Inequality, Social Insurance, and Redistribution

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*I*s the political support for welfare policy higher or lower in less egalitarian societies? We answer the question using a model of welfare policy as publicly financed insurance that pays benefits in a redistributive manner. When voters have both redistributive and insurance motives for supporting welfare spending, the effect of inequality depends on how benefits are targeted. Greater inequality increases support for welfare expenditures when benefits are targeted to the employed but decreases support when benefits are targeted to those without earnings. With endogenous targeting, support for benefits to those without earnings declines as inequality increases, whereas support for aggregate spending is a V-shaped function of inequality. Statistical analysis of welfare expenditures in advanced industrial societies provides support for key empirical implications of the model.

How do changes in the inequality of income affect political support for welfare policy? Starting with the economic models of Romer (1975), Roberts (1977), and Meltzer and Richard (1981), the conventional view is that increased inequality in pretax earnings leads to greater political demand for redistributive policies. The logic is simple and compelling. If the majority of the electorate receives a below-average income and if an increase in inequality causes above-average incomes to rise and below-average incomes to fall, then it is reasonable to think that demands for public policies to reduce the gap between rich and poor will increase.

The argument of Romer (1975) and Meltzer and Richard (1981) is best illustrated by comparing two hypothetical lognormal income distributions with the same mean but different levels of inequality as shown in Figure 1. As the figure shows, the greater the variance of a distribution like the lognormal distribution that is skewed to the right, the greater the gap between median and mean income. In the models of Romer (1975), Roberts (1977), and Meltzer and Richard (1981), political competition drives the level of welfare spending toward the ideal point of the median income voter. The greater the gap between the pretax earnings of the median income voter and average (mean) income, the greater is the level of spending preferred by the median income voter and the higher is the equilibrium level of welfare spending.

The relationship between the inequality of pretax earnings and welfare expenditures is important because it shapes our understanding of the relationship between political and economic equality. According to the conventional view, a change in the economic environment that causes the income distribution to grow more unequal increases political support for redistributive policies. In other words, the public favors redistributive policies as the need for them increases. Although voters are assumed to care only about their own welfare, the result is a welfare policy that varies appropriately with the needs of the poor. In addition, if greater equality reduces the demand for redistributive policies and if those policies inhibit growth, then reduced income inequality promotes growth (Alesina and Rodrik 1994; Persson and Tabellini 1994).

In this article, we demonstrate that a more complete theory leads to different conclusions. Support for some kinds of welfare spending may increase as inequality rises, but support for other kinds is lower when inequality is higher. In particular, our framework implies that greater inequality in pretax earnings is associated with less, not more, spending on welfare policies targeted to people who have lost their market income because of layoffs, accidents, or ill health. Both theory and the data on welfare expenditures in 18 advanced industrial countries suggest that one political consequence of greater income inequality is less support for policies that constitute a significant share of the welfare budget.
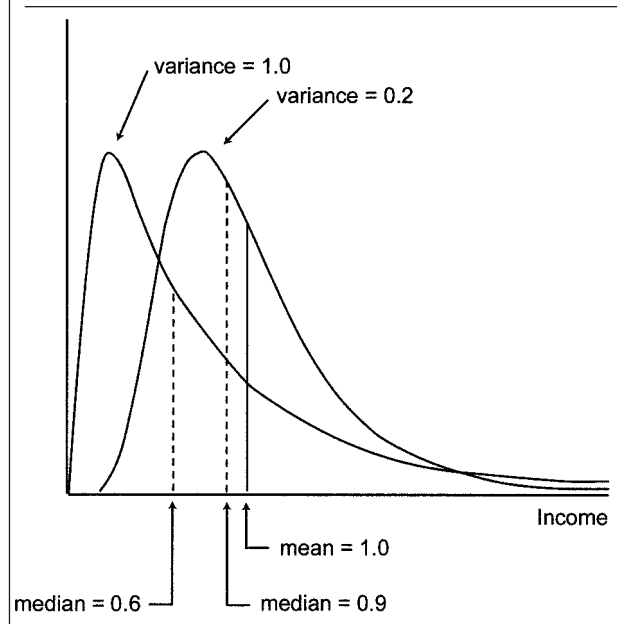
Our framework combines two different approaches to understanding the sources of political support for welfare policy. In the first view, as expressed in most economic models and the large literature in political science and sociology that emphasizes the political strength of the working class in cross-national studies of welfare spending, welfare policy is fundamentally about redistribution from rich to poor.[1] Self-interested voters support welfare policy up to the point at which their gain from income redistribution matches their share of the cost. In the second view, the essence of welfare policy is the public provision of insurance, and self-interested voters support welfare policy to obtain

[1] The early literature on the role of social democratic parties and organized labor in the expansion of welfare policies is surveyed by Shalev 1983. For more recent studies, see Esping-Andersen 1990; Hicks 1999; Hicks and Swank 1992; Huber, Ragin, and Stephens 1993; and Huber and Stephens 2001.

FIGURE 1. Two Hypothetical Lognormal Income Distributions with the Same Mean and Different Levels of Inequality

protection against risks that private insurance markets fail to cover.[2]

These two views appear to have very different political implications. Critics frequently view welfare programs as redistributive policies that distort incentives and reduce the efficiency of the economy. Supporters often argue, in contrast, that welfare policies provide insurance to all and enhance efficiency to the extent that the public sector protects against risks that are difficult or impossible to cover through private insurance markets. In fact, the policy implication of either view is not obvious. On the one hand, one might think that welfare policies are fundamentally redistributive but favor increased spending on the ground that the benefit of greater equality outweighs the efficiency loss. On the other hand, one might consider welfare policies as social insurance but think that the demand for insurance could be better satisfied by private firms.

Our purpose is to investigate the contrast between the redistributive and the insurance views in terms of how inequality affects political support for welfare spending. Consider an increase in income inequality that lowers the income of the median voter but leaves mean income unchanged. In the redistributive model, the wider this gap, the more the median voter gains from welfare expenditures. In the insurance model, in contrast, the demand for insurance declines with income, holding risk constant, assuming that insurance is a normal good. If median-voter income decreases and the risks covered by social insurance do not change, then support for spending on social insurance will decline.

In our judgment, both approaches provide essential ingredients for an adequate understanding of the politics of welfare policy. Social insurance policies comprise a large part of the welfare budget. Even means-tested policies can be viewed as protection against the residual risk of income loss that social insurance policies do not cover. At the same time, public insurance is commonly provided and financed in a manner that is redistributive ex ante, in that voters with lower expected income receive insurance on more favorable terms than do voters with higher expected income. Thus, without specifying how the policy is designed, one cannot tell which aspect—redistribution or insurance—dominates in determining the effect of inequality on support for welfare spending.

Our article is related to two strands of the recent theoretical literature on the politics of welfare policy. The first consists of studies of how income or wealth inequality affects support for redistributive policies. This literature can be subdivided according to whether the emphasis is on the cost of redistributive policies (Moffitt, Ribar, and Wilhelm 1998; Rodriguez 1998; Saint-Paul 1998),[3] voters' empathy toward the poor or the unlucky (Kristov, Lindert, and McClelland 1992; Piketty 1995),[4] or voters' demand for insurance versus redistribution (Bénabou 2000; this article).[5] The second strand of literature examines the effect of benefit targeting on political support for welfare expenditures (Casamatta, Cremer, and Pestieau 2000; De Donder and Hindricks 1998, 2000; Gelbach and Pritchett 1997; Moene and Wallerstein 2001b). We bring these two strands together to examine (1) how benefit targeting alters the effect of income inequality on support for welfare expenditures and (2) how the inequality of income affects the share of the welfare budget targeted to different groups. Our mathematical framework is similar to the model Wright (1996) uses to study the effect of economic growth on welfare expenditures. Most recently, Iversen and Soskice (2001) apply the same framework to study how different types of training affect welfare support.

In the following section we develop a model in which government spending is characterized by two parame-

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[2] For studies of social welfare as publicly provided insurance, see Barr 1992; Casamatta, Cremer, and Pestieau 2000; De Donder and Hindricks 2000; Sinn 1995; and Wright 1996.

[3] Moffitt, Ribar, and Wilhelm (1998) argue that a reduction in the earnings of low-wage workers increases the cost of welfare policies by lowering the incentive of welfare recipients to find work. Saint-Paul (1998) argues that if inequality increases due to a decline in the income of the poor, the mean income may fall relative to the median, which will increase the cost of redistribution to the median voter. Rodriguez (1998) maintains that higher inequality increases the ability of the rich to evade redistributive taxes by political lobbying.
[4] Kristov, Lindert, and McClelland (1992) argue that voters are more willing to support benefits for others like themselves. Thus, support for welfare declines as the gap between the poor and the middle grows. Piketty (1995) maintains that willingness to support redistributive policies depends on beliefs regarding the relative importance of luck and effort in determining earnings. In Piketty's model, a negative income shock can shift the equilibrium in such a way that support for redistributive policies may either increase or decrease, depending on the status quo ante.
[5] In Bénabou's (2000) model, inequality and spending on egalitarian policies that promote efficiency are simultaneously determined. Bénabou does not consider differences in the targeting of welfare benefits, which is the focus here.

ters: a tax rate that determines the level of aggregate welfare spending and a distributive parameter that determines how welfare benefits are targeted. This framework encompasses both the redistributive and the insurance views of welfare policy, depending on the type of targeting. We then show how targeting can alter the influence of inequality on voters' choice of the level of benefits. When the beneficiaries are predominantly persons who are employed, we obtain the conclusion of the redistribution models: When a rise in inequality reduces the income of the median voter relative to the mean, support for welfare expenditures increases. When the beneficiaries are those without earnings, however, the response to greater inequality is predicted by the insurance model: A reduction in the median income, holding the mean constant, reduces support for welfare expenditures.

We also investigate the simultaneous choice of the level and targeting of benefits. When targeting is endogenous, benefits aimed at those without earnings decline as income distribution becomes more skewed. Thus, when increases in inequality reduce the income of the median relative to the mean, benefits targeted to those without earnings are reduced, both as a share of GDP and as a share of government spending. The situation regarding benefits targeted to the employed is more complicated. If income distribution is not too unequal, a majority of voters prefer all welfare payments to be targeted to the unemployed. If the distribution of income is sufficiently skewed, benefits aimed at the employed are an increasing function of the skewness, as in the pure redistribution model. We test these propositions with data on welfare spending and the inequality of wages and salaries in eighteen advanced industrial countries from 1980 to 1995.

BASIC ASSUMPTIONS

We present our theory in the context of a simple model of the economy that contains two essential ingredients: uncertainty regarding future income on the part of a significant fraction of the population and heterogeneity among voters in terms of both their income and the risks they face. We will assume that the population is divided into three groups. The share σ_0 is permanently outside the labor market and has no income other than transfer payments. The share σ_L is the group of wage earners who receive a wage of w_H when employed. The share σ_H is the high-income group and receives w_H, with $w_H > w_L$. We assume that the three groups exhaust the population, so that $\sigma_0 + \sigma_L + \sigma_H = 1$.

Wage earners may be employed or not. We assume that the probability of employed wage earners losing their source of income (whether due to lay off, injury, or illness) within period dt is αdt. The probability that workers who have lost employment will find a new job within dt is βdt. For simplicity, both α and β are assumed to be constant.[6] The Markov process described by the parameters α and β converges to a

steady state distribution of wage earners in which the fraction $\beta/(\alpha + \beta)$ are working. Alternatively, $\beta/(\alpha + \beta)$ denotes the fraction of time that each wage earner expects to be employed in the long run. The high-income group faces a lower risk of losing earnings than do wage earners. For simplicity, we set the risk of job loss for high-income earners to zero.[7]

The population without earnings consists of the share who are permanently outside the labor market, σ_0, plus a share who are temporarily without employment, $[\alpha/(\alpha + \beta)]\sigma_L$; the workforce consists of high-income earners, σ_H, plus the share of low-income earners who are employed, $[\beta/(\alpha + \beta)]\sigma_L$. It simplifies the notation to introduce a symbol $e \equiv \sigma_H + [\beta/(\alpha + \beta)]\sigma_L$ for employed share of the population. We will assume that the majority of people are employed, or $e > \frac{1}{2}$. In addition, we assume that the high-income groups constitutes a minority, or $\sigma_H < \frac{1}{2}$. It follows that the employed wage earners are the median income earners.

We represent fiscal policy with two parameters. The first is the flat tax rate on earnings, t, that determines aggregate government spending per capita, $T(t)$. We write the requirement that tax receipts equal expenditures as

$$T(t) = \tau(t)e\bar{w}, \qquad (1)$$

where $\bar{w}$ is the average wage, $\bar{w} \equiv (1/e)[\sigma_H w_H + (\beta/(\alpha + \beta))\sigma_L w_L]$, and $\tau(t)$ represents tax revenues as a share of earnings. The function $\tau(t)$ implicitly incorporates the deadweight cost of taxation. We assume, therefore, that $\tau(t)$ is a strictly concave function (the deadweight cost of taxation rises at an increasing rate as the tax rate rises), with $\tau'(0) = 1$ (there is no deadweight cost when the tax rate is zero) and $\tau(0) = \tau(1) = 0$ (tax revenues are zero when the tax rate is zero or when taxes are confiscatory).[8]

The second policy parameter, γ, represents the share of welfare spending received by employed persons. The remaining share, $(1 - \gamma)$, is assumed to go to programs aimed at those without earnings. Thus, the posttax and transfer consumption of a person with a pretax income of w is

$$c_E(w) = (1 - t)w + \frac{\gamma T(t)}{e}, \qquad (2)$$

where $\gamma T(t)/e$ is the welfare benefit received by each employed person. The consumption of those without earnings is

$$c_N = \frac{(1 - \gamma)T(t)}{1 - e}. \qquad (3)$$

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[6] In a more general model, the probability of obtaining employment, βdt, would be partly a matter of agents' efforts rather than a
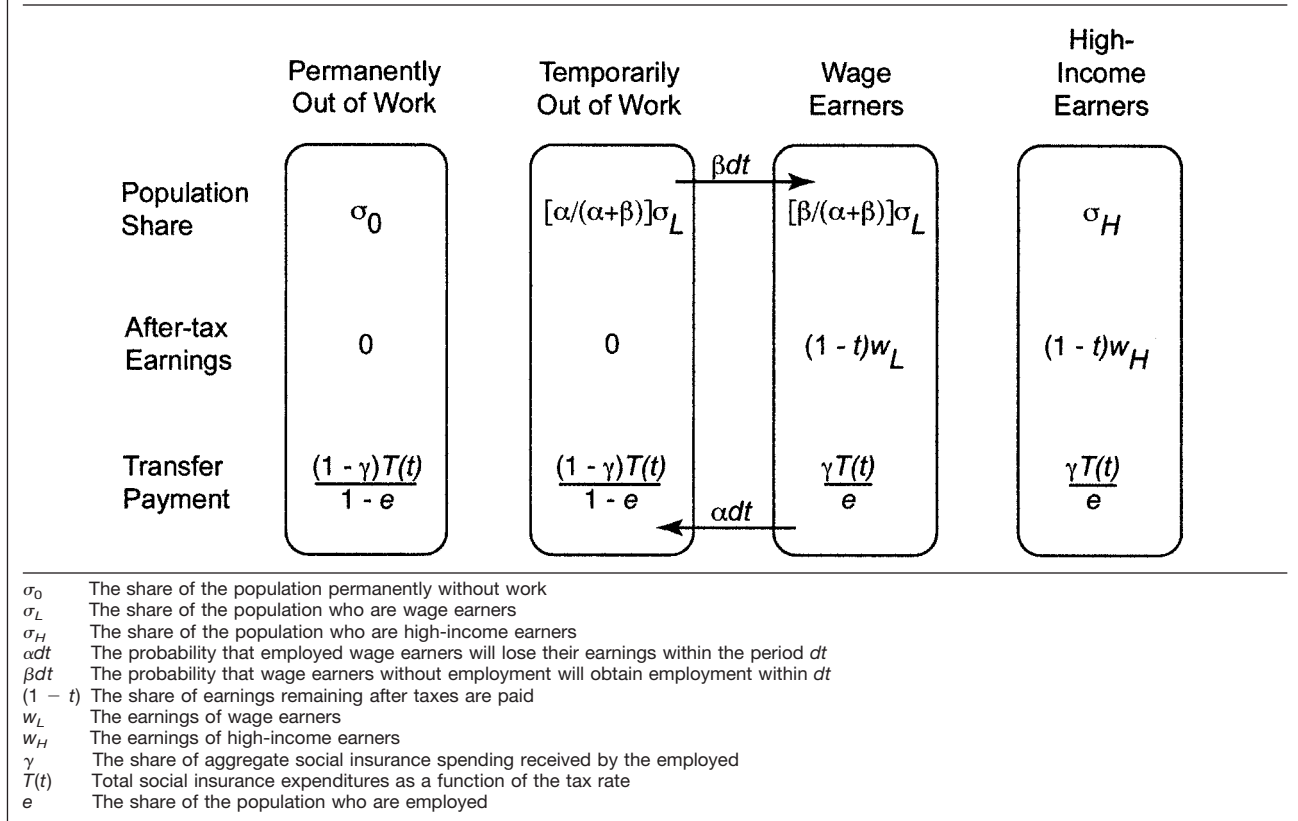
parameter. Making β endogenous is discussed briefly in a later section.

[7] We discuss the consequence of relaxing this assumption below.

[8] To model the costs of taxation explicitly, we could set $\tau(t) = th(t)$, where $h(t)$ is the appropriately defined hours worked, derived from worker preferences over consumption and leisure. Alternatively, we could assume that hours worked are fixed and that $t - \tau(t)$ represents the costs of collecting taxes, with the cost assumed to be an increasing, convex function of t.

FIGURE 2. The Distribution of Income

	Permanently Out of Work	Temporarily Out of Work	Wage Earners	High-Income Earners
Population Share	σ_0	$[\alpha/(\alpha+\beta)]\sigma_L$	$[\beta/(\alpha+\beta)]\sigma_L$	σ_H
After-tax Earnings	0	0	$(1-t)w_L$	$(1-t)w_H$
Transfer Payment	$\dfrac{(1-\gamma)T(t)}{1-e}$	$\dfrac{(1-\gamma)T(t)}{1-e}$	$\dfrac{\gamma T(t)}{e}$	$\dfrac{\gamma T(t)}{e}$

βdt (arrow from Temporarily Out of Work to Wage Earners)

αdt (arrow from Wage Earners to Temporarily Out of Work)

σ_0	The share of the population permanently without work
σ_L	The share of the population who are wage earners
σ_H	The share of the population who are high-income earners
αdt	The probability that employed wage earners will lose their earnings within the period dt
βdt	The probability that wage earners without employment will obtain employment within dt
$(1-t)$	The share of earnings remaining after taxes are paid
w_L	The earnings of wage earners
w_H	The earnings of high-income earners
γ	The share of aggregate social insurance spending received by the employed
$T(t)$	Total social insurance expenditures as a function of the tax rate
e	The share of the population who are employed

Implicit in equation 3 is an assumption that all persons without earnings receive the same benefit, regardless of their history of employment or earnings.[9] If $\gamma = 0$, then welfare policy is targeted at those without work. If $\gamma = 1$, then the benefits go exclusively to those with earnings. (We assume throughout that $0 \leq \gamma \leq 1$.) A universalistic policy that pays the same benefit to all, regardless of employment status, is implied by $\gamma = e$. Our assumptions regarding the distribution of pre- and posttax and transfer income are summarized in Figure 2.

We also assume that all individuals have identical preferences over consumption, described by a standard utility function, $u(c)$, with the following characteristics: (1) $u''(c) < 0$, (2) $u'(c) \to \infty$ as $c \to 0$, and (3) $\mu \equiv -cu''(c)/u'(c) > 1$. Assumption 1 states that individuals are risk averse. Assumption 2 means that individuals always want some insurance to cover a nonnegligible risk that they may have nothing. Assumption 3 implies that insurance is a normal good or that the demand for insurance increases as income rises. Empirical estimates of μ, usually called the coefficient of relative risk aversion, consistently conclude that $\mu \geq 1$ (Friend and Blume 1975). We assume $\mu > 1$ to simplify our discussion. How the description of the results

would have to be modified to encompass the borderline case of $\mu = 1$ is easily seen from the mathematics.

Assuming that individuals live forever, the expected lifetime utility for a wage earner can be derived from the asset equations:

$$rV^E = u(c_E(w)) - \alpha(V^E - V^N), \qquad (4)$$

$$rV^N = u(c_N) + \beta(V^E - V^N), \qquad (5)$$

where V^E is the expected lifetime utility of a person currently employed, V^N is the expected lifetime utility of a person temporarily not employed, $u(c_i)$ is the instantaneous utility of consumption when employed ($i = E$) or when not employed ($i = N$), and r is the discount rate.[10] Equations 4 and 5 can be solved for the expected lifetime utilities of starting out in the two different states. We will concentrate on the expected

[9] Such an assumption is stronger than necessary. All the results go through in a more general model in which the benefits targeted to those without earnings partly depend on past wages or contributions as long as there is some minimum benefit that everyone without earnings receives.

[10] To understand equation 4, observe that lifetime expected utility (for individuals who live forever) can be written as the sum of current utility during period dt plus expected lifetime utility one period in the future, discounted by the discount factor e^{-rdt}: $V^E = u(c_E)dt + e^{-rdt}[(\alpha dt)V^N + (1 - \alpha dt)V^E]$. Future expected lifetime utility equals the expected lifetime utility of someone without employment with probability αdt. With probability $(1 - \alpha dt)$, lifetime utility remains unchanged. Rearranging terms, letting $dt \to 0$, and using the fact that $(1 - e^{-rdt})/dt \to r$ as $dt \to 0$ yields equation 4. The derivation of equation 5 is similar. The assumption that individuals live forever can be relaxed by replacing r with $r/(1 - e^{-rH})$ in equations 4 and 5, where H is the voter's life expectancy. (We thank an anonymous referee for this observation.)

lifetime utility of employed wage earners, which is conveniently written as

$$v \equiv rV^E = \left(\frac{\beta + r}{\alpha + \beta + r}\right) u(c_E(w_L)) + \left(\frac{\alpha}{\alpha + \beta + r}\right) u(c_N).$$

(6)

Equation 6 indicates that the expected lifetime utility of an employed wage earner consists of a weighted average of expected utility in the two states, with the current state of being employed weighted more heavily, the greater is the discount rate. Self-interested workers care about the benefits received by the unemployed because of the chance that they may be without employment sometime in the future. Of course, voters may care about those without earnings out of altruism as well as self-interest. In this case, the parameter r might be interpreted as reflecting concern for the poor as well as concern for the future. The lower is r, the greater the weight given to the welfare of those without earnings in wage earners' choice of how to cast their ballots.

CHOOSING THE LEVEL OF BENEFITS WITH EXOGENOUS TARGETING

We first investigate the political choice of the level of benefits when targeting is fixed. The investigation of the choice of t for a fixed γ provides a general framework in which the contrasting predictions of the two models of welfare spending—as redistribution and as public insurance—can be compared and shown to depend on how benefits are targeted. In addition, the model of choosing t for a fixed γ may be applicable in circumstances in which changing the funding level is politically easier than altering a program's design.

With γ fixed, the level of taxation and benefits preferred by wage earners is given by the first-order condition

$$\frac{dv}{dt} = \left(\frac{\beta + r}{\alpha + \beta + r}\right) u'(c_E)[\gamma\tau'(t)\bar{w} - w_L]$$

$$+ \left(\frac{\alpha}{\alpha + \beta + r}\right) u'(c_N)\left[\frac{(1 - \gamma)\tau'(t)e\bar{w}}{1 - e}\right] = 0, \quad \textbf{(7)}$$

or, by rearranging,

$$\left(\frac{\beta + r}{\alpha}\right)\left[\frac{u'(c_E)}{u'(c_N)}\right] - \left(\frac{e}{1 - e}\right)\left[\frac{(1 - \gamma)\tau'(t)}{(w_L/\bar{w}) - \gamma\tau'(t)}\right] = 0.$$

(8)

The first term in equation 8 represents the marginal rate of substitution between consumption when employed and consumption when unemployed, and the second term represents the marginal rate at which income can be transferred via the welfare system from a workers' earnings when employed to income when not employed. The strict concavity of $u(c)$ and $\tau(t)$ guarantees that the second-order condition for a maximum is satisfied. In this model, all groups have single-peaked preferences. Therefore, we can identify the political equilibrium as the preferred tax rate of the median group of income recipients, or the value of t that solves equation 8.

From equation 8 it is apparent that a decrease in the discount rate r or an increase in voters' altruism induces voters to raise $u'(c_E)/u'(c_N)$ or to increase the redistribution of income from c_E to c_N. Conversely, a rise in the cost of taxation, as represented by a decrease in the marginal tax yield $\tau'(t)$, induces voters to lower $u'(c_E)/u'(c_N)$ or to reduce the redistribution of income from c_E to c_N.[11] It is sometimes argued that the more policy benefits are targeted to the majority with earnings, the higher is the level of political support.[12] Within our framework, this argument is partially correct. Differentiating equation 7 with respect to γ yields $dt^*/d\gamma > 0$, where t^* is the median group's preferred tax rate. Thus, the more benefits targeted to the employed, the higher is the benefit level the employed majority will support.

An increase in the funding of benefits may not benefit the poor, however, if the benefits are targeted more broadly. The question of whether less targeting to the poor benefits the poor concerns the sign of

$$\frac{dc_N}{d\gamma} = \left(\frac{e}{1 - e}\right)\bar{w}\left[(1 - \gamma)\tau'(t^*)\frac{dt^*}{d\gamma} - \tau(t^*)\right],$$

which can be either positive or negative, depending on the concavity of the function $\tau(t)$. It is straightforward to show that $dc_N/d\gamma > 0$ when the deadweight cost of taxation is negligible (i.e., when $\tau(t) \approx t$), whereas $dc_N/d\gamma < 0$ when the deadweight cost of a marginal increase in taxation increases rapidly (i.e., when $|\tau''(t)|$ is sufficiently large).

Our topic, however, is how changes in income inequality affect support for welfare expenditures. Consider the effect of a mean-preserving spread in the wage distribution, that is, an increase in w_H and a reduction in w_L, such that the average wage remains constant. To investigate the importance of a change in w_L on wage earner support for welfare, holding w constant, define

$$\Psi(w_L, \gamma) \equiv u'(c_E)[\gamma\tau'(t)\bar{w} - w_L]$$

as the part of equation 7 that depends on w_L. The sign of dt^*/dw_L is the same as the sign of

$$\frac{\partial\Psi(w_L, \gamma)}{\partial w_L} = u'(c_E)(\mu\xi - 1), \quad \textbf{(9)}$$

where

$$\xi \equiv \frac{dc_E}{d(1 - t)}\frac{(1 - t)}{c_E} = \frac{(1 - t)[w_L - \gamma\tau'(t)\bar{w}]}{(1 - t)w_L + \gamma\tau(t)\bar{w}}$$

is the elasticity of consumption when working with respect to $1 - t$.[13] Since $\mu > 1$ and $\xi \leq 1$, the sign of $\partial\Psi/\partial w_L$ in equation 9 is not clear.

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[11] The effect of deadweight costs on political support for redistributive policies is emphasized in Becker 1983, 1985.
[12] See, for example, the exchange between Skocpol (1991) and Greenstein (1991).
[13] To derive equation 9, start with

There are two special cases in which the sign of $\partial\Psi/\partial w_L$ is immediate, however. The first is the case of $\gamma = 1$, in which the employed receive all the benefits. If $\gamma = 1$, we have $w_L - \gamma r'w = 0$ from equation 7, which implies that $\xi = 0$. In this case, equation 9 reduces to

$$\frac{\partial\Psi(w_L,1)}{\partial w_L} = -u'(c_E) < 0. \qquad (10)$$

Thus, workers with lower wages prefer higher benefits $(dt^*/dw_L < 0)$ when benefits are targeted at the employed.

The second special case is $\gamma = 0$, in which benefits are targeted exclusively at those without earnings. Since $\gamma = 0$ implies that $\xi = 1$, equation 9 reduces to

$$\frac{\partial\Psi(w_L,0)}{\partial w_L} = u'(c_E)(\mu - 1) > 0. \qquad (11)$$

Thus, an increase in the earnings of the median income group, w_L, increases their preferred benefit level $(dt^*/dw_L > 0)$ when benefits are aimed at those without earnings.

The effect of increased inequality on political support for welfare spending is summarized in the following proposition.

PROPOSITION 1. *A mean-preserving spread in the income distribution (i) reduces the median voter's preferred level of benefits when benefits are targeted to those without employment but (ii) increases the median voter's preferred level of benefits when benefits are targeted to the employed.*

Proof: According to equation 10, a decline in the median voter's wage reduces his or her demand for welfare benefits if $\gamma = 0$. According to equation 11, a fall in the median voter's wage increases his or her demand for welfare benefits if $\gamma = 1$. Since $\Psi(w_L, \gamma)$ is continuous in γ, the conclusions hold for γ near zero and γ near one as well.[14]

A mean-preserving spread of the pretax income distribution has two effects on the choice of benefits. On the one hand, an increase in inequality represents a decline in income for workers with income below the mean. The wage reduction increases employed workers' resistance to paying taxes to finance benefits for those not working. On the other hand, greater inequality lowers the ratio of the median voter's income to mean income, thereby lowering the tax that must be paid by low-wage workers to finance a given level of benefits. A reduction in the price of providing benefits increases the willingness of low-wage voters to support higher benefit levels. Thus, in addition to an income effect that leads the median voter to reduce his or her

preferred level of expenditures, there is a substitution effect that works in the opposite direction.

Alternatively, the two effects can be described as a redistribution effect and an insurance effect. For any value of $\gamma < 1$, welfare policy both redistributes income and provides insurance. A rise in inequality increases the redistributive effect of the welfare system, to the benefit of workers with below-average income. At the same time, an increase in inequality, holding average income constant, implies a reduction in the income of workers whose incomes are below average. Voters whose wages decline prefer to reduce the amount of insurance they buy. Which effect dominates depends on the coefficient of relative risk aversion, μ, and on the targeting of welfare benefits, γ.

Consider first the effect of voters' risk aversion for a fixed value of γ. If $\mu = 1$, that is, if voters' risk aversion is at its lower bound, then the insurance benefit provided by the welfare system is less important, and greater inequality increases the median voter's preferred tax rate for all $\gamma > 0$. If μ is sufficiently large, that is, if voters are sufficiently risk averse, then the insurance aspect of welfare dominates, in which case greater inequality lowers the median voter's preferred tax rate.

Alternatively, for a fixed $\mu > 1$, whether the redistributive or the insurance effect dominates can be understood as a function of benefit targeting. When benefits are mostly paid to the employed (when γ is close to one), the redistributive aspect dominates, and the preferred benefit level of the median income earner increases as inequality grows. This is the case described by the standard redistribution model. When benefits are mostly paid to those without earnings (when γ is close to zero), however, the insurance aspect dominates, and the preferred benefit level of the median income earner declines as inequality increases.

Equation 11 implies that, in comparing different countries with similar average income and similar distribution of the risk of income loss, support for spending on benefits targeted to the unemployed rises as the skewness of the income distribution declines. Equation 11 does not imply that support for spending on benefits aimed at the unemployed is a positive function of income when comparing the preferences of voters located at different points in the income distribution. When the risk of job loss is correlated with income, such that low-income voters face a greater probability of income loss than high-income voters, the relationship between a voter's position in the income distribution and support for spending on policies targeted to the unemployed can go either way. In our simple model, high-income voters are assumed to face no risk of income loss, so they prefer less welfare spending than low-income voters for all values of γ and μ.

The model in this section can be generalized in a variety of ways without altering the conclusions. The simplifying assumption that there are only two types of workers, lower paid and higher paid, can be replaced by the assumption of any finite number of types, or even a continuum of types. The assumption that only

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$$\frac{\partial\Psi}{\partial w_L} = u''(c_E)(1-t)[\gamma\tau'\bar{w} - w_L] - u'(c_E)$$

and use the definition $\mu = -c_E u''(c_E)/u'(c_E)$ to write $u''(c_E) = -\mu u'(c_E)/c_E$. Equation 10 follows immediately.

[14] We conjecture that ξ is generally a monotonic declining function of γ, which would imply the existence of a unique $\tilde{\gamma} \in (0,1)$ such that $dt^*/dw_L > 0$ for $\gamma < \tilde{\gamma}$ and $dt^*/dw_L < 0$ for $\gamma > \tilde{\gamma}$.

wage earners are subject to the risk of income loss can be replaced by assuming a general distribution of this risk. As long as the risk for workers with lower income is the same as or greater than the risk for workers with higher income, all the results of this section remain unchanged. Also, one might consider a different environment in which wages each period are random draws from a known wage distribution. In this case, one can investigate the effect of an increase in uncertainty regarding future wages, holding expected wage and risk of job loss constant. The results are similar. If welfare benefits are targeted to the employed, then an increase in uncertainty regarding future wages raises the preferred level of benefits of the median voter. If welfare benefits are targeted to those without employment, an increase in uncertainty regarding future wages reduces the median voter's preferred level of benefits.[15]

The assumption that the probability of obtaining employment, βdt, is not affected by changes in taxes and benefits could be relaxed to allow β to be a function of the difference in welfare between those with and without earnings. The result would be to introduce an additional mechanism whereby increased inequality causes reduced welfare spending; as described by Moffitt, Ribar, and Wilhelm (1998), voters cut benefits to the poor as wages fall in order to restore work incentives. Another extension would allow self-insurance (or saving) to compete with public insurance against income loss. The possibility of saving would enable the share of the population with no need for social insurance to be made endogenous. Such an extension might introduce a third reason for the association of greater inequality with lower welfare spending insofar as greater inequality increases the relative share of the electorate who prefer self-insurance to public insurance.

CHOOSING BOTH BENEFIT LEVELS AND TARGETING

The targeting of benefits is as much a political decision as the level of welfare spending. Thus, a general model of the politics of welfare must include the political choice of targeting. Consideration of a second dimension of political choice is made difficult, however, by the general absence of a majority rule equilibrium in two dimensions without additional assumptions about the political process. We begin by characterizing the optimal policy of the median income group, as in the previous section. We then describe two alternative models of the political process, both of which imply that the policy preferred by the median income group constitutes the political equilibrium in the context of our particular model.

We concentrate, as before, on employed wage earners who receive w_L and face the risk αdt of losing their source of earnings within period dt. Wage earners' ideal policy is the combination of t and γ that maxi-

mizes their expected lifetime utility (equation 6), subject to the constraint that $\gamma \geq 0$ or that total benefits paid to those without employment, $(1 - e)c_N$, cannot exceed total expenditures, $T(t)$. The constraint that $\gamma \leq 1$, or that $c_N \geq 0$, is never binding, given our assumption that $u'(c) \rightarrow \infty$ as c $\rightarrow$ 0. The first-order conditions for the solution can be written as

$$\left(\frac{\beta + r}{\alpha}\right)\left[\frac{u'(c_E)}{u'(c_E)}\right] - \left(\frac{e}{1 - e}\right)\left[\frac{(1 - \gamma)\tau'(t)}{(w_L/\bar{w}) - \gamma\tau'(t)}\right] = 0,$$

(12)

$$\gamma\left\{\left(\frac{\beta + r}{\alpha}\right)\left[\frac{u'(c_E)}{u'(c_N)}\right] - \left(\frac{e}{1 - e}\right)\right\} = 0. \quad (13)$$

The first-order condition with respect to t, equation 12, is identical to equation 8. We now must consider the first-order condition with respect to γ as well.

Equation 13 indicates that there are two cases to be considered. In the first, the constraint is not binding, or the optimal choice of γ, denoted γ^*, is greater than zero. In this case, the first-order conditions can be written as

$$\tau'(t)\bar{w} - w_L = 0, \quad (14)$$

$$\left(\frac{\beta + r}{\alpha}\right)\left[\frac{u'(c_E)}{u'(c_N)}\right] - \left(\frac{e}{1 - e}\right) = 0. \quad (15)$$
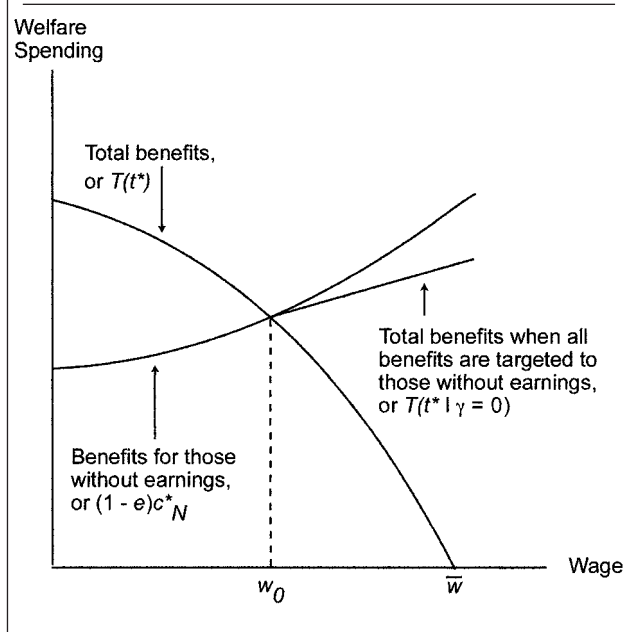
Equation 14 determines the optimal tax rate as the rate at which the marginal revenue gain from an increase in the tax rate, $\tau'(t)\bar{w}$, just equals the marginal cost to wage earners, w_L, in line with the pure redistribution model. The optimal tax is zero when $w_L = \bar{w}$, since $\tau'(0) = 1$, and it rise as $w_L/\bar{w})$ declines, since

$$\frac{dt^*}{dw_L} = \frac{1}{\tau''(t)\bar{w}} < 0. \quad (16)$$

With the optimal tax rate determined by equation 14, the optimal allocation of tax revenues between benefits targeted to those with and without earnings is given implicitly by equation 15. Equation 15 represents the standard condition that the marginal rate of substitution between consumption when employed and consumption when not employed must equal the cost of transferring income from a worker's earnings when employed to income when not employed. For a fixed welfare budget, the cost of transferring benefits from those without earnings to the employed is the relative size of the two groups, $e/(1 - e)$. Equation 15 indicates that a change in the distribution of income that causes a decline in w_L must be matched by a decline in the benefits received when not employed to keep the ratio $(\beta + r)u'(c_E)/\alpha u'(c_N)$ unchanged:

$$\frac{dc_N}{dw_L} = \frac{(1 - t)\left[e/(1 - e)\right](\beta + r)u''(c_E)}{(\beta + r)u''(c_E) + [e/(1 - e)]^2\alpha u''(c_N)} > 0. \quad (17)$$

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[15] See Moene and Wallerstein 1998 for details on the mathematical analysis of the effect of an increase in uncertainty on support for welfare spending.

FIGURE 3.   Preferred Policy of Employed Wage Earners

It follows from equations 16 and 17 that

$$\frac{d\gamma^*}{dw_L} = \frac{1}{\tau(t)\bar{w}}\left[(1-\gamma)\frac{\tau'(t)}{\tau''(t)} - \left(\frac{1-e}{e}\right)\frac{dc_N}{dw_L}\right] < 0.$$

Employed workers who suffer a decline in earnings prefer a partial offset of the wage reduction through an increase in the benefits targeted to themselves.

The second case to consider is the binding constraint, or when $\gamma^* = 0$. In this case, the first-order condition with respect to t simplifies to

$$\left(\frac{\beta + r}{\alpha}\right)\left[\frac{u'(c_E)}{u'(c_N)}\right] - \left(\frac{e}{1-e}\right)\left[\frac{\tau'(t)\bar{w}}{w_L}\right] = 0. \quad \textbf{(18)}$$

Wage earners would like to lower t and raise money with a lump-sum tax (i.e., set γ below zero), but lump-sum taxes are ruled out by the constraint. Therefore, wage earners prefer to transfer less money from c_E to c_N than they would if lump-sum taxes were possible. From proposition 1, we know that $dt^*/dw_L > 0$ when $\gamma = 0$.

In order to visualize the wage earner's optimal policy, it is helpful to rewrite the policy choice as a choice of aggregate expenditures, $T(t)$, and a choice of the total transfers that are disbursed to those without earnings, $(1 - e)c_N$. These choices are graphed in Figure 3. The curve $T(t^*)$ represents wage earners' unconstrained optimal aggregate welfare expenditures, which decline as w_L increases. The curve $(1 - e)c_N^*$ represents the unconstrained optimum with respect to the benefits targeted to those without earnings. This curve is an increasing function of w_L from equation 17. Since $T(t^*) = 0$ when $w_L = \bar{w}$, whereas $(1 - e)c_N^*$ is always positive and increasing in w_L, the two curves must cross at a wage level below $\bar{w}$, denoted w_0 in the figure. If $w_L < w_0$, wage earners' optimal choice of

benefits targeted to themselves is given by the difference between $T(t^*)$ and $(1 - e)c_N^*$. For $w_L \geq w_0$, the constraint that $\gamma \geq 0$ or that $T(t) \geq (1 - e)c_N$ binds. The constrained optimum with $\gamma^* = 0$ or $T(t^*) = (1 - e)c_N$ is represented by the curve $T(t^*| \gamma = 0)$. That $T(t^*|\gamma = 0)$ is an increasing function of w_L is a restatement of part (i) of proposition 1.

The comparative static results implicit in Figure 3 are summarized as follows.

PROPOSITION 2. *A mean-preserving increase in inequality that lowers the income of the median voter (i) reduces wage earners' preferred level of benefits targeted to those with no income, (ii) reduces wage earners' preferred level of aggregate spending when initial inequality is sufficiently small, but (iii) increases wage earners' preferred level of aggregate spending when initial inequality is sufficiently large.*

Proof: Part (i) states that c_N^* is an increasing function of w_L (equation 17 and proposition 1, part (i)). Part (iii) states that $T(t^*)$ is an increasing function of w_L for $w_L < w_0$ (equation 16), and part (ii) states that $T(t^*|\gamma = 0)$ is a decreasing function of w_L for $w_L > w_0$ (proposition 1, part (i)).[16]

When workers' income falls, their demand for redistribution increases, and their demand for insurance against loss of earnings declines. When the wage is sufficiently low, relative to the mean, the preferred level of aggregate spending provides more than enough to finance the preferred level of insurance, which leaves money in the budget to be distributed to employed workers and high-income earners. As the wage rises relative to the mean, however, wage earners' demand for insurance increases, and their demand for redistribution falls. Eventually, the wage rises above the threshold $w_L = w_0$, and wage earners prefer the entire welfare budget to be targeted to those without earnings. With $\gamma = 0$, wage earners face the conflict between redistributive and insurance motives for supporting welfare spending, described in the previous section. According to proposition 1, the insurance motive dominates when $\gamma = 0$, in the sense that the preferred benefit level rises with w_L.

In the previous section, when γ was assumed to be fixed, political choice was one-dimensional, and the political equilibrium could be identified with the optimal policy of the median income group. Proposition 2 implies that the same reasoning can be applied with regard to the simultaneous choice of t and γ when the median income is sufficiently close to the mean. If $w_L \geq w_0$ in Figure 3, a majority of voters prefer to target all benefits to those without earnings. (The γ that is optimal for wage earners who have lost their earnings and for those who never work is always less than or equal to the γ preferred by employed wage earners.) Given majority support for $\gamma = 0$, part (i) of proposition 1 applies. The ideal policy combination of

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[16] Bénabou (2000) derives a similar V-shaped relationship between redistributive spending and inequality from a different set of assumptions regarding preferences, risk, and the fiscal system.

employed wage earners is preferred by a majority to all feasible policy alternatives.

In the case in which w_L is sufficiently low, such that employed wage earners prefer a policy combination with some spending targeted to the employed ($w_L < w_0$), however, no policy has the property of being preferred by a majority to all feasible alternatives. To specify an outcome, one must add some additional assumptions about the political process. We consider two approaches that can be used to select an equilibrium. The first assumes issue-by-issue voting, as in Shepsle (1979). If t and γ are decided in separate parliamentary votes, then the outcome is the policy combination preferred by employed wage earners, regardless of which policy vote is first, since employed wage earners are the median group in both policy dimensions.[17] The second approach assumes electoral competition between two parties or two coalitions of parties that have distinctive constituencies.[18] Suppose the leftist party seeks the support of wage earners and the poor, and the rightist party seeks the support of wage earners and voters with income above the median. If the party system prevents the formation of an alliance of the rich and poor against the middle, the wage earners' preferred policy is again a stable political equilibrium. Although other plausible approaches might yield other equilibria, we proceed to investigate the extent to which the pattern of government spending in advanced industrial societies fits the preferences of the median income group as described in proposition 2.

INEQUALITY AND WELFARE SPENDING IN 18 COUNTRIES, 1980–95

Definition of Variables

According to proposition 1, for the case of exogenous targeting, and proposition 2, for the case of endogenous targeting, an increase in the skewness of the income distribution reduces the share of GDP that the median income group prefers to spend on benefits for those who have lost their earnings. In the notation of the model, the preferred level of $(1 - e)c_N = (1 - \gamma)T(t)$ is a decreasing function of the skewness of the income distribution. In addition, the two propositions imply that an increase in skewness reduces the share of government spending that the median income group prefers to allot to benefits aimed at those without earnings.[19] In this section, we show that both these

implications of the model fit the data on welfare expenditures in advanced industrial societies during 1980–95.[20] Spending on social insurance against income loss is lower in countries where the income distribution is highly skewed, whether measured as a share of GDP or as a share of total government expenditures.

To measure *Spending on Insurance Against Income Loss*, we sum expenditures in seven categories: disability cash benefits, occupational injury and disease, sickness benefits, services for the disabled and elderly, survivors' benefits, active labor market programs, and unemployment insurance. Both government expenditures and mandated private expenditures are included. Government spending on health care does not fit in this category because in seventeen of the countries coverage is provided to all, regardless of income or employment status. The exception is the United States, which targets substantial programs to the elderly and the poor. To include health care spending would significantly overstate expenditures aimed at the unemployed in the seventeen countries, but to exclude it might understate benefits targeted to those without employment in the United States. Therefore, we added 100% of government spending on health care to the benefits received by those without earnings in the United States, but we only added 42% in the other countries. The latter figure is the government share of total health care expenditures in the United States in 1990 (OECD 1994).[21]

Our measure of insurance against the risk of income loss excludes old age cash benefits, family benefits, housing benefits, and benefits for other contingencies. Many family and housing programs cover those without employment, but many do not, and we have no way of estimating how the spending in these areas is divided among different types of households. Pensions are a large category of spending that is received by persons who are not employed. Although public pensions insure against investment risks inherent in private pensions, the loss of income upon retirement is an expected event in a way that the loss due to sickness or layoffs is not. Thus, we exclude government pension programs from our measure. Spending on insurance against income loss is still substantial even with pensions excluded. Among the eighteen countries in our sample, it averaged 10% of GDP or 20% of total government spending from 1980–95.

According to most models, the aspect of income distribution that matters politically is the comparison of the median wage to the mean. The absence of data, however, compels us to use the ratio of earnings at

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[17] Let (t_0^*, γ_0^*) the optimal policy of the poor, (t_1^*, γ_1^*) the optimal policy of workers temporarily without earnings, (t_2^*, γ_2^*) the optimal policy of employed wage earners, and (t_3^*, γ_3^*) the optimal policy of high-income earners. In the case with $w_L < w_0$, it is straightforward to show that $0 = \gamma_0^* \leq \gamma_1^* < \gamma_2^* < \gamma_3^* = 1$ and that $0 = t_3^* < t_2^* = t_1^* < t_0^* = t_{max}$, where t_{max} is the tax rate that maximizes $T(t)$.

[18] See Roemer 1998, 1999, and Austen-Smith 2000 for theoretical studies of political competition among constituency-based parties over redistributive policies.

[19] More precisely, the model implies that $(1 - e)c_N/T(t) = (1 - \gamma)$ is a declining function of the skewness of the income distribution as long as $\gamma > 0$. Given the existence of government expenditures for purposes other than insurance and redistribution, however, it is reasonable to expect that, if our model is correct, spending on

insurance should increase as a share of total government spending as skewness falls, even when the $\gamma \geq 0$ constraint is binding.

[20] The countries in the Organization for Economic Cooperation and Development (OECD) data set are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Sweden, Switzerland, United Kingdom, and the United States. These are the countries for which the OECD (1993, 1996) has published measures of wage and salary inequality.

[21] The statistical results are not changed significantly if government spending on health care is excluded from the insurance category.

different percentiles of the wage distribution as a proxy. If we approximate the empirical distribution of wages and salaries with the lognormal distribution, then the ratio of the median to the mean wage can be written as

$$\frac{\text{median wage}}{\text{mean wage}} = \exp(-\sigma^2/2),$$

where σ^2 is the variance of the log of wages and salaries.[22] This variance, in turn, can be derived from the ratio of wages at any two percentiles of the wage distribution, according to the formula

$$\sigma = k_{ij} \ln(w_i/w_j),$$

where w_i and w_j are the wages at the ith and jth percentiles, respectively, with $i > j$, and where k_{ij} is a positive constant that depends on i and j. It follows that the ratio of the median wage to the mean wage is a strictly decreasing function of the wage ratio w_i/w_j for any i and j with $i > j$.

In theory, any ratio w_i/w_j is an equally good proxy for the ratio of the median to the mean. Our proxy for the skewness of the income distribution, *Inequality (90/10)*, is derived from the ratio of pretax earnings as between the 90th percentile and the 10th percentile of the distribution of wages and salaries. These data are available for eighteen industrialized countries from 1979–80 through 1995–96 (OECD 1996). Taking the log of $[(w_{90}/w_{10}) - 1]$ improves the fit slightly. Therefore, we use

$$\text{inequality (90/10)} = \ln\left(\frac{w_{90} - w_{10}}{w_{10}}\right)$$

as our proxy for the skewness of the income distribution. All the statistical analyses were redone using the w_{50}/w_{10} and the w_{90}/w_{50} ratio in place of the w_{90}/w_{10} ratio to check that our findings are robust with respect to the choice of proxy.[23] Because wage inequality data are not available annually for the entire data set, we took the average of all data points for each country in the periods 1980–94, 1985–89, and 1990–94, which yielded (3)(18) = 54 possible data points. After removing cases with no inequality data for one or more of the five-year periods, we were left with 50 observations.[24]

Welfare spending today is highly correlated with welfare spending in the recent past. Budgets are adjusted up or down from the status quo. For the eighteen countries, if one regresses spending on social insurance against income loss as a share of GDP in

1985, 1990, and 1995 on spending as a share of GDP five years earlier, one obtains

$$(\text{Spending/GDP})_{it} = 1.60 + 0.913 \, (\text{Spending/GDP})_{it-5},$$

where the standard error of the coefficient in front of the lagged dependent variable is 0.05, and $R^2 = 85.5$. It is clear that the influence of past spending on current decisions cannot be ignored in empirical work.

In addition to a *Lagged Dependent Variable*, we control for the rate of unemployment (*Unemployment*), government by conservative parties (*Right Government*), the turnout for elections to the lower house of parliament (*Turnout*), and the proportion of the population over age 65 (*Percentage Elderly*). The rate of unemployment is potentially an important determinant of spending on unemployment insurance, active labor market policies, and even disability insurance (countries with high levels of joblessness may classify some of the unemployed as disabled) (Pampel and Williamson 1989). Because our measure of spending on insurance against income loss includes survivors' insurance and expenditures on health for those not in the labor market, the share of the population who are elderly also may affect spending levels. Whether one views the fraction of the population who are over age 65 or who are unemployed as measuring need or measuring political influence has a subtle implication for measument choice. As an indicator of need, the relevant control is the share of each group in the year at which expenditures are measured. As an indicator of political influence, the relevant control is an average of the size of each group in the preceding five years, since policy changes lag shifts in the electorate. We let the data decide this issue. The unemployment rate fits the data much better if measured in the same year that we measure social insurance benefits. With regard to the proportion of elderly, using the average over the preceding five years fits slightly better, although the difference is small.

In the literature on partisanship and welfare spending, the early emphasis was on the division between socialist or social democratic parties and center/Right parties (Korpi 1983; Stephens 1979). Like many before us, we find that the most important division is between the Left/center and the Right (Castles 1982; Esping-Andersen 1990). Because the Left versus center/Right division was never significant in any of our regressions, we only report results based on the classification conservative versus Left/center. Our measure of conservative government is the share of cabinet seats held by conservative parties (Castles and Mair 1984; Huber and Inglehart 1995).

Turnout also may have an important effect on political support for spending to insure against the risk of income loss (Franzese 1998; Liphart 1997). We include the average turnout in elections in the lower house of parliament in the preceding five years. Summary statistics and data sources for all the variables are presented in the Appendix.

Among the earliest findings of the empirical literature is that welfare spending is higher as a share of

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[22] According to Aitchison and Brown (1957), the distribution of wages and salaries is closely approximated by the lognormal distribution apart from the upper and lower tails.

[23] See Moene and Wallerstein 2001a for the full set of regression equations using the w_{50}/w_{10} and the w_{90}/w_{50} wage ratios. In addition, our results do not depend in a significant way on whether one uses $\ln[(w_{90}/w_{10}) - 1]$ or $\ln(w_{90}/w_{10})$ or (w_{90}/w_{10}) as the proxy.

[24] The excluded cases were Belgium 1980–84, Portugal 1980–84, and Switzerland 1980–89. The method for calculating wage inequality in the United States was changed in the early 1990s. To construct a continuous time series starting in 1980 for the United States, we used the older series reported in OECD 1993 together with the extension of the older series reported in OECD 1996.

TABLE 1. Effect of Inequality on Government Spending for Insurance against Loss of Income as a Share of GDP in Eighteen Countries, 1980–95

	1	2	3	4	5
Lagged dependent variable	.761* (.063)	.734* (.073)	.789* (.069)	.778* (.068)	.757* (.063)
Inequality (90/10)	−2.17* (0.33)	−1.93* (0.35)	−2.52* (0.55)	−1.83* (0.39)	
Unemployment	.118 (.073)	.122 (.072)	.117 (.082)	.060 (.071)	.119 (.077)
Turnout	−.053* (.012)	−.050* (.011)	−.043* (.015)	−.044* (.011)	−.053* (.014)
Rightist government	−.013* (.004)	−.013* (.005)		−.013* (.004)	−.013* (.005)
Percentage elderly		.108 (.108)			
Inequality (50/10)					−1.31* (0.53)
Inequality (90/50)					−1.53 (0.97)
adj. R^2	90.0	90.1	88.3	90.3	89.8
N	50	50	50	49	50

Note: The table shows OLS estimation. The dependent variable is insurance benefits for loss of income as a share of GDP. Parentheses contain panel-corrected standard errors. All regressions include a constant. Column 4 excludes Finland 1995. *$p \leq .05$.

GDP in countries with a higher level of GDP per capita (Wilensky 1975). Yet, like most other researchers whose data set is limited to countries with relatively high GDP per capita, we found that this factor had no explanatory power. Therefore, we did not include GDP per capita in the set of independent variables. In addition, we used no controls for union strength, such as density or centralized wage-setting, since these two are among the most important determinants of the inequality of earnings distribution (Freeman 1988; Hibbs and Locking 2000; Rueda and Pontusson 2000; Wallerstein 1999). It should be noted that government spending has little influence on the inequality of pretax wages and salaries after controlling for the effect of wage-setting institutions (Wallerstein 1999). Thus, the inequality of pretax wages and salaries can be considered exogenous with respect to spending on social insurance benefits.

Testing the Model

Regressions results with spending on social insurance against income loss as a share of GDP as the dependent variable are presented in Table 1.[25] The first column is our basic specification. The estimated effect of the skewness of the wage distribution on spending as a share of GDP is strongly negative, as predicted by the model. Among advanced industrial societies, countries with a more skewed distribution spend less on insurance against income loss than countries with more a egalitarian distribution. The estimated effect of an increase in inequality (90/10) by one standard deviation (.378) reduces spending on insurance against income loss as a share of GDP by (2.17)(.378) ≈ 0.8 percentage

points in five years. In the long run, such an increase reduces that spending by 0.8/(1 − .761) ≈ 3.3 percentage points.[26] This is a large effect. For example, consider the contrast between average spending on insurance against income loss in the Netherlands (15% of GDP), ranked highest in this category in the sample, and United States (8% of GDP). Given that the difference for the inequality (90/10) variable between the Netherlands and the United States averaged 1.44 − 0.43 ≈ 1.0, the long-run difference in their spending as a share of GDP we can expect on that basis is (2.17)(1.0)/(1 − .761) ≈ 9 percentage points, compared to an actual difference of 7 percentage points.

The estimated effect of turnout on spending as a share of GDP is also negative. Higher turnout is associated with less spending on insurance against the risk of income loss, controlling for the skewness of income distribution. The simplest explanation is that the propensity to vote is positively correlated with age as well as income. Indeed, Franklin (1996, 220), in an analysis of survey data from 21 European countries and the United States, found that the effect of age exceeds that of income.[27] When turnout is low, the elderly may comprise a larger share of voters than when turnout is high. Because some of the insurance benefits going to those without earnings are disproportionately received by the older voters (obvious examples are disability and

[25] The panel-corrected standard errors are estimated assuming that $E(\epsilon\epsilon') = \Sigma \otimes I$ where Σ is a general 18×18 variance-covariance matrix for the error terms associated with the eighteen countries and I is the 3×3 identity matrix for the three time periods. See Beck and Katz 1995 or Greene [1993] 1997, 651–69 for a discussion of the estimation of panel-corrected standard errors.

[26] The coefficients reported in Table 1 represent the short run effect of a unit change in the independent variables on the dependent variables, where the short run is within five years, since all variables are measured in five year intervals. The long-run effect of a unit change in the independent variables is given by the short-run effect divided by (1 − .761), where .761 is the estimated coefficient on the lagged dependent variable. The long run refers to the total cumulative effect of a permanent change in one of the independent variables as time goes to infinity.

[27] Franklin (1996, 220) divided his sample into five age and income categories. The difference in turnout between the top and bottom age quintiles was approximately 30 percentage points (from 58.8% to 88.9%); the difference in turnout between the top and bottom income quintiles was roughly 15 percentage points.

survivors' insurance), the negative estimated effect of turnout on spending may reflect the fact that smaller electorates contain a relatively larger proportion of elderly than do larger electorates.

As an additional control for the age distribution of the electorate, we added the proportion of the population who are elderly to the set of independent variables in the second column of Table 1. Note that cross-national differences in turnout far exceed cross-national differences in the share of the population over age 65, as shown in Table A-1. Thus, it is not surprising that the standard error of the estimated effect of the percentage elderly is much larger than the standard error of the estimated effect of turnout. The point estimates indicate that both a high share of elderly in the population and a low turnout are associated with higher benefits.

There are two ways in which income distribution can affect spending for insurance against income loss. The first is to induce all parties to shift their platform in the direction of the policy preferred by the median income group. This is implicit in the first column of Table 1. The second mechanism is to alter the likelihood of an electoral victory of the parties that are most committed to social insurance policies, that is, the parties of the Left and center. In this case, government by rightist parties is an endogenous variable that reflects the distribution of income. If income distribution affects policy by affecting the likelihood of a conservative electoral victory, then inclusion of rightist government as a control variable will underestimate the influence of income on social insurance benefits as a share of GDP. The third column of Table 1 shows that the estimated effect of inequality (90/10) does increase in absolute value when government by the Right is removed as a control, but the difference is not large.[28]

The last two columns of Table 1 present several checks on the robustness of our results. Tests of the influence of individual data points revealed that the case of Finland in 1995, an outlier with an unemployment rate of 17.4%, has a large influence on the estimates. Its extraordinarily high rate significantly increases the range over which unemployment varies in the data and allows more precise estimates of the coefficients. As the fourth column of Table 1 shows, removing the case of Finland 1995 greatly reduces the estimated effect of unemployment and slightly reduces the estimated effect of inequality (90/10).

In column 5, we replace the w_{90}/w_{10} ratio with w_{50}/w_{10} and w_{90}/w_{50} to test the argument of Kristov, Lindert, and McClelland (1992) that support for social insurance depends on the social affinity felt by the median group toward the poor. Kristov and his colleagues argue that such affinity is a negative function of the distance between the middle and the poor, as

TABLE 2. Effect of Inequality on Government Spending for Insurance against Loss of Income as a Share of Government Expenditures in Eighteen Countries, 1980–95

	1	2
Lagged dependent variable	.845* (.105)	.851* (.089)
Inequality (90/10)	−1.33* (0.27)	−1.74* (0.28)
Turnout	−.060* (.013)	−.064* (.013)
Rightist government	−.008 (.009)	−.008 (.010)
Unemployment	−.042 (0.78)	
Percentage elderly	.131 (.101)	
adj. R^2	84.9	85.3
N	46	46

Note: The table shows OLS estimation. The dependent variable is insurance benefits as a share of government expenditures. Parentheses contain panel-corrected standard errors. All regressions include a constant. New Zealand and Portugal 1995 are deleted because of missing data. *$p \leq .05$.

measured by the w_{50}/w_{10} ratio, and a positive function of the distance between the middle and the rich, as measured by the w_{90}/w_{50} ratio. Thus, the estimated coefficient for inequality (50/10) should be negative, and the estimated coefficient for inequality (90/50) should be positive. According to our model, in contrast, both measures are equivalent proxies of income skewness. Column 5 indicates that the estimated coefficients for both are virtually the same, negative number.

Our model implies that countries with a highly skewed distribution of wages and salaries spend less on insurance against income loss as a share of either government expenditures or GDP. This is tested in Table 2. The dependent variable is social insurance spending as a share of government spending, defined as total outlays by all levels of government minus gross capital formation and other capital expenditures. Because the signs of the estimated coefficients for both unemployment and the share of elderly in column 1 are contrary to our prior beliefs, we removed both controls in column 2.[29] Both specifications in Table 2 show a strong, negative relationship between spending on insurance against income loss as a share of government spending and the skewness of the wage distribution. Together, columns 1 and 2 imply that a long-lasting increase in inequality (90/10) by one standard deviation reduces social insurance spending as a share of government outlays by between $(1.33)(.378)/(1 - .851) \approx 3.4$ and $(1.74)(.378)/(1 - .851) \approx 4.4$ percentage points in the long run.

Our model generates weaker predictions regarding the relationship between the skewness of income distribution and total spending on benefits for both the employed and people without earnings. The V-shaped

[28] Standard economic theory suggests that unemployment also may be endogenous, in the sense of being affected by both the distribution of wages and the generosity of unemployment benefits. Yet, the correlation of unemployment and our measure of wage inequality is close to zero. Moreover, the removal of the unemployment rate from the set of controls had little effect on the estimated coefficients of the variables that remained.

[29] Since spending on pensions reduces the share of government spending that is spent on insurance against income loss, we expected the coefficient on the percentage elderly to be negative.

relationship between skewness and $T(t)$ described in proposition 2 and illustrated in Figure 3 is compatible with any empirical relationship between our measure of inequality and $T(t)$ except for an upside-down V. A further obstacle to testing the predictions of our model regarding $T(t)$ is the difficulty in measuring government spending on benefits for the employed. Defined narrowly to be transfer payments received by the median group of wage earners, these benefits as a share of GDP are close to zero in all advanced industrial societies; this is consistent with our model if the income distribution in those societies is sufficiently egalitarian that a majority prefers transfer payments be targeted to those without earnings.[30] An alternative approach is to equate $T(t)$ with total social expenditures as defined by the OECD (1999), which includes insurance benefits to those without earnings (about 40% of the total), pensions (about 30% of the total) and other transfer payments and in-kind benefits that do not depend on employment status.[31]

Column 1 of Table 3 reveals a strong, negative relationship between income inequality and social expenditures as a share of GDP, as Rodríguez (1998) has shown. If one looks for a V-shaped relationship between social expenditures and income inequality, it can be found. Searching the data for a critical level of inequality that generates the strongest V-shaped relationship yields the division described in columns 2 and 3. In those two cases the sample is divided according to whether $w_{90}/w_{10} < 3.15$ (the distribution of income is at least as equal as in Japan) or $w_{90}/w_{10} \geq 3.15$ (the distribution of income is at least as unequal as in France). The point estimates in columns 2 and 3 indicate a V-shaped relationship between spending and inequality, but the F-statistic fails to reject the null hypothesis that the coefficients in the two subsamples are identical.

To summarize the empirical evidence, there is strong support for the model's predictions regarding insurance against income loss. In advanced industrial societies, the more positively skewed the distribution of pretax earnings, the lower is government spending on insurance against income loss, whether measured as a share of GDP or total government spending. There is also a strong negative relationship between aggregate social expenditures as a share of GDP and income inequality. In other words, there is little empirical support for a purely redistributive model of welfare expenditures. The empirical relationship between inequality and political support for welfare programs, we suggest, cannot be adequately understood without considering welfare policies as publicly provided insurance.

CONCLUSION

We have developed the implications of the view that welfare policies are publicly financed insurance that pays out benefits relative to contributions in a redistributive manner. At the extreme ends of the income scale, the insurance aspect is dwarfed by the redistributive aspect. The poor in our model receive benefits and do not contribute at all, and the rich have no need for publicly financed insurance. But the middle group of voters in our model benefit from both aspects of welfare policies. When the redistributive and insurance benefits are considered simultaneously, the effect of increasing inequality on political support for welfare policies depends critically on the way in which benefits are targeted. Increased income inequality that is associated with an increased gap between median and mean income increases political support for redistributive benefits received by the employed but reduces support for publicly provided insurance against income loss. When the targeting of benefits is endogenous, the model continues to imply that support for spending on insurance against the risk of income loss declines as the gap between the median and the mean increases. Regression results indicate that greater inequality is associated with lower spending on programs to insure against income loss among eighteen advanced industrial countries from 1980 to 1995, as a share of both GDP and total government spending.

Our approach does not yield a clear prediction regarding how support for insurance against the risk of income loss varies across individuals with different incomes. In our model, the demand for welfare spending comes from those who never work and low-wage workers who may lose their employment. High-wage workers, who, by assumption, face no risk of income loss, oppose spending on social insurance to the extent that they vote in a self-interested manner. In reality, however, the risk of income loss rises gradually as one moves up the income scale. Whether self-interested workers earning a higher income would support more or less spending on insurance against the risk of job loss than workers earning lower income depends on their relative risk as well as their relative wage.[32] Our conclusion that a more unequal distribution of income leads to less support for social insurance is conditional upon holding constant the distribution of the risk of income loss.

Theoretically, the largest gap in our approach is the absence of a private alternative to publicly provided insurance. We have concentrated on the loss of income, a risk that cannot be insured privately. The politics of the demand for insurance when there is a private alternative involves different considerations. The policies that constitute the welfare state are heterogeneous in their bases of political support. One model will not encompass them all.

Empirically, there is strong support in our sample for the proposition that countries with more skewed in-

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[30] Family benefits, the only transfer payments likely to be received by a voter with median income, average 1.4% of GDP among advanced industrial societies (OECD 1999).

[31] Social expenditures include government spending on health and housing but not on education.

[32] Iversen and Soskice (2001) find that support for welfare expenditure declines as survey respondents' income increases, controlling for the specificity of skills.

TABLE 3.   Effect of Inequality on Social Expenditures as a Share of GDP in Eighteen Countries, 1980–95

	1 (Entire Sample)	2 ($w_{90}/w_{10} < 3.15$)	3 ($w_{90}/w_{10} \geq 3.15$)
Lagged dependent variable	.749* (.065)	.715* (.078)	.730* (.089)
Inequality (90/10)	−2.87* (0.79)	−5.88* (2.59)	4.06 (2.99)
Turnout	−.069* (.022)	−.117* (.035)	.034 (.036)
Rightist government	−.019* (.007)	−.013 (.010)	−.028* (.008)
Unemployment	.259* (.089)	.288* (.098)	.765* (.207)
Percentage elderly	.320 (.221)	.112 (.249)	.964* (.340)
adj. R^2	92.2	91.8	95.9
N	50	34	16
F (7, 36)		1.55	

Note: The table shows OLS estimation. The dependent variable is total social expenditures as a share of GDP. Parentheses contain panel-corrected standard errors in column 1, OLS standard errors in columns 2 and 3. All regressions include a constant. The F-statistic tests the null hypothesis that the coefficient vectors in the last two columns are identical. *$p \leq .05$.

come distributions spend less on insurance against income loss. A simple cross-sectional comparison of wage inequality and spending on social insurance yields a clear negative relationship. That relationship holds up surprisingly well using panel data with a lagged dependent variable; that variable alone explains 85% of the variance. The results can be destroyed, however, by removing all the cross-sectional variation with a full set of country dummy variables, as Devroye (2000) shows. The variation in wage inequality within countries is too small over the fifteen years we studied to provide a reasonable test of the model's implications. To test the relationship using a fixed-effects model, we need measures of wage inequality and spending on benefits targeted to those without employment over a longer period. We also need more empirical work on the categories of welfare expenditures that do not consist of insurance against income loss. The political

contests over pensions or government spending on health care may differ significantly from the political contest over programs that insure against the loss of income. Finding the level of disaggregation that best explains the dynamics of political support for welfare policies should be high on the agenda of future work.

APPENDIX

Descriptive statistics for all the variables used in the data analysis are presented in Table A-1. Insurance against income loss refers to spending on welfare program targeted to those without earnings, excluding pensions, as described in the text. Data are for 1985, 1990, and 1995 in the case of social insurance benefits, government spending and unemployment. All the other variables represent the average value for the periods 1980–84, 1985–89, and 1990–94. See note 20 for the countries in the sample. The source for spending on social insurance, health care, and pensions is OECD (1999).

TABLE A-1.   Summary Statistics

Variable	Mean	S.D.	Minimum	Maximum
Insurance for income loss/GDP	9.8	3.4	3.6	15.7
Insurance for income loss/govt. spending	21.8	4.4	13.6	30.0
Social expenditures/GDP	23.0	6.2	11.3	33.4
Inequality (90/10)	.604	.378	−.020	1.50
Inequality (90/50)	−.333	.264	−.755	.336
Inequality (50/10)	−.463	.393	−1.17	.365
Unemployment	7.2	3.1	1.6	17.2
Rightist government	41.5	36.7	0	100
Turnout	78.5	13.2	40.0	95.6
Percentage elderly	13.5	2.1	9.5	17.7

Wage inequality (i/j) is $\ln[(w_i - w_j)w_j]$, as described in the text. The data on wage inequality are from OECD (1996) and, in the case of the United States, OECD (1993). The share of government spending, the share of elderly in the population, and unemployment figures are from OECD (1997). Conservative government is based on Swank (1992), updated using recent issues of *Keesing's Record of World Events*. The classification of parties in terms of Right versus center and Left is based on Castles and Mair (1984), updated with Huber and Inglehart (1995). Turnout refers to elections for the lower house of parliament or for president in the United States. The source for turnout is Blais and Dobryzynska (1998). The data set is available from the authors upon request.

REFERENCES

Aitchison, John, and J. A. C. Brown. 1957. *The Lognormal Distribution*. Cambridge: Cambridge University Press.

Alesini, Alberto, and Dani Rodrik. 1994. "Distributive Politics and Economic Growth." *Quarterly Journal of Economics* 109 (May): 465–90.

Austen-Smith, David. 2000. "Redistributing Income under Proportional Representation." *Journal of Political Economic* 108 (December): 1235–69.

Barr, Nicholas. 1992. "Economic Theory and the Welfare State: A Survey and Interpretation." *Journal of Economic Literature* 30 (June): 741–803.

Beck, Neal, and Jonathan Katz. 1995. "What to Do (and Not to Do) with Time-Series Cross-Sectional Data in Comparative Politics." *American Political Science Review* 89 (September): 634–47.

Becker, Gary S. 1983. "A Theory of Competition among Pressure Groups for Political Influence." *Quarterly Journal of Economics* 98 (August): 371–400.

Becker, Gary S. 1985. "Public Policies, Pressure Groups, and Dead Weight Costs." *Journal of Public Economics* 28 (December): 329–47.

Bénabou, Roland. 2000. "Unequal Societies: Income Distribution and the Social Contract." *American Economic Review* 90 (March): 96–129.

Blais, André, and Agnieszka Dobrzynska. 1998. "Turnout in Electoral Democracies." *European Journal of Political Research* 33 (March): 239–61.

Casamatta, Georges, Helmuth Cremer, and Pierre Pestieau. 2000. "Political Sustainability and the Design of Social Insurance." *Journal of Public Economics* 75 (March): 341–64.

Castles, Francis G. 1982. "The Impact of Parties on Public Expenditure." In *The Impact of Parties: Politics and Policies in Democratic Capitalist States*, ed. Francis Castles. London: Sage. Pp. 21–96.

Castles, Francis, and Peter Mair. 1984. "Left-Right Political Scales: Some 'Expert' Judgements." *European Journal of Political Research* 12 (January): 73–88.

De Donder, Philippe, and Jean Hindriks. 1998. "The Political Economy of Targeting." *Public Choice* 95 (January): 177–200.

De Donder, Philippe, and Jean Hindriks. 2000. "The Politics of Redistributive Social Insurance." Department of Economics. University of London. Typescript.

Devroye, Dan. 2000. "Voting for Inequality." Department of Government, Harvard University. Unpublished paper.

Esping-Andersen, Gösta. 1990. *The Three Worlds of Welfare Capitalism*. Princeton, NJ: Princeton University Press.

Franklin, Mark N. 1996. "Electoral Competition." In *Comparing Democracies: Elections and Voting in Global Perspective*, ed. Lawrence LeDuc, Richard Niemi, and Pippa Norris. Thousand Oaks, CA: Sage Pp. 216–35.

Franzese, Robert J. 1998. "Political Participation, Income Distribution and Public Transfers in Developed Democracies." Department of Political Science, University of Michigan, Ann Arbor. Typescript.

Freeman, Richard B. 1988. "Labour Market Institutions and Economic Performance." *Economic Policy* 6 (April): 64–80.

Friend, Irwin, and Marshall E. Blume. 1975. "The Demand for Risky Assets." *American Economic Review* 65 (December): 900–22.

Gelbach, Jonah B., and Lant H. Pritchett. 1997. "Indicator Targeting in a Political Equilibrium: Leakier Can Be Better." Washington, DC: World Bank Policy Research Working Paper 1523.

Greene, William H. [1993] 1997. *Econometric Analysis*. Upper Saddle River, NJ: Prentice Hall.

Greenstein, Robert. 1991. "Universal and Targeted Approaches to Relieving Poverty: An Alternative View." In *The Urban Underclass*, ed. Christopher Jencks and Paul Peterson. Washington, DC: Brookings Institution. Pp. 437–59.

Hibbs, Douglas A., and Håkan Locking. 2000. "Wage Dispersion and Productive Efficiency: Evidence for Sweden." *Journal of Labor Economics* 18 (October): 755–82.

Hicks, Alexander. 1999. *Social Democracy and Welfare Capitalism: A Century of Income Security Politics*. Ithaca, NY: Cornell University Press.

Hicks, Alexander, and Swank, Duane. 1992. "Politics, Institutions and Social Welfare Spending in the Industrialized Democracies, 1960–1982." *American Political Science Review* 86 (September): 658–74.

Huber, Evelyne, Charles Ragin, and John D. Stephens. 1993. "Social Democracy, Christian Democracy, Constitutional Structure and the Welfare State." *American Journal of Sociology* 99 (November): 711–49.

Huber, Evelyne, and John D. Stephens. 2001. *Development and Crisis in Advanced Welfare States*. Chicago: University of Chicago Press.

Huber, John, and Ronald Inglehart. 1995. "Expert Interpretations of Party Space and Party Locations in 42 Societies." *Party Politics* 1 (1): 73–111.

Iversen, Torben, and David Soskice. 2001. "An Asset Theory of Social Policy Preferences." *American Political Science Review* 95 (December): 875–93.

Korpi, Walter. 1983. *The Democratic Class Struggle*. London: Routledge and Kegan Paul.

Kristov, Lorenzo, Peter Lindert, and Robert McClelland. 1992. "Pressure Groups and Redistribution." *Journal of Public Economics* 48 (July): 135–63.

Lijphart, Arend. 1997. "Unequal Participation: Democracy's Unresolved Dilemma." *American Political Science Review* 91 (March): 1–14.

Meltzer, Allan H., and Scott F. Richard. 1981. "A Rational Theory of the Size of Government." *Journal of Political Economy* 89 (October): 914–27.

Moene, Karl Ove, and Michael Wallerstein. 1998. "Rising Inequality and Declining Support for Redistribution." Department of Political Science. Northwestern University. Typescript.

Moene, Karl Ove, and Michael Wallerstein. 2001a. "Inequality, Social Insurance, and Redistribution: Additional Statistical Tables." Department of Political Science. Northwestern University. Typescript.

Moene, Karl Ove, and Michael Wallerstein. 2001b. "Targeting and Political Support for Welfare Spending." *Economics of Governance* 2 (1): 3–24.

Moffitt, Robert, David Ribar, and Mark Wilhelm. 1998. "The Decline of Welfare Benefits in the U.S.: The Role of Wage Inequality." *Journal of Public Economics* 68 (June): 421–52.

Organization for Economic Cooperation and Development. 1993. *Employment Outlook*, July 1993. Paris: OECD.

Organization for Economic Cooperation and Development. 1994. *New Orientations for Social Policy*. Paris: OECD.

Organization for Economic Cooperation and Development. 1996. *Employment Outlook*, July 1996. Paris: OECD.

Organization for Economic Cooperation and Development. 1997. *Statistical Compendium 1997/2* [CD-ROM]. Paris: OECD.

Organization for Economic Cooperation and Development. 1999. *Social Expenditure Database, 1980–1996* [CD-ROM]. Paris: OECD.

Pampel, Fred C., and John B. Williamson. 1989. "Welfare Spending in Advanced Industrial Democracies 1950–1980." *American Journal of Sociology* 93 (May): 1424–56.

Persson, Torsten, and Guido Tabellini. 1994. "Is Inequality Harmful for Growth?" *American Economic Review* 84 (June): 600–21.

Piketty, Thomas. 1995. "Social Mobility and Redistributive Politics." *Quarterly Journal of Economics* 110 (August): 551–84.

Roberts, Kevis W.S. 1977. "Voting over Income Tax Schedules." *Journal of Public Economics* 8 (December): 329–40.

Rodríguez Caballero, Francisco Rafael. 1998. "Essays on the Political Economy of Inequality, Redistribution and Growth." Ph.D. diss. Department of Economics. Harvard University.

Roemer, John E. 1998. "Why the Poor Do Not Expropriate the Rich in Democracies: A New Argument." *Journal of Public Economics* 70 (December): 399–424.

Roemer, John E. 1999. "The Democratic Political Economy of Progressive Income Taxation." *Econometrica* 67 (January): 1–20.

Romer, Thomas. 1975. "Individual Welfare, Majority Voting, and the Properties of a Lienar Income Tax." *Journal of Public Economics* 14 (May): 163–85.

Rueda, David, and Jonas Pontusson. 2000. "Wage Inequality and Varieties of Capitalism." *World Politics* 52 (April): 350–383.

Saint-Paul, Gilles. 1998. "The Dynamics of Exclusion and Fiscal Conservatism." Department of Economics, Universitat Pompeu Fabra and CEPR. Typescript.

Shalev, Michael. 1983. "The Social Democratic Model and Beyond: Two Generations of Comparative Research on the Welfare State." *Comparative Social Research* 6: 316–51.

Shepsle, Kenneth A. 1979. "Institutional Arrangements and Equilib-rium in Multidimensional Voting Models." *American Journal of Political Science* 23 (February): 27–59.

Sinn, Hans-Werner. 1995. "A Theory of the Welfare State." *Scandinavian Journal of Economics* 97: 495–526.

Skocpol, Theda. 1991. "Targeting within Universalism: Politically Viable Policies to Combat Poverty in the United States." In *The Urban Underclass*, ed. Christopher Jencks and Paul Peterson. Washington, DC: Brookings Institution. Pp. 411–36.

Stephens, John D. 1979. *The Transition from Capitalism to Socialism*. Atlantic Highlands, NJ: Humanities Press.

Swank, Duane. 1992. "Politics and the Structural Dependence of the State in Democratic Capitalist Nations." *American Political Science Review* 86 (March): 38–54.

Wallerstein, Michael. 1999. "Wage-Setting Institutions and Pay Inequality in Advanced Industrial Societies." *American Journal of Political Science* 43 (July): 649–80.

Wilensky, Harold L. 1975. *The Welfare State and Equality*. Berkeley: University of California Press.

Wright, Randall. 1996. "Taxes, Redistribution, and Growth." *Journal of Public Economics* 62 (November): 327–38.