

Equality and efficiency: The illusory tradeoff

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Abstract. Scholars and policy makers have traditionally assumed that nations face a tradeoff between income equality and economic efficiency. Greater equality is believed to reduce investment and dampen work incentives. A heterodox view suggests that a more egalitarian distribution of income may have beneficial efficiency effects by augmenting consumer demand and/or encouraging workers to cooperate in upgrading competitiveness. This paper offers an empirical assessment of the relationship between equality and efficiency, based on cross-sectional data from 17 advanced industrialized economies over the period 1974–90. The comparative evidence indicates no adverse impact of greater equality on investment or work effort, nor on growth of productivity or output, trade balances, inflation, or unemployment. On the contrary, higher levels of equality are associated with stronger productivity growth and trade performance, and possibly with higher investment and lower inflation.

Introduction

Along with liberty and democracy, equality is one of the most cherished social principles of the modern world. Yet it has long been accepted by scholars and policy makers that we ought not have too much equality of income. The most prominent basis of this sentiment is the widespread view that income equality impedes economic efficiency. Is this presumption correct? Is there a tradeoff between equality and efficiency?

According to the tradeoff thesis, equality undermines efficiency by reducing investment and dampening work incentives. Holding other factors constant, countries with greater income equality should thus exhibit economic performance results inferior to those of nations with less egalitarian distributive arrangements. A heterodox view holds that a more egalitarian income distribution may have beneficial economic effects by boosting consumer demand and complying with norms of fairness.

This paper offers an empirical assessment of the relationship between income equality and economic efficiency, based on cross-sectional data from 17 advanced industrialized democracies over the period 1974–90. The first section outlines normative debates on the desirability of income equality. The second discusses the contending views on the existence of an equality-efficiency tradeoff. The third section assesses previous research on this issue. The fourth section describes the data and method used in this study, and the fifth presents and discusses the findings. A brief conclusion follows.

Normative arguments

Debate over equality frequently focuses on ethical considerations. One of the most common objections to distributive egalitarianism is that equalizing income requires excessive interference with individual liberty. Historically, this form of opposition to equality initially stemmed from a fear that egalitarian measures would impinge upon freedom of property ownership (Locke 1690; Nozick 1974). In particular, government efforts to redistribute income would of necessity impose restrictions on the freedom to appropriate profit. Equality might even require the abolition of private ownership of property. With the advent of authoritarian socialism in the Soviet Union, Eastern Europe, and China, the threat to freedom posed by equality was seen as extending to encompass a broad array of liberties. Egalitarian distributive outcomes, in this view, can only be achieved via extensive political and social repression (Friedman & Friedman 1979, chap. 5; Hayek 1960; Flew 1978).

Egalitarians have countered by arguing that the freedom to own property is intrinsically contradictory. A consequence of this freedom is that property assets will be distributed unequally; indeed, a number of individuals will own no property at all. And in a market economy, the economic freedom of those without property is severely restricted (Cohen 1981; Roemer 1988; Tawney 1931). A related contention is that the libertarian objection relies on a limited conception of freedom, as merely the absence of coercion. True individual freedom ought to consist of positive capacities, not just the absence of barriers. In most existing societies, greater equality of resources would enhance the capability of large numbers of people to generate and fulfil informed preferences, and would thereby augment their freedom. In this sense, equality and liberty are not only compatible; they are interdependent (Norman 1982; Tawney 1931; Preston 1984).

Two other popular arguments attack egalitarianism directly, asserting that equality is an unfair distributive principle.¹ One suggests that individuals should be compensated in proportion to their contribution to the social product. That is, income should be proportionate to the economic value of one's work. This is the distributive principle implicitly favoured by neoclassical economic theory (Bronfenbrenner 1971). Egalitarians respond that differences in the value of work are determined to a substantial degree by individuals' intelligence and talent, which in turn are largely innate and/or a result of environment. They are products, in other words, of factors over which an individual has no control. This ought to make them morally irrelevant in the determination of just rewards (Rawls 1971, p. 72; Barry 1988).

The other objection to equality contends that individuals who wish to work harder or longer, or who endeavour to develop skills which increase their productivity, deserve to be recompensed for their extra effort. If work effort is a disutility for individuals but a benefit for society, it seems only fair to reward greater effort with greater compensation. This suggests that equality should apply not simply to material goods per se, but to the broader consump-

tion-leisure tradeoff. Individuals who prefer greater leisure should receive less monetary compensation than those who put forth greater work effort. But while compensation according to effort would justify some inequality, it surely would not countenance the severe disparities in income that characterize existing societies. The distribution of income would likely be relatively egalitarian, though not perfectly so.

Equality and efficiency: contending theses

The most prominent argument against equality is based not on normative considerations, but on a well-accepted principle of economic theory. It is widely believed, even by many ethical egalitarians, that equality is inimical to economic efficiency. Achieving greater equality of income entails sacrificing some measure of efficiency. Arthur Okun's *Equality and Efficiency: The Big Tradeoff* offers the classic expression of this thesis. In Okun's (1975) words: 'Any insistence on carving the pie into equal slices would shrink the size of the pie. That fact poses the tradeoff between economic equality and efficiency' (p. 48). Okun professes that 'Equality in the distribution of incomes . . . would be my ethical preference. Abstracting from the costs and consequences, I would prefer more equality of income to less and would like complete equality best of all' (p. 47). But he reluctantly concludes, like many others, that given the existence of a tradeoff between equality and efficiency, society ought to forego greater equality in favour of a healthy economy.²

Economic prosperity is determined in large measure by the degree to which investors invest and workers work. According to the equality-efficiency tradeoff thesis, it is in these two areas that distributive equality hinders economic efficiency. Efforts to increase equality are said to reduce the quantity of funds available for investment and to dampen work incentives (Arrow 1979; Browning 1976; Browning & Johnson 1984; Friedman & Friedman 1979, chap. 5; Hayek 1960; Kristol 1978, part 3; Letwin 1983; Lindbeck 1986; Okun 1975).

Equalizing income involves giving more of the social product to those less well-off. It entails flattening compensation scales and/or redistributing income through taxation and government transfer programmes. In the view of those who see equality and efficiency as a tradeoff, equalitarian institutional arrangements lessen society's supply of savings and investment. Well-off individuals and corporations have a high propensity to save and invest. Consequently, decreasing the income share of these sectors in favour of lower-income individuals, who tend to allocate a greater percentage of their earnings to consumption, will reduce the society's investment rate. In an essay on 'The Tradeoff Between Growth and Equity', Kenneth Arrow (1979, p. 7) remarks: 'It appears that savings by individuals is likely to rise more than proportionately with income. Hence total personal savings will fall as

a result of redistribution. Further, to the extent that redistributive taxes fall on business institutions that form such a large part of the saving mechanism, there may again be a reduction in saving For these reasons, the aggregate volume of capital formation may fall as a consequence of redistribution'. Equality, in effect, crowds out investment.

A similar logic is said to apply to work motivation. Work effort, according to the tradeoff view, is directly determined by the prospect of pecuniary reward. To elicit hard work, substantial material payoff is required. David Hume (1751) once remarked that depriving people of this incentive by distributing the social product equally would 'reduce society to the most extreme indigence, and instead of preventing want and beggary in a few, render it unavoidable to the whole community' (p. 28). Work effort refers not only to the intensity and length of work, but also to investments people make in human capital and new ideas. Engineers and other specially-skilled employees must invest in years of schooling or skill training before they receive compensation. Entrepreneurs and inventors risk time, effort, and capital in creating and marketing new innovations. To encourage a sufficient quantity of individuals to make such investments, society must, it is asserted, offer a level of compensation above that of other jobs which require lesser investments.

Few dispute the assertion that perfect equality in the distribution of income would result in substantial efficiency losses. Achieving complete distributive equality would virtually eliminate monetary incentives, which surely would substantially reduce work effort and investment. Consider, for instance, a society in which the social product is divided into an equal consumption allowance for each citizen. If the population were 10 million, the effective marginal tax rate on additional income would be 99.99999 percent, and an average earner who stopped working and investing entirely would reduce the value of her own consumption share by a mere 0.00001 percent.³ Plainly, the disincentive to put forth extra effort, or any work effort at all, would be overwhelming.

But this claim is not particularly relevant to our understanding of actual, existing economies, for none has an income distribution even remotely approximating perfect equality.⁴ The question is: What is the relationship between equality and efficiency at various levels of income equality? In particular, what are the efficiency effects of the current income distribution in various nations?

The assertion that there exists a tradeoff between equality and efficiency is generally meant to be an empirical claim that efforts to increase equality involve a sacrifice of some efficiency, not merely a theoretical suggestion that a hypothetical state of perfect equality would be inefficient.⁵ But there are reasons to suspect that equality's efficiency effects might be considerably less detrimental than assumed by the tradeoff thesis, and perhaps even beneficial.

First, greater equality may increase and stabilize consumer demand, which

may in turn boost investment. In focusing exclusively on the supply of funds available for investment, the crowding out thesis ignores variation in the incentives to invest. Rational actors do not simply invest whatever funds they have left after their consumption needs are fulfilled. They invest when they expect the payoff to exceed a return they could otherwise obtain from their funds. Plainly there are a variety of factors that affect the expected rate of return on any particular investment, but in aggregate terms one of the most influential components of the investment climate is consumer demand. As Keynes made clear long ago, if consumers are not buying, rational investors will see little reason to invest. Consumer demand and distributive equality are interrelated; in fact, the assumptions behind the crowding out thesis point to this interrelation. Individuals in lower income groups have a high propensity to consume; by necessity, they spend a larger share of their income on consumption than do wealthy individuals. Increasing the share of income accruing to the latter thus has a tendency to undercut consumer demand, and may thereby lead to a reduction in investment.

This is not to imply that more equality necessarily leads to more investment. Consumer income levels are only one factor among several that determine demand, and demand is but one of the various components that determine the investment climate, which in turn is just one factor among several that determine the level of investment. The point is simply that in order to understand investment levels, it is necessary to look beyond the supply of funds. Augmented consumer demand may attenuate, or even outweigh, the crowding out effect (if one exists), and thereby mitigate or eliminate the asserted tradeoff between income equality and investment.

The second consideration has to do with perceptions of fairness. While some degree of inequality is surely necessary to spur work effort, excessive reward for effort or for investments in human capital may be viewed as unfair by those at the lower end of the distributive scale. This might lead to reduced motivation on their part, cancelling out or even outweighing any extra effort put forth by those at the top. In other words, to be effective, work incentives must motivate individuals at all ends of the distributive spectrum. Otherwise, their net utility may be negligible or perhaps negative.

The point here is that the utility function for workers, as for all economic actors, extends beyond income and leisure. Beliefs and preferences are embedded in – that is to say, shaped by – a wide range of social institutions and norms (the literature on this issue is extensive, but see especially Zukin & DiMaggio 1990; Granovetter 1985, 1990; Elster 1989). Norms of fairness are likely to affect employee motivation, and it seems reasonable to suspect that the income distribution within firms and within nations has a bearing on the degree to which such norms are perceived as being complied with (Akerlof & Yellen 1990; Levine 1991; Solow 1990; Lazear 1989; Adams 1965; Kahneman, Knetsch & Thaler 1991; Cook & Hegtvedt 1983; Deutsch 1985). It is likely that such norms vary somewhat across countries (Kelley & Evans 1993). A particular degree of income inequality may be viewed as

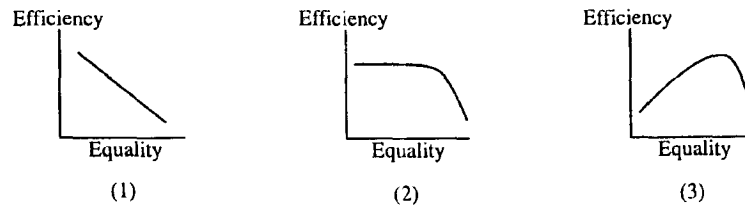


Figure 1. Equality and efficiency: contending theses.

less objectionable by, for instance, U.S. workers than by their Swedish counterparts. But if norms regarding income distribution differ less across countries than do levels of equality, which seems quite possible, then differing levels of equality could result in differing degrees of work effort.

Figure 1 illustrates – in highly stylized fashion – the three principal contending theses on the relationship between income equality and economic efficiency. Thesis (1) represents the tradeoff view. Thesis (2) contends that equality has little impact on efficiency, though it admits a tradeoff at high levels of equality. Thesis (3) depicts the heterodox view. It, too, suggests a sharp tradeoff at high levels of equality. But it predicts exactly the opposite at lower levels; that is, relatively inegalitarian countries should be able to increase efficiency by increasing equality.

Prior research

Previous research on the relationship between equality and efficiency suffers from several flaws.

A host of studies have assessed the effect of tax and transfer programmes on labour supply and saving patterns in the United States (reviewed in Burtless & Haveman 1987; Danziger, Haveman & Plotnick 1981; Moffitt 1992). Many of these have found a negative impact of transfers, but the magnitude of the effect is unclear. More importantly, this research has not analyzed the impact of tax and transfer programmes on aggregate economic outcomes. Detrimental effects of equality on labour supply or savings may be so small as to have no influence on overall economic performance, or may be offset by other positive effects of income equalization.

A number of studies have examined the relationship between transfer spending and economic performance across countries (Castles & Dowrick 1990; Friedland & Sanders 1985; Korpi 1985; Landau 1985; Marlow 1986, 1988; McCallum & Blais 1987; Pfaller, Gough & Therborn 1991; Weede 1986). But the findings of this research have conflicted. And as Figure 2 indicates, transfer spending is only modestly correlated with income equality, making it at best a questionable proxy. In addition, these studies focus

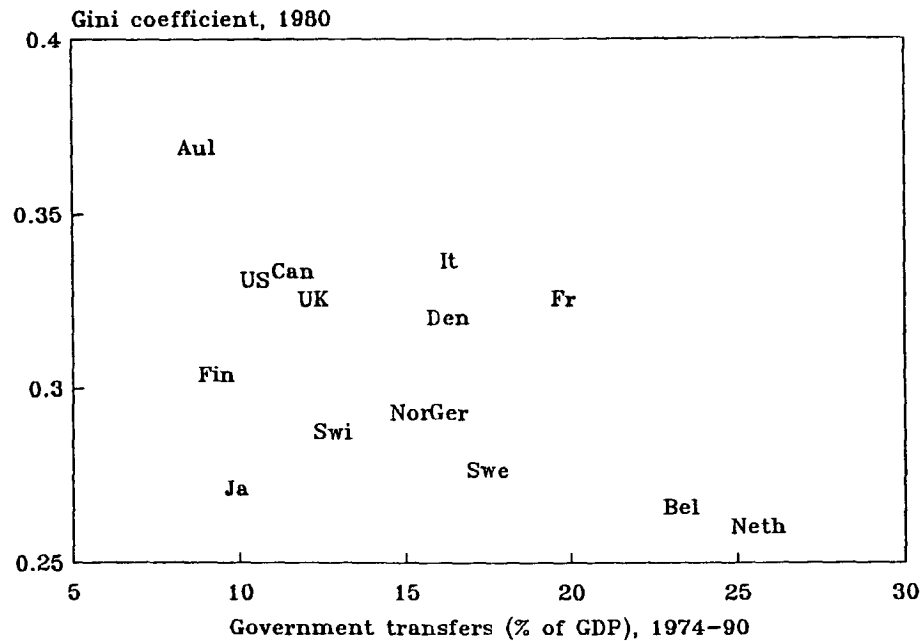


Figure 2. Government transfers and inequality. Correlation = -0.56 . New Zealand missing. For sources see the Appendix.

exclusively on growth, which is only one component of economic performance.

A variety of studies have advanced the view that there is no tradeoff between equality and efficiency (Kuttner 1984; Thurow 1980; Bowles, Gordon & Weisskopf 1990, chap. 14; Freeman 1989, chap. 6). But they have generally relied either on anecdotal evidence or on bivariate analyses which fail to control for relevant factors. And they, too, have tended to use economic growth as the lone performance measure.

The only careful empirical analysis of the relationship between income distribution and economic performance is a recent study by Torsten Persson and Guido Tabellini (1994). The authors examined the effect of inequality, measured as the pre-tax income share of the richest fifth of the population, on per capita GDP growth during 20-year intervals between 1830 and 1985. For the nine developed countries for which such data were available, inequality was found to have a negative impact on growth. Persson and Tabellini also examined a group of 67 nations over the period 1960-85, this time using the income share of the middle population quintile and relying on cross-sectional analysis. Once again the data indicated an association between inequality and slower growth. Persson and Tabellini's analysis is limited, however, by the fact that they use pre-tax income data of questionable reliability and that they too look only at economic growth.

Despite the issue's important policy implications, then, we know relatively little about the empirical relationship between equality and efficiency in developed market economies.

Data and method

The analysis here utilizes comparative country data to examine the relationship between income equality and various components of economic performance. The aspects of performance most directly at issue in the tradeoff thesis are investment and productivity. These are the best available proxies for, respectively, the willingness of investors to invest and of workers to work. I also examine productivity growth, output growth, trade performance, inflation, and unemployment, as further indicators of efficiency. I estimate ordinary least squares (OLS) regression equations for each performance component. Definitions and data sources for all variables are listed in the Appendix.

The analysis is cross-sectional, covering the period 1974 to 1990. Data for all economic performance variables are period averages. It would be desirable to also examine earlier periods as well as the impact of changes in equality over time on performance outcomes, but available data on income equality unfortunately are neither comprehensive nor reliable enough to permit such analysis (see Mahler 1989, p. 27). Seventeen nations are included in the analysis: Australia, Austria, Belgium, Canada, Denmark, Finland, France, (West) Germany, Italy, Japan, the Netherlands, New Zealand, Norway, Sweden, Switzerland, the United Kingdom, and the United States. The countries were chosen to control for level of development; the group includes all OECD-member nations that throughout the period 1974–90 had a level of per capita gross domestic product at least 50 percent as large as that of the world's richest nation (Switzerland or the United States, depending upon the year).⁶

The best available data on income distribution come from the World Bank, which reports the shares of national income accounted for by quintiles of households within countries.⁷ These data are derived from random surveys of each country's population, administered by the national statistical authority in the individual nations. The figures cover total after-tax household income, including wages and salaries, self-employed income, investment income, property income, and current public and private transfers. Unrealized capital gains income is not included.⁸

The earliest and only year for which these data are available for the full set of countries is 1980. (The actual year varies slightly from country to country.) I use these figures as proxies for the average level of equality obtaining in each nation during the entire period in question, under the assumption that *relative* levels of equality did not change appreciably between 1974 and 1990. Some fluctuation of income distribution within each nation

Table 1. Comparative income inequality, circa 1980

Country	Year	Gini coefficient	Percent of household income going to:				
			Poorest quintile	Second quintile	Middle quintile	Fourth quintile	Richest quintile
Netherlands	1981	0.260	8.3	14.1	18.2	23.2	36.2
Belgium	1979	0.265	7.9	13.7	18.6	23.8	36.0
Japan	1979	0.270	8.7	13.2	17.5	23.1	37.5
Sweden	1981	0.276	8.0	13.2	17.4	24.5	36.9
Switzerland	1978	0.291	6.6	13.5	18.5	23.4	38.0
Germany	1978	0.295	7.9	12.5	17.0	23.1	39.5
Norway	1979	0.295	6.2	12.8	18.9	25.3	36.7
Finland	1981	0.305	6.3	12.1	18.4	25.5	37.6
Denmark	1981	0.320	5.4	12.0	18.4	25.6	38.6
France	1979	0.323	6.3	12.1	17.2	23.5	40.8
United Kingdom	1979	0.324	5.8	11.5	18.2	25.0	39.5
United States	1980	0.329	5.3	11.9	17.9	25.0	39.9
Canada	1981	0.330	5.3	11.8	18.0	24.9	40.0
Italy	1977/86 ^a	0.333	6.5	11.7	16.3	23.1	42.4
New Zealand	1981	0.366	5.1	10.8	16.2	23.2	44.7
Australia	1975/85 ^a	0.371	4.9	10.5	16.2	23.7	44.7

Note: For data sources see the Appendix.

^a Figures are averages for the two years.

undoubtedly occurs. The question, however, is whether these fluctuations alter a country's level of equality relative to that in other countries. It seems likely that there has been some alteration in relative levels over the past two decades, but I assume the changes were sufficiently modest so as not to substantially affect the results of the analysis. Comparison with the limited World Bank data available for earlier years suggests that this assumption is a reasonable one. In addition, cross-country variation in wage dispersion and government transfer spending, both of which contribute to income distribution trends, appears to have been relatively stable during the 1970s and 1980s (OECD 1993; OECD 1992, Table 6.3).

Table 1 shows the shares of national income accruing to each quintile of households in 16 of the 17 countries (World Bank data are not available for Austria), along with the corresponding Gini coefficient for each nation. Gini coefficients range between 0 and 1, with higher scores representing greater inequality in the distribution of income. I use the Gini index to measure inequality in the analysis.

As Figure 2 (above) suggests, there are two principal ways in which countries attempt to equalize income.⁹ First, payment scales within and across firms can be flattened, so that the variation in citizens' pre-tax compensation is low. This is the primary mechanism through which Japan has achieved its level of distributive equity, which is one of the highest among developed nations.¹⁰ The second means of equalizing distributive outcomes is via taxation and government transfers. Progressive taxation combined with exten-

sive social and welfare programmes are the chief instruments utilized by countries such as the Netherlands, Belgium, Sweden, Germany, and Norway. In Japan, by contrast, government transfers are minimal. France and Italy also spend a large fraction of national income on welfare and social programmes, but their pre-tax income differential is rather severe, so their after-tax income distribution is relatively unequal. Countries such as Australia, Canada, and the United States feature wide differences in compensation along with minimal transfer spending; consequently they are among the least egalitarian of developed nations.

Several control variables – representing a mix of economic and political factors – are included in the analysis. I use only controls which theoretical considerations and/or empirical research strongly suggest to be relevant.¹¹ My aim is not to explain as much of the variation in economic outcomes as possible, nor to discover which economic, political, or other factors account for the most variance. It is simply to assess the impact of income equality on performance. Furthermore, given the small number of cases, including too many independent variables could diminish the reliability of parameter estimates.

The real interest rate for each country is included in the equations for investment, productivity and output growth, and unemployment. High interest rates indicate, to a large extent, a policy choice in favour of price stability. They reduce the demand for investment, and are thereby likely to dampen growth and heighten unemployment (Newell & Symons 1987).

To control for the 'catch-up' effect, I include a variable in the equations for investment, productivity growth, and output growth representing each country's level of per capita GDP at the beginning of the time period. By copying the technological advances of leader nations, less developed countries are able to grow more quickly with similar levels of investment and work effort (Dowrick & Nguyen 1989; Baumol, Blackman & Wolff 1989, chap. 5). Faster growth of income in turn makes possible higher investment levels, and less developed nations may invest at higher rates in any case in an attempt to catch up.

Also included in these three equations is a variable representing aggregate government spending. A number of studies have found higher levels of state expenditure to be associated with lower rates of growth and investment (Grier & Tullock 1989; Cameron 1982; Landau 1985; Marlow 1986, 1988; Hagemann, Jones & Montador 1988).¹²

The best available measure of work effort is productivity, or output (GDP) per employed worker. Differences in output per worker may stem in part from differences in the amount of capital available to work with. Hence it is desirable to control for the level of capital stock per employee in each country. The equation for productivity also includes a variable controlling for unemployment. A high jobless rate makes it difficult for workers to find another job, and thereby increases the penalty for shirking. This may spur greater work effort (Shapiro & Stiglitz 1984; Weisskopf 1987). Alternatively,

an unemployment-productivity tradeoff may be viewed as the product of a voluntary choice on the part of nations – such as Sweden, Norway, Austria, and Japan – which are committed to (something like) full employment. Guaranteeing employment on a consistent basis is bound to reduce an economy's average productivity level because, at least during economic downturns, a certain share of those employed must inevitably be redundant. They are kept employed simply for the sake of keeping them employed, because such nations view employment security as important for economic, political, and/or moral reasons. Whichever is the case, comparative empirical research supports the contention that unemployment levels are positively related to productivity (Kenworthy 1995a, chap. 3).

Trade performance is likely to be influenced by dependence on the world market. Economic actors in countries heavily reliant upon exports and imports may be more willing and able to flexibly accommodate changing demand patterns (Katzenstein 1985); such nations might thereby prove more successful in international trade. On the other hand, countries with large domestic markets (the U.S., Japan, Germany, for example) may be able to achieve strong trade balances by using the importance of their home markets for smaller export-dependent nations to manipulate the terms of international trade in their favour. Irrespective of which of these hypotheses is more accurate, we would like to know the effect of equality on trade performance net of degrees of economic openness. I therefore include a variable in this equation representing each nation's average of exports and imports as a share of GDP.

The trade performance equation also includes a real interest rate variable. Under a flexible international exchange rate regime, high domestic interest rates increase the value of a nation's currency, which makes its exports more expensive and imports cheaper (Bergsten 1991). Interest rates should thus be inversely related to trade balances.

Over the long run, inflation is a function of money supply increases which exceed growth of production (Friedman & Schwartz 1982). Presumably, then, I should include a variable in the equation for inflation representing change in the money supply. But actually, that depends on the view one holds regarding the causes of money supply growth. According to orthodox economic logic, monetary authorities determine the rate of money supply increase autonomously; the money stock is treated as exogenous. If so, it is necessary to control for money supply changes in the analysis. An alternative view is that central bank decisions regarding the money supply tend to be made in response to economic trends, such as changes in wages or investment demand (Gordon 1975; Moore 1979). Thus, for instance, in order to avoid a recession, monetary authorities may be forced to accommodate wage militancy by permitting a substantial expansion of the money supply. A recent, careful empirical study of money supply patterns in 12 of our countries finds considerable support for this interpretation (Willett et al. 1988). This suggests that institutional factors such as income equality will affect inflation in part

via changes in the money supply. Hence, a favourable coefficient for inequality with a money supply variable included can be interpreted as providing strong support for the heterodox view.

The equation for inflation includes three additional variables. One is the unemployment rate. According to a prominent line of economic thought embodied in the Phillips Curve, nations confront a tradeoff between unemployment and inflation (Phillips 1958). Low unemployment fosters wage militancy by reducing the cost of job loss, thereby contributing to cost-push inflation. The second is the degree of labour movement 'encompassingness'. An extensive literature suggests that, by inducing wage restraint, coordinated wage negotiations contribute to superior macroeconomic performance results compared to fragmented bargaining structures (Kenworthy 1995b; Soskice 1990; Bruno & Sachs 1985, chap. 11; Cameron 1984; Crouch 1985; Tarantelli 1986).¹³ The third variable is change in state expenditures. Rapid growth of government spending may heighten inflation by causing an increase in taxes or interest rates, which firms may pass along to consumers in the form of higher prices, or by producing excessive demand (Lindbeck 1983; Peacock & Ricketts 1978).¹⁴

Along with real interest rates and union encompassingness, the equation for unemployment includes a variable representing labour force participation. All else being equal, nations with low levels of labour force participation should be able to achieve lower rates of joblessness. Then again, high labour force participation may encourage countries to implement measures, such as active labour market policy, to reduce friction in the job matching process and assure effective integration of their citizens into paid work.

In cross-sectional analyses based on a small number of nations, it is important to beware of outliers. Japan is a particularly good candidate for careful inspection. Japan is the third most egalitarian among these countries, and its rates of investment, productivity growth, and output growth have consistently been much higher than those of any other developed nation over the past two decades. Its unemployment rate has also been among the lowest. Recent research has found that the decision whether to include or omit Japan has a profound influence on the relationship between various purported causal factors and economic performance (Kenworthy 1995a; Saunders 1986; Korpi 1985). For this reason, I estimate each of the equations both with and without Japan.

Excluding Austria due to a lack of comparable income distribution data may unduly bias the analysis against the tradeoff thesis. Although an egalitarian country in many other respects, Austria's degree of income equality is known to be rather low. At the same time, its economic performance in a variety of areas has been very strong relative to that of most other industrialized nations. Although the World Bank data do not include Austria, John Freeman (1989, pp. 176, 182) provides information from which an estimate of post-tax income inequality around the year 1980 can be calculated for the country. Freeman's figures include the income shares for only the

Table 2. Regression results for inequality and investment

	15 countries	Japan omitted	Austria included
Inequality	-42.531** (22.793)	-49.471* (32.154)	-0.433 (0.471)
Catch-up	-0.188*** (0.058)	-0.205** (0.080)	-0.189*** (0.063)
Real interest rate	0.117 (0.531)	0.177 (0.588)	0.289 (0.582)
Government spending	-0.303*** (0.079)	-0.336** (0.131)	-0.276 (0.086)
Adjusted R ²	0.55	0.28	0.44

Note: New Zealand is missing due to lack of data on government expenditures. Inequality measure is Gini index in first two equations, rich/poor quintile ratio when Austria is included. Standard errors in parentheses. For variable definitions and data sources, see the Appendix.

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$ (one-tailed test).

richest and poorest quintiles of the population. Dividing the former by the latter gives us a 'quintile ratio' measure of inequality. This measure excludes the middle three fifths of the population, yet it yields estimates of inequality very similar to the Gini index for the other 16 countries. The correlation between the two measures is 0.97. I reestimate each of the equations using this measure to see if Austria's inclusion alters the results.

The group of countries examined here constitutes a population rather than a sample, which calls into question the relevance of significance tests in assessing parameter estimates. Such tests do, however, help to distinguish probable associations from those which could arise randomly. Hence we are on firmer ground in drawing inferences based not only on the coefficient signs, but also on their significance levels.

Let us see, then, what the comparative evidence has to say regarding the relationship between equality and efficiency.

Findings

The results of the regression analysis are displayed in Tables 2–8. I first discuss investment and productivity, and then turn to the other five performance indicators.

Equality and investment

Does income equality crowd out investment? One provisional means of assessing the crowding out thesis is to look at the relationship between equality and savings across countries. If variation in the share of income accruing to the well-to-do is a key determinant of differences in national savings rates, we should find inequality to be positively associated with

Table 3. Regression results for inequality and productivity

	11/15 countries		Japan omitted		Austria included ^a
	A	B	A	B	B
Inequality	15.581 (122.745)	-32.746 (68.019)	25.993 (129.669)	-38.246 (74.163)	0.035 (1.370)
Capital stock	-0.112 (0.253)		-0.272 (0.372)		
Unemployment	3.510** (1.404)	3.292*** (0.960)	3.171** (1.570)	3.183*** (1.091)	2.874*** (0.909)
Adjusted R ²	0.31	0.41	0.22	0.34	0.35

Note: Switzerland is missing for all equations due to lack of data on unemployment. Denmark, Italy, the Netherlands, and New Zealand are also missing for equation A due to lack of data on capital stock levels. Inequality measure is Gini index in first two sets of equations, rich/poor quintile ratio when Austria is included. Standard errors in parentheses. For variable definitions and data sources, see the Appendix.

^a Equation A is not estimated because Austria is one of the nations for which capital stock data are not available.

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$ (one-tailed test).

Table 4. Regression results for inequality and productivity growth

	15 countries	Japan omitted	Austria included
Inequality	-7.989** (3.755)	-7.835* (5.326)	-0.176*** (0.063)
Catch-up	-0.049*** (0.010)	-0.048*** (0.013)	-0.048*** (0.008)
Real interest rate	-0.009 (0.088)	-0.010 (0.097)	0.024 (0.078)
Government spending	-0.024* (0.013)	-0.023 (0.022)	-0.024** (0.011)
Adjusted R ²	0.65	0.49	0.70

Note: New Zealand is missing due to lack of data on government expenditures. Inequality measure is Gini index in first two equations, rich/poor quintile ratio when Austria is included. Standard errors in parentheses. For variable definitions and data sources, see the Appendix.

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$ (one-tailed test).

savings. This, however, is not the case. The correlation between inequality and average savings for the 16 countries over 1974–90 is -0.35 .¹⁵

Recent developments in the United States also cast doubt upon the crowding out thesis. Structural changes in the economy combined with regressive tax reforms and cuts in social spending increased the real after-tax income of the richest fifth of the U.S. population by approximately 30 percent between 1980 and 1990, while that of the bottom fifth fell 5 percent (Greenstein & Barancik 1990; see also Krugman 1992). Yet investment averaged 17.6 percent of GDP during this period, compared to 18.8 percent in the period 1974–79 and 18.2 percent over 1960–73 (OECD 1992, Table 6.8).

Table 5. Regression results for inequality and growth

	15 countries	Japan omitted	Austria included
Inequality	-3.831 (3.282)	-3.764 (4.656)	-0.050 (0.062)
Catch-up	-0.043*** (0.008)	-0.043*** (0.012)	-0.044*** (0.008)
Real interest rate	0.017 (0.077)	0.016 (0.085)	0.034 (0.077)
Government spending	-0.024** (0.011)	-0.024 (0.019)	-0.023** (0.011)
Adjusted R ²	0.63	0.48	0.62

Note: New Zealand is missing due to lack of data on government expenditures. Inequality measure is Gini index in first two equations, rich/poor quintile ratio when Austria is included. Standard errors in parentheses. For variable definitions and data sources, see the Appendix.

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$ (one-tailed test).

Table 6. Regression results for inequality and trade balances

	16 countries	Japan omitted	Austria included
Inequality	-30.713*** (9.120)	-34.466*** (11.990)	-0.579*** (0.149)
Real interest rate	0.271 (0.188)	0.272 (0.194)	0.370 (0.168)
Economic openness	0.000 (0.021)	-0.009 (0.027)	0.011 (0.017)
Adjusted R ²	0.58	0.57	0.62

Note: Inequality measure is Gini index in first two equations, rich/poor quintile ratio when Austria is included. Standard errors in parentheses. For variable definitions and data sources, see the Appendix.

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$ (one-tailed test).

Movement away from income equality has corresponded with falling, rather than rising, investment levels.

Table 2 shows the regression results for income inequality as a predictor of investment.¹⁶ The tradeoff thesis predicts positive coefficients for inequality. Net of the catch-up effect, interest rates, and state expenditures, higher levels of inequality should be associated with higher rates of investment. Instead, the coefficients for inequality are all negative, indicating that if equality has any effect on investment it is a beneficial one. The coefficients in the first two equations reach statistical significance, but that is no longer the case when Austria is included. (One-tailed significance tests are used since I am testing two directional hypotheses – the tradeoff thesis and the counterthesis that equality has beneficial effects.) This suggests that there may be no genuine association between the two variables.

Table 7. Regression results for inequality and inflation

	14 countries	Japan omitted	Austria included
Inequality	17.628 (16.627)	6.275 (16.574)	0.334* (0.238)
Change in money supply	0.490*** (0.143)	0.459*** (0.131)	0.502*** (0.106)
Unemployment	0.052 (0.183)	-0.225 (0.236)	0.045 (0.165)
Union encompassingness	-3.046* (1.861)	-6.183** (2.541)	-3.268** (1.541)
Change in government spending	0.153** (0.082)	0.157** (0.074)	0.150** (0.079)
Adjusted R ²	0.67	0.73	0.70

Note: Switzerland and New Zealand are missing due to lack of data on unemployment and change in government spending, respectively. Inequality measure is Gini index in first two equations, rich/poor quintile ratio when Austria is included. Standard errors in parentheses. For variable definitions and data sources, see the Appendix.

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$ (one-tailed test).

Table 8. Regression results for inequality and unemployment

	15 countries	Japan omitted	Austria included
Inequality	24.547 (18.528)	-10.992 (19.173)	0.102 (0.359)
Real interest rate	0.768* (0.450)	0.849** (0.349)	0.685* (0.487)
Labour force participation	-0.230** (0.100)	-0.086 (0.093)	-0.141* (0.099)
Union encompassingness	-0.673 (2.948)	-7.329** (3.301)	-4.244* (2.580)
Adjusted R ²	0.31	0.53	0.18

Note: Switzerland is missing due to lack of data on unemployment. Inequality measure is Gini index in first two equations, rich/poor quintile ratio when Austria is included. Standard errors in parentheses. For variable definitions and data sources, see the Appendix.

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$ (one-tailed test).

Equality and productivity

What about work effort? Here again there is reason for skepticism toward the assertion that equality has detrimental effects. Surveys and econometric studies suggest that differential wages and marginal tax rates have relatively little impact on work effort (Burtless & Haveman 1987; Pencavel 1986; Saunders & Klau 1985, pp. 162-67; Brown 1980). In the face of higher taxes, individuals, especially those with higher incomes, often maintain their present work patterns or work more in order to sustain their previous standard of living. Sometimes labour supply decreases, but the loss tends to be minimal. Income transfers have been found to reduce the supply of labour, both

because nonearned income increases and because, in many programmes, transfer payments decline as earnings from work rise. But again the labour supply effect does not appear to be large (Danziger, Haveman & Plotnick 1981; Moffitt 1992; Sawhill 1988, pp. 1102–103). Since progressive tax and transfer programmes are a key component of equalitarian measures in many countries, their apparent lack of substantial negative impact on labour supply suggests a potential compatibility between equality and strong work effort. It is also worth noting that the correlation between income inequality and labour force participation for the 16 countries during the period 1974–90 is 0.04. This suggests a lack of any relationship between a country's distribution of income and the rate at which its citizens participate in the paid labour force.

Table 3 displays the regression results for labour productivity. The productivity variable is an index based on average productivity levels over 1974–90. Unfortunately, data on capital stock levels are available for only 11 of the countries. The capital stock variable, however, is not influential as a predictor of productivity levels (equation A). I thus reestimated the equations with this variable omitted, allowing the analysis to include the full set of nations. With the capital stock variable included the inequality coefficients for each equation have a positive sign, but they are small and not even remotely near to being statistically significant. With the variable omitted (equation B) two of the three coefficients are negative, but again are almost certainly really zero. The data suggest, in other words, that differences in income distribution across developed nations have no effect on work effort.

Equality and other performance indicators

Let us turn now to some other indicators of economic performance. Perhaps these will reveal heretofore hidden evidence in favour of the tradeoff argument. If equality reduces investment and work effort, as the tradeoff thesis suggests, then it should also negatively affect other aspects of performance. The cross-national evidence does not appear to support these assertions, however, so we should not expect to discover such a pattern.

Indeed, there is reason to suspect that greater equality may be associated with *better* performance. By stabilizing consumer demand, it may help to reduce the intensity and duration of business cycle downturns. The demand-accentuating impact of equality may also lead to stronger growth in an economy without necessarily increasing the ratio of investment to GDP. Healthy demand may encourage higher levels of investment, in turn generating increased output and sales. In these circumstances investment as a share of national output would remain constant, but the economy's growth rate would be higher.

Perhaps more important is the role of fairness, discussed earlier. As R. H. Tawney (1931, p. 211) observed in his classic treatise on equality, 'Efficiency rests ultimately on psychological foundations. It depends, not merely

on mechanical adjustments, but on the intelligent collaboration of contentious human beings, whom hunger may make work, but mutual confidence alone can enable to cooperate'. Egalitarian distributive arrangements may foster a greater willingness on the part of the workforce to do what is necessary to succeed in international competition – for example, flexible adjustment of production to new demand patterns, accommodation to the introduction of productivity-enhancing technology, and sacrifice of present consumption in favour of investment and market share. If widespread, these sorts of actions could lead to faster growth, better trade performance, and lower inflation and unemployment.

Table 4 shows the regression results for productivity growth.¹⁷ The cross-national evidence suggests a beneficial effect of equality. Each of the inequality coefficients is negative and significant at the 10 percent level or better. The results for output growth (per capita) are presented in Table 5. Again each of the inequality coefficients is negative, but the significance levels suggest less confidence in these estimates than is the case for productivity growth.¹⁸

Since it takes into account the amount of work required to increase output, productivity growth is a superior indicator of advance in living standards (see, for example, Porter 1990; Krugman 1990). Thus, in my view, we should place more stock in the findings for this measure than in the results for output growth. It is also worth noting that the inability to include New Zealand, due to lack of data on government spending, probably weakens the coefficients for the inequality variable somewhat. New Zealand is one of the most inegalitarian developed nations, and its rates of productivity and output growth were the lowest among these 17 countries during the 1974–90 period.

What about trade performance? National trade balances are considered by some to be the indicator *par excellence* of economic competitiveness (Magaziner & Patinkin 1989). Given that trade now amounts to 25 to 50 percent of GDP in most industrialized countries, successful performance is indeed determined to an increasing degree by how well a nation fares in direct competition with its foreign rivals. The results in Table 6 suggest that, net of interest rates and economic openness, nations with more egalitarian income distributions have tended to fare better in maintaining a healthy trade balance. Each of the inequality coefficients is negative and statistically significant.

Next, let us look at inflation. If distributive equity does indeed buoy consumer demand, as suggested earlier, the possibility exists that its impact will be too strong, resulting in too much spending chasing too few goods – the classic conditions of demand-pull inflation. On the other hand, to the extent that their income distribution is perceived by the workforce as relatively fair, egalitarian countries may be less vulnerable to cost-push inflation caused by wage hikes that exceed productivity increases. The correlation between inequality and nominal wage increases in manufacturing (the only

sector for which longitudinal data on wages are available) for the 16 countries over 1974–90 is 0.53, suggesting that equality is indeed associated with wage restraint.

The results in Table 7 suggest that if there is any genuine association between equality and inflation, it is a favourable one. Each of the inequality coefficients is positive, though only when Austria is included is statistical significance reached. If the money supply variable is omitted, the results (not shown here) more strongly indicate that egalitarian countries have had better success at keeping price increases in check.

Inequality is correlated with rapid money supply growth over the 1974–90 period ($r = 0.52$). A plausible interpretation of developments during these years is therefore the following: Equality induced wage moderation, enabling monetary authorities to pursue a sustained tight money policy, which resulted in low inflation in egalitarian countries. Alternatively, central banks in the more egalitarian nations may have made autonomous decisions in favour of tight money, thereby forcing wage restraint. But why would monetary authorities in egalitarian countries be more likely than those in less egalitarian nations to pursue such a policy? Is this simply a random correlation? Probably not. Central banks should be more prone to choose a policy of tight money if they have confidence that wage-earners will cooperate by restraining wage demands, and income equality offers the latter an incentive for such cooperation. Thus, regardless of the exact causal chain, there is good reason to suspect that differences in income distribution have had real effects on cross-national variation in inflation rates.

The final performance indicator is unemployment, the results for which are presented in Table 8. Here the inequality coefficients are inconsistent in sign and not close to significance. This suggests that there is probably no genuine relationship between income equality and rates of joblessness.

Reverse causality?

The analysis here has assumed a particular direction of causality between equality and efficiency, but it could be objected that the causal relationship in fact lies in the opposite direction. It is conceivable that, instead of equality supporting successful performance, the reverse is true. This is the traditional view regarding the direction of causality between efficiency and equality (Kuznets 1955). In other words, my findings may reflect the fact that those countries which have performed well economically during the past three decades have been better able and/or more willing to equalize the distribution of income. Evidence confirming the tradeoff thesis could be hidden by this process. The plausibility of reverse causality is heightened by the fact that income equality is measured at only a single point in time, and in the middle of the period being analyzed.

Looking at numbers can tell us little, if anything, about the direction of causality between two variables. Yet there *is* a way for us to get a handle on

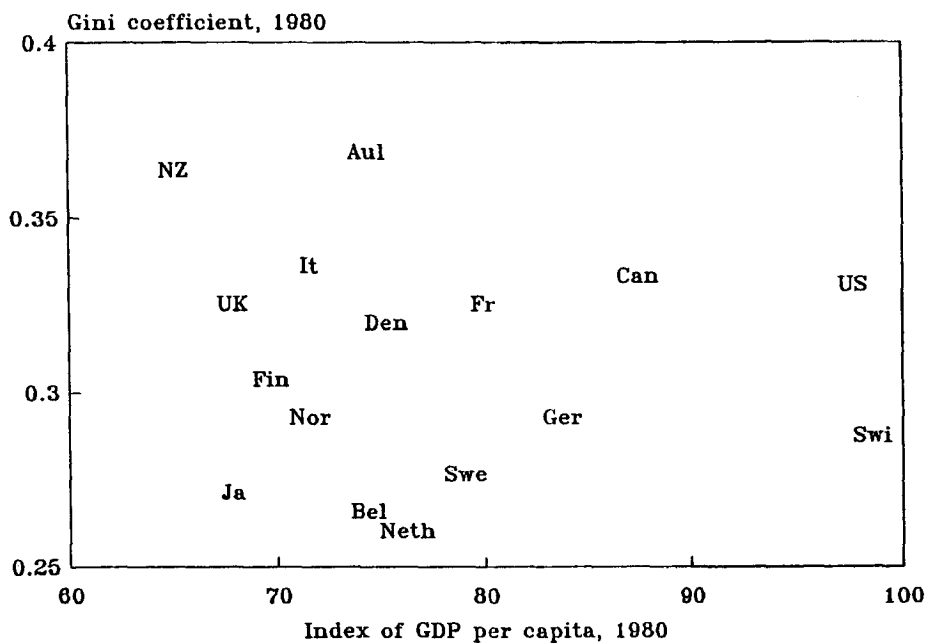


Figure 3. National wealth and inequality. Correlation = -0.09 . For sources see the Appendix.

this issue. If it is the case that strong economic performance leads countries to distribute income more equally, rather than the other way around, we would expect the richest nations to be more egalitarian and the poorest to be less so. Figure 3, however, shows that this is not the case. The chart plots national wealth (an index of GDP per capita) with inequality for our 16 countries for the year 1980. Contrary to the reverse causality hypothesis, several of the richest countries are among the least egalitarian (the U.S., Canada) and some of the least wealthy are among the most equitable (particularly Japan). Overall, there is little or no relationship between wealth and income distribution. The level of equality in a nation is determined less by its wealth than by its institutions governing wage differentials and the extent to which its government intervenes to transfer income. It is unlikely, then, that my findings are muted by this objection.

Concluding remarks

On the whole, the findings here are consistent in contradicting the equality-efficiency tradeoff thesis. Cross-country analysis for the period 1974 to 1990 lends no credence to the view that greater income equality impairs efficient economic performance in advanced industrialized countries. Almost all of the coefficients for inequality in the regression equations have the opposite

sign to that predicted by the tradeoff view, and those few which do have the predicted sign are small and nowhere near to being statistically significant. Furthermore, the evidence links higher levels of income equality with stronger productivity growth and trade performance, and possibly with higher investment and lower inflation.

Based on the available data, then, I conclude that greater levels of distributive equality than presently exist in most, if not all, developed countries are *compatible with* efficient, successful economic performance. And some of the cross-national evidence indicates that increasing equality might well *enhance* performance in a number of nations.

Why does equality appear to have favourable effects for some performance indicators but not others? One possibility is that the small number of cases makes it difficult for parameter estimates to reach statistical significance.¹⁹ Measurement problems may also have resulted in the suppression of some effects. This is particularly true for productivity levels, where data for a key control variable, capital stock levels, are limited and where the indicator itself is a highly imperfect measure of work effort. It is also quite possible, however, that the distribution of income has sizeable effects on only certain aspects of economic performance. Recent research suggests, for instance, that variation in unemployment rates is largely determined by government policy choices not easily captured in quantitative form (Therborn 1986; Korpi 1991).

What is the best route to equality? Two considerations suggest that income equalization may be best achieved by reducing the disparity in primary incomes, rather than by redistributing income via government taxation and transfers. The first is theoretical. State officials seldom face a hard budget constraint – that is, they do not face the threat of bankruptcy if they act inefficiently – and they are vulnerable to rent-seeking (Le Grand 1991; Wolf 1988; Buchanan 1975). In addition, as Arthur Okun (1975, chap. 4) pointed out, there is a ‘leaky bucket’ effect associated with government programmes. For every dollar that passes through the state, part inevitably leaks out in the form of administrative expenses. The second consideration, an empirical one, has to do with Japan. As noted earlier, Japan is one of the most egalitarian developed nations, but it is unique in achieving its relatively equal income distribution with little in the way of state redistributive intervention. Japan’s exceptional economic performance is thus consistent with an interpretation suggesting that equalization of primary incomes is the most efficient, effective path to equality. On the other hand, Japan’s success may owe largely to factors unrelated to its distribution of income (Kenworthy 1995a, chap. 6; Dore 1987; Johnson, Tyson & Zysman 1989). Further research is needed to assess this issue.

Appendix: Variable definitions and data sources

Income distribution

Income inequality Gini coefficient. From World Bank (1991, Table 30); World Bank (1989, Table 30). For equations with Austria included, inequality is measured as rich/poor quintile ratio. Data for Austria are from Freeman (1989, pp. 176, 182).

Control variables

Real interest rate Average yield on five-year or longer-term government bonds adjusted for inflation. From OECD (1992, Table 10.10). Data for several countries are based partly on extrapolation.

Catch-up Per capita GDP in 1974. From OECD (1991c, p. 146, Table 3).

Government expenditures Total outlays of government as a share of GDP. From OECD (1992, Table 6.5). Data are not available for New Zealand.

Capital stock Gross capital stock per employed person. Capital stock data are from OECD (1991a). Excludes dwellings and government production. Purchasing power parities (rather than exchange rates) were used to convert capital stock figures into a common currency; these are from OECD (1991c, pp. 156–57, Table 3). Employment levels are from OECD (1991b, pp. 26–27, Table 4.0). Data are not available for Austria, Denmark, Italy, the Netherlands, New Zealand, and Switzerland.

Unemployment As a share of the total labour force. From OECD (1992, Table 2.15). Data are not available for Switzerland.

Economic openness Average of exports and imports as a share of GDP. From OECD (1992, Tables 6.12, 6.13).

Change in money supply Change in currency outside banks plus demand deposits other than those of the central government. From IMF (1992, pp. 78–79).

Union encompassingness David Cameron's index of the organizational unity of labour. From Cameron (1984, Table 7.6). New Zealand is not included in Cameron's index; here it is assigned the same score as Australia.

Change in government expenditures Final year level minus initial year level, total outlays of government as a share of GDP. From OECD (1992, Table 6.5). Data are not available for New Zealand.

Labour force participation	As a share of the population age 16 to 64. From OECD (1992, Table 2.6).
<i>Economic performance</i>	
Investment	Gross fixed capital formation as a share of GDP. From OECD (1992, Table 6.8).
Productivity	Index of GDP per employed person. GDP levels from OECD (1991c, pp. 146–47, Table 1). Employment levels from OECD (1991b, pp. 26–27, Table 4.0).
Productivity growth	Change in real GDP per employed person. From OECD (1992, Table 3.7).
Output growth	Change in real GDP per capita. From OECD (1992, Table 3.2).
Trade balances	Exports minus imports as a share of GDP. From OECD (1992, Table 6.14).
Inflation	Change in the consumer price index. From OECD (1992, Table 8.11).
Unemployment	See above.
<i>Other variables</i>	
Government transfers	As a share of GDP. From OECD (1992, Table 6.3). Data are not available for New Zealand.
Savings	Gross savings as a share of GDP. From OECD (1992, Table 6.17).
Nominal wage changes	Manufacturing sector only. From IMF (1992, pp. 100–01).
National wealth, 1980	Index of per capita GDP. From OECD (1991c, p. 147, Table 3).

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Notes

1. These are not the only objections of this nature, merely the most influential. For others see Rae et al. (1981); Elster (1989, pp. 228–29).
2. Alfred Marshall (1907, p. 41) offered a similar formulation of the dilemma: ‘Taking it for granted that a more equal distribution of wealth is to be desired, how far would this justify changes in the institutions of property or limitations of free enterprise even when they would be likely to diminish the aggregate wealth?’
3. This illustration is borrowed from Letwin (1983, p. 45). See also Baumol and Fischer (1979),

who demonstrate formally that 'under a set of reasonable assumptions, any attempt to guarantee absolute equality of incomes using . . . progressive income taxes and transfers for the purpose must, at least in theory, reduce society's output to zero' (p. 514).

4. As one bit of evidence bearing upon this issue, we might consider the attempts in Cuba and China in the late 1960s to rely predominantly on moral incentives for eliciting work effort. By most accounts these experiments were largely unsuccessful (Karl 1975; Mesa-Lago 1981, chap. 7; Walder 1986, chap. 7) – although given the political and economic contexts in which they were undertaken, they certainly cannot be presumed to represent the final word on the matter.
5. The following statement by Milton and Rose Friedman (1979, p. 145) is representative: 'Who can doubt the effect that the drive for equality has had on efficiency and productivity? Surely, that is one of the main reasons why economic growth in Britain has fallen so far behind its continental neighbours, the United States, Japan, and other nations over the past few decades.'
6. Among OECD countries, Greece, Ireland, Portugal, Spain, and Turkey fail to qualify on the basis of per capita wealth. I exclude Iceland and Luxembourg because of their extremely small populations – less than 500,000 each.
7. See Mahler (1989). A potentially more reliable source of national income distribution data is the Luxembourg Income Study, but so far data are available for only nine of the countries included in this study (Smeeding 1991; Smeeding, O'Higgins & Rainwater 1990).
8. A potential limitation of the World Bank data is that they are not adjusted for household size. If the size distribution of households varies significantly across countries, this could bias comparative estimates of income equality. For instance, a nation might appear to be more egalitarian than it actually is simply because its poor households have more members than their counterparts in other countries, and thus more income. Efforts to examine this issue, however, have found that adjusting for household size has little effect on relative differences in national income distribution (Mahler 1989, p. 21; Smeeding 1991, p. 45).
9. See also van Arnhem and Schotsman (1982).
10. Thus, for instance, the average compensation of top-level corporate executives in Japan is estimated to be around 15 times that of a typical production worker. In Germany, the corresponding figure is 20 times; in Britain, 25 times; and in the United States, 50 times (Crystal 1991, chap. 13).
11. Two prominent variables not included in the equations are Mancur Olson's institutional sclerosis argument and the partisan complexion of government. Olson (1982) contends that rent-seeking by narrow interest groups blocks productive economic activity. I do not include an Olson variable because his thesis has yet to be satisfactorily operationalized. Empirical tests have relied on indicators such as the number of years countries have experienced stable democratic rule (Choi 1983; Lane & Ersson 1990, chap. 8; Weede 1986). But this type of indicator has two severe drawbacks. First, it is predicated upon an additional component of Olson's theory – an assertion that stability permits narrow interest groups to form and provides them the opportunity to successfully engage in rent-seeking behaviour. Political or economic disruptions which break up such distributional coalitions are thereby viewed as beneficial. This part of Olson's argument is unconvincing. There is little or no empirical basis for the assumption that rent-seeking interest groups are less numerous and powerful in nations suffering disruptions than in those characterized by long periods of stability (Cameron 1988, pp. 569–71; Lehner 1987, pp. 75–76; see also Olson's comments on Ireland in Olson 1991). Second, this measure ignores Olson's (1982, pp. 41–50) point about the differing incentives facing narrow, localized versus encompassing organizations, which is the most insightful and important aspect of his theory. Instead, it implicitly assumes that all interest groups have detrimental effects on economic performance.

A number of studies have found party ideology, as represented by the partisan complexion of government, to affect cross-national variation in economic performance, especially unemployment and inflation (Hibbs 1977; Alt 1985; Korpi 1991; Suzuki 1993; Whiteley 1983). Rather than include this variable, I have chosen to use direct indicators of government

policy choices such as government spending, interest rates, and change in the money supply.

In any case, including these two variables does not alter the results for the income inequality variable. (For the Olson thesis I used Kwang Chof's (1983) variable. For government partisanship I used data provided by Duane Swank; see Swank (1992).)

12. Other research has arrived at contrary findings. See, e.g., Castles and Dowrick (1990); Korpi (1985).
13. I use David Cameron's (1984, Table 7.6) index of union concentration, or what he calls the 'organizational unity of labour', which ranges from 0 to 1. For justification of the use of this measure, see Kenworthy (1995b); Golden (1993).
14. An additional factor which may influence inflation is central bank independence (Suzuki 1993). This, however, is expected to have its effects via changes in the money supply. Hence, it is effectively controlled for in the analysis here.
15. This is for gross savings. The result is no different if net savings is used instead.
16. Investment is measured here as gross fixed capital formation as a share of GDP. This measure is less than ideal because it includes investment in housing, which does not directly contribute to future economic growth in the way that investment in machines or research does. But it is the only good comparative measure available, and there is little reason to suspect that excluding housing investment would substantially alter the results.
17. Dynamic efficiency – in the form of growth of productivity or output – is sometimes conceptualized as intergenerational equity (e.g., Freeman 1989). A better indicator of productivity than output per employed person, which I use here, is output per *hour worked*. But data based on this measure are not available for a number of our countries. Using the latter measure would alter the findings only slightly, if at all. Both the number of persons employed and average hours of work per employee have changed at roughly the same rate in most of these countries since the mid 1970s, with the former figure increasing and the latter declining. The only exceptions are Canada, Japan, and the United States. Average hours in these three countries have declined more slowly than in other nations, and employment, particularly in Canada and the U.S., has increased more rapidly. Hence, these nations' rates of productivity growth are somewhat overstated here relative to the other countries. See Blyton (1989); OECD (1992, Table 1.6).
18. Because the tradeoff thesis suggests that income equality will affect the rate of growth in an economy via its effects on investment, I have not included a variable for investment in the equations for productivity and output growth, despite the fact that it is known to be an important determinant of these two performance indicators. This leaves open the possibility that the apparent beneficial effect of equality on productivity and output growth is spurious, simply a result of the omission of investment. But including investment in these two equations does not alter the findings (not shown here).
19. If we discount the significance tests, the findings suggest support for the heterodox view virtually across the board. Equality's effect on work effort is minimal, if there is one at all, but it appears to be associated with superior outcomes in the areas of investment, productivity and output growth, trade performance, inflation, and unemployment.

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