

**Efficient Redistribution:
New Rules for Markets, States, and Communities**

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1 Introduction

Socialism, radical democracy, social democracy, and other egalitarian movements have flourished where they successfully crafted the demands of distributive justice into an economic strategy capable of addressing the problem of scarcity and thereby promising to improve living standards on the average. Land redistribution, social insurance, egalitarian wage policies, central planning, and human investment expenditures have all been attractive when they promised to link the redistribution of economic reward to enhancing the performance of the economic system as a whole.

For this reason economic analysis has always been central to the construction of more democratic and egalitarian alternatives to capitalism as well as egalitarian reforms of capitalism itself. Keynesian economics, for example, supported state regulation of the macroeconomy and was also provided a rationale for income redistribution to the less well off who, by spending a larger portion of their incomes, could be relied upon to generate higher levels of demand for consumer goods and thereby sustain higher levels of employment. Similarly, the model of general competitive equilibrium was deployed by market socialists, from Oskar Lange to John Roemer, to demonstrate the possibility and advantages of planning in a socialist economy.

But today both Keynesianism and planning lack credibility, and it appears that the left has run out of economic models.¹ Even among egalitarians, the conviction is widespread that while some combination of social democracy, market socialism and workplace democracy would be preferable on democratic or egalitarian grounds, only capitalism has a workable answer to the problem of scarcity. Economic theory has proven, one hears, that any but cosmetic modifications of capitalism in the direction of equality and democratic control will exact a heavy toll of reduced economic performance. Yet economic theory suggests no such thing. On the contrary, there are compelling economic arguments and ample empirical support for the proposition that there exist changes in the rules of the economic game which can foster both greater economic equality and improved economic performance. Indeed, as we will see, inequality is often an impediment to productivity.

Following an overview of our major propositions in the next section, we will take up the empirical evidence suggesting the possibility of a productivity-enhancing egalitarianism and the related evidence suggesting the obsoles-

¹This is not to say that leftist economists have run out of models or have abandoned the construction of alternatives to capitalism, as a reading of Bardhan and Roemer (1992), Roemer (199?) and van Parijs (1995), will indicate.

cence of older egalitarian models. We then address the peculiar capacities and disabilities of the institutional forms—markets, states and communities—upon which an egalitarian strategy must necessarily rely. We draw on this discussion to present a model of the relationship between the distribution of assets and the level of output in an economy, pointing to the contradictory effects of egalitarianism on productivity. We then present four concrete cases of egalitarian asset redistributions that support higher levels of economic performance. In our two penultimate sections we turn to the major problems intrinsic to our strategy of asset-based redistribution in a competitive economy and suggest how these drawbacks might be attenuated.

2 An Overview

Inequality fosters conflicts ranging from lack of trust in exchange relationships and incentive problems in the workplace to class conflict and ethnic clashes. To influence the outcomes of these conflicts, individuals and groups invest resources that otherwise might have been productively used. Also, high levels of conflict and the lack of agreed-upon rules of division with broad legitimacy often preclude solutions to the coordination failures that beset sophisticated economic systems. ‘Coordination failures’ occur when the independent actions of agents lead to outcomes less desirable than could have been achieved in the presence of coordinated action—examples are environmental pollution, unemployment, traffic jams, and the common inability of employers and workers to adopt potentially beneficial changes in work rules and technology. Since in highly unequal societies states often cannot or have little incentive to solve coordination failures, the result is not only the proliferation of market failures in the private economy, but a reduced capacity to attenuate these failures through public policy.

Economic performance depends on what may be termed the *structure of economic governance*: the rules of ownership, forms of competition, norms, and conventions that regulate the incentives and constraints faced by economic actors, and hence that determine the nature of coordination failures and their feasible solutions. Ideally, a structure of governance is a means of avoiding or attenuating coordination failures, but there is nothing in the process determining the evolution of governance structures that insures this result. Governance structures may endure because they are favored by powerful groups for whom they secure a large slice of a given pie, not because these structures foster the growth of the pie itself.

The relationship between inequality and economic performance is thus mediated by the structure of economic governance. Governance structures

critically influence both the level of productivity and the degree of inequality in the economy. Correspondingly, the feasibility of distinct forms of governance is itself strongly influenced by the degree of inequality, and in particular by the nature and distribution of property rights. We will define a change in governance structures as *productivity enhancing* if the gainers could compensate the losers, except that the implied compensation need not be implementable under the informational conditions and other incentive problems in the economy. The proposals developed in this paper are then based on our first major claim: *inequality impedes economic performance by obstructing the evolution of productivity enhancing governance structures*. We offer three arguments in support of this position.

First, institutional structures supporting high levels of inequality are often costly to maintain. Solving economic problems requires a state empowered to intervene effectively in the economy. But an activist state is capable of using its power not only to improve economic efficiency, but also to redistribute income in response to populist pressures. For this reason economic elites may prefer a weak state in an inefficient economy to a strong state in an efficient economy. Moreover states in highly unequal societies are often obliged to commit a large fraction of the economy's productive potential to enforcing the rules of the game from which the inequalities flow.

The private sector also incurs costs in enforcing inequality, in such forms as high levels of expenditure on work supervision and security personnel. Indeed, one might count high levels of unemployment itself as one of the enforcement costs of inequality, to the extent that the threat of job loss contributes to employers' labor discipline strategies: in less conflictual conditions, unutilized labor might be allocated to productive activities.² Moreover in highly inegalitarian societies the insecurity of property rights is often widespread, militating against long-term investments by the rich and the poor alike.

A second reason for a positive relationship between efficiency and equality is that more equal societies may be capable of supporting levels of cooperation and trust unavailable in more economically divided societies. Yet both cooperation and trust are essential to economic performance, particularly where information relevant to exchanges is incomplete and unequally distributed in the population. Of course trust and cooperation do not appear in conventional economic theory. A time-honored prejudice among

²In the United States in 1987, for example, the above categories of 'guard labor' constituted over a quarter of the labor force, and the rate of growth of guard labor substantially outstripped the rate of growth of the labor force in the previous two decades (Bowles, Gordon and Weisskopf 1990)

economists holds that there are two possible relationships among economic actors—unfettered competition or hierarchical command. Yet these do not exhaust the range of economic relationships essential to high levels of economic performance. In any economy, a third type of relationship is ubiquitous and essential: long-term agreements over the creation and sharing of the results of cooperative efforts.³ Kenneth Arrow (1969):22 writes:

It is useful for individuals to have some trust in each other's word. In the absence of trust it would be very costly to arrange for alternative sanctions and guarantees, and many opportunities for mutually beneficial cooperation would have to be foregone. . . norms of social behavior, including ethical and moral codes [may be]. . . reactions of society to compensate for market failures.

In addition to the invisible hand of competition and the fist of command, a well-governed society must also rely on the handshake of trust.

One of the possible productivity effects of greater equality thus may operate through the political and cultural consequences of redistribution. A well-run welfare state or a relatively equal distribution of property holdings may foster the social solidarity necessary to support cooperation and trust. These and related sentiments frequently provide the basis for low cost solutions to coordination failures.⁴ By providing the cultural and political preconditions for bargained solutions with sufficient legitimacy to require little enforcement, egalitarian distributions of assets and income may contribute to the solution of complex problems that would otherwise be highly costly to solve.⁵

³A tripartite division of governance structures has been proposed by a number of authors. Ouchi (1980) refers to these as markets, bureaucracies and clans, while Ostrom (1990) analyses centralized, market decentralized and decentralized mutual enforcement systems of governance.

⁴A critical example of a coordination failure of this type are strikes. It is perhaps not surprising that in the more advanced welfare states and more egalitarian capitalist economies, Sweden, Netherlands, Denmark and Germany, for example, the fraction of workdays lost to strikes in the period 1955-1989 averaged less than a third of the level in countries with less well developed welfare states, the United States, Canada, Australia and Italy (U. S. Bureau of Labor Statistics 1990).

⁵Bardhan (1993) and Boyce (1988) argue that the many commons-type coordination failures are easier to solve where inequality among participants is limited. Singleton and Taylor (1992) argue that the inability to solve coordination failures often stems from the lack of community, defined as a set of people with shared beliefs, stable membership, and ongoing, relatively unmediated interaction: 'The more a group resembles a community, the lower are the transactions costs which it must meet in order to solve a given collective

A third source of equality-productivity complementarity concerns the inefficient incentive structures that arise in economies with highly unequal asset distributions.⁶ An example may make this clear. Consider a single owner of a machine who hires a single worker to operate the machine. The worker has little reason to supply a high level of effort, since the owner is the residual claimant on the income associated with the asset and hence receives the profit from the worker's labor. Thus without costly monitoring, productivity in the firm will suffer. But monitoring uses up resources that could have otherwise been productively employed. A rental contract in which the worker rents the machine from the owner for a fixed sum and becomes residual claimant on the entire income stream of the firm would of course avoid this particular incentive problem.⁷ But this solution to the effort incentive difficulty simply displaces the conflict of interest to the issue of the treatment of the machine—in this case the firm's capital stock itself. For the worker would then be residual claimant on the income produced by the machine, but not on the value of the machine itself, and hence would have little incentive to maintain the asset.

The generic problem here is that behaviors critical to high levels of productivity—hard work, maintenance of productive equipment, risk-taking and the like—are difficult to monitor and hence cannot be fully specified in any contract enforceable at low cost. As a result, key economic actors, workers and managers, for example, cannot capture the productivity effects of their actions, as they would if, for instance, they were the residual claimants on the resulting income stream and asset value.

The result of these incentive problems is that a highly concentrated distribution of capital is often inefficient: there may exist a more egalitarian distribution, in which the worker becomes the owner of the firm's capital goods which, by more effectively addressing the incentive, monitoring, and maintenance problems involved, allows general improvements in well-being (including possible compensation for the former owner).⁸

action problem'. (p. 319) Putnam (1993) finds that horizontal networks of civic engagement support forms of cooperation which enhance economic performance while vertical (hierarchical) networks do not.

⁶For some recent treatments of the relationship between property rights and efficiency, see (Dasgupta and Ray 1986, Grossman and Hart 1986, Milgrom 1988, Moene 1989, Stiglitz 1989, Hart and Moore 1990, Eaton and White 1991, Aghion and Bolton 1992, Moene 1992, Manning 1992, Hoff and Lyon 1995, Hoff 1994, Newman 1994, Banerjee and Newman 1994, Aghion and Bolton 1997, Mookherjee 1997).

⁷The 'residual claimant' owns whatever remains (the residual) after all fixed claims (in this case the rent paid to the owner) are settled.

⁸For examples of wealth inequality inducing economic inefficiency, see Eswaran and

This being the case, one might wonder why the redistribution does not come about spontaneously, for if worker ownership of the firm avoids incentive problems and supervision costs, it might be thought that the firm will be worth more to the worker than to the employer, so the worker would profit by borrowing to purchase the firm's capital stock. But an asset-poor worker cannot borrow large sums at the going rate of interest, so cannot purchase the firm's capital stock. Furthermore, the worker would be unlikely agree to assume the risk of concentrated ownership of a risky asset, even if it could be financed. For this reason inefficient distributions of property rights may prove immune to disruption through private contracting despite the existence of other more efficient distributions.⁹ More technically, inefficient property right distributions may be sustained in a competitive equilibrium.

Modern economies, of course, cannot avoid such incentive problems by implementing the simple property ownership structures appropriate to an idealized Robinson Crusoe world of individual production. The economies of scale that characterize all contemporary economies make team production ubiquitous. Thus free-riding and related agency problems will arise under any conceivable set of property distributions and institutional arrangements. None the less, structures of economic governance will differ markedly in the costliness of the incentive problems to which they give rise.

It will be clear from the above that devising governance structures capable of supporting both equality and higher living standards requires a fundamental rethinking of relationships between markets, states, and communities. The necessary reconstruction of political economy must therefore confront three widespread prejudices common among social scientists and political actors alike.

The first is that competitive markets determine prices that measure the

Kotwal (1989), Stiglitz (1988), Bowles and Gintis (1993b), and for an overview, see Bardhan, Bowles and Gintis (1998). Several mechanisms of this type have been analysed. First, low wealth producers tend to be highly risk-averse, leading them to hold low productivity, but highly liquid capital (Rosenzweig and Wolpin 1993, Nerlove and Soedjiana 1996, Hoff 1996a). Second, credit limitations faced by non-wealthy producers lead to inefficient production. Several plausible models illustrating this behavior (Loury 1981, Stiglitz 1974, Gintis 1989, Stiglitz 1989, Banerjee and Newman 1993, Rosenzweig and Wolpin 1993, Galor and Zeira 1993, Bowles and Gintis 1994, Barham, Boadway, Marchand and Pestieau 1995, Hoff and Lyon 1995, Hoff 1996b, Legros and Newman 1996, Aghion and Bolton 1997, Bénabou 1996, Piketty 1997), and several empirical studies have found it operative (Laffont and Matoussi 1995, Carter and Mesbah 1993, Barham, Boucher and Carter 1996, Carter and Barham 1996, Sial and Carter 1996, Rosenzweig and Wolpin 1993, Rosenzweig and Binswanger 1993, Laffont and Matoussi 1995). Finally low wealth depresses labor market opportunities (Bardhan 1984).

⁹For a review of the literature on this topic, see Bardhan, Bowles and Gintis (1998).

real scarcity of goods and for this reason allocate resources efficiently. For the most part they do not; as we will see, the considerable contribution of markets to effective economic governance lies elsewhere.

The second prejudice, particularly widespread among egalitarians, is that in a suitably democratic society government intervention can efficiently supplant the private provision of goods and services where market failures occur. But state failures in the production and delivery of goods and services are as ubiquitous as market failures. As in the case of markets, the distinctive capacities of the state in the process of economic governance are frequently overlooked by the advocates of interventionist policies.

The third prejudice, common across much of the political spectrum, is to see communities as archaic rather than modern institutions and to suppose that whatever social value communities have, their contribution to contemporary economic governance is minimal. By a ‘community’ we mean a group of individuals whose interactions are long-term, frequent, and personal. Families, residential neighborhoods and workplaces are communities in this sense. Moreover, while community governance structures cannot be subsumed under the rubrics of state and market, their viability critically depends on the structure of states and markets, and in particular on the nature and distribution of property rights implied by the structure of markets and states.¹⁰

In sum, the prejudices of conservative policy stem from its recognition of weaknesses in the state but not in the market as governance structures. This selective treatment leads to the view that the state is an arena of wasteful rent-seeking, while the market economy is efficient, a view from which exclusive reliance upon the market ineluctably follows. Advocates of egalitarian economic policy, by contrast, while treating the market system as riddled with coordination failures, have often failed to recognize the limitations of the state as a governance structure, and hence have treated the state as an effective instrument for the implementation of economic objectives. Both strands of political economy have overlooked the critical role of communities as governance structures.

These alternatives are summarized in figure 1. The optimism of post-Second World War Keynesian policies, and that of the neo-liberal policies that supplanted them, can be seen to flow from the choice of assumption concerning the location of coordination failures (the lower-left to upper-right diagonal in figure 1). Our approach recognizes coordination failures in both state and market, and achieves only those (generally Pareto-inferior) allo-

¹⁰This point is developed in Bowles and Gintis (1998a) and Bowles and Gintis (1998b).

| State \ Economy | No Market Failures | Market Failures |
|-------------------|---|---|
| No State Failures | Both <i>laissez-faire</i> and planning can support optimal allocations | Keynesian and other state interventions can support optimal allocations |
| State Failures | <i>Laissez-faire</i> with minimal state can support optimal allocations | market/state/community complementarity can support second-best optima |

Figure 1: Alternative Approaches to Economic Policy

cations compatible with feasible incentive structures. Figure 1 also includes a fourth policy approach (the upper left corner) that does not recognize coordination problems in either economy or state. This position is taken both by some traditional neoclassical economics and its socialist adversaries, and implies that in the absence of market failures such as externalities, increasing returns to scale, and cyclical volatility, both *laissez-faire* and central planning can support optimal allocations.

Our reconstruction of egalitarian political economy begins by recognizing that markets, states, and communities, each with its characteristic capabilities and deficiencies, will necessarily play a complementary role in any governance structure worthy of support. A key to such a reconstruction is the recognition that the nature and distribution of property rights critically affects the workings of all three. This view reflects what may be termed the new economics of property, a distinguishing characteristic of which is the representation of ownership not simply as a claim on the residual income deriving from an asset, but the right of control of access to the asset and disposition over its use.

This view motivates our second major claim: *where hard work, innovation, maintenance of an asset and other behaviors essential to high levels of economic performance cannot be specified in costlessly enforceable contracts, the assignment of control rights and residual claimancy status influences the kinds of exchanges that are possible and the costs carrying out these exchanges.*

This second claim directly supports our third: *Some distributions of property rights are more efficient than others; in particular there exists an implementable class of distributions that are both more egalitarian and more efficient than the concentrations of asset holding observed in most capitalist*

economies.¹¹

The most important implication of the above is that egalitarian strategies should abandon what has hitherto been an exaggerated emphasis on overriding market outcomes through tax and transfer policies designed to attenuate the consequences of concentrated ownership. Given the high and apparently rising levels of inequality generated by the private sectors of the advanced economies in recent years, a redistribution of income of suitable magnitude to achieve even minimally acceptable levels of equality will incur prohibitive political and economic costs. The logic of this conundrum is inescapable. If the current degree of asset inequality is taken as given, market determined rewards will be correspondingly unequal, so the egalitarian project becomes one of superseding market outcomes and thereby undermining the beneficial disciplining effects of market competition.

A more promising approach is to identify those aspects of the concentrated ownership of assets that give rise to perverse incentives and costly enforcement strategies and then to devise asset redistributions that can attenuate the resulting coordination failures without introducing their own costly incentive problems. In contrast to income based egalitarian strategies which are at best productivity neutral, asset-based egalitarianism can in principle be productivity enhancing. This is true both because it can implement more efficient distributions of residual claimancy and control rights and because redistributing assets addresses a major cause of unequal incomes and thus gives greater scope for markets and other forms of competitive discipline.

3 Is Equality Passé?

Our confidence that such productivity enhancing asset redistributions can be effected may seem out of step with the pervasive contemporary skepticism concerning the viability of egalitarian alternatives. But the intellectual foundations of ‘equality pessimism’, as this frame of mind might be called, have been badly shaken. Recent research has both questioned the presumption that economic performance is best promoted by *laissez-faire* policies and cast doubt upon the existence of the fabled efficiency-equity trade-off, which asserts that the pursuit of egalitarian objectives necessarily impairs economic performance.

A comparison of the economic performance among nations supports no such presumption and reveals no such trade-off. Countries experiencing

¹¹We do not specify the metric in which these distributions are measured, for nothing in the following pages hinges on our use of any particular measure of wealth, income, or other attributes of concern to egalitarians.

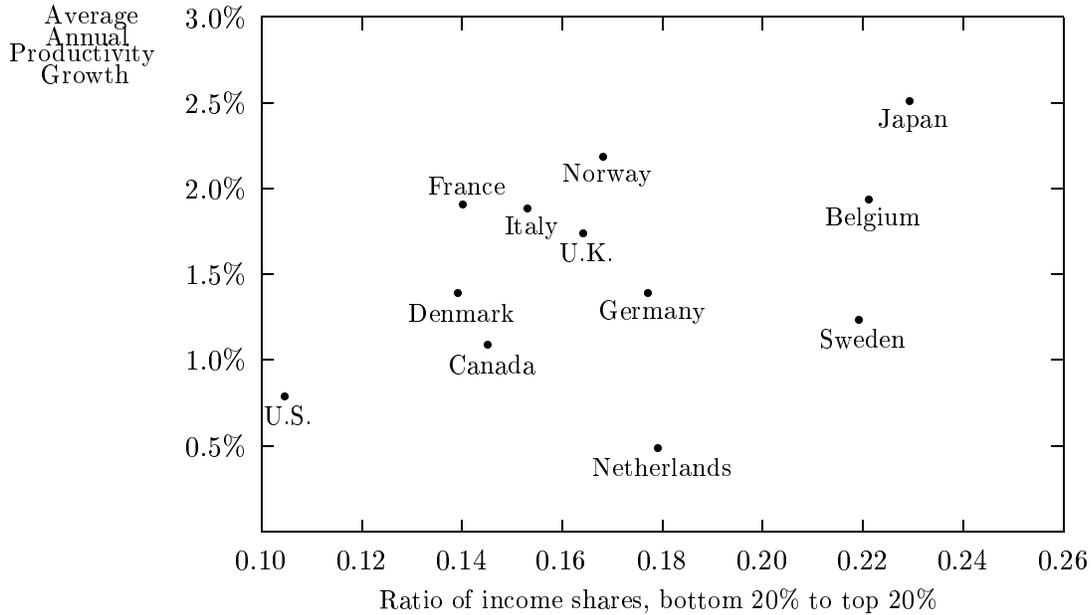


Figure 2: Inequality and Productivity Growth: 1979-1992

In this figure, productivity growth is defined as an average annual rate of growth of gross domestic product per employed person, 1979-1992 (U. S. Bureau of Labor Statistics 1994). Data on income distribution is from the World Bank's World Development Report (various years). We have restricted our analysis to countries present in both the Bureau of Labor Statistics and the World Bank data sets.

Ideally one would use a measure of total factor productivity growth, but these measures are not available. Output per hour of labor input is generally available only for the manufacturing sector, which constitutes a small fraction of most economies. The data are from the comparative productivity growth data set of the U. S. Bureau of Labor Statistics. The choice of dates also conveniently allows an assessment of the period of conservative economic hegemony in the U.S. and in the U.K. (President Carter appointed Paul Volcker to head the U.S. Federal Reserve System in 1979 and rapidly accelerated the deregulation process in the previous year.) Annual hours worked per employed person varies considerably among these countries (2034 in Japan and 1415 in Norway, for example), and productivity growth will be understated in those countries that experienced a reduction in hours over this period.

The simple correlation between our measure of equality and the rate of productivity growth is 0.32. However a regression of productivity growth on inequality (both singly and along with the initial productivity levels of each country converted to a common unit of account using purchasing power parities) indicates that the relationship is not statistically significant, though the positive covariance of equality and productivity remains even when accounting for initial productivity levels.

rapid productivity growth from the 1960s to the 1990s, including China, Japan, Singapore and South Korea, exhibit a degree of economic equality and a level of state involvement in economic decision-making considerably greater than in the relatively *laissez-faire* industrialized countries which, in the same time period, have experienced weak productivity growth and increases in economic inequality. The contrast with the relatively stagnant and highly unequal Latin American economies is even more stark. Systematic analysis of aggregate data on the level of income equality and rates of investment and productivity growth across nations fail to find evidence that equality impedes macro-economic performance. Our analysis of income equality and productivity growth appears in figure 2. Other studies support these conclusions.¹²

However, cross national comparisons of inequality and macroeconomic performance are of limited use in assessing the effects of policies to reduce inequality on economic performance. We are interested not in the *correlates of equality* but in the *effects of egalitarian policies*. The fact that more equal countries have more rapid rates of economic growth could well be accounted for by a statistical association between measures of equality and unmeasured causes of economic growth. Determining the effects of a decision to redistribute land, or to raise the minimum wage requires the study of the evolution of policies and their outcomes over time.

Thus a better indicator of a positive relationship between egalitarian institutions and policies on the one hand and economic performance on the other is the fact that the advanced capitalist countries, taken as a whole, have grown faster under the aegis of the post-Second World War welfare state than in any other period for which the relevant data exist. In historical retrospect, the epoch of the ascendant welfare state and social democracy was capitalism's golden age. This relationship is exhibited in figure 3.¹³

We do not conclude that equality *per se* promotes high levels of economic performance. But a more modest inference seems inescapable: under

¹²Bowles et al. (1990) also find a negative association between income inequality and both the long term rate of growth of output per employed person and the investment share of output in ten advanced capitalist economies. Persson and Tabellini (1996), for instance, find that inequality and growth in gross domestic product are negatively correlated in a cross section of 67 nations as well as in long time series for nine advanced capitalist nations. Similarly Alesina and Rodrik (1994) find that a measure of asset (land) inequality is inversely associated with economic growth in a sample of 39 countries. Glyn (1995) surveys the impact of the 1980s shift in economic policy in most of the advanced capitalist nations towards less egalitarian objectives. See also Chang (1994).

¹³These data are from Glyn, Hughes, Lipietz and Singh (1990), based on Maddison (1982).

favorable institutional circumstances egalitarian outcomes are not incompatible with the rapid growth of productivity and other valued macroeconomic outcomes.

‘Equality pessimism’ thus finds little support in the empirical record of macroeconomic performance. Rather the sense that egalitarian projects may now be unfeasible appears to derive more from the demise of a particular model of redistribution and from the way in which global competition is said to constrain the autonomy of nation states in their pursuit of egalitarian objectives.

Figure 3: Post-War Growth in Long Term Perspective. Sources: see text. Capital Stock is tangible, reproducible, non-residential fixed capital stock.

The optimism of the golden age of egalitarian economic policy, roughly the first three decades following the Second World War, was fostered by the Keynesian belief that the expansion of publicly funded social services and transfers, as well as wage increases in the private sector, would promote full employment and economic growth. This belief served to minimize political opposition to egalitarian redistribution by promising ‘soft redistribution’: even the wealthy would benefit from policies to stabilize and expand aggregate demand and to provide adequate schooling and medical care for the work force.

Underlying this faith was a macroeconomic model that could be termed ‘national Keynesianism’. The first of its three main tenets was that the level of output in a national economy is limited by the level of aggregate demand for goods and services. The second tenet equated aggregate demand to the home market. The third held that more egalitarian distributions of income support higher levels of aggregate demand. Egalitarian redistribution was thus doubly blessed: it promised ‘soft redistribution’, addressing the needs of the less well off, while promoting the general interest of abundance for all.

The evidence does not support the third, and most critical, of these tenets, however, and the second tenet, upon which the third is based, is also flawed. An econometric study by Bowles and Boyer (1995) of the U.S., France, the U.K., Japan, and Germany over the post-war period shows that increased wages are likely to lead to a decline, not an increase, in aggregate demand and that this is particularly the case the more open the economy is

to exports and imports.¹⁴ Also, even in the cases where Bowles and Boyer found that increasing the real wage would expand aggregate demand, the estimated effect is small, and is insufficient to support a positive relationship between the real wage and the rate of investment.¹⁵ Thus even if a wage increase were to expand employment in the short run, it seems likely that it would diminish private investment, thus jeopardizing the long run viability of this particular egalitarian strategy. The estimated effects of increased unemployment benefits and other income redistributive measures on aggregate demand and investment are no more promising.

Smaller and more internationally open economies are unlikely to be exceptions to these findings. Thus there is some doubt concerning the relevance, even in the heyday of social democracy, of a Keynesian wage led growth regime. The positive macroeconomic effects of social democratic policies may be more plausibly attributed to such productivity enhancing policies as unifying wage structures across industries and active labor market policies.¹⁶ The first tenet is not wrong: demand constraints continue to limit output and employment. But the global integration of national economies has rendered the level of output in each country increasingly sensitive to world-wide demand conditions and to the competitive position of each economy and less dependent on the domestic distribution of income.

As a result, attention has shifted from the demand-enhancing effect of high wages and social expenditures to the effect of wages and other redistributive policies on costs and on productivity. Many economists and others have argued that the policies once thought to induce a virtuous cycle of redistribution and growth are in fact a prescription for economic decline and long term reduction in living standards. The post-golden age appeared to promise at best hard redistribution.

With the analytical underpinnings of soft redistribution thus shaken, and the political viability of hard redistribution doubted, the egalitarian project has stalled. The reorientation of economic policy to supply-side rather than demand-side problems appears to have entailed a corresponding shift from egalitarian redistribution to its converse: policies promoting greater inequality, justified by the promise of long-run trickle-down effects. The new emphasis on long-term productivity growth is entirely welcome; and arguments for greater emphasis other supply-side issues are compelling.

¹⁴A redistribution from profits to wages has predictably positive effects on the demand for consumer goods, but it is offset by the negative impact of wage increases on demand for investment goods and net exports.

¹⁵Gordon's (1995) study of the U.S. comes to similar conclusions.

¹⁶This argument has been compellingly made by Moene and Wallerstein (1995).

| | | Distributional Aspect of Policy | |
|---------------------------------|--------------------|---|---------------------------------------|
| | | <i>Egalitarian</i> | <i>Trickle-down</i> |
| Diagnosis of the Problem | <i>Demand Side</i> | Left Keynesianism | Low Wage Export Led Growth |
| | <i>Supply Side</i> | Productivity Enhancing Redistributions | IMF ‘Structural Adjustment’ Policy |

Figure 4: Economic Performance and Policies

But we have shown that the abandonment of the egalitarian project is a *non sequitur*. Rather than a simple correspondence between demand-side economics and egalitarian policy on the one hand and supply-side economics and trickle-down policy on the other, there is a complex array of choices. Perhaps surprisingly, the Keynesian focus on demand does not favor egalitarian policies. As we have observed, in a world of globally integrated national economies, aggregate demand may be fostered by a redistribution from wages to profits, rather than by the reverse. Analogously, the focus on supply-side problems does not entail trickle-down policies: egalitarian redistributive policies can be productivity enhancing. The expanded menu of choices is presented in figure 4.

A further implication of the globalization of production is that it may be very costly to redistribute against the owners of factors of production that are globally mobile, notably capital. The point is easily exaggerated, and often is by opponents of redistribution. The process of investment is still primarily national: the vast majority of investment in every country is of domestic origin. Moreover most international movements of direct investment are among high-wage countries, not from these countries to the low-wage economies.¹⁷

But any sharp reduction in the after-tax rate of profit expected by wealth holders in any particular country may provoke responses capable of devastating an egalitarian program. The mobility of goods and finance thus does not preclude egalitarian policies, but it does substantially raise the political and economic costs of policies that are purely redistributive. Without growth in productivity, substantial increases in the well-being of the less well off

¹⁷See Koechlin (1992).

cannot be implemented without these disruptive declines in the profit rate.

4 Conflict and Coordination

We stress productivity growth as a welfare measure because the long-run gains in living standards obtainable through redistribution are limited by the size of the pie, while the benefits of productivity growth, including increased leisure, are cumulative.¹⁸ For this reason if one considers a sufficiently long time horizon, redistributions that are productivity reducing are difficult to support, even if one's sole concern were the well-being of the less well-off: after some years, they would have had a higher living standard under the less egalitarian status quo.¹⁹

A single minded desire to redivide the pie has sometimes diverted egalitarians from the task of producing a better pie. More precisely, the characteristic leftist focus on the conflictual aspect of social interactions has obscured its coordination aspect. Interactions typically exhibit both aspects, but we can define polar cases. A pure conflict interaction between two people is one in which all possible outcomes can be ranked as better for one and worse for the other. Zero-sum games are an example. Conversely, a pure coordination problem is one in which all feasible outcomes can be ranked such that if one outcome is better than another for one of the actors the same will be true for the other actor.²⁰

The exploitation of one person by another may be a pure conflict, while a traffic jam may be more nearly a pure coordination problem. The dif-

¹⁸Productivity growth means an increase in output per unit of a composite of inputs in which both the measure of inputs and outputs takes account of environmental effects. As defined, productivity growth is both conceptually and practically distinct from other criteria such as income growth or 'competitiveness'. Further, policies designed to reduce working time would be consistent with the objective of productivity growth, but not with the objective of output growth.

¹⁹For example, suppose the bottom half of the income distribution receives 25 per cent of total income. Equalizing income would on the average double the income of members of the bottom half of the distribution. Continuous productivity growth at a rate of 2.5 per cent per year for 27 years could also double the income of each member of the bottom half of the distribution, with no change in the degree of inequality. Of course economic welfare may depend on one's relative economic position in addition to one's absolute. To the extent that this is true, sustained productivity growth overestimates welfare growth for the less well-off. However economic welfare may also depend one's expected future absolute economic position relative one's current position, in which case sustained productivity growth underestimates welfare growth for all persons.

²⁰We define a pure conflict situation as one in which all feasible outcomes are Pareto-optimal, and a pure coordination situation as one in which there is only one Pareto-optimal outcome and given any two distinct feasible outcomes, one is Pareto-preferred to the other.

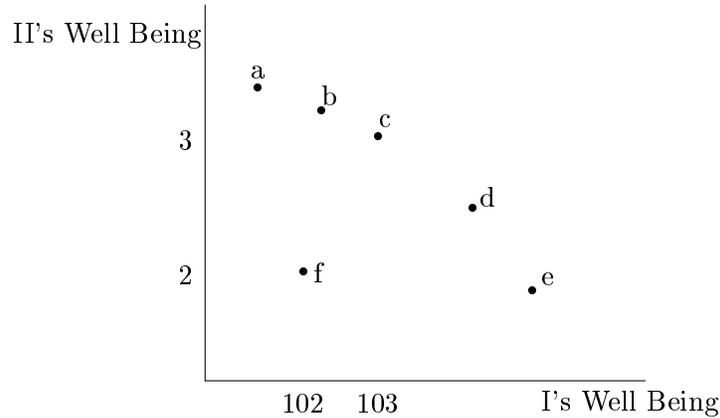


Figure 5: Productivity Enhancing Redistributions

ference is illustrated in figure 5, which presents a measure of well-being for two individuals (it does not matter what it is, income, ‘utility’ or whatever), with each dot the result of a particular outcome of their interaction. Which outcome occurs depends both on the economic institutions regulating their interaction, and on the actions taken by each. Person I is evidently advantaged as all of I’s outcomes (102, 103, etc.) are far better than any of II’s (2, 3, etc.). If the possible outcomes included only points *a* through to *e*, it would be a pure conflict game; if only *f* and one of *b* through to *d* were possible it would be a pure coordination game. If point *f* obtains under existing institutions, and if *b*, *c*, and *d* are the other technically feasible outcomes, getting to any of them may be considered to be more important than the which of them one obtains: solving the coordination aspect of the problem may be more important than resolving the conflict aspect. Point *f* indicates what we have called a coordination failure: at least one point superior to *f* for both people is possible, but is not obtained due to the lack of coordinated action of the two.

The logic of productivity enhancing redistributions is that moves from *f* to *b* are possible, and that movements in a northeasterly direction in the figure (‘soft redistribution’) may be a more promising strategy than movements to the northwest (‘hard redistribution’) even if the claims of justice would support the latter.²¹

²¹This example should not be taken literally, of course. There will necessarily be losers in any major change in property rights or other aspects of the institutions that coordinate economic activity. The fundamental point is not that all changes should be strictly Pareto-

If mutually beneficial solutions to coordination failures exist, it may be asked why they are not adopted. Why, that is, are coordination failures so common? The answer, we think, is that privileged groups often prefer the economic institutions resulting in f to an alternative set of institutions that has as possible outcomes all the other points, the reason being a fear that among these, point a will be chosen.

A generalization of this example is as follows. The holders of concentrated wealth often find themselves in opposition to effecting the changes in the rules of the game necessary to solve coordination failures. Coordination failures arise because people cannot make binding agreements among themselves. Solving coordination failures therefore frequently involves introducing institutions for the enforcement of collective decisions. But the only broadly legitimate way to make these decisions is by majority rule, and institutions created to solve one problem are readily deployed for other ends. Thus, where the wealthy exercise sufficient power, the result may be the failure to adopt a superior institutional structure capable of averting coordination problems by facilitating collectively binding agreements.²²

To analyse how governance structures can impede desirable solutions to coordination failures, we will use a concrete example to which figure 5 applies. Person I , let us say, is the owner of a firm, and II is one of a team of 100 identical workers. The two actors each decide whether to select one of two production inputs: the worker may apply high or low effort to the job, and the owner may or may not devote resources to modernizing the firm's capital stock. Let us assume, realistically, we believe, that these decisions are not easy to reverse: the investment, once committed is costly to redeploy, and the workers' agreement to new work rules, once conceded, is difficult to withdraw. When they each provide Low, the result is indicated by point f in figure 5: each worker gets 2, the owner gets 102 and the total income (value added) of the firm (counting all 100 workers) is 302. They could do better, but the problem is that each could also do worse; this is the challenge facing the governance structure.

If both select High, the combination of effective labor in a modernized plant yields any of points b , c , or d , depending on how the gains are shared. If the outcome is c , for example, each worker gets 3 and the owner gets 103; the value added of the firm is then 403. However, in many situations

improving (no losers) but egalitarian redistributions should be productivity enhancing.

²²An example is the initial opposition by U.S. business to Keynesian economic policy and its preference for minimalist regulation of the macroeconomy by means of monetary policy. To many, macroeconomic instability was the lesser evil if the alternative was a *carte blanche* for the state.

| | | Employer Investment Level | |
|--|-------------|--|--|
| | | <i>High</i> | <i>Low</i> |
| Employee Support for Productivity Development | <i>High</i> | I's second best (103) II's second best (3) (point c) | I's best (104) II's worst (1) (point e) |
| | <i>Low</i> | I's worst (101) II's best (4) (point a) | I's third best (102) II's third best (2) (point f) |

Figure 6: Investment and Productivity as a Prisoner's Dilemma
Note: Points *a-f* refer to figure 5.

each will prefer to select Low while the other selects High; the worker would prefer less intense work in a more modern plant (point *a*), while the capitalist would prefer to meet his output and cost targets through speedup or cost-cutting change in work rules than through a long term commitment of capital expenditure (point *e*). The worst outcome for each is to select High while the other selects Low. A high level of investment when workers give a low level of support of productivity enhancing practices will lock the employer into an unprofitable operation. Similarly, for the worker: supporting productivity enhancing practices while the employer invests little will lead to both exhaustion and job terminations.

The above strategies and outcomes are summarized in figure 6, from which it can be seen that the employer-employee relationship in production is a prisoners' dilemma: the dominant strategy for each, that which it is rational for each to follow regardless of what the other does, is to select Low, leading to the third best outcome for both.²³

The dismal third best result occurs because the interaction is non-co-operative in the sense that binding agreements between the two cannot be made. In the absence of such agreements, the more desirable outcome (High, High) is not an equilibrium: if by chance it occurred, each would have the incentive to defect to the Low option. Hence the high productivity outcome

²³This model borrows from Bowles, Gordon and Weisskopf (1992). Employer employee relationships have been modeled extensively as prisoners' dilemmas, starting with Leibenstein (1982), and including Solow (1990).

cannot be sustained in this governance structure.

How might the collectively rational joint high levels of both investment and work be secured? The two (for simplicity regarding the worker as a single actor) could agree to select High. Arriving at and enforcing an agreement of this kind would present serious obstacles under existing institutional conditions. Workers, for example, would require access to the firm's financial records, as well as a way of sanctioning the owners should they fail to comply. Owners likewise would require a low cost and effective way of monitoring the work activities of the work force. But monitoring is often exceptionally costly, if not impossible, given the nature of the work process, and the difficulties are exacerbated by the unwillingness of workers to cooperate in such monitoring activities since the employer is the residual claimant on the resulting income and hence the sole beneficiary of the effectiveness of the monitor and of the workers' efforts.

Less obvious difficulties arise. Workers may bargain collectively with the employer, perhaps offering to monitor their own work activities in return for investment guarantees and open books. Mutually beneficial agreements might struck on these terms allowing the preferable outcomes b , c , or d . But which one? The answer will depend on the bargaining power of the two parties, and this, in turn, would depend on the consequences for each of failing to come to an agreement, or the so-called fallback outcome point f .

In a bargaining situation, then, both persons have an incentive to avoid any move that worsens their fallback position. Thus the employer would want to avoid any type of fixed investments that cannot be relatively easily redeployed elsewhere, including, importantly, investments in the worker's own job skills. Workers, for their part, would want to avoid any simplification of the work process which would facilitate their own replacement. Thus both workers and employers will direct their efforts towards activities that increase their expected share of the firm's net revenue. These activities may be very costly; they need not contribute to productivity, and typically they do not.²⁴

To the waste associated with the bargaining process must be added the likelihood that in many cases no agreed-upon rule for sharing the benefits of cooperation will be adopted, therefore no agreement will be struck, and the productivity gains will be foregone. Or perhaps an agreement will be secured only after costly strikes or lockouts.²⁵

²⁴Johansen (1979) first elaborated this argument. It has been convincingly applied by Moene (1989).

²⁵Elster (1989) has argued that the failure to solve coordination failures typically arises from the lack of an agreed upon principle for the division of the benefits of cooperation.

Often no agreement will be struck at all, and the employer will simply offer the worker a wage high enough to make the job worth keeping, and then threaten to fire any worker who does not work sufficiently hard. But such threats are ineffective unless the employer devises a system of surveillance of the labor process, deploying surveillance equipment and supervisory personnel around the workplace for this purpose. In actual capitalist economies, these monitoring costs constitute a considerable fraction of the cost of employing labor.²⁶

No particular importance should be attributed to the specific coordination failure we have chosen for purposes of illustration. A similar situation with analogous results could describe the worker's decision as to how much learning of firm-specific skills to undertake and the employer's decision as to how much employment security to grant workers, for example. See Pagano (this volume) and Levine and Parkin (1993). Firm specific skills contribute to productivity, but they are useless to a terminated worker, and hence there is little reason to acquire them in the absence of a job guarantee.

The example can be no more than a metaphor for the far more complex coordination failures resulting from the non-cooperative nature of the microeconomic interactions which determine the level of productivity and its growth. But the model is not misleading in its major conclusion: namely, that overcoming coordination failures often requires agreements which are difficult to secure and costly to enforce given the governance structures that are feasible when property rights are highly concentrated.

5 The Institutions of Economic Governance

What new configurations of state, communities, and markets would be permitted by a more egalitarian distribution of residual claimancy and control rights? Among these would any be productivity enhancing? The answers, we will see, depend on the types of information available to some people and not to others, the way in which information can be acquired, hidden and shared, and the way in which governance institutions and property rights distributions alter the information structures and types of conflict of interest typical of social interactions.

For two reasons, the analysis of differential access to information should be central to any attempt to answer the above questions. The first is obvious:

²⁶Estimates vary, of course, but monitoring expenses appear to be about a fifth of the cost of labor in the U.S. The resources devoted to monitoring the labor process are of roughly the same magnitude as those devoted to producing the capital goods with which workers are employed. See David Gordon (this volume).

as a factual matter, much information is ‘asymmetric’ in the sense that different pieces of information are private to different agents. Individuals generally have better knowledge concerning their own preferences, needs, and wants, their personal skills and productive capacities, as well as their past, present, and intended future actions, than do outsiders. Moreover, the costs of information transmission from one person to another may be very high, as in the case of specialized technical information, craft, skills, or personal tastes. Even where the transmission costs are potentially low, people typically have an interest in misrepresentation—in not revealing a serious medical condition while applying for insurance, for example, or in exaggerating the difficulty of a task in response to a job supervisor’s inquiry.

The second reason is less obvious. If everyone knew the same things, institutions might not matter from an allocational standpoint. If no one had privileged access to information, efficient coordinations would be possible under a variety of governance structures and property rights configurations, including markets with private property and central planning with property owned in common. We may summarize this point more formally. With symmetric information, private contracting and the state are allocationally equivalent in the following sense: any Pareto-efficient allocation feasible under given preferences and technologies can be implemented either directly by the state or as a result of some initial distribution of assets followed by private contracting.²⁷

This equivalence result does not require that economies of scale be absent or that markets be competitive; the key result is that as long as whatever is known is known by all (symmetric information) all mutually beneficial trades will be made. The result is true even when the technical assumptions required to demonstrate the Pareto-optimality of competitive equilibrium fail to obtain, that is, in the presence of spillover effects such as pollution. The assumption of symmetric information is key to this result because contracts enforceable at low cost are typically unavailable if they require access to information known to one but not to other parties to the exchange, and in the absence of these contracts it will not be the case that all beneficial trades will be made. Similar problems arise when information is common

²⁷This fact was first brought out in the so-called ‘socialism debate’ in the 1930s, between the market socialist Oskar Lange and the *laissez-faire* proponent Friedrich Hayek, for the case of perfectly competitive markets (Lange and Taylor 1938). The analysis was extended by Coase (1960) to the case of market failures. The central point here is that when there are market failures, bargaining among agents can correct the market solution, and under conditions of symmetric information bargaining will be efficient. See Farrell (1987) for an analysis of the Coase Theorem and its limits.

to all parties but is not legally admissible (i.e., cannot be used in a court of law).

The importance of allocational inefficiencies occasioned by contractual problems stemming from the private (or legally non-admissible) nature of information depends in part on the extent to which the interests of the exchanging parties differ. Where conflicts of interest are attenuated (or absent, as in pure coordination interactions) the prospect of mutual gain through cooperation is often sufficient to induce the emergence of rules and conventions supporting an efficient solution. By contrast, coordination problems with a large element of conflict—prisoners’ dilemmas with large rewards for unilateral defection and little advantage of mutual cooperation over mutual defection, for example—present far greater challenges to a governance structure.²⁸

An adequate evaluation of the state, markets and other systems of private contracting must thus address how each deals with asymmetric information, or with the distribution of property rights, or with both. The two cannot be easily separated: once one admits the importance of information asymmetries, the distribution of property rights makes a difference not only for the distribution of output, but also in its efficient production. We have already seen this in the prisoners’ dilemma example above, where an efficient solution of the coordination problem is precluded by some property rights distributions. We can now generalize the point. The effects of information asymmetries on efficiency depend on the distribution of property rights: coordination failures arise when the distribution of both private information and property rights is such that agents’ interests are in conflict and their non-contractible actions affect one another’s well-being.

It follows that the coordination failures that arise in these cases may be attenuated by property rights systems that accomplish one or more of the following *desiderata*: they more closely align rights of control and residual claimancy so that individuals own the results of their actions, they reduce the conflict of interest among affected parties, or they reduce the extent or importance of private information. Our task in this section is to examine the unique capacities of markets, governments and communities that might be germane to a redesign and redistribution of property rights capable of serving these ends.

Markets have two major attractive properties. The first concerns one of

²⁸Wade (1987), for example, studied coordination problems in South Indian villages and found that an important correlate of a village’s capacity to solve prisoner’s dilemma-type coordination failures was the extent to which the mutual cooperation solution improved on the mutual defect outcome.

the above *desiderata*, that of reducing the importance of private information: market competition is a means of inducing agents to make public the economically relevant private information they hold. In centralized non-market systems producers typically have an incentive to understate their productive capacities in order to secure a lower production quota. Consumers similarly have an incentive to overstate their needs hoping to establish a superior claim on goods and services. By contrast, misrepresenting capacities or wants in a market economy is costly and rarely beneficial. It is often said that in markets people vote with their dollars. The implication is not that markets are democratic, but that it is costly to express a preference in a competitive market system. Indeed, the only way to register a preference in a market is to make a purchase, and the price at which one is willing to purchase a good conveys what would otherwise be private information, namely that the good is worth at least as much as the price paid.

Similarly it is often rewarding to reveal a productive capacity, and costly to misrepresent the true costs of production. In a competitive market equilibrium, profit-maximizing producers will make goods available at their private marginal cost of production, thereby revealing an important and otherwise private piece of information. Those who might be said to be misrepresenting their productive capacities by offering goods at prices not equal to their true cost of production will make lower profits.²⁹

Thus where key aspects of production and demand are subject to private information, markets are often superior to other governance structures.³⁰ But as we will see private information combined with highly concentrated assets also generates market failures in the provision of credit and insurance, the management of firms, the conduct of work, the process of innovation,

²⁹The observation that market competition makes producers more accountable by increasing the information concerning production that is available to non-producers (including individual consumers, community planning boards, and state regulators) should be contrasted with the assertion that market competition promotes allocational efficiency by ‘getting the prices right’. The role of markets in promoting allocational efficiency has been seriously overrated, in our opinion. By contrast, role of markets in promoting the accountability of producers has been seriously underrated. In effect, market competition turns production into a prisoner’s dilemma in which producers have a common interest in hiding their conditions of production (e.g., by overstating their costs, overstating their effort levels, and understating their opportunities for innovation), while each individual producer has an incentive to ‘defect’ by undercutting its rivals, thereby revealing its true production conditions.

³⁰This is a statement about the relative merits of imperfect forms of governance, not about the optimality of markets. The claim that competitive markets support Pareto-optimal outcomes plays little role in current debates about alternative forms of governance and is true only under implausibly stringent conditions.

and the maintenance of assets.

Second, where residual claimancy and control rights are closely aligned (our first *desideratum*), market competition provides a decentralized and relatively incorruptible disciplining mechanism that punishes the inept and rewards high performers. Markets, it is said, impose hard budget constraints on actors, but they do this only when decision makers own the results of their decisions. However property rights assignments that are efficient in this sense often do not obtain in highly unequal societies; as a result, the disciplining process is often poorly targeted.

The comparative advantage of the state is in the production of rules: the state alone has the power to make and enforce compliance with the rules of the game that govern the interaction of private agents. The state does not have particular advantages in the production and distribution of most goods and services. Where individuals face prisoners' dilemma-like situations or other coordination problems in which the autonomous pursuit of individual objectives leads to an undesirable outcome, the state can provide or compel the coordination necessary to avert this outcome. Services that governments can perform well that communities and markets cannot include the definition, assignment, and enforcement of property rights, the provision of public goods, the regulation of environmental and other external or 'spillover' effects, the regulation of natural monopolies, the provision of some forms of insurance, and macroeconomic regulation. Less obvious cases include what is termed equilibrium selection where multiple equilibria exist—for example a high-wage and a low-wage growth path may both be feasible and state intervention may determine which occurs (we provide an example concerning wealth redistribution in our concluding essay).

The state addresses prisoners' dilemmas in a manner diametrically opposed to that of markets. Competitive markets hinder the formation of cartels and other forms of collusion by providing incentives for defection, while the state can induce cooperation by preventing defection. Since both defection and cooperation are desirable under different circumstances, markets and states serve complementary roles in solving coordination problems. The state prevents defection by compelling participation in exchanges that would not be voluntarily chosen by economic agents acting singly, for example, cooperating in a prisoner's dilemma situation. This capacity to force compliance can contribute to the solution of coordination problems even where individuals have information that is private and therefore inaccessible to the state.

An example involving the availability of insurance illustrates this principle. Before they have learned that capacities, health status, and the special

risks they face as individuals, all members of a population might prefer to purchase insurance. But after they have learned their own special position, those with a low probability of collecting on the insurance will not be willing to purchase it, as they would be subsidizing those with a high probability of collecting. Thus the low-risk people would drop out of the market, and the price of the insurance would be too high for the high-risk people. Since before obtaining specific knowledge of their own risk position, all would have been willing to purchase the insurance, and since it is unavailable on the market, there is a clear market failure. By providing the insurance and compelling all agents to pay for it, the state overcomes this market failure.³¹

This reasoning extends to several important areas of social policy. Consider, for instance, health insurance. Suppose that everyone would be willing to purchase insurance covering a particular illness, if people did not know their personal likelihood of contracting the illness. But once people do learn how likely they are to contract the illness, and if coverage for this illness is optional, the healthy will not purchase the insurance. To cover the costs of claims with fewer subscribers, insurers will raise rates, with the eventual result that those prone to the illness will not be able to afford the insurance.

³¹This point is developed in Bardhan, Bowles and Gintis (1998). For a simple example, suppose n entrepreneurs have investments that cost k in initial capital costs. To the outside world these projects are indistinguishable, with a probability p of succeeding, in which case the firm would gross π , and a probability of $(1 - p)$ of failing, in which case the firm's revenue is zero. Then these investments should be undertaken if their expected return $p\pi$ is greater than their cost $k(1 + \rho)$ where ρ is the interest rate. We assume this is the case.

If the entrepreneurs are risk-averse, they may not undertake the projects unless they can obtain insurance against failure. If investments are identical, it is clear that the entrepreneurs will be able to obtain fair and full insurance through the market (abstracting from the transactions cost involved in writing the contracts), since an insurance company will agree to pay the entrepreneur $k(1 + \rho)$ if the project fails, and receive from the entrepreneur $(1 - p)k(1 + \rho)/p$ if the project succeeds (the expected value of this policy to the insurance company is zero). In this case the entrepreneur receives $\pi - (1 - p)k(1 + \rho)/p - k(1 + \rho) = \pi - k(1 + \rho)/p > 0$ in case of success, and zero in case of failure, which is also acceptable to the entrepreneur.

However, suppose the investments are not identical, and the entrepreneurs must make the investment of k to start the business before applying for insurance, but by investing they learn more about the probability of success. Again for simplicity, assume that half the entrepreneurs find that their investment will surely succeed, and the other half find that they will surely fail. In that case the fortunate entrepreneurs will not buy insurance at all, and the unfortunate ones will be unable to purchase insurance, since the insurance company knows that only a failing business will seek insurance. Since we can expect all the entrepreneurs to understand this situation prior to their decision to invest the k , we conclude that they will not invest, and the socially beneficial projects will not be undertaken.

Universal coverage, compelling all to subscribe and extending benefits to all, solves this problem. This insurance can be supplied by the state, or the state can merely compel all citizens to subscribe to such insurance privately. Since it is costly to enforce private subscription to insurance, and virtually impossible in the case of people who cannot afford the price of insurance, in this case state supply of insurance would be a superior alternative.

For another example, consider unemployment insurance. Suppose everyone would be willing to purchase a certain level of insurance covering the costs associated with losing their job through no fault of their own—e.g., through a macroeconomic downturn causing layoffs and bankruptcies. Once all individuals acquire knowledge of the likelihood of job loss in their particular cases, and if unemployment insurance is optional, those with job security will not purchase the insurance, premiums will rise and those with insecure jobs will not be able to purchase unemployment insurance. Again, universal coverage, which can only be effected by the state compelling all to subscribe and extending benefits to all, solves this problem.

The state, however, has several fundamental weaknesses as a governance structure. The first is its lack of access to private information held by producers and consumers. The second is the mirror image of the first: the lack of access by voters and citizens (assuming a democratic polity) to the private information held by those who operate within the state, and hence the difficulty in rendering the state's actions democratically accountable. The third is the weakness of voting as a decision rule. Because there is no consistent democratic way to aggregate individual preferences into consistent social choice criteria, the results of majority rule and other voting mechanisms depend critically on who controls the voting agenda. Moreover, unlike markets, voting schemes have difficulty representing the intensity of preferences for different goods or social outcomes. Finally, where government intervention suppresses market outcomes, economic actors privileged by the intervention earn rents—incomes above their next best alternative. Thus groups will engage in 'rent-seeking behavior', attempting to influence it to intervene on their behalf rather than for another group or the public at large, thereby wasting resources and distorting policy outcomes.

These weaknesses are virtually inescapable, by the very nature of the state and the character of democratic processes. To compel while preventing exit requires that the state be universal and unchallenged in some spheres. This universality of the state prevents its being rendered accountable by subjecting the state to the competitive delivery of its 'services'. Moreover the inability of voting schemes to aggregate preferences in a consistent manner requires that non-electoral ways of influencing collective decision making—including

interest group activities—must be available as correctives. But rent-seeking activity directed towards these non-electoral processes is difficult to regulate. Of course states can be rendered more accountable by fostering competition among local governments and public agencies, by carefully monitoring the actions of state officials, by subjecting elected and administrative positions within the state to well designed incentives, and by limiting the state's actions to those which cannot be regulated in a more accountable manner by some other governance structure.³²

It may seem that we are exaggerating the disabilities of the state as a governance structure. But in fact we are merely applying to the state the same reasoning that is commonly used to demonstrate the existence of coordination failures in markets. We regard elected officials, voters, state administrators, and the private individuals with whom they interact as acting strategically in pursuit of their own ends, subject to whatever incentive and monitoring systems they face. Our point is not that officials are selfish but that whether selfish or not, their individual objectives need to be taken into account. In this framework one cannot advocate a state policy without specifying its implementation; i.e., giving reasons why all of the individuals involved will take the actions required for the goals of the policy to be achieved.

A convenient way to check that a policy meets this test is to ask if its objectives are realized as a Nash equilibrium, given the constraints, incentives, and other instruments used to implement the policy. A Nash equilibrium is a set of strategies, one for each agent, such that no agent has an incentive to choose a different strategy, given the strategies followed by the other agents. Successful implementation in this framework will of course be promoted by choosing government personnel with such competencies and commitments that their personal goals align well with the public purposes they are called upon to fulfill. But it equally includes a structure of incentives—rewards, penalties, and forms of accountability—ensuring that government personnel find it in their interest to behave as prescribed by the policy.

We turn now to a third governance structure, distinct from and complementary to both state and market—the community.³³

The special and common character of the community as a governance structure derives from the fact that its members share a common set of norms and are in frequent and close face-to-face interaction. What makes a group

³²See Przeworski (1996), Schmitter (1995), Cohen and Rogers (1997), and Wittman (1989) for suggestions along these lines.

³³We analyse communities as governance structures in greater detail in Bowles and Gintis (1997) and Bowles and Gintis (1998b).

of people a community is not the degree of affection or altruism amongst them (community members may be envious and spiteful) but rather the commitments, incentives and constraints governing their behavior.

Communities may solve coordination problems where other governance structures would fail. Examples of the success of communities as governance structures include cooperative governance of irrigation systems and other common property resources, mutual credit associations, and worker owned and managed enterprises.³⁴ Communities structure social interactions by applying rewards and punishments to members according to their conformity with or deviation from community norms. Further, a community can monitor the behavior of its members in a manner rendering them accountable for their actions. In this respect communities contrast with other governance structures, for communities more effectively foster and utilize the incentives that people have traditionally deployed to regulate their common activity: trust, solidarity, reciprocity, reputation, personal pride, respect, vengeance, and retribution, among others.

Three aspects of communities account for their unique capacities as governance structures. First, in a community the probability that members who interact today will interact in the future is high, and thus there is a strong incentive to act in collectively rational ways now in order to avoid retaliation in the future.³⁵ Consider a case in which interactions are such that the benefits to each member depend on the actions taken by each, and that any action once taken is known to the other party but is not admissible as evidence in court and therefore cannot be used as the basis for contracting for the actions of the other prior to the interaction. An example would be a two person prisoners' dilemma in which the action taken by one's partner was known *ex post*, but was not judicially verifiable. In this case neither private contracting nor state regulation would address the underlying coordination problem. But the threat of retaliation on the next and successive rounds of the game will effectively deter defection if each expect the interaction to continue over a long period as will typically be the case in communities.³⁶

Third, communities share norms that allow members to coordinate their

³⁴See, for example, Ostrom (1990), Thomas and Logan (1982), Craig and Pencavel (1995), Greenberg (1986), Hossain (1988), Frohlich, Godard, Oppenheimer and Starke (1997), Verba, Schlozman and Brady (1995), and Sampson, Raudenbush and Earls (1997).

³⁵This follows directly from repeated game theory, which shows that cooperative behavior can be sustained when actors have long time horizons relative to the time between interactions, a condition that is ensured by a sufficiently high frequency of interaction. See Bowles and Gintis (1998b).

³⁶Model illustrating this point are developed in Bowles and Gintis (1998b) and Bowles and Gintis (1997).

behavior and thereby settle on efficient interactions. For example where property rights cannot be well defined, costly contestation can be avoided by the prevalence of other legitimate norms of division, such as ‘first come first served’ or ‘finders keepers’ or equal shares. The point is not that communities foster norms that appeal to a sense of fairness, but that agreed-upon norms often allow cooperation to take place by deterring costly conflicts. ‘Last come, first served’ would do equally well for this purpose.³⁷

Thus, over some range of governance problems, communities contribute to all three *desiderata* outlined above: aligning control and residual claimancy through retaliation for socially destructive actions in repeated interactions, making information less private by providing incentives to establish reputations through consistent behavior, and reducing the degree of conflict of interest over non-contractible aspects of exchange through the provision of division rules and other norms capable of working even when property rights are not well defined. These reasons may help explain why communities, long dismissed by social scientists and all but utopian leftists as anachronistic remnants of an earlier era, have not been supplanted by markets and the state.

Community governance structures are not, however, substitutes for markets and the state, since the very factors accounting for the unique capacities of communities to solve difficult coordination problems also account for their weaknesses. Notably, the necessarily small scope of community governance structures required to support frequent encounters among members and low mutual monitoring costs prohibits them from coordinating interactions on a national, much less global, scale.³⁸ Moreover, the high cost of exit and durability of social interactions essential to the workings of communities may militate against innovation.

The ability of communities to address coordination problems depends on the types of property rights in force and their distribution among the population. Where community members are not residual claimants on the results of their actions there may be little incentive to engage in the forms of sanctioning and reputation building we have stressed. Were property

³⁷It may also be observed that norms effective in reducing costly contestation may induce waste in seeking to satisfy the norm. Any division rule based on first arrivals for example is bound to lead to waste in competition to be first, as was pointed out by Sugden (1989).

³⁸For example, Greif (1994) argues that the eventual superiority of the Genoese over the North African Maghribi traders in the early development of Mediterranean trade stemmed from the scale limitations of the locally very effective community-based enforcement strategies of the Maghribi traders.

rights assignments to make some members vastly more wealthy than others, shared norms of division may be difficult to maintain, and threats of retaliation against non-cooperative actions may lack effectiveness or credibility. For similar reasons, the distinctive capacities of communities are likely to be undermined where the costs of exit are very asymmetrical, for instance when some members have attractive outside options and others do not. In short, the effectiveness of communities depends on the assignment of property rights.

In this respect communities are not unlike markets. The allocational efficiency advantage of the decentralization of control rights (either the extensive use of market- or community-based governance systems) lies in the placing of decision making in the hands of those who have information which others lack. For this to be beneficial, the holders of private information must have residual claimancy rights on the results of their actions. On efficiency grounds, decentralization to individuals through use of markets is favored over decentralization to communities where contracts are relatively complete and enforceable at low cost and hence where interests may conflict without generating coordination failures. Decentralization to communities is favored where complete contracting is precluded but where low levels of conflict of interest within the community and other aspects of community structure facilitate the transmission of private information among community members.

6 Risk-Taking, Project Quality, and Labor Incentives

There is no reason, of course to think that the nature and ownership of existing property rights is such as to make either markets or communities maximally effective in solving coordination failures. The state, markets, and communities that make up the governance structure of capitalist societies sustain coordination failures, some of which, we will argue, could be attenuated through a redistribution of ownership and control from current owners to the less wealthy. However, egalitarian asset redistribution may also reduce productivity. Before turning to concrete cases of productivity enhancing redistributions, then, we will use a simple model to outline the complex and partially contradictory consequences of asset redistribution. We will see that there is indeed an analogue to the efficiency equality frontier, a locus of feasible levels of wealth equality and output, but that for plausible values of the parameters of the model the relationship between the two may be complementary rather than contradictory over some range of wealth distributions.

The intuitions motivating our model are now familiar. Output depends

on such intangibles as decision makers choice of levels of risk, the quality and intensity of workers' labor effort, and the process of project design and innovation. Information concerning these productivity enhancing intangibles is for the most part private, and hence not subject to contract. Where this is the case, as we have seen, a decentralization of residual claimancy and control to the private holders of information may be productivity enhancing. Thus asset redistribution may attenuate coordination failures due to private information by more closely aligning residual claimancy rights with *de facto* control over actions governed by private information, or less technically, by making actors liable for the consequences of their actions.

We will focus on three aspects of the relationship between asset distribution and productivity. First, the wealthy are likely to be risk-neutral and hence to manage projects so as to implement an (approximately) socially optimal level of risk-taking.³⁹ By contrast, less wealthy individuals will be risk-averse and will implement socially suboptimal levels of risk-taking. Second, the non-wealthy will be unable to implement projects, or will implement fewer, a result of which will be that 'good' projects which are the private information of the non-wealthy will not be implemented, while 'less good' projects of the wealthy will be implemented. Third, where wealth constraints force some to seek employment on the projects of others, the labor incentive problems arising from the fact that workers are not residual claimants on the income stream resulting from their labor will lead to monitoring and other costs not required when self-employment is possible.

Consider an economy composed of n individuals, some of whom are wealthy and some of whom are not. Income may be generated by implementing a 'project' that yields a base income y plus additional returns to the project. Projects are chosen from a list of projects known only to each person, each project costing \$1 to implement. Projects once implemented may be managed with varying degrees of risk, selected by the owner of the project, as a result of which the project fails (and yields no income) with probability f . Every person will work a given amount of time and experience a given disutility of labor (though on the above reasoning the amount of quality and intensity of work done will vary according to the labor contract). If hired labor is used, the returns are a fraction β times the returns to the

³⁹Risk-neutral actors are indifferent between a gamble and a sure thing if their expected value is the same. Thus risk-neutral actors choose risk levels that maximize the expected value of the outcome irrespective of the dispersion of the distribution of outcomes around its expected value. We assume that a large society in which the endogenously determined stochastic elements in the returns to projects are substantially uncoordinated across projects can provide insurance against these risks to its members.

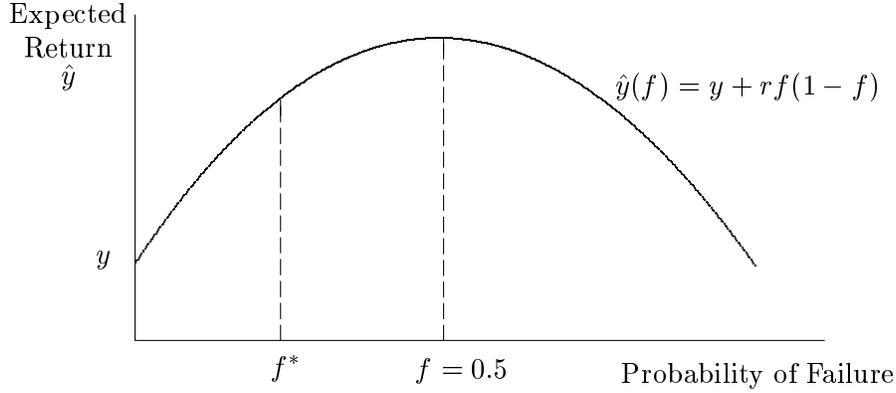


Figure 7: The Risk and Expected Return to a Project

project when the work is done by the residual claimant, where $1 - \beta$ reflects the monitoring costs associated with the wage contract. Each project requires just one person to work it. No income can be generated without a project, that is without investing \$1.

If person i implements project j , providing the necessary investment and labor its return r_{ij} , if it does not fail, varies with the level of risk f_{ij} chosen by i :

$$y_{ij} = y + r_{ij}f_{ij}.$$

If the project fails it yields only y , so dropping the subscripts, the expected return \hat{y} from the project is then just the weighted sum of the ‘failure’ and ‘success’ payoffs:

$$\hat{y} = fy + (1 - f)(y + rf)$$

which, letting $F = (1-f)f$, can be rewritten

$$\hat{y} = y + Fr.$$

This relationship is illustrated in figure 7.

If this project is implemented by a wealthy and hence risk-neutral person, the chosen level of risk is simply that which maximizes expected income, on the margin balancing the contribution of greater risk to the returns of the project should it succeed against the greater probability that the project will fail. This optimizing process determines that for the wealthy person $f = 0.5$ which, when substituted into the above equation, yields

$$\hat{y} = y + 0.25r.$$

Thus if the sum of all assets is n (just enough to employ everyone) and a single person owns all of these and has n equally good projects to implement, there will be 1 self employment contract and $n - 1$ wage labor contracts. Thus total expected output is

$$Y = (y + 0.25r)(1 + (n - 1)\beta).$$

Now let f^* be the level of risk chosen by a non-wealthy person who has just enough wealth to initiate a project, and let $F^* = f^*(1 - f^*)$. Because $f^* < 0.5$, $F^* < 0.25$. Suppose wealth is distributed so that m non-wealthy people are just able to fund their own projects (the remainder of the wealth is in the hands of a single person, who employs the remainder of the population ($n - m - 1$) on wage contracts). Our measure of asset inequality is thus m , ranging from perfect equality ($m = n - 1$) to perfect inequality ($m = 0$). Then we can write the output equity trade-off as follows:

$$Y = Y(m, r, \beta, .5 - F^*)$$

where m measures the level of equality and the remaining three arguments measure the return to risk-taking, the monitoring cost of wage labor contracts and the extent to which the risk-aversion of the non-wealthy depress risk-taking below its socially optimal level. Using the above results we see that total income is the sum of returns on three types of projects: the single project owned and operated by the wealthy individual, the $n - m - 1$ projects employing wage labor, owned by the wealthy person, and the remaining m self-employment projects of the non-wealthy:

$$Y = (y + 0.25r) + (n - m - 1)\beta(y + 0.25r) + m(y + F^*r).$$

The effect of redistribution on total expected income (the ‘slope’ of the output equality trade-off locus) is thus

$$\frac{dY}{dm} = y(1 - \beta) + (F^* - 0.25\beta)r,$$

where the first term is the positive effect of greater equality on base level incomes from improved labor incentives and the second term incorporates the loss in expected income occasioned by reduced risk-taking by the non-wealthy. The level of expected output and the degree of equality clearly may co-vary positively or inversely. The sign of the trade-off depends, as expected, on the strength of the labor incentive effect relative to the extent of risk-aversion among the non-wealthy and the return to risk-taking. If,

for example $y = 1$, $\beta = 0.7$, $r = 2$ and $f^* = 0.4$ (so that $F^* = 0.24$), $dY/dm = 0.43$ indicating a positive contribution of asset redistribution to output.

Now suppose that the quality of projects varies. Everyone's 'best' project has the return structure rf and everyone's q^{th} project has returns of $r(q)f$ with $r' < 0$. As above there are n units of capital, m of which are owned by the non-wealthy and $n - m$ of which are owned by a single wealthy person. More equality entails fewer projects undertaken by the wealthy person, so the average quality of the project adopted by the wealthy person, \tilde{r} , increases with the level of equality, m . Writing $\tilde{r} = \tilde{r}(m)$ with $\tilde{r}' > 0$, we can now express total expected income

$$Y = (y + 0.25\tilde{r}(m))(1 + (n - m - 1)\beta) + m(y + F^*r),$$

and the effect of egalitarian redistribution on total expected income is:

$$\frac{dY}{dm} = y(1 - \beta) + r(F^* - 0.25\beta\tilde{r}(m)) + 0.25\tilde{r}'(m)(1 + (n - m - 1)\beta),$$

where the first and second terms are interpreted as above, and the third represents the gain in the average quality of the projects undertaken associated with more people having sufficient wealth to undertake their best project (or more precisely the rich person investing in fewer of his not so good projects and hence raising his average returns).

It is reasonable that projects will vary in the degree of disadvantage of the labor contract as opposed to self-ownership. Some may be characterized by production processes in which the cost of effective monitoring is very high, or conversely perhaps negligible so that piece rate contracts can be used. Distributing wealth from a single large owner to other members of the population will thus induce changes in β . We can model these changes by assuming that the wealthy person abandons first the projects that are least advantageously exploited using wage labor, and that the non-wealthy first take up projects for which self-employment is most advantageous. For this reason β will rise with m : the greater the level of equality in the distribution of assets, the less the relative advantage (on average) of self-employment contracts. In the example below we assume that when wealth is equally held, we have $\beta = 1$; i.e., the advantages of residual claimant status by workers in self-employment are matched by fully offsetting disadvantages.

Figure 8 illustrates an output-equality locus for some representative parameter values (labeled 'Benchmark').⁴⁰ For levels of inequality such that

⁴⁰ Figure 8 was drawn using a $\tilde{r}(m) = r - cm/(n - 1)$, so $\tilde{r}(m)$ falls from r to $r - c$ as

fewer than half the population can undertake their own projects, egalitarian redistribution increases expected income; more egalitarian distributions of wealth confront an equality-output tradeoff. It is clear from the equation above that asset redistribution is likely to be productivity enhancing when the costs of labor contracting are high (β is low), the risk-aversion of the non-wealthy is limited ($.25 - F^*$ is small), and when the gradient of project quality is steep (i.e., when \tilde{r}' is large). The magnitude of returns to risk-taking may affect the benefits and cost of redistribution positively or negatively, depending on the above parameters. In figure 8 we compare the benchmark locus with two others. The first is based on a lesser disadvantage of the wage labor over the self-employment contract. Not surprisingly, output is higher in this case, and the maximum output occurs at a more unequal distribution of assets, with a more pronounced trade-off between output and equality. The second, a lower return to risk-taking compensated by an upward shift in the risk-free base income of projects, yields an output maximum at a greater level of equality, reflecting the concomitant reduction in the output losses induced by the socially sub-optimal risk-taking by the asset-poor.

The centrality of the parameter β in the above analysis suggests that the possibility of productivity enhancing redistribution depends critically on the ability of a relocation of residual claimancy to alter the costs of contract enforcement. Let us then turn to a concrete case of exchange involving noncontractible intangibles critical to productivity: employee ownership of firms.

7 Wealth Redistribution and Worker-Owned Firms

To show that an egalitarian redistribution of assets may support a superior governance structure, we will identify the conditions under which a relocation of residual claimancy and control rights of the firm from a capitalist owner to the firm's worker-members will improve productivity. Moreover, we will explain why such transfers will not occur spontaneously in a market economy. The upshot is that despite the advantages of this form of governance in addressing problems of labor discipline and incentives, the limited wealth of most workers will impede the expansion of worker ownership.

m increases from 0 to $n - 1$. Similarly, we have defined $\beta(m) = \beta + (1 - \beta)m/(n - 1)$, so $\beta(m)$ rises from β to 1 as m increases from 0 to $n - 1$. The 'benchmark' values of the variables are $\beta = 0.4$, $r = 20$, $c = 2$, $y = 1$, and $F^* = 0.07$. The 'steep' value of β is 0.5, and the 'low' value of r is 10 (we also shifted the latter curve upward by 75 for easier comparison purposes).

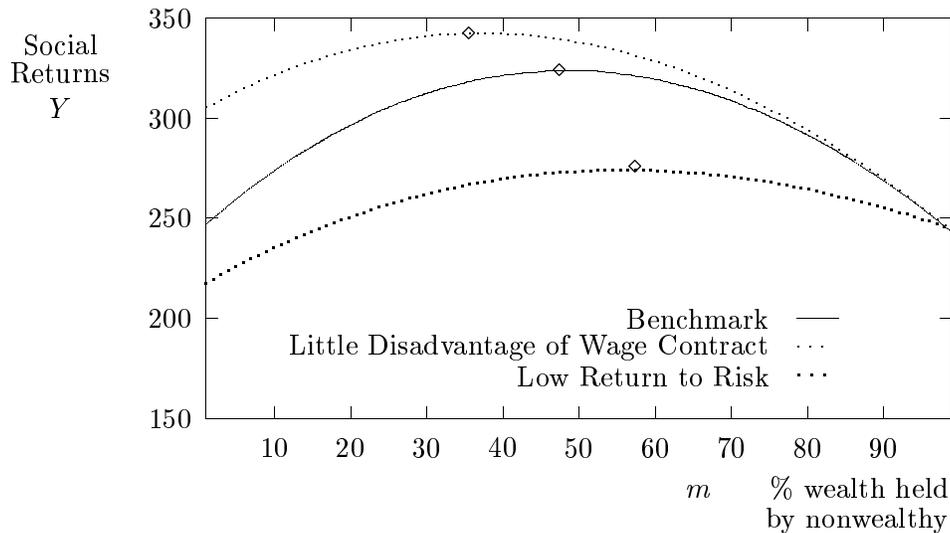


Figure 8: The Expected Output–Equality Trade-Off
 Note: Graphing details in Footnote 40

Consider first the capitalist firm, where the profit of the owner depends upon the level of effort workers devote to their assigned tasks. The two ingredients of a coordination failure, a conflict of interest and asymmetric information, are present in this interaction. We assume work effort is private information, in the sense that a worker’s level of effort is known by the worker and perhaps by some co-workers, but not by the employer. For this reason, a worker’s promise to work hard is legally unenforceable.

Where work effort cannot be contracted for, it must be elicited through the adoption of a costly enforcement strategy. Thus the employer uses monitoring of the workers and the threat of dismissal to ensure the delivery of any particular level of effort per hour of labor time supplied.⁴¹ The effectiveness of the threat of non-renewal depends on the wage, since the larger the difference between the worker’s current position and the worker’s expected next-best alternative, the greater the cost of job loss. The employer thus selects the wage and the level of monitoring by maximizing profits subject to

⁴¹The employer may also use the promise of promotion and other incentives, but adding these to our model would not change the argument.

the worker's reaction function, in equilibrium balancing the labor disciplining effects of the higher wage against the cost of the higher wage payments.⁴² It is not difficult to show that the resulting equilibrium is inefficient, in that both employer and worker would prefer some combination of more work and more pay; but given the property rights defining the capitalist firm there is no way that the necessary trades can be made.⁴³ The reasoning is as follows. Because the owner has varied the wage to maximize profits, the owner is indifferent to small changes in the wage in the neighborhood of the profit maximum (but prefers increases in work effort). Because the worker has varied the level of effort to maximize the present value of utility (trading off increased disutility of labor against increased probability of retaining the job), the worker is indifferent to small changes in the level of effort in the neighborhood of the equilibrium, but prefers wage increases. Thus there must be some wage increase and effort level increase that is preferable to both parties over the competitive equilibrium.

Consider another firm, owned by its workers and governed by their elected representatives. We assume that workers direct the managers of the democratic firm to select investments, systems of work monitoring, and other policy options to maximize the workers' welfare. The workers' incomes then consist of their share of the revenues of the firm net of monitoring, materials and other non-labor costs. While we may expect the capitalist and the democratic firms to differ in many respects, our argument is facilitated by assuming that the two firms employ identical workers, produce with identical technologies, and that both use the threat of termination as a means

⁴²The contingent renewal model of the employment relationship is developed in Gintis (1976), Shapiro and Stiglitz (1984), Bowles (1985), Gintis and Ishikawa (1987) and Bowles and Gintis (1993a). We may briefly describe such a model as follows. Firm profits are an increasing function of worker effort e . The employer has an imperfect measure of worker effort, and dismisses a worker who is caught shirking. The probability of dismissal is thus a decreasing function $p(e, m)$ of the level of effort e chosen by the worker and the level m of monitoring chosen by the firm. The worker has utility function $u(w, e)$ that is increasing in the wage w and decreasing in effort e . The worker chooses e to maximize the discounted present value v of the job. If the discount rate is ρ and the worker's fallback position upon losing the job is z , the worker's objective function can be written as

$$\max_e v = \frac{u(w, e) - \rho z}{p(e, m) + \rho} + z.$$

The quantity $(u(w, e) - \rho z)/(p(e) + \rho) = v - z$ is thus the rent the worker enjoys from the relationship, the threat of withdrawal of which induces a high level of effort. The firm then chooses the wage w and the level of monitoring m to maximize effort per dollar $e/(w + m)$.

⁴³We demonstrate this in Bowles and Gintis (1993a).

of labor discipline.⁴⁴

Because workers own the assets with which they work, the conflict of interest between the owner and the workers concerning the choice of an investment policy, a conflict discussed in section 6 has disappeared. Workers' interests are now to save and to invest in a way that protects or enhances the value of their asset. Critics often claim that cooperatives will underinvest, myopically preferring to devote the income of the firm to current consumption.⁴⁵ This view may be correct where workers do not individually own the assets of the enterprise, but where workers hold shares that are sold upon leaving the firm, this anti-investment incentive does not exist. Individually owned worker cooperatives may indeed have too little capital, but this, we will see, is because workers are poor, not because they have shortsighted objectives.

Not surprisingly, the main advantages of the worker-owned firm are most evident in the regulation of the labor process. We will offer two reasons why the democratic firm will be more efficient than the capitalist firm, in the technical sense that the democratic firm uses less of at least one input to produce the same output.

First, because workers are residual claimants on the income of the demo-

⁴⁴We have in mind something of the type that, according to Craig and Pencavel (1995), is approximated in practice by the ownership structure of a large number of worker-owned plywood mills in the Northwest of the United States; see also Dow (1986) and Fehr (1993). Like the passive owner, the team uses contingent renewal to motivate member effort. Team members who are terminated must sell their share of the asset without penalty other than the loss of the enforcement rent $v - z$ (we are using the notation developed in footnote 42 on page 38).

The decision facing the active ownership firm (abstracting from the problem of the optimal number of members), is to select a level of monitoring m to maximize members' present value v of tenure. Each member receives an income from the team equal to $q(\sum_i e_i)/n - m$, where $q(\cdot)$ is revenue as a function of total team effort. Thus the net payment taking account of the member's forgone interest income, ρk_0 on each member's capital contribution k_0 , is $w = q(\sum_i e_i)/n - m - \rho k_0$. Thus the team must select m according to

$$v = \max_m \frac{u(w, c) - \rho z}{\rho + p(e, m)} + z.$$

Given that each worker's best response function is still of the form $e = e(w, m)$, we interpret the problem as follows: the team collectively selects a level of monitoring and agrees to pay the residual income of the organization to members as a salary equal to w plus the forgone return on assets ρk_0 . Each team member j then selects e_j to maximize v_j .

⁴⁵See Ward (1958), Vanek (1970), Domar (1966), Meade (1972), Furubotn and Pejovich (1974), and Jensen and Meckling (1979). For an insightful review of this literature, see Bonin and Putterman (1987).

cratic firm owners, they receive all returns that flow from their choice of effort levels. If the work team is sufficiently large one might think that the worker would have no less incentive to slack on the job in the democratic firm than in the capitalist firm, since individual workers receive only a small portion of whatever gains accrue to the firm because of their individual efforts. But this view is mistaken. Workers frequently have access at low cost to information concerning the work activities of fellow workers, and in the democratic firm each worker as a residual claimant on the income of the firm has an interest in the effort levels of other workers. The residual claimancy status of workers thus alters the information structure of the interaction of participants in the production process by providing a motive for mutual monitoring. The democratic firm could thus deploy a considerably more effective monitoring structure at less cost than the capitalist firm.⁴⁶ For this reason it is easier for worker-owners to secure among themselves a binding agreement concerning the quality and quantity of work than it is for capitalist employers to secure such an agreement from non-owning workers.

The second reason for the technical efficiency of the democratic firm is that the profit-maximizing labor discipline system adopted by the capitalist firm is typically inefficient in that it uses too many monitoring resources and not enough wage incentives. The reason is that the capitalist firm faces two prices in selecting its enforcement structure. One, the price of monitoring may (at least under ideal competitive conditions) correctly measure a social marginal cost, for the use of monitoring equipment or personnel employs resources with valued alternative uses and hence has a social opportunity cost. The TV cameras and the supervisors could be used to produce output instead of insuring compliance. The payment of a higher wage, by contrast, is simply redistributive, akin to a transfer rather than to a claim on resources. Using the firm's revenues in this way does not use up any societal resource; as a transfer, the wage corresponds to no social opportunity cost, though it is of course a private cost to the employer. Not surprisingly then, the capitalist firm uses too little wage incentive and too much monitoring relative to an efficient alternative. To workers, of course, the wage is a payment to themselves and is hence not a cost but a benefit. So in the democratic firm where they design the system regulating the labor process they would not

⁴⁶Mutual monitoring is not without cost, of course, as it requires a coordinator and may be time consuming in cases where verification of insufficient work by a team member is contested. Where work is highly dispersed, as is sometimes the case in agricultural production, mutual monitoring may be ineffective as workers will lack good information on the work activities of their teammates. For a model of mutual monitoring, see Weissing and Ostrom (1991) and Bardhan, Bowles and Gintis (1998).

replicate the inefficient choice of the capitalist.

An analogy may make this reasoning clear. Imagine a trucking company choosing between a shorter route over a toll road and a somewhat longer route without tolls. The two prices in question are the operating cost of the truck and the tolls. The trucking company would rationally treat these two costs as equivalent, perhaps avoiding use of the shorter but costlier toll road. But the toll does not represent a social cost, while the operating costs of the truck (wear and tear, fuel, the driver's time and effort) do. The choice of the longer toll-free route, like the capitalist's choice of lower wages and more intense monitoring is cost minimizing but inefficient.

Though few firms exist with the democratic structure we have assumed, a good number of more or less close approximations exist, and many have been studied extensively in recent years. Studies tend to show that these firms have higher productivity than their capitalist counterparts.⁴⁷

In a competitive economy one might expect the ownership of assets (and hence residual claimancy) to accrue to those who can use the assets most efficiently, since if workers can make better use of productive assets than capitalist owners, the relevant assets will *ceteris paribus* be worth more to them. Hence one might wonder why they do not purchase the assets and thus acquire the associated control and residual claimancy rights. The result would be to attenuate the coordination failure associated with ownership by non-workers.

But lenders face the same problems of asymmetric information that confront employers: potential borrowers have private information concerning the quality of their projects and how they intend to operate them (including the choice of risk levels). Thus credit markets exhibit the same enforcement problems as labor markets, since it is normally impossible for a lender to specify contractually the probability of loan repayment. It follows that lenders will adopt strategies designed to attenuate the conflict of interest between the two sides of the credit market, often requiring borrowers to invest equity in their projects. But equity requirements typically prevent

⁴⁷Levine and Tyson (1990), for instance, surveyed fourteen studies of worker cooperatives and found positive effects on productivity in thirteen of them, with no negative effects in any. Weitzman and Kruse (1990) surveyed 16 econometric studies of the effects of profit sharing on productivity and found that of the total of 226 estimated regression coefficients for variables measuring profit sharing 94 per cent were positive and 60 per cent were twice or more than their standard errors, while no negative coefficient estimates were statistically significant by this standard. For related studies supporting this research, see Cable and FitzRoy (1980), Ben-Ner (1988), and Conte and Svejnar (1990). Worker participation in decision making and residual claimancy status appear to be complementary in that their joint effects exceed the additive effects of each separate factor.

workers from borrowing sufficient funds or impose prohibitive costs on such transactions. Even when this is not the case, asset-poor workers are typically risk-averse, and risk-averse persons do not choose to concentrate their wealth in a single asset.⁴⁸

Thus even when more efficient in regulating work than their capitalist counterparts, worker-owned firms none the less operate at a competitive disadvantage and hence do not flourish in a capitalist economy, since wealth constraints inhibit the formation and lower the profitability of such firms. This credit market disability of worker-owned firms obviously has greater force the larger and more transaction specific is the firm's capital requirement.

8 Efficient Redistributions

We now consider three additional cases of productivity enhancing asset-based redistribution. First, in residential communities—neighborhoods, apartment complexes, or housing projects—the relationship between tenants and landlords is often analogous to that between workers and employers in that private information is held by tenants and wealth differences impose an inefficient outcome—the agent who is most capable of maintaining and improving the value of the asset (the tenant) has only a limited incentive to do so. As in the previous case the inefficiency arises because a conflict of interest exists concerning a set of actions known to only one of the parties to the exchange. The interests of the two diverge because the tenants' care of the property and its physical and social environment enhances the value of the property, an asset in which the tenant has no rights. The tenants' physical care of the property, attention to the appearance of the neighborhood, and participation in educational, recreational, crime prevention and other collective activities to improve the social environment of the community, while beneficial to the tenant, are also time consuming. Moreover much of the benefit of these activities, when they occur, redounds to the owner of the asset, whose property values rise and fall with the physical and social quality of the neighborhood.

As in the case of the work process, the tenants rather than the land-

⁴⁸Indeed, the capital stock per worker required to operate most firms is considerably in excess of the total assets of most working families. In the U.S., for example the value of the capital goods used in production per worker employed averages just under \$100,000, while the average net assets of the least wealthy 80 per cent of families including car and home ownership is \$64,000. So most working families, even if they sold their house and car could not finance the capital goods to employ even a single family member.

lord are best situated to undertake these amenity producing and wealth-enhancing activities. A comment from a neighbor concerning a loud party or a neighbor's watchful eye on the street cannot be replaced by the landlord's direct monitoring or police supervision, except at prohibitive cost. Of course tenants do undertake some of these activities, even without ownership of the asset whose value is thereby enhanced, but their status as nonowners considerably reduces their incentive to do so.

The landlord faces difficulties in attempting to harness the capacity of tenant care to improve property values. The reason is that the landlord's ability contractually to induce the tenants to undertake the relevant activities is restricted because knowledge concerning the tenant's action is asymmetrically held—shared perhaps among other tenants but not readily available to the landlord and even if known often not legally admissible. The result is an inefficiently low level of community amenities and an inefficiently high rate of physical depreciation of the housing stock. Thus there exists an alternative exchange in which the tenant provides more care and the landlord receives less rent and in which both tenant and landlord are better off. This alternative, while technically feasible, is not implementable under the stated property rights, however.

If residential tenancy is inefficient for reasons analogous to the inefficiency of the capitalist firm, it follows that the housing assets are worth more to the tenants than to the landlords. Literally, the benefits they would derive from owning these assets exceed the net income that the landlord can extract in rents. Why, then, do tenants simply not buy out their landlords? Some may not expect to settle in a place for long enough to justify the transaction costs of owning the property. But many simply lack the wealth to make the purchase. Residential tenancy, like the capitalist ownership of firms, is a market failure exacerbated by an unequal distribution of wealth.

Residential ownership might take a variety of forms, ranging from single unit ownership, perhaps in condominiums with a democratic governance structure regulating common spaces, to housing cooperatives with ownership shares along the lines of the worker-owned firm. Asset transfers to foster this kind of ownership might take the form of subsidized purchase options in publicly held housing units and subsidized private construction of low cost housing.⁴⁹

Our next two cases similarly concern a misalignment of residual claiman-

⁴⁹A general subsidy of home ownership, by contrast, serves no productivity enhancing purpose as most home owners have sufficient wealth to avoid the market failures associated with tenancy.

cy and control, but with a different twist. The problem in the case of tenants and workers is that beneficial actions are often not rewarded through full claims on the consequences of hard work or care of the residential property. The problem in our next two cases—schooling and parental care of children—might better be understood as establishing liabilities for damages in cases where agents fail to act beneficially towards principals. As in the case of workers and tenants, the problems illustrated by both of our next cases arise because existing property rights fail to align residual claimancy and control, the assignment of liability and benefits merely being the negative and positive side of residual claimancy over one’s own actions.

It is widely agreed that the costs of schooling should be substantially subsidized, that the content of schooling should be socially regulated, at least to the extent of establishing minimal standards in key areas of competency, and that schooling should be so structured as to avoid reproducing racial, class and other inequalities, and to offer equal educational opportunities to all.

Parents and children of course regard the school at least in part as any consumer would regard the deliverer of a valuable service, for instance a hospital or a restaurant. The consumer’s interest is that the school offer a service addressed as nearly as possible to the needs or wants of the child (we will elide the not small problem of possible differences in interest between the parents and the child). Given the considerable size of the educational sector in most economies, a failure to serve the consumer’s interest here must be considered to be a substantial shortcoming of the economy not dissimilar in principle or in magnitude from an agricultural sector that regularly produces poor tasting food. Thus an adequate governance structure for the educational system ideally balances the various social interests and the consumers’ interests in a broadly acceptable manner.

The effective implementation of the consumer’s interest in any educational governance structure poses problems of incentives and accountability not dissimilar from those already confronted. Consider the relationship between the parents and the school leadership. The parents and children in this case are in a situation analogous to the employer or the landlord, since they are dealing with another person whose actions are of great importance to them but which they cannot observe or control.⁵⁰ As in the earlier cases, the presence of private information and a conflict of interest

⁵⁰By contrast the leadership has every reason to pay careful attention to the directives of the local board, for this is the source of the school funding, including the leadership’s salary, tenure, and perks.

support inefficient outcomes, given that the *de facto* property rights entail a separation between control and residual claimancy. The parents (and their children) are the residual claimants (the child is educated well or not); but the control rights are being exercised by teachers and the school head who hold private information concerning their own actions. For at least three reasons, the parents and children cannot secure any enforceable agreement with the leadership of the school: the parents are unlikely to agree among themselves, the school leadership has little incentive to enter into such an agreement with parents, and if they could agree, parents would have neither the information nor the judicial means to enforcement.

Can the parents not exercise control through the electoral process given that the school board is democratically accountable? In a limited way, they can. But the expression of the parents' and children's interests in schooling is confined largely to the use of democratic voice in periodic elections, the results of which will be determined by voter preferences on issues among which schooling may be relatively unimportant. Unless the school system is substantially failing, a significant majority of parents and voters, and in a way that admits a readily available remedy, a democratic voice is not likely to offer an effective avenue for the expression of the consumer's interest.

The opportunity for accountability through exit is generally ineffective, either because there is no choice of which school a student attends, or if there is there is little penalty to the school leadership if students move elsewhere. Under these circumstances, parental voice in direct interventions at the school or its advisory bodies is likely to be ineffective as well. This governance structure seems designed to mute the consumers' interest.

Yet opportunities for exit could both directly empower parents and would also make parental voice more effective. This is particularly true if exit imposed costs on the school leadership so that they would more nearly be residual claimants on the results of their actions. An example would be a variant on the voucher proposal: parents would annually be issued vouchers of no direct monetary value to them but that when given to a school attended by the child, would represent a claim by the school for appropriations from state revenue. In the absence of private contributions to school finance, this is equivalent to saying that school budgets are proportional to the number of students enrolled, and students are free to move. Vouchers would be acceptable at any institution certified as adequate by the Department of Education. The funding of schools through vouchers would give the leadership a powerful incentive to attend to the parents' and students' interest, as long as the value of the voucher to the school exceeded the cost of accommodating an additional child (which could easily be insured,

as average costs of schooling decline with enrollments, at least over a wide range).

Though most voucher plans currently under discussion have paid scant attention to egalitarian and pluralistic objectives, this is more a commentary on the conservative origins of these proposals than its intrinsic logic. The scope for egalitarianism and pluralism is considerable, provided that the level of voucher funding be sufficient to cover the costs of quality education, and that schools accredited to receive vouchers be prohibited from charging parents additional tuition fees. Whatever legal requirements concerning the integration of the school population and the pluralism of its curriculum obtaining prior to the adoption of vouchers could easily be maintained or strengthened. Further, decentralized incentives for racial, class, gender, and other integration of schools could also be written into the system by making the value of the voucher to the school depend on the demographic and economic characteristics of the family perhaps in relationship to that of the current composition of the school enrollment. For example, a voucher presented by a low income student to a school of predominantly high income children could be worth more, thus giving the school an incentive to accommodate, even recruit these students. The converse, and analogous principles concerning race could also be applied. Implementing these provisions would not require that the government have information not already available to it.⁵¹

The voucher proposal highlights the important distinction between the public or private funding and regulation of schools on the one hand and their status as private or public bodies on the other. If funding were entirely public and egalitarian and if regulation of schools were adequate, the objections to private provision of schooling would be attenuated, and the benefits of competition might be enhanced.⁵²

Of course an increase in the degree of mobility of students may promote socially wasteful forms of competition among schools. Among these, grade inflation and standards erosion might be particularly damaging, as they would reduce the information value of the resulting credentials. For this reason any program for enhanced competition among schools should include

⁵¹For an expanded analysis of school choice as part of an educational governance structure, see Gintis (1995) and Jencks (1992).

⁵²If it were deemed desirable to have schools remain part of the state sector on grounds of greater democratic control of educational content and the social relations of schools, the use of vouchers could be restricted to public schools. The important point is that free entry and the competitive delivery of educational services be part of the educational governance structure.

strengthened national certification of competencies. Adopting some variant of the above proposals would most likely increase the regulatory activities of the state in education and reduce the extent of private as opposed to tax-based finance, while decreasing the state's production activities. The proposals would thus take better advantage of the state's unique advantages as a structure of governance.

Lastly, consider the case of property rights concerning children, and in particular the assignment of obligations to provide for their care. The common *de facto* assignment of these obligations to mothers rather than to fathers implies that marital separation generates a substantial increase in income inequality even if the mother and fathers have equal incomes.⁵³ As a result, a reassignment of property rights over the incomes of the two parents could significantly alter the level of inequality.

Aside from hardships occasioned by the existing arrangements, the distribution of implied property rights is inefficient for the same reason that tenancy and wage labor are inefficient: it separates residual claimancy from control. By shielding fathers from liability for their actions, *de facto* property rights concerning children provide a distorted structure of incentives for the mother and father in matters concerning the decision to have children, the care of children, and the amount of attention given to maintaining the relationship. The father has the *de facto* right not to provide financial or other care for his children should he choose not to continue a relationship with their mother, and he does not bear all the costs resulting from his action, displacing these costs to others (to the children, the mother, other members of the community). The father, in other words, is not a residual claimant on the net benefits and costs arising from his activities, just as workers in the capitalist firm do not own the results of their work (or lack thereof), and the tenant does not enjoy the full benefit resulting from his activities in improving the residential property. The solution here, as before, is to align residual claimancy and control more closely. But in this case the requirement may be better expressed by saying that the father should be made liable for the costs that his lack of attention might inflict on others.

The underlying problem is not that information is private. Indeed, the

⁵³In a society composed of an equal number of adult men and women and children in which women receive incomes two thirds that of men and couples pool and share income, there is no income inequality if all are in couples (one child per couple). Yet the Gini coefficient of income inequality would be a substantial 0.27 if all the couples separated and women were responsible for the support of the children, assuming no other changes in the data. This is a greater amount of inequality than is generated by unequal ownership of capital, assuming that the richest five per cent of income earners own all the capital.

actors' actions could be fully known without altering the structure of the interaction. The problem rather is that because information on one's spouse's actions in a couple may not be admissible in court (the actions are observable but not verifiable), it would be pointless to contract for a level of care. Similar problems, we will see, confront any attempt to specify contractually the consequences of breakup.

The unequal distribution of costs upon separation being well known, it might be asked why women do not simply contract for a level of child support should the relationship end? As in the case of the capitalist owner seeking to contract for labor intensity or the landlord seeking to contract for care of the property, the answer is simply that such contracts are most often unenforceable. But unlike the two previous cases, where the problem of unenforcibility arises due to the intangible and complex nature of the service to be performed, here it arises because the absent parent may be impossible to locate, or without funds, or (in the contrary case) in a position to deploy superior legal resources.

But unlike individual parents the state, precisely by virtue of its comparative advantage in low cost enforcement of universal rules, could enforce contracts of this nature. The state could in this case make and enforce new rules of the game. In particular, children can be assigned limited property rights in the income streams of their parents. The state could establish standard levels of child support corresponding to this property right, perhaps a given amount plus a fraction of the parent's reported taxable income, for children of various ages. This amount could then be transferred directly to children, through the parent currently caring for them. Assessing and collecting these charges could be effected by the revenue collection system.⁵⁴ Not all cases of neglected child support would thereby be addressed, but the vast majority may well be.⁵⁵

Figure 9 summarizes the common logic behind these four cases. In each case there is a principal-agent problem flowing from the fact that important aspects of the agent's behavior is not subject to contractual enforcement.

⁵⁴The standard child support levels (similar to standard charges for medical procedures in many insurance systems) could be the 'default' amounts to be paid. These default amounts could be altered by the courts, or under some conditions, by mutual agreement of the parents.

⁵⁵We do not consider reassigning enforceable property rights concerning children a retreat from a general social responsibility for the care of children. Rather it is a social strengthening of the family as a support system for financing and caring for children. Where parents cannot provide adequate financing, or where provisioning children's education, health care, recreation and other needs are most effectively provided by the public sector, public provisioning remains appropriate.

| Agent | Agent's non-contractible action | Principal | Problem | Solution |
|--------------------|--|---|---|---|
| Worker | Quality and level of work effort | Employer and owner of work-related asset | P is residual claimant on A's actions | Transfer ownership of work-related asset to worker |
| Residential Tenant | Provision of community amenities and care of residential asset | Owner of residential asset | P is residual claimant on changes in asset value caused by A's actions | Transfer ownership of residential asset to tenant |
| School Manager | Quality of educational services | Student, and family as student's representative | A controls the relevant asset but P is residual claimant on quality of services | Transfer school choice to student/family, so school is residual claimant over its actions |
| Father | Child support and care of the relationship with the mother | Child, and mother as child's representative | A controls level of care but P is liable for the costs of A's actions | Enforce default liabilities for child care, thus giving residual claimancy to the father |

Figure 9: Redistributing Property Rights to Align Residual Claimancy and Control of Non-Contractible Actions

And in each of the cases, a transfer of property rights, residual claimancy, and control can, under the appropriate conditions, increase the efficiency of the system in an egalitarian fashion.

9 Implementation: Insurance and Innovation

We have proposed four redistributions of property rights designed to align control of non-contractible actions more closely with residual claimancy over the results of these actions. We shall deal here with what we consider the possible shortcomings of these proposals. We could produce a long list of concerns that are simply not addressed by an asset-based redistribution strategy, but since our policy proposals do not interfere with the implementation of solutions to such concerns by other means, they pose no problem for our approach. Perhaps of greater interest, then, are the potential difficulties intrinsic to our approach as a general strategy.

First, and perhaps most serious, is the potential of asset-based redistribution, if widely implemented, to reduce the level of risk-taking and hence the pace of economic innovation, with the result of lowering long term pro-

ductivity growth. This difficulty is unavoidable, for it is based on an aspect of the strategy that is key to its success. Unlike tax- and transfer-based approaches to redistribution our approach distributes not only claims on income but rights of control over productive assets as well. Indeed it is by unifying claims on income with control rights that the asset-based approach promises to attenuate the incentive problems that arise when actors are not the residual claimants on the income streams which their actions affect. But by redistributing control as well as income, the strategy places decision making power in the hands of less wealthy actors, who are likely to be more averse than the wealthy to taking risks and more conservative in evaluating potential innovations.⁵⁶

Second, our proposed redistributions of property rights is egalitarian only in the sense that it shifts ownership of assets to the less wealthy. But since the value of these assets are subject to the vagaries of the market, and since the advantages of ownership of productive assets may be greater for those with more adequate initial resources, these redistributions may tend to increase the degree of inequality among the less wealthy.⁵⁷ This difficulty is also unavoidable, since it could not be eliminated completely without undermining the incentives that render asset-based redistribution productivity enhancing: if winners are not allowed to win and losers are not allowed to lose, then the relocation of property rights will undermine economic efficiency. Moreover, a redistribution of productive assets will not address the low incomes and wealth of individuals who are incapable of or choose not to supply high levels of effort in utilizing productive assets.

A third problem intrinsic to our proposal is that its reliance on competition may have unwanted cultural effects. The culture of a people is affected by its economic institutions, and the heavy reliance on competition in our model may foster a culture of self-interest, invidious distinction, individualism and materialism, by comparison to the cultural traits that would flourish in a society in which cooperation is favored over competition.

Consider first the possibility that asset redistribution to the less wealthy will reduce the level of risk-taking and hence the pace of economic innovation. This possibility flows from the fact that individual risk-aversion tends to decline with increasing wealth; i.e., the lower their wealth, and the larger a particular asset is as a fraction of their wealth, the less willing they are to expose their assets to the risk of loss. Thus by redistributing assets to the

⁵⁶See Bardhan, Bowles and Gintis (1998), section 4.

⁵⁷Moene (1992) argues convincingly that land redistribution may have these disequalizing consequences.

less wealthy, our proposal would have the effect of lowering the amount of risk-taken in the economy as a whole. While this might be a desirable side-effect with respect to speculative risk-taking, it would not be with respect to technical change and product innovation.

The magnitude of the problem can be overstated; indeed, because asset inequality also limits the pace of innovation, an egalitarian redistribution might promote greater innovation. First, where access to education and other forms of human capital is highly unequal, and where the content of education for the vast majority is oriented towards accommodation to the bureaucratic organization of production characteristic of private economies with high levels of asset concentration, a large fraction of the population is deprived of the cognitive skills and personal capacities to innovate. Second, where wealth is highly unequal, the fraction of the population with the material resources to innovate is highly circumscribed. As we saw in our analysis of the output-equality trade-off in section 6, good projects may not be implemented when their value is based on private information held by the less wealthy. Finally, where most people are not residual claimants on the results of their productive activities, they have little incentive, individually or together, to seek new ways to solve production problems.

However, the tendency for egalitarian asset redistribution to reduce risk-taking is likely to be prominent in such areas as small businesses and democratic firms, especially when the capital requirements of production are high and the nature of the capital goods is specific to the particular enterprise and hence not salvageable should the project fail. Yet as we have suggested, asset-poor workers would be unlikely to want membership in such enterprises, as the level of risk exposure to which they would be subjected would be prohibitive. Thus the types of asset redistribution that would most depress innovation are unlikely to arise as long as workers' ownership is not mandated universally by *fiat*.

Indeed, barring a redistribution to achieve asset equality, the risk-aversion of the asset-poor will leave ample room for innovative private entrepreneurship based on personal or venture capital. If, after asset redistribution, these owners remain sufficiently wealthy, they could diversify their portfolios to spread the risk over many independent investments, and could thus behave in a virtually risk-neutral and hence socially optimal manner. Yet the innovation promoted by such firms would be readily emulated by worker-owned firms, under the pain of loss of market position. Finally, much product and technical innovation takes place in non-market institutions, including academic and research setting, that would continue and could be expanded as a means of increasing the pace of innovation.

Even with these provisos, however, the problem remains. We suggest two forms of state intervention that would increase risk-taking by the less wealthy, and thereby expand the scope of productivity enhancing asset-based redistribution. In both cases the state would offer insurance contracts designed to promote risk-taking without adversely affecting other productivity relevant incentives. Both could be self-financing in the sense that the expected revenues equal the expected costs. Both also draw on the state's particular advantage as a governance structure—its capacity to make and enforce the rules of the game—in this case to insure universal compliance.

We explain the impact of these forms of insurance using the following model of individual income, which we consider a plausible representation of the interaction of wealth, individual choices concerning risk exposure, and unavoidable risk exposure. Suppose a person's income has three parts: a fixed income y , a variable income that cannot be controlled by the person, and an investment income with risky return $r(f)$, where f is the risk associated with the investment, and is chosen by the person. We term the risk associated with the investment income 'controllable', as the level of exposure to this risk is chosen; other sources of income variation are termed 'exogenous risk'. We assume the expected return to the investment is an increasing function of the risk taken, at least up to a certain point (as in our previous treatment of risky investment in section 5). As before, we assume the degree of risk-aversion in the economy decreases with wealth. This means that for wealthier persons (in this case, for those with higher fixed incomes y , which can be considered an annual risk-free return to wealth) the risk premium needed to induce the person to accept a given risky investment is relatively low.

We can show (Bardhan, Bowles and Gintis, 1988) that those with higher wealth choose higher levels of controllable risk, so increasing the wealth of the less wealthy will promote higher levels of risk-taking. This assertion is intuitively plausible, and we have used it in developing our model in section 5. We also find that a decrease in the level of unavoidable risk exposure increases the level of controllable risk assumed by the person. A reduction in the volatility of the business cycle or the variability of prices of inputs, for example, would induce people to select higher levels of risk in the design of their projects. Universal and adequate health insurance has the same effects. We conclude that egalitarian asset-based redistribution, coupled with insurance against forms of uncertainty that cannot be controlled by the person—policies valued on egalitarian and personal security grounds—promote innovation.

The design of the appropriate insurance instruments, however, must bal-

ance the objective of reducing risk exposure against that of maintaining productivity enhancing incentives. Consider again unemployment insurance. Workers lose jobs for two quite different reasons: their employer may cut back employment for reasons unrelated to actions taken by the worker, and the worker's job may be terminated as the result of actions taken by the worker. An insurance policy consistent with the above principle would insure the worker against the first but not against the second eventuality. For instance, unemployment insurance with a very high replacement rate (unemployment benefits approximating income on the job) may induce the worker to be relatively unconcerned about job loss. But suppose the value of the benefit (the replacement rate or the duration of benefits) is designed to vary inversely with the business cycle, generous benefits being granted during recessions but not during expansions. Insurance would then be extended predominantly to those who lose their jobs for reasons outside their control, with limited payments only going to those whose own actions are implicated in their joblessness.

A high level of well-designed unemployment insurance could thus support higher levels of risk-taking in two senses: by directly protecting workers against risk, and its indirect effect in attenuating variations in aggregate demand, and hence dampening the volatility of the business cycle and reducing the extent of risk. Similar beneficial effects would be fostered by tying unemployment benefits to other observable variables indicative of exogenous risk, such as world prices, bankruptcy rates in an industry, and the pattern of technical change. We conclude that even without insuring people against the risks they may choose to take, higher levels of insurance against exogenous risk could promote innovation, simply by reducing the level of overall risk exposure.

But can insurance be provided against exogenous risk without reducing incentives for productivity? A worker-owned firm may make losses, for example, because of an exogenous increase in the real cost of borrowing, or because it failed to adopt an effective system of mutual monitoring. Is it possible to insure against the first without also insuring against the second? The answer is yes: insuring people against exogenous risk will, under plausible conditions, lead them to assume more controllable risk without altering other incentives. It follows that asset-based redistribution, coupled with insurance against forms of exogenous risk that is compatible with the incentives of agents to exploit their investments efficiently and does not reduce the level of innovation.

The problem is to provide such insurance in a manner that does not reward people for reducing their productive activity. Clearly insuring peo-

ple against bankruptcy in general does not meet this criterion, since this would induce people to be indifferent to avoidable risks. However there are many risks that firms face that can be assessed independently from the discretionary actions of individual firms that can be the subject of social insurance. Suppose, for instance, that the probability of failure of a firm can be written as $\phi(f, e, x)$, where f is the level of project risk chosen by the work team, as described above, e is the effort of the firm members, and x are environmental factors not controlled by the firm. We assume ϕ is an increasing function of f and x , and a decreasing function of e . Suppose the state supplies insurance against failure, but it observes only the outcome (success or bankruptcy) and the level of x . Then the state could offer insurance $\gamma(x)$ that is increasing in x . For instance, the state may observe the average failure rate and profit rate in the industry, and reimburse firms that fail when these indicators of adversity are high, but not when these indicators are low. Similarly insurance can help firms recover from short-term economic downturns, adverse movements in the terms of trade, consumer demand, or the price of production inputs. By thus dampening the uncontrollable aspects of asset risk, people can be induced to increase their risk level, and hence their level of innovation, in areas under their discretionary control. These examples of well designed insurance are not simply hypothetical. In the United States unemployment benefits are typically extended during periods of prolonged unemployment. In India crop insurance is based not on one's own crop, but on the average yields in neighboring areas (Dandekar 1985). Both insurance designs implement the desideratum that people should be shielded from exogenous risk, but not from controllable risk.

The effects of the insurance contracts proposed above would be a favorable shift in the output-equality trade-off defined in section 6, as can be seen in figure 10. There we reproduce the $Y(m, \dots)$ function from figure 8 as well as the same output-equality function embodying the effects of insurance in inducing higher levels of risk-taking by the non-wealthy.⁵⁸ As is clear, the provision of insurance both shifts the function upwards and displaces it to the right, increasing the scope for output-enhancing asset redistribution (the level of equality that maximizes total income is greater with the insurance, indicated by the diamond-marker in the figure).

⁵⁸The model underlying Figure 10 is described in Footnote 40. The 'Benchmark' curve describes the wealth inequality vs. expected output relationship for $F^* = 0.07$, corresponding to a choice of failure rate $f = 0.076$. The effect of insurance is to increase F^* to $F^* = 0.10$, corresponding to a failure rate $f = 0.112$.

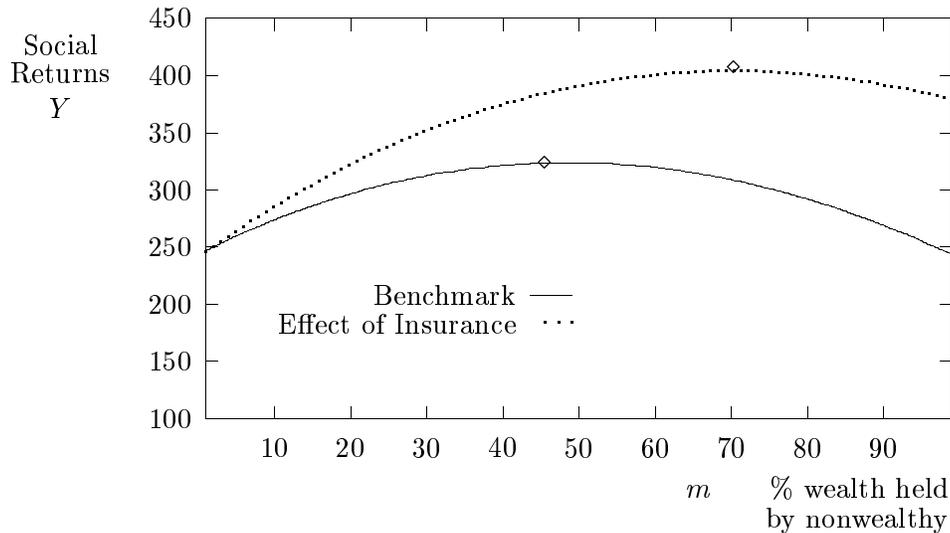


Figure 10: Insurance Improves the Output-Equality Trade-Off

10 Implementation: Equality and Culture

Our second problem, the possibility that a redistribution of assets to the less wealthy might not be egalitarian, has a ring of paradox about it. Indeed, were there a simple correspondence between asset holdings and income this problem could not arise. But in a world of asymmetric information and incomplete contracts no such correspondence can be assumed. In this context our asset-based redistribution strategy may induce increased inequality among the less wealthy, arising either because the vicissitudes of the market inevitably create winners and losers, or because some individuals and groups cannot or prefer not to participate in the control of productive assets.

It might be suggested that any such inequalities that arise be corrected by other, traditional forms of redistribution, such as progressive income or estate taxation. But were this our only response asset-based redistribution, however attractive otherwise, could not be described as ‘egalitarian’. We therefore address strategies that contribute to solving this problem that themselves draw upon the logic of asset-based redistribution.

In fact, the insurance policies we have advocated to promote risk-taking are effective means of increasing the egalitarian impact of asset-based redis-

tribution. Many of the causes of low income are closely correlated with the observable and exogenous variations in the economy, personal health, and other determinants of well-being for which incentive-compatible insurance policies can be designed. To the extent that the less wealthy are risk-averse, they would welcome forms of insurance that reduce the expected fluctuations in the value of their assets. Such forms of insurance would also reduce the degree of inequality among less wealthy asset owners, and hence contribute to the solution of this problem.

With assets more equally distributed among the population, estate taxation may also be a considerably more potent instrument of intergenerational redistribution than it is with a highly unequal wealth distribution. For where wealth is highly unequally distributed, the rich have critical positions in the economy that they can deploy to ensure the transfer of their capital across generations. Where wealth is more equally distributed, however, no asset holder has a significant degree of economic power, and while the collective gains associated with rent-seeking behavior to subvert redistributive taxation may be undiminished, these gains are less concentrated, and hence provide more limited incentives and opportunities for rent-seeking efforts. Perhaps more important, with a more egalitarian distribution of wealth, intergenerational redistribution becomes a form of social insurance to which most relatively modest wealth holders might readily assent, prior to the unfolding of their own individual histories of success or failure.

To address the problem of poverty among groups unable or unwilling to hold assets in a productivity enhancing manner we return to our notion of governance structures and incentive-compatible interventions. We make two proposals, one concerning the distribution of claims on income and the other the provision of services to persons with lower income. The logic of our proposals is that the state has unique and decisive advantages in the former and few in the latter.

Bad luck, as we have seen, is a contributor to poverty. So are good works. People engaged in the unpaid work of raising children, caring for home-ridden relatives, and performing community volunteer work typically have reduced access to income as a result of the services they perform. Some of this work has non-monetary rewards, but much of remains unrewarded. The result is a standard market failure, in which the beneficial effects of one person's actions are enjoyed by others without full compensation to the actor. The uncompensated status of what Folbre (1994) calls 'caring labor' biases individual decisions against performing this type of service and in favor of entering the market for paying jobs, thus exacerbating the problem of unemployment. There are thus strong *prima facie* efficiency grounds for

subsidizing caring labor and for supporting the institutions that promote it.⁵⁹

We propose that all individuals be given a basic income grant, provisional on performing some useful but unpaid social service, such as the unpaid rearing of children or the care of those confined to their homes.⁶⁰ The grants would be financed by the state, but distributed by non-profit organizations, thereby strengthening the role of the community in economic governance. Only those constitutionally incapable of providing useful social functions would be exempt from this requirement, and the determination of what sorts of activities are socially useful would be determined by the non-profit organizations themselves.

Which caring institutions should be supported? We propose that every taxpayer have the right to transfer a certain fixed sum directly to non-profit organizations, subject to the proviso that the groups be appropriately accredited (for instance by the state or designated professional bodies). This sum would then be deducted from the taxpayers' obligation to the government.⁶¹ The result of this decision mechanism is that community groups and other non-profit organizations would compete for grants, thus giving performance incentives to these groups, and individuals could formulate their own concepts of socially useful service, without having to conform to anything but a minimal uniform state-enforced norm. Non-profit organizations would also have an incentive to participate in the monitoring of groups with which they compete, thereby rectifying a major shortcoming state provision, in the absence of competition among state agencies.

Our second proposal concerns the provision of services. Except in areas such as insurance, where the unique advantages of state supply of services are compelling, the role of the state should be in financing and regulating the delivery of services, not the provisioning of services itself. The most incentive-compatible alternative to service delivery by the state is a combination of public funding and private (or possibly private and public) competitive provision along the lines of the Canadian health care system. The

⁵⁹Of course 'caring labor,' like worker effort, managerial effort, borrower prudence, and other actions that are difficult to monitor and hence cannot be effectively specified by contract, should be rewarded in a manner most likely to induce recipients to develop 'caring skills' and to elicit a high level of recipient effort. This could entail performance-contingent subsidies rather than flat grants.

⁶⁰This ideal is inspired by the basic income grant proposal of van Parijs and Van Der Veen (1986), though the conditionality of the grant derives from the related proposal of Atkinson (1995).

⁶¹Schmitter (1992) has developed a related proposal designed to support secondary institutions promoting civic engagement.

replacement of publicly owned rental housing for low income residents by public subsidies, to reduce the cost of acquiring private ownership of residences, is a typical case in which the redistribution of assets could be both productivity enhancing and targeted to raise economic well-being among the poor. In other areas, eligible recipients of such services as mental health, family counseling, home care for the sick and elderly, and dependency treatment, could be given vouchers that could be redeemed by any accredited private agency supplying these services, in the same way as food stamps, rent subsidies, and income supplements are provided under the current system in the United States. Individuals not competent to choose would, of course, be exempted from this system. This system, if well designed, could make the supply of services responsive to the needs of the recipients, much as in the case of school vouchers, and also give the recipients the dignity that comes from the right to choose.

The third intrinsic difficulty posed by our proposal concerns the evolution of culture. An economic system in which competitive markets and competition for public monies occupy an important place constitutes a distinct cultural environment, one that may favor the replication of some behaviors and cultural traits over others. Many of the traits plausibly favored by competition are widely considered to be socially valuable—personal responsibility, and an ethic of entrepreneurship for example—while others are not.

There is little doubt but that a society with no other societal interaction other than competitive exchange and in which rewards went to people who conform most rigorously to the archetypal *homo economicus* would induce others to adopt similar values and behaviors, thus promoting a set of widely deplored cultural values.⁶² But we have not suggested that society be reduced to competitive exchange or advocated a reduced presence of the state or of communities.

In a heterogeneous governance system, we would expect the social pressures that individuals face in competitive market relations to be complemented by the potentially cooperative relations they face within communities and workplaces, and by the ethic of human rights, party competition, and social purpose fostered by a liberal democratic political environment, particularly one whose public life was enhanced by the flourishing of non-profit organizations that might be expected under the tax credit system we propose.

⁶²For a critical evaluation of the effects of markets as cultural environments, see Bowles (1996, 1998).

Many egalitarians will applaud the promotion of community and state values, but consider the values fostered by competition, the market, and private property to be at best a necessary evil. We think this is incorrect. Developing the capacity to compete through the instrumental choice of strategies in competition with others doing the same is as much a part of personal development as is developing a capacity to cooperate, share and submit to legitimate authority. Indeed, competing is a common strategy for the assertion of one's individuality and the expression of one's creativity.

Finally, we cannot assess the culture engendered by our nexus of economic governance structures in the abstract, but must compare it with other suggested alternatives. Excluding utopian communitarian proposals, an obvious alternative to asset-based redistribution would be the restriction of competition and markets in favor of an enhanced role for central planning and hierarchical command relations, subjected to democratic accountability. It would be hard to argue that the cultural values promoted by such institutions would compare favorably to those suggested by our proposal. Evidence on the complex questions concerning the cultural consequences of alternative economic arrangements is hard to come by, but the reasoning of those who have studied the question with care is suggestive.⁶³ Putnam (1993) concludes from his study of networks of civic engagement in Italy that 'A vertical network, no matter how dense and no matter how important to its participants, cannot sustain trust and cooperation'. Similarly, Kohn's comparative study of work organization (Kohn et al. 1990) supports a causal link between bureaucratic structures and the evolution of authoritarian personality traits. These studies are hardly decisive, but they serve as a reminder that the cultural consequences of the alternatives to competition may be far from attractive.

11 Conclusion

The four egalitarian reallocations of property rights we have discussed—worker ownership, home ownership, children's rights and educational vouchers—illustrate a general point: property rights allocations affect both equity and efficiency. There is no reason to expect that an observed distribution of property rights is economically efficient, since those who might make the socially most valuable use of a bundle of property rights often lack the wealth to acquire the rights. Indeed, precisely because the less wealthy are differentially excluded from obtaining property rights in productive assets,

⁶³See Bowles (1998) for a survey.

it is likely that existing distributions of rights are excessively unequal from a purely efficiency standpoint.

Our analysis also illustrates a second general point: where people with differing objectives interact, resolving differences through compromise or permitting a third party (such as the state) to determine a uniform outcome is often inferior to restructuring the incentives facing the interacting parties and then allowing each to choose his or her preferred alternative. Markets and communities, in different but complementary ways, are thus necessary elements of any economically efficient nexus of governance structures.

The resulting economic policy paradigm, which we have termed ‘asset-based redistribution’ might be described as ‘competition on a level playing field’. In this paradigm the role of the state is to implement outcomes not directly, by *fiat*, but by establishing the property rights and rules of competition, as well as other rules that determine the outcomes of social interactions. This conception is a redefinition of the state’s role in governance as compared with traditional notions of the interventionist state, but not necessarily a reduction in its presence in economic affairs. While the state’s role in production would be minimal, the scope of its activities in redefining and reassigning rights of residual claimancy and control, in its credentialing role in an educational voucher system, or in implementing children’s rights, and in providing insurance, would be considerable. Moreover, the state would have an ongoing role in redistribution, though less in overriding market outcomes than in the continuing redistribution of property rights to overcome the disequalizing consequences of luck, increasing returns to scale, differences in individual abilities, and other forces contributing to uneven development.

A comparison may illuminate differences between our and alternative approaches. A fundamental difference among paradigms is the importance each gives to the redistribution of assets on the one hand and redistribution of the income or other benefits resulting from assets, on the other. Four possible approaches are illustrated in figure 11. Market socialism and central planning involve high levels of asset redistribution as well as state determination of at least some of the key prices in the economy and a centralized claim on a substantial fraction of the income flows received by productive units. In this they contrast with *laissez-faire* capitalism, which accepts no such interference with market outcomes. Social democracy and the developmental state (by the latter we mean the forms of state intervention undertaken by many Asian economies, such as South Korea and Japan) involve extensive intervention on the level of price determination (incomes policies, price supports, tariffs and quotas), but relatively little interference

| | | Redistribution of Market Determined Income Flows | |
|--------------------------|-------------|--|----------------------------|
| | | <i>High</i> | <i>Low</i> |
| Redistribution of Assets | <i>High</i> | Market Socialism Central Planning | Asset-Based Redistribution |
| | <i>Low</i> | Social Democracy Developmental State | Laissez-Faire Capitalism |

Figure 11: Interventions for Redistribution

with the distribution of property titles. Asset-based redistribution is the polar opposite of this pattern, reallocating residual claimancy and control rights among private owners, but not directly intervening in the market determination of prices, except where market externalities (e.g., environmental effects) indicate a divergence of market prices from social costs.

There are two economic advantages of asset-based redistribution. First, it is productivity enhancing because of its positive incentive effects in exchanges involving goods and services for which contracts enforceable at low cost cannot be written (this includes labor effort, information, and the intangibles determining the productivity in the production process). These advantages are diminished in the market socialist model (by the commitment to public rather than private ownership of property) and the social democratic model (by concentration of private property rights, depriving workers and others of the positive incentives of residual claimancy). Second, because asset-based redistribution achieves egalitarian outcomes through asset transfers, it can use markets to discipline economic actors without thereby enforcing a high level of inequality in economic outcomes. For the same reason it avoids the productivity-dampening incentives that accompany income redistribution through taxes and transfers. While asset redistributions involve some incentive distortion—there would be opportunities for wasteful rent-seeking in the provision of subsidized credit to worker-owned firms, for example—we believe that the support of productivity enhancing forms of egalitarian ownership could accomplish considerable redistribution at an acceptable cost.

But are not such proposals utopian in the face of the globalization of production and the heightened competition among producers facing radically differing wage structures? While global competition challenges many conventional redistributive policies, it does not preclude a recasting of the

egalitarian project along the lines we have suggested. An economically viable egalitarianism would rely substantially on the kinds of productivity enhancing asset-based redistributions that simultaneously promote equality and strengthen the economy's competitive position. The chief impediments to egalitarianism in the globally integrated economy may not be a dearth of economically viable programs, but rather a surfeit of political obstacles. There are three reasons for this.

First, as we have seen, by enhancing the degree of competition in most markets, international integration reduces the effectiveness of demand expansion policies that once helped secure the support of disparate elements in the egalitarian coalitions that promoted redistributive policies during the post-Second World War golden age. Second, the contemporary more globally competitive situation has heightened a divergence of interest between public sector and private sector workers, between the employed and the unemployed, among workers, farmers and those in the informal sector, and between these and other groups whose unified endorsement of egalitarian policies was often critical to their success. Owners of firms in consumer goods industries, for example, may be less likely to join workers in support of wage increases and other domestic demand-enhancing policies and look instead to the world market. Producers—employers and workers—in sectors exposed to competition may find alliances difficult to build with those in protected sectors, and particularly those in public employment.⁶⁴

Finally, to the extent that new policies require asset-based redistributions, they are likely to incur strong opposition by an anti-egalitarian coalition that in many countries can readily unify under the banner of the defense of the existing distribution and definition of property rights.

On the other hand, a broader dispersion of asset holdings in the population and the close association of property holdings with both residence and workplace entailed by the asset-based redistribution strategy would reduce the global mobility of capital and thereby might relax one of the major constraints on egalitarian policy.

⁶⁴Trade liberalization might enhance the viability of egalitarian coalitions in other respects. Gerschenkron (1944) argues that conflicts over tariff policies obstructed a potentially egalitarian farmer-worker alliance in pre-First World War Germany, for example. A general argument might be made that tariff and other policies that politicize the relative prices of commodities tend to favor within-industry alliances seeking to gain income by altering relative goods prices, rather than cross-industry coalitions seeking to alter income distribution directly. The latter type of coalition may be more viable as a vehicle for egalitarian policy.

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