations from the 34-year income trend.

In the base case, the GARCH model was executed on log income in order to express the resulting standard deviation in terms of annual relative income change. Recall that, under a normal distribution, there is about a 95 percent probability that the random variable will fall within a window of about two standard deviations from the mean in either direction. Thus, if income is log normal, the outcome σ_y = .05 (see table 1) indicates that there is approximately a 95 percent probability that income will rise or fall by ten percent or less in a given year.

As for independent variables, certain variables will be examined to reveal information about each of the theories. See Table 2 for a listing of the variables

considered pertinent to each theory, and specific predictions in terms of signs. One could make arguments for including certain variables in one regression or excluding them from others. For example, should the female labor force participation rate be included or excluded from the social spending equation? One could make arguments in both directions; suffice it to say that numerous specifications have been examined but there is not enough space to include them all. The overall pattern of results reported below is robust across such changes.

A final aspect of the data worthy of attention is the fact that not all variables are available for all years. This, plus the reductions made necessary by the calculation of three-year averages, the use of three years of lagged variables as instruments, and the GARCH implementation on lagged income (for seven years of lost data in total), considerably reduce sample sizes from the 19*34 = 646 potential maximum. Typical sample sizes fall in the range from 300 to 400. Still, the results seem reasonably accurate in the sense that R^2 values are reasonably high and many coefficients pass standard statistical significance tests.[7]

V. Results

In general the results do not make a watertight case for any one of the theories, but some perform better than others. The transfer motive seems to receive the most consistent support, while support for the insurance motive appears to be only mixed. There does not seem to be much evidence either for or against the control motive, but there does seem to be fairly strong evidence against the aid motive. The data could be said to give the following grades: **Transfer** A-, **Insure** C+, **Control** D, **Aid** D-.

These assessments are based on an overview of the coefficient signs, sizes, and statistical significance in Tables 3-7. Table 3 gives the results for a base case, and for the most part its results are representative of the other regressions. It reports coefficients for all three of the main equations in the model, even though most interest lies in the social spending equation (3.3). The income equation (3.1) has the pattern that growth theory predicts: investment, the size of the work force, and the amount of capital per worker all contribute significantly to the income level. Contrary to what one would expect, social spending does not have a negative impact on income. This is especially suprising since one of the main counterarguments, that spending encourages risk which should raise incomes, has been accounted for specifically in the model. As a result, the positive and comparatively large coefficient on social spending reflects other ways that social spending encourages higher incomes. Whatever these forces are, they seem to dominate the deadweight costs of the Welfare State. This finding is consistent with Lindert's (1996) results. In general, there seems to be no evidence in the country-level historical record that increases in the size of the Welfare State cause declines in income levels. Another finding of interest in the income equation is the weak negative effect of the gini coefficient; a large literature exists to explore the impact of inequality on income, but there seems to be little evidence here that inequality has a significant impact on the income level.

The income equation contains the first piece of evidence against the insurance motive of social spending. That theory requires that society can increase the income level by increasing the risk level, but the risk coefficient in the income equation, while positive and reasonably large, is not statistically significant. It will be seen in later tables that the

size and sign of the coefficient is not stable; one could not conclude that the evidence supports the idea that risk raises incomes. On the other hand, the risk equation itself (3.2) provides some evidence in support of the insurance motivation, in that social spending does seem to encourage risk taking (beta = .043). It will be seen that the sign is reasonably robust to variations in method, but the size and statistical significance is not. Again, the evidence is only weak. The fact that income has a negative, large, and statistically significant effect on risk taking indicates an increasing relative risk aversion, since the risk variable is defined relative to the income level (see the preceding section). Overall, however, there is more instability in the risk equation than in the others (R^2 = 0.1721), evidence that none of the various approaches to estimating risk produce a particularly noise-free estimate. The variance of aggregate income time series seems to be intangible. In the spending equation (3.3), the insurance motive again receives weak support. Risk leads to an increase in social spending, and the effect is large (beta = 0.666). Still, the coefficient is not statistically significant and not particularly robust to variations.

The social spending equation allows the other motives to be tested. All the theories predict that income will raise spending, and it does seem to have a powerful positive effect (beta = 0.379). The transfer motive suggests that population sizes of the aged and unemployed should increase spending, and this is the case. These two coefficients are universally large, positive, and statistically significant throughout. Conversely, indicators of social stress such as strikes (beta = -0.290), turnout (beta =

-0.051), and left vote shares (beta = -0.041) are small and have the wrong sign. The signs vary, but the coefficients only rarely appear to be large or statistically significant.[8] Thus, social spending seems largely indifferent to the control motive.

As for the aid motive, the evidence seems to argue against it: while aged and unemployed groups have a positive impact, as this theory predicts, the coefficient on the gini is large, negative, and statistically significant throughout virtually all the results, which runs directly counter to the theory's main tenet. (This results also goes against one of the minor predictions of the some of the transfer literature, but that prediction refers to inequality below the median income, which is not observed here.) Infant mortality has a positive but not large or statistically significant impact, and is not robust. As already mentioned, left voting has a negative impact. While some of this evidence could be considered only inconclusive, the robust negative impact of inequality seems a fairly decisive rejection of the aid motive.

Table 4 repeats the estimation using the income growth rate in place of the income level in the income equation. From a welfarist perspective, it would seem that the income level, which determines utility, would be of greater interest than the growth rate, which has only indirect implications for well-being. Still, most of the literature focuses on income growth rather than levels, so this table is included to allow comparison to the literature. Most of the patterns from Table 3 are repeated, in particular those of greatest interest here, in the social spending equation. One difference there is that growth has a negative impact on spending. This is consistent with a convergence theory of growth: the smaller the country, the higher the growth rate. Hence if social spending is lower in poorer countries (see Table 3), then it should be lower where growth rates are highest.

Another difference worth noting is in the growth equation, where now social spending apparently deters growth (beta = -0.188). This is again conceivable through a convergence theory: social spending makes countries richer (Table 3) but richer countries do not grow as quickly. Setting aside the convergence idea, however, the question of whether or not the Welfare State imposes a significant drag on the economy depends on one's object of interest: well-being or development. It seems to raise well-being but slow the rate of development. (The result is robust across multiple variations in methods, not shown.) Note, however, that the gini coefficient has no noticeable impact on growth or the income level, and in both tables the gini reduces social spending as well. This pattern runs counter to that predicted by a set of recent theories on the role of inequality in growth, which argue that inequality discourages growth because it causes social spending, which is a growth deterrent (Persson and Tabellini, 1994, Aghion, Caroli, and Garcia-Penalosa, 1999). [9]

Tables 5-7 return to income in levels and focuses on the social spending equation, with other relevent coefficients included as an addendum at the bottom of the table. Table 4 presents results based on a different approach to estimating risk. In the base case, risk is estimated from a GARCH model on log income, in regression 5.1, it is estimated from a GARCH model on the income level, and then expressed as a fraction of income. There is no substantial change in the social spending pattern, but risk now has a large, negative, and statistically significant impact on income, a direct contradiction of the insurance motive. In regression 5.2, the GARCH model is used to predict a level of permanent income and this is used as the income measure (i.e. p_t instead of y_t). Again there is no major impact on the patterns. In regression 5.3, $\log(y_t)$ replaces y_t as the income variable,

again without major effects. In results not shown, regressions were run with various measures of income growth as the dependent variable in the income equation, again without any significant impact on the basic patterns. The results do not seem sensitive to the treatment of income.

Table 6 shows some variations on the definition of risk and social spending. Regression 6.1 abandons the GARCH model and estimates risk simply as squared deviations of log income around its time trend. This preserves the positive and statistically insignificant impact of risk on income in the income equation, but has little impact on the social spending equation. Regression 6.2 expresses social spending as a per capita figure, in thousands of real $US. Risk and strikes have a statistically significant and positive impact on spending under this definition, while the other effects are the same. This definition thus offers more support to the insurance argument and the control argument. Regression 6.3 expresses social spending as the share of non-health social spending in GDP. In this definition, strikes again have a positive impact and it is very large. Oddly, focusing on non-health social spending also makes infant mortality a positive motive for the Welfare State; the definition thus supports the control and aid motivations to a greater extent than the base case.

Table 7 presents the results of more radical changes in the regression structure. First, one might argue that if risk is endogenous in the insurance motive, the level of inequality should be treated as endogenous in the aid motive. Treated as an exogenous variable, the gini coefficient might be subject to a reverse causation problem, as increases in social spending would naturally decrease the level of inequality (both directly and as an indicator of broader social forces that promote equality). Also, the gini used here is

derived from multiple studies using many methods, and is probably distorted by measurement error (although this would only affect the size, not the sign). Both problems require that the gini be instrumented. Regression 7.1 shows, however, that instrumenting the gini variable has no significant effect on its sign or magnitude, and it remains statistically significant. The negative impact of inequality on social spending seems to be both robust and causal in these data.

Regression 7.2 explores the impact of ignoring the presence of fixed effects, and regression 7.3 also ignores the endogeneity of any variables (except the dependent variable) and abandons instrumenting. Here risk actually has a negative impact on social spending, although the effect is not statistically significant. Openness of the economy (Trade) seems to increase social spending while unionization decreases it. Interestingly, left voting here does increase social spending, which suggests that the common assumption that left parties support the Welfare State has its basis in the historical record prior to 1960 (i.e. the pattern of historical cross-country norms). The results in other tables suggest that this historical pattern is no longer valid. Other than this, the results are largely the same as in the other regressions.

Considering all the regressions as a whole (and others not shown), the most robust findings are:

- Social spending rises with income
- Social spending rises with size of the aged and unemployed populations
- Social spending falls with level of inequality

Weaker results include:

- Social spending increases risk taking

- Risk increases social spending
- Left voting, strikes, military spending, turnout, and infant mortality have little apparent effect
- There is no consistent effect of risk-taking on the income level, and only a small, statistically insignificant effect of social spending on risk-taking

VI. Conclusion

The most robust results thus support the transfer motive but offer evidence against the aid motive. The insurance motive receives some support but it is only weak, while the evidence does not seem to speak strongly one way or the other with respect to the control motive.

It is tempting to conclude that the Welfare State is primarily about transferring as much money to politically powerful groups as the income level permits, but of course with an institution of such complexity it is dangerous to make such universal judgments. A more prudent assessment might be that doubts about the charitable motives of the Welfare State's planners and promoters are perhaps warranted. Such doubts must have occurred to many people already, since they have already led to the construction of major non-altruistic theories of the Welfare State, as an agent of insurance, control, or redistribution. Given the results here, one can conclude with some certainty that either altruism or self-interest consistently encourages transfers to the aged and the unemployed.

The purpose of social transfers does not seem to be the alleviation of inequality and poverty, however. Increases in inequality, all else equal, depress social spending.

Future research could focus on finding theoretical reasons for such a strong and robust result. One argument might be that inequality erodes the tax base, as poor people have no money to pay and rich people can successfully evade taxes. A smaller middle class might mean less government spending overall. Another argument might be that social spending requires a sense of solidarity, and that inequality erodes this. There are two facets to this line of reasoning. First, from a risk and insurance perspective, increasing inequality might indicate to middle class voters that they are less likely to become poor, since the poor have become so unlike them. This would lead to a decrease in the demand for income insurance. Second, from an altruism perspective, middle class voters might have less sympathy for the poor when they are very much poorer than the middle class; they may see less of themselves in the poor person on the street, and more of some alien and immoral being. All of these ideas could be tested with better historical data on the income distribution.

Better data could also help shed more light on the control motive. None of the measures used here is a particularly satisfying indicator of social stress, with strike frequency perhaps coming closest. To directly identify the Bismarckian anti-riot motive of social spending, it would be necessary to collect international riot data from 1960 onward. Certainly in the US there is ample reason to conjecture that the large increase in social spending after 1965 had much to do with the riots and rebellions that began in that year. To identify the paternalistic moral control motive, it would be necessary to collect data on some kind of morally significant behavior, such as divorce, crime, or out of wedlock birth. Historical cross-country differences in moral attitudes would be swept out by the fixed effects method, and one could test whether increases in morally-hued

behavior from their historical norms have some impact on spending. Lastly, it can be said of the control motive that it might not require money to be effective; a Welfare State that serves only a few clients may, by structuring incentives appropriately, have a great deal of control over the actions of many people. It may not be possible to test empirically for the control motive when the Welfare State is defined as social expenditure.

Finally, the results offer less support for the insurance motive than one might have expected. The predictions of the insurance theory are not confirmed robustly in the data. That may lie at the hands of the risk estimates, which seem to be noisy. Still, many different approaches were taken to measuring the variance of the income process, and none yielded tight estimates or robust regression coefficients. The insurance motive has attracted attention because, while it is not as pollyannish as the altruism theory, it is less cynical than the theory of self-interested transfers, and certainly much less cynical than the control theory. Insurance theory makes the claim that the huge sums devoted to social spending serve the self interest of voters in an entirely honorable way: it offers them an insurance against risks that the private market cannot provide. In this view, the Welfare State is a classic correction for market failure, a form of government intervention well-honored among economists both left and right. According to the results here, however, this view of the Welfare State may have less validity than some other views.

There is some reason to question such a conclusion, however, on the basis of our weak understanding of what income risk really is. As researchers we tend to focus on risk as an observable component of the income process, the second moment of income. It is not clear that average people view their risks in such a manner, however, and it is their perceptions, and not our estimates, which affect behavior. To what extent does the second

moment of income in a well-specified rational agent model of income determination accurately reflect the perceptions of income variability among real people? Since all estimates of income variance begin with the problematic expected utility model, we might not be surprised to find that our estimates of individually-perceived risk are unrealistic. These issues are similar to those that confront policy analysts attempting to design policies for handling environmental and workplace risk. It is not clear where risk perceptions come from, but they do not seem to come from a rational-actor expected utility model. The implication here is that large populations of aged and unemployed people, instead of the variance of income, might be the effective indicator of perceived income risk in the population. Whatever the true variance of his income, the citizen sees bread lines and imagines himself in them, and then votes for increases in social spending. This may or may not be a rational way to estimate the risk of poverty, but it may be the way real people do it. If so (and this would be a good avenue for more work), the results here could be said to support the insurance theory as much as any other.

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Table 1. Variable Definitions

Variable	Mean	Min	Max	Description
Income	10.7	3.6	18.1	Income per capita, in $US 1985, in thousands
Risk	2.4	1.9	5.5	Standard deviation of log income (defined as above), divided by 100, as estimated by a GARCH(1,1) model on the income series of each country. See text for more detail.
Social Spending	13.8	3.7	28.8	Share of social spending in GDP (%)
Investment	26.5	14.2	44.7	Share of investment in GDP (%)
Inflation	6.0	-0.7	24.2	Annual percent change in country CPI
Unemployment	4.8	0.1	18.2	Unemployment rate
Aged	12.3	5.9	17.8	Percent of population over 65
Trade	63.9	9.1	211.9	Imports + Exports/GDP
Union	33.3	-0.1	77.1	Net union membership (gross minus retired and unemployed) relative to workforce (%), from Visser (1996)
Gini	33.8	19.9	58.2	Gini coefficient, from Deininger and Squire (19xx)
Workers	65.0	57.6	70.5	Working age population as percent of total
Capital	29.0	5.3	76.7	Capital stock per worker (real 1985 $US, thousands)
Strikes	0.185	0	1.810	Working days lost to strikes per 1,000 workers
FLFPR	33.9	17.1	51.8	Female labor force participation rate
Kids	0.447	0.280	0.685	Ratio of children to females in the population
Mortality	13.6	4	42	Infant mortality rate
Turnout	80.7	33.0	95.8	Electoral turnout in all elections in given year (%)
Military	2.76	0.80	9.40	Military expenditure as percent of GDP
Left	39.0	10.3	61.1	Vote share of left parties in year

Source: Comparative Welfare States data set; Deininger and Squire inequality data.

Table 2. Predictions on independent variables

Theory	Variable	Effect on social spending	Notes and other predictions
Aid	Income	+	Under altruism, increases in income should increase demand for charity. So should inequality in general as well as an increase in needy groups. Infant mortality is taken as a weak indicator of substandard economic conditions among the poor (poverty data are not available)
	Unemployment	+	
	Aged	+	
	Gini	+	
	Mortality	+	
Risk	Income	+	Risk should increase spending because it creates a demand for income insurance. Risk should also raise income in the income equation (the mean-variance tradeoff), and social spending should lower risk in the risk equation (otherwise social spending is not income insurance). FLFPR and Kids should both affect risk in the risk equation, since these determine the size of income changes from marriage and divorce.
	Risk	+	
Transfer	Unemployment	+	Spending should respond to entitled and powerful groups (unemployed, unionized blue collar workers, aged) but not to weak groups (poor – captured through the gini). Some models, however, argue that increases in inequality below the median should increase transfers. Political variables should have the intuitive effects.
	Aged	+	
	Union	+	
	Gini	0 or +	
	Turnout	+	
	Left	+	
Control	Income	+	As income rises, so does the exposure of the middle class to turmoil. Strikes, left voting and turnout are the only direct evidence of social stress available in the data. Military spending may indirectly indicate a desire for domestic cohesion when foreign affairs seem threatening.
	Strikes	+	
	Turnout	+	
	Military	+	
	Left	+	

Table 3. Base case regression results

	Dependent Variables					
Independent Variables	1. Income		2. Risk		3. Social Spending	
	beta	s.e.	beta	s.e.	beta	s.e.
Income	--	--	-.130	*.050	.379	*.158
Risk	.113	.247	--	--	.666	.479
Social Spending	.139	*.080	.043	*.024	--	--
Investment	.107	*.042	--	--	--	--
Inflation	-.014	.018	.023	*.009	-.040	.039
Unemployment	-.041	.071	.001	.021	.372	*.108
Aged	--	--	--	--	.746	*.285
Trade	-.027	.030	2.26e-4	.004	.052	*.028
Union	2e-5	2e-5	-7.7e-7	6.6e-6	3e-5	4e-5
Gini	-.002	.017	.009	*.005	-.103	*.042
Workers	.229	*.079	--	--	--	--
Capital	.213	*.033	--	--	--	--
Strikes	-.838	*.445	-.141	.257	-.290	.879
FLFPR	--	--	.027	*.009	--	--
Kids	--	--	.030	1.131	--	--
Mortality	--	--	--	--	.093	.111
Turnout	--	--	--	--	-.051	.039
Military	--	--	--	--	.505	.514
Left	--	--	--	--	-.041	.029
R^2	.8506		.1721		.7516	
N	344		344		344	

Note: coefficients identified with a '*' are statistically significant at the 90 percent level, two-tailed test. Source: Comparative Welfare States data set; Deininger and Squire inequality data.

Table 4. Growth regression results

	Dependent Variables					
Independent Variables	1. Growth		2. Risk		3. Social Spending	
	beta	s.e.	beta	s.e.	beta	s.e.
Growth	--	--	.028	.022	-.453	*.066
Risk	.096	.329	--	--	.545	.472
Social Spending	-.188	*.070	.024	.033	--	--
Investment	.150	*.078	--	--	--	--
Inflation	-.294	*.038	.035	*.013	-.162	*.044
Unemployment	.007	.128	.023	.026	.291	*.085
Aged	--	--	--	--	.871	*.189
Trade	.064	*.020	-9.3e-4	.004	.070	*.020
Union	.089	*.017	-.003	.007	.044	.034
Gini	.002	.017	.008	.006	-.089	*.037
Workers	.077	.082	--	--	--	--
Capital	-.151	*.036	--	--	--	--
Strikes	-.025	.641	-.074	.249	-.255	.874
FLFPR	--	--	.010	.009	--	--
Kids	--	--	1.949	*1.038	--	--
Mortality	--	--	--	--	.069	.094
Turnout	--	--	--	--	-.028	.039
Military	--	--	--	--	.108	.440
Left	--	--	--	--	-.051	*.024
R^2	.4531		.1225		.7882	
N	344		344		344	

Note: coefficients identified with a '*' are statistically significant at the 90 percent level, two-tailed test. Source: Comparative Welfare States data set; Deininger and Squire inequality data.

Table 5. Variations in risk and income definitions

	Dependent Variable: Social Spending					
Independent Variables	1. Risk calculated from income levels, not logs		2. Permanent income (from GARCH) replaces observed income; risk based on levels, not logs		3. Income in logs, not levels; risk based on log income	
	beta	s.e.	beta	s.e.	beta	s.e.
Income	.174	.150	.400	*.155	5.676	*1.402
Risk	-.662	.453	-.500	.439	.793	.486
Inflation	-.022	.041	-.029	.041	-.039	.042
Unemployment	.377	*.103	.384	*.101	.370	*.103
Aged	.870	*.247	.675	*.265	.702	*.223
Trade	.049	*.029	.053	*.027	.050	*.029
Union	.030	.038	.038	.037	.028	.035
Gini	-.096	*.042	-.089	*.040	-.102	*.041
Strikes	-.624	.882	-.558	.845	-.365	.828
Mortality	.103	.114	.133	.108	.141	.116
Turnout	-.053	.042	-.046	.042	-.057	.039
Military	.369	.505	.362	.505	.305	.486
Left	-.040	.032	-.039	.031	-.034	.029
R^2	0.7534		0.7597		0.7590	
N	344		344		344	
Addendum: Coefficient on risk in income equation	-.668	*.341	-.470	.316	-.016	.027
Coefficient on social spending in income equation	.122	*.074	.161	*.064	.017	*.008
Coefficient on social spending in risk equation	.021	.018	.028	.022	.041	.026

Note: coefficients identified with a '*' are statistically significant at the 90 percent level, two-tailed test. Source: Comparative Welfare States data set; Deininger and Squire inequality data.

Table 6. Variations in risk and social spending definitions

	Dependent Variable: Social Spending					
Independent Variables	1.Risk defined as squared deviations from trend of log income (no GARCH)		2. Social spending defined as spending per capita (not relative to GDP), in 000		3. Social spending defined as non-health social spending relative to GDP	
	beta	s.e.	beta	s.e.	beta	s.e.
Income	.310	*.162	.218	*.047	.453	.305
Risk	.152	.198	.142	*.046	.515	.349
Inflation	-.032	.042	-.011	.009	-.041	.048
Unemployment	.339	*.110	.052	*.002	.497	*.160
Aged	.728	*.247	.171	*.062	.983	*.416
Trade	.056	*.027	.007	.004	.066	*.035
Union	.007	.045	.011	*.007	.094	*.051
Gini	-.102	*.040	-.023	*.007	-.159	*.049
Strikes	-.200	.824	.343	*.122	2.000	*.756
Mortality	.039	.110	.026	.022	.223	*.133
Turnout	-.052	.047	-.003	.010	-.036	.048
Military	.492	.496	-.041	.069	.233	.452
Left	-.043	.032	.004	.008	-.023	.063
R^2	0.7391		0.8345		0.6787	
N	319		311		311	
Addendum: Coefficient on risk in income equation	.030	.106	.118	.184	.317	.291
Coefficient on social spending in income equation	.168	*.092	1.2e-3	*3.9e-4	10.415	6.981
Coefficient on social spending in risk equation	.047	.066	1.9e-3	*8.4e-4	1.36	1.30

Note: coefficients identified with a '*' are statistically significant at the 90 percent level, two-tailed test. Source: Comparative Welfare States data set; Deininger and Squire inequality data.

Table 7. Variations in regression structure

	Dependent Variable: Social Spending					
Independent Variables	1. Gini endogenous and instrumented		2. No fixed effects		3. No fixed effects, no instruments, no endogeneity	
	beta	s.e.	beta	s.e.	beta	s.e.
Income	.304	*.157	.359	*.189	.265	*.077
Risk	.571	.501	-.751	.851	-.066	.348
Inflation	-.018	.038	.016	.050	.006	.035
Unemployment	.386	*.109	.303	*.122	.292	*.051
Aged	.936	*.282	.718	*.315	.927	*.074
Trade	.042	.035	.101	*.035	.084	*.007
Union	.020	.038	-.129	*.047	-.131	*.012
Gini	-.124	*.047	-.006	.059	.024	.022
Strikes	-.618	.819	-.596	1.312	-.626	.611
Mortality	.126	.107	-.008	.117	-.022	.044
Turnout	-.056	.039	.055	.052	.065	*.016
Military	.420	.499	-.544	.358	-.414	*.117
Left	-.050	.030	.142	*.041	.087	*.019
R^2	0.7477		0.7388		0.7123	
N	320		378		461	
Addendum: Coefficient on risk in income equation	.170	.283	.063	.556	-.424	*.195
Coefficient on social spending in income equation	.147	*.076	.127	*.071	.061	*.022
Coefficient on social spending in risk equation	.037	.022	-.019	.015	-.013	*.006

Note: coefficients identified with a '*' are statistically significant at the 90 percent level, two-tailed test. Source: Comparative Welfare States data set; Deininger and Squire inequality data.

[1] See also: Uusitalo (1984), Hicks and Misra (1993), Huber, Ragin, and Stephens (1993), Baldwin (1990).

[2] Some of the most intriguing Lindert results can be explained through the risk framework. The finding that the Welfare State does not reduce growth can be explained by the fact that the income insurance effect of the Welfare State encourages risk-taking and thereby growth (Bird, 2000). There is a result that spending falls as the gap between the middle income and lower incomes rises, which might be explained as follows: the middle class assesses its own risks of poverty by the distance between its incomes and those of the poor. As this gap widens, the perceived risk falls, so the demand for income-insuring social spending falls.

[3] According to some of its supporters, a paternalistic Welfare State should also involve lower social spending. Thus even though the state would be exercising more control over its clients, spending would be lower. The lower spending is possible, however, only because there would be fewer clients; overall, the level of social control could only have fallen. Thus on the whole it still seems safest to assume, as is done in this paper, that extending the government's control over the population will always generate greater costs. Studies of the many state-level experiments in service-intensive and control-oriented welfare to work programs in the US indicate that these are quite expensive.

[4] These variables will not capture the moralistic control motive mentioned in Section II, whereby the state hopes to instill a specific ethic of a defined responsible behavior in the lower class. This is mostly due to data limitations. Internationally comparable panel data on divorce rates or out of wedlock births would be helpful. This in addition to riot data would allow a much better assessment of the control motive.

[5] An alternative method for achieving the same results would be to assume that the historical norm effects α are not fixed parameters, like the β terms, but are unobserved random variables in the error term. This leads to random effects regression, which is mechanically not very different from fixed effects (Greene, 1993, pp. 466-71). Conceptually, the fixed effects assumption makes more sense here. The data here consist of a census of the available population (countries), each with a fixed history; this is not random sample from a large population where each observation has an unobservable individual shock term.

[6] How does the variance of aggregate per capita income relate to the variance of individual income? It can be shown that if the cross-section correlation is assumed to be close to zero, then the aggregate risk

measure used for most of the study (σ_y^2) is approximately equal to the population average of individual risk divided by N. The potential dependence of aggregate variance on cross-section covariances might be of interest because an average value of $\bar{c}$ could be estimated using individual panel data.

[7] It is not entirely clear what 'statistical significance' means in a data set that consists of virtually every possible observation. A regression equation calculated on a census of observations is not an estimate of the conditional expectation function, it *is* the conditional expectation function. Still, the results will be discussed in the usual way.

[8] The political literature (Flora and Heidenheimer, 1981; Hicks and Misra, 1993) actually has not been able to establish clearly that left governments have a larger effect on social spending.

[9] That literature (see Persson and Tabellini, 1994; Aghion, Caroli, and Garcia-Penalosa, 1999) uses a slightly different method, regressing subsequent growth rates on some initial inequality measure in a reduced-form model. That is, the procedure if not to regress social spending on inequality and then growth on social spending, as is done here. Instead, growth is directly regressed on inequality, with the results that inequality at the start of some time period causes lower growth in later years. Here the finding is slightly different: contemporary innovations in inequality have no apparent effect on contemporary innovations in growth, either directly or through the mechanism of social transfer. The difference in methods is probably dictated mostly by a difference in data; the Comparative Welfare States data base allows examination of social spending, but is limited to developed countries, while the Heston-Summers Penn World Tables do not have social spending but allow examination of developing countries.