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Inequality of Opportunity and Economic Development[1]

Francisco H.G. Ferreira and Michael Walton[2]

Abstract: Just as equality of opportunity becomes an increasingly prominent concept in normative economics, we argue that it is also a relevant concept for positive models of the links between distribution and aggregate efficiency. Persuasive microeconomic evidence suggests that inequalities in wealth, power and status have efficiency costs. These variables capture different aspects of people's opportunity sets, for which observed income may be a poor proxy. One implication is that the cross-country literature on income inequality and growth may have been barking up the wrong tree, and that alternative measures of the relevant distributions are needed. This paper reviews some of the detailed microeconomic evidence, and then suggests three research areas where further work is needed.

Keywords: Inequality of Opportunity, Equity and Efficiency, Inequality and Growth

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[2] Francisco Ferreira is at The World Bank and Michael Walton is with the Kennedy School of Government, at Harvard University, respectively. We are grateful to all of our colleagues in the team that prepared the World Development Report 2006, especially Abhijit Banerjee, Peter Lanjouw, Tamar Manuelyan-Atinc, Marta Menéndez, Berk Özler, Giovanna Prennushi, Vijayendra Rao, Jim Robinson and Michael Woolcock, on whose work this paper draws extensively. We also thank François Bourguignon for many helpful discussions, and Martin Ravallion for comments on an earlier version.

1. Introduction

Two relatively recent developments in thinking about distribution in economics, which have remained largely unrelated so far, ought to be much more closely connected. The first is the acknowledgement that distribution – in particular the distribution of wealth – may affect aggregate outcomes, such as the overall level of output, or its rate of growth. This had of course been a theme of classical economists, who intuitively understood the importance of distribution in political economy. It has also been recognized more recently, as in Nicholas Kaldor's view that the poor and the rich have different savings rates. Kaldor (1956) hypothesized that increases in income inequality today could lead to greater prosperity tomorrow, by increasing the average savings rate from a given amount of output.

But distributional considerations had been peripheral to mainstream neo-classical economics until the early 1990s, when a series of important papers suggested that, if credit and insurance markets were imperfect, the distribution of wealth might matter for the level and composition of aggregate investment, and hence to total output levels (e.g. Galor and Zeira, 1993). Different initial wealth distributions could also affect occupational choice and, through its impact on the relative supply of and demand for labor, determine wage trajectories and aggregate development paths (Banerjee and Newman, 1993). A variety of other mechanisms through which unequal wealth distributions could reduce economic efficiency when capital markets are imperfect were proposed.[3] The result was, as Atkinson (1997) put it, to "bring income distribution in from the cold" (p.297).

In a separate strand of work, it was also suggested that politics could be another channel through which distribution affected outcomes. If governments were not benevolent dictators, but instead represented the (possibly conflicting) interests of different groups in society, then the expected distributional outcomes of different policies (such as tax rates, or public expenditure decisions) would feature in the public decisions about them. The implication was that policies actually chosen and implemented need not be optimal from a social point of view. They might instead be optimal from the private point of view of the pivotal voter, dominant group, or government agent that makes the decision. To the extent that wealth (or income) affects either the individual's preference for different policy alternatives, or his power in influencing the ultimate government choice (or both), the distribution of wealth may affect the choice of policies, and hence the degree of the resulting inefficiency.

Early models of these policy decisions in a median-voter framework included Alesina and Rodrik (1994) and Persson and Tabellini (1994). Later, the interaction between political economy mechanisms and capital market imperfections allowed for an even richer set of possible outcomes, including one in which unequal wealth leads to inequality in political power and, consequently, to inefficiently low levels of redistribution. Plausible models exist in which such reinforcement between economic and political

[3] See, e.g., Aghion and Bolton (1997), Piketty (1997) and Aghion et al. (1999).

inequalities might lead to multiple equilibria, with some featuring higher inequality and lower output levels than others.[4]

The second development in thinking about distribution preceded these models of distribution and aggregate outcomes, and took place in the areas of public choice, welfare economics and theories of social justice - along the frontier between economics and philosophy. It consisted of a move away from *ex-post realizations* – such as incomes and utilities – and towards *ex-ante potentials* as the appropriate metrics for social welfare, or as the appropriate spaces in which to judge the fairness of a given allocation or system,. John Rawls (1971) may have been the pioneer in this essentially normative (and highly influential) literature, but he was soon joined by others such as Ronald Dworkin (1981), Amartya Sen (1985), G. A. Cohen (1989) and John Roemer (1998). As the very titles of some of their most important contributions indicate, these authors were concerned with the *space* in which one should seek to measure, understand and influence distribution.[5]

Although each author was different in important respects, the thrust of their efforts begins, with the passage of time, to seem similar in essence. Rawls's "Difference Principle" sought to maximize the availability of *primary goods* to the least privileged group; Sen wrote about *capabilities*[6]; Dworkin spoke of *equality of resources*; and Roemer emphasized *equality of opportunities*. While a number of worthy treatises have been written on the subtle distinctions between these different normative approaches, a broad common tendency can be identified in this evolution in the theory of social justice over the last three decades or so. And that is the movement away from *actual* ex-post outcomes (such as incomes) and their effects on the well-being of the individual (such as utilities), towards *sets* of *potential* outcomes, ex-ante (such as *capabilities* or *opportunities*).

We argue that these two separate developments in thinking, in two apparently remote areas of economics, should *not* remain unconnected. The reason is that inequality in opportunity – in addition to being an arguably superior concept on which to anchor the normative evaluation of alternative social states – may well turn out to be precisely the right concept for the empirical testing of theoretical hypotheses about how distribution affects aggregate efficiency and growth.

Most models that propose links between distribution and aggregate levels of output do not actually refer to income distributions. The key concept is usually the distribution of wealth (as in Galor and Zeira, 1993, and Banerjee and Newman, 1993) and, crucially, the extent to which, under imperfect capital markets, wealth levels may affect the set of feasible *investment opportunities* (or occupational choices). If education is a lumpy investment process with fixed costs, then those who are "too poor" may not have the opportunity to invest, despite the fact that returns may be high and that the investment

[4] See, e.g., Bénabou (2000) and Ferreira (2001).
[5] A number of papers echoed Amartya Sen's (1980) *Tanner Lecture on Human Values*, which was entitled "Equality of What?".
[6] Sen defines a person's *capabilities* as the set of all possible *functionings* – actions and states of being – that a person can choose from.

would have been undertaken if the credit market were perfect. Entrepreneurship may be a preferable occupation to being a wage laborer but again, if there are non-convexities in production and imperfections in credit markets, then the poor may not have that option, regardless of ability. If wealth and ability both determine the allocation of students to the best schools or colleges, then it will not be the ablest students who attend the best schools (Fernández and Gali, 1999).

The models are, therefore, fundamentally about the distribution of *opportunities*. Inefficiencies arise because the people who seize the opportunities (for education, investment, or entrepreneurship) are neither as many nor the same individuals as would have been the case if markets worked perfectly. Aggregate output is lower because capital ends up being invested at lower marginal returns by some richer investors, rather than at higher returns by credit-constrained ones. Or because dumb children from rich families have the chance to attend good schools, while clever children from poor families do not – and then go to schools with no teachers or simply drop out.

Think a little bit more broadly about opportunities, and the same logic begins to apply to the political economy models. That class of ideas revolves around power. The *same* distribution of wealth can generate very different economic outcomes – some efficient, some not – under different assumptions mapping wealth to political power (Ferreira, 2001). If one is prepared to think of a person's – or group's – ability to influence political decisions in his community as part of his opportunity set, then the political economy channel between inequality and efficiency (or growth) is also fundamentally about the inequality of opportunities. The empirical implications should be clear: if institutional set-ups (including the relative freedom of the press, the independence of the judicial system, and the transparency of the campaign finance system) differ across societies, the same degree of wealth inequality should lead to different aggregate efficiency outcomes. It all depends on the mapping between economic wealth and political power.

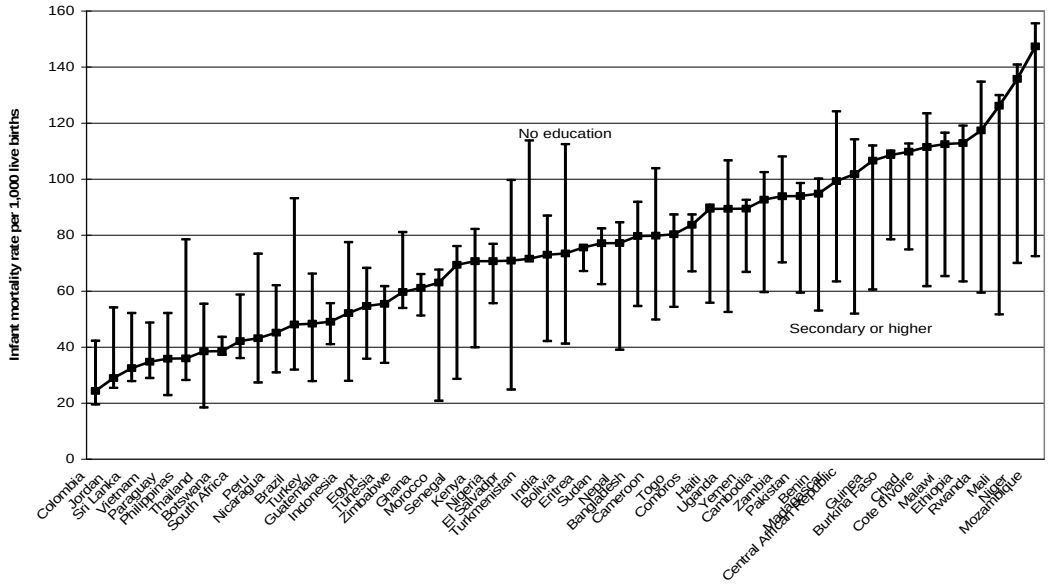
There may, therefore, be a coincidence between the normative concept towards which philosophers have been gravitating as a defining feature of the just society, and the positive concept of which greater equality may imply greater efficiency. It was the possibility of this remarkable convergence that motivated the World Bank's *2006 World Development Report*'s focus on equity and development.

In what follows, we sketch some of the arguments that the Report presents in greater detail. In Section 2 we present some evidence that morally irrelevant predetermined circumstances – i.e. factors over which individuals have no control, and which society deems to be irrelevant in terms of their deserts – do in fact powerfully affect outcomes. Following Roemer (1998), we interpret these effects as prima-facie evidence of the existence of inequality in opportunities. Section 3 argues that the existence of these inequalities in opportunity hold back development – through many of the mechanisms suggested in the theoretical literature, and in some other ways too. Section 4 considers some implications of the analysis, both for policy and further research.

2. Pre-determined circumstances shape lives

Opportunity sets begin taking form *in utero*. Who one's parents are, what country they live in, and how rich they are make a great deal of difference for a person's opportunities. The opportunity to life itself turns out to depend on such pre-determined circumstances as the education and wealth of parents, whether their house has access to clean water and sanitation, and how close it is to medical treatment. Consider Figure 1, which plots group-specific infant mortality rates across countries. Each vertical line in the figure corresponds to one country, and within each country, the highest point in the line indicates infant mortality (per 1,000 live births) among children whose mothers have no education, while the lowest point gives the corresponding figure for those whose mothers have completed secondary schooling or higher. The differences are striking, not only across countries, but perhaps even more so within them. In El Salvador, for instance, babies born to mothers with no schooling are four times as likely to die before their first birthday as their counterparts with better educated mothers.

Figure 1 Infant mortality varies across countries but also by mother's education within countries



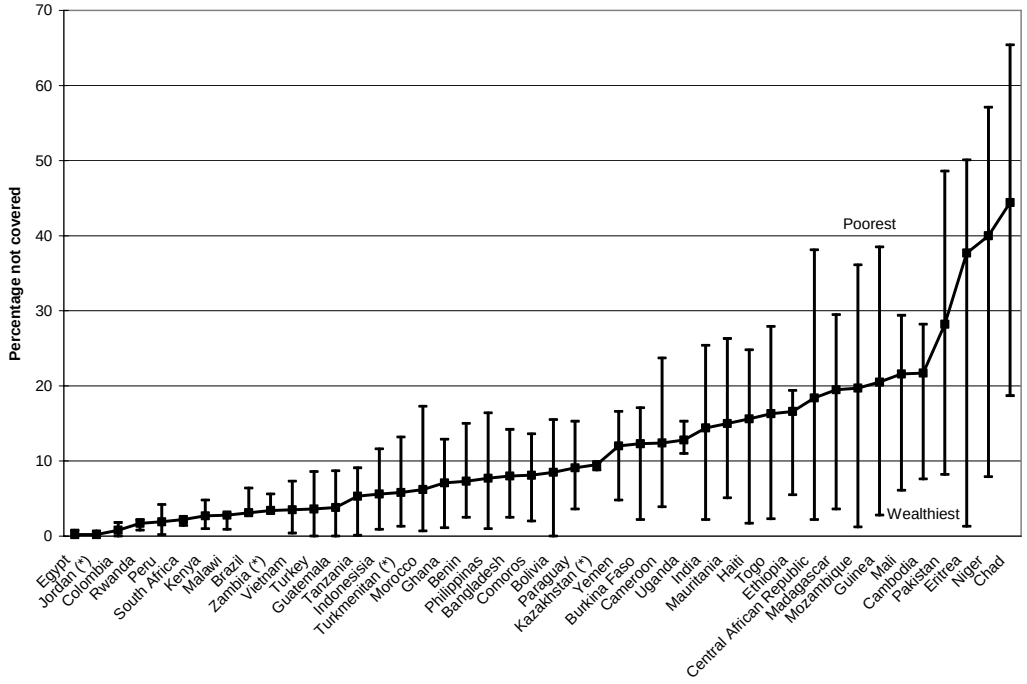
Source: World Development Report 2006, from Demographic Health Survey (DHS) data.
Note: The continuous dark line represents the mean infant mortality rate in each country, while the endpoints of the whiskers indicate the infant mortality rates by different levels of mother's education.

Parental education is not, unfortunately, the only predetermined circumstance that affects the basic opportunity for life. There is some evidence that gender does too, at least in parts of Asia, where juvenile sex ratios are unusually high. A juvenile sex-ratio simply measures the number of 0-4 year-old boys in a population, relative to the number of 0-4 year-old girls. Because slightly more boys than girls are born in a typical population at any given time, that ratio oscillates between 1.00 and 1.05 in most countries. Remarkably, in the Indian states of Punjab and Haryana, the 2001 ratio was above 1.20. In China, it reached 1.17 in 2000. While some recent work suggests that the patterns of incidence of hepatitis B – and the fact that it leads to more male births – may account for

some of these differences (see Oster, 2005), the dominant view is that this unusual discrepancy reflects son-preference in these societies, implemented through selective abortion and post-natal care (see Sen,1990, and Klasen and Wink, 2003).

Opportunities continue to depend on morally irrelevant, predetermined circumstances even if you survive your first year. Access to basic health care, such as immunization services, is strongly correlated with parental wealth (Figure 2). Even a child's cognitive skills seem to develop at different rates depending on family background, for children as young as 3-5 years old. Figure 3, drawn from Paxson and Schady (2004), shows the evolution of vocabulary recognition test scores (TVIP) for two groups of children from Ecuador: those whose parents have 0-5 years of schooling, and those whose parents have 12 or more years of schooling. By the time these children enter primary school, at age 6, they have markedly different learning abilities, shaped in large part by differential family backgrounds.

Figure 2 Access to childhood immunization services depends on parent's economic status

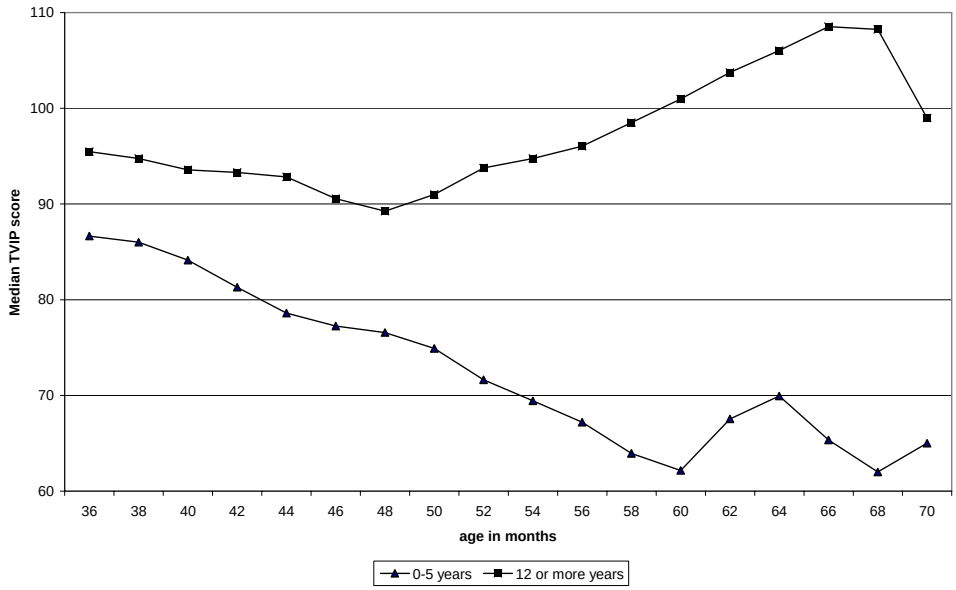


Source: World Development Report 2006, from Demographic Health Survey (DHS) data.
Note: The continuous dark line represents the percentage of children without access to a basic immunization package in each country, while the endpoints of the whiskers indicate the percentages for the top and the bottom quintile of the asset ownership distribution.
* Indicates that the poorest quintile have higher access to childhood immunization services than the wealthiest quintile.

These statistical associations do not establish causality, of course. While endogeneity should not be a concern in the associations presented above – because access to immunization rates or child mortality today can not cause parental education decades earlier – omitted variables clearly exist. The descriptions presented above are essentially

bivariate correlations. They do not establish the effect of, say, parental education on vocabulary recognition, or immunization. Parental education is obviously correlated with wealth, housing quality, access to water, distance to and quality of school, and possibly even with genetic endowments of ability that can be transmitted across generations. There is an important literature that seeks to identify each of these individual effects,[7] and it is clear that the simple patterns we describe here do not do so. What they do is suggest that the collection of these pre-determined circumstance variables (parental education, wealth, location, access to services, etc.), which can not be controlled by the infant or young child, do powerfully shape his or her choice – or opportunity – set.

Figure 3: Child cognitive skill development by maternal education



Source: Paxson and Schady, 2004.

3. Unequal opportunities hold back development – in a number of ways.

The fact that predetermined, morally irrelevant circumstances influence opportunities, and therefore final outcomes, was all that mattered to the second strand of thinking mentioned in the Introduction. A normative consensus – or at least some degree of convergence – was emerging, that judged such inequality of opportunities to be ethically undesirable, from the point of view of social justice. In this section, we argue that it is exactly this sort of inequality – inequality in the predetermined circumstances that shape opportunities – that leads to aggregate inefficiency, in the spirit of the first strand of thinking previously summarized. Consider three telling examples.

The first example is from an agricultural setting in Ghana, where land is allocated by custom, and security of property rights is therefore often linked to the local power structure. Goldstein and Udry (2002) find that individuals are less likely to leave their land fallow (an investment in long-run productivity of the land) if they do not hold a

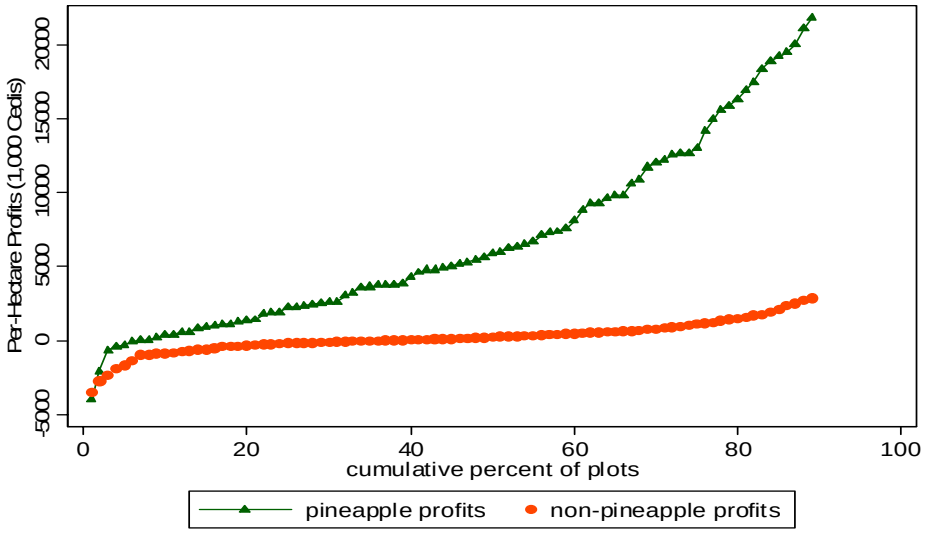
[7] See Card (2001) for a survey.

position of power within either the hierarchy of the village or the hierarchy of the lineage. The problem is that the land may get taken away from those with little influence when it is lying fallow. Because women rarely hold these positions of power, women's land is not left fallow enough and is much less productive than men's. This land gets degraded because women do not have the social status needed to hold on to it during the fallowing period. The key point for our argument is that the resulting decline in land productivity is a pure loss for society. The fact that other people do have status and can fallow their land as needed does not, in any way, compensate for the loss of productivity on the land of the powerless.

A separate study by the same authors (and in the same country) provides a second example of how unequal opportunities that arise from the interaction between poverty and imperfect or missing markets leads directly to inefficiency. In the forest-savannah in Southern Ghana, cocoa cultivation, receding for many years because of the swollen shoot disease, has been replaced by a cassava-maize intercrop. Recently, however, pineapple cultivation for export to Europe offered a new opportunity for farmers in this area. In 1997 and 1998 more than 200 households cultivating 1,070 plots in four clusters in this area were surveyed every six weeks for about two years. The survey results reveal that the profitability of pineapple production dominates that of the traditional intercrop (figure 4).[8] The average returns associated with switching from the traditional maize and cassava intercrops to pineapple is estimated to be in excess of 1,200 percent! Yet only 190 out of 1,070 plots were used for pineapple. When the authors asked farmers why they were not farming pineapple, the virtually unanimous response was: "I don't have the money".[9] While it is true that some heterogeneity in ability between those who have switched to pineapple and those who have not cannot be entirely ruled out, the authors conclude that the fixed costs involved in switching crops (combined with imperfect credit and insurance markets) prevent a large number of farmers from making a very profitable investment. Output and income levels in these areas is correspondingly below potential.

[8] From Goldstein and Udry (1999), figure 4.
[9] From Goldstein and Udry (1999), 38.

Figure 4 Average returns for switching to pineapples as an intercrop can exceed 1,200 percent



Source: Goldstein and Udry (1999).

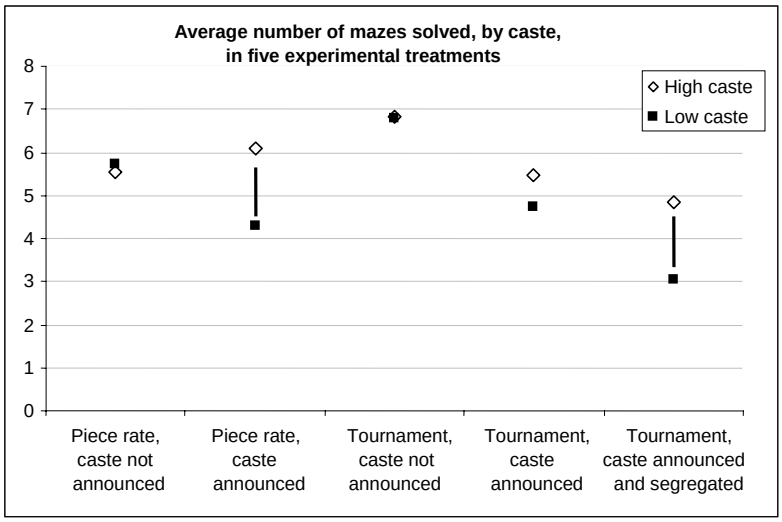
A final example comes from the impact of belonging to a low caste on individual performance. To examine the effect of stereotypes on the ability of individuals to respond to economic incentives, Hoff and Pandey (2004) undertook experiments with low- and high-caste children in rural north India. The caste system in India can be described as a highly stratified social hierarchy in which groups of individuals are invested with different social status and social meaning.

In the first experiment, groups composed of three low-caste ("dalits") and three high-caste junior high school students were asked to solve mazes and were paid based on the number of mazes they solved. In one condition, no personal information about the participants was announced. In a second condition, caste was announced with each participant's name and village. In a third condition, participants were segregated by caste and then each participant's name, village, and caste were announced in the six-person group.

When caste was not announced, there was no caste gap in performance (figure 5). But increasing the salience of caste led to a significant decline in the average performance of the low caste, regardless of whether the payment scheme was piece rate (that is, participants were paid 1 rupee per maze solved) or tournament (that is, the participant who solved the most mazes was paid 6 rupees per maze solved; the other participants received nothing). When caste was announced, the low-caste children solved 25 percent fewer mazes on average in the piece-rate treatments, compared with the performance of subjects when caste was not announced. When caste was announced and groups were composed of six children drawn from only the low caste (a pattern of segregation that for the low caste implicitly evokes their traditional outcast status), the decline in low-caste performance was even greater. While we cannot be sure from these data what the

children were thinking, some combination of loss of self-confidence and expectation of prejudicial treatment likely explains the result.

Figure 5 Children's performance differs when their caste is made public



Source: Hoff and Pandey (2004).
Note: A vertical line in the figure illustrates the statistically significant caste gaps.

The expectation by the low-caste subjects of prejudicial treatment may be rational given the discrimination in their villages. But the discrimination itself may not be fully rational. Cognitive limitations may prevent others from judging stigmatized individuals fairly. The fact that people are bounded in their ability to process information creates broad scope for belief systems—in which some social groups are viewed as innately inferior to others—to influence economic behavior. If such beliefs persist, it will generally be rational for those discriminated against to under-invest (with respect to others) in the accumulation of skills for which the return is likely to be lower for them.

The three examples above illustrate a growing body of microeconomic evidence of the inefficiency of inequality.[10] One case – that of Ghanaian farmers unable to switch from cassava and maize to pineapple – exemplifies the classic interaction between fixed costs, poverty and a missing credit market. Farmers were too poor to be able to pay the fixed costs required for making the switch. If a perfect credit market existed, they would have been able to borrow against the large expected returns of switching, to finance the investment. Market imperfections and a mass of poor people at the bottom of the distribution lead to missed opportunities and X-inefficiency.

But the other two examples are different. The Indian children who solve fewer mazes when they are explicitly reminded of their inferior social status do not require any markets that might be missing or imperfect. Yet, in a convincing experimental setting, their productivity is reduced by the mere existence of the social hierarchy. If similar declines in productivity occur in real work situations, the private and social losses would

[10] To paraphrase the title of Glaeser, Scheinkman and Shleifer (2003): "The Injustice of Inequality".

be no less important. The Ghanaian women farmers who cannot adequately fallow their land, leading to losses in its productivity, are similarly not suffering from poverty combined with missing markets. The channel here is an inequality in power, when effective property rights are power-dependent. What all three situations have in common is that differences in wealth, power or status generate unequal opportunities for productive investment. In all cases, these inequalities cause society to remain shy of the Pareto frontier.

A concern with these mechanisms is particularly justified because of the evidence that unequal productive opportunities persist across generations, over long periods of time. The World Development Report 2006 highlights two broad mechanisms through which inequalities are reproduced – leading to what it calls *inequality traps*. One is the simple fact that many of an adult's outcomes (such as his education and wealth levels, or where he lives) will be his children's pre-determined circumstances. If the child's outcomes are affected by the circumstances, the ingredients for intergenerational persistence are present. And in fact, a growing literature on intergenerational mobility (or the lack thereof) has documented the impact of parental background on achievement, and the degree of transmission of status across generations. In the US, Mazumder (2005) finds an intergenerational earnings elasticity of 0.6, implying that a family currently earning half the national average income can expect to take five generations to reach the average.[11] Estimates for developing countries are few and far between, but can be even higher. Dunn (2003) estimated an elasticity of 0.69 for Brazil.

The second mechanism for the persistence of inequalities is institutional endogeneity. Since Douglas North and Oliver Williamson modern economists have understood that the manner in which individuals and firms interact in markets is conditioned by the nature of non-market institutions – formal and informal rules and norms of behavior, and the agencies that enforce them. Among the most important roles of these non-market institutions are the definition and enforcement of property rights and contracts. People will not invest if property rights are not well defined and enforced, or if they believe that the contracts they write will not be honored. The state must also provide a whole set of other inputs apart from social order and fair contract enforcement. These include various types of public services and regulations. Lying behind well-functioning markets are legal systems, judges, policemen, and, ultimately, social groups and politicians.

But institutions, like policies, are not designed by a benevolent dictator. They evolve over time in response to the actions of individuals and groups who seek to protect their own interests. It follows that institutions – again just like policies – need not be optimal from a social viewpoint. It is perfectly possible that the institutions that are best-suited to the short-term interests of a particular group in a particular generation are not those most conducive to broad-based economic growth and development. If that particular group

[11] Mazumder's estimate is considerably higher than previous estimates (of around 0.4). See, e.g. Solon (1992). The difference arises mainly from the author's use of a long-term social security earnings history of fathers and children, which allows him to reduce the variance of the transitory component of incomes inherent in previous measures of father's economic status, usually drawn from the Panel Study of Income Dynamics (PSID) or from the National Longitudinal Surveys (NLS).

happens to be very powerful, however, it is also possible that those institutions end up prevailing, despite not being the best ones for growth and development.

The *World Development Report* 2006 discusses a number of examples, both historical and contemporary, of different institutional developments that appear to have been driven by different degrees of political and economic inequality. One revealing comparison – which draws on work by Acemoglu, Johnson and Robinson (2001), and Engerman and Sokoloff (1997) – is that between European colonies in North and South America. Those colonies, such as present-day Mexico, Peru or Brazil, where initial factor endowments enabled the colonizers to establish extractive institutions based on highly-concentrated property and control structures (such as the *encomienda* and *mita* systems used, for example, in the Andean silver mines; or the *capitanias hereditárias* in northeastern Brazil), tended to do less well in the long-run than those colonial backwaters, such as present-day Canada and northern United States, where conditions were not ripe for producing any of the day's most desirable commodities, such as gold, silver, or sugar.

In these places, instead of imposing concentrated patterns of land ownership and indentured or slave labor institutions, colonists were left to their own devices. The absence of large native populations (who could be exploited and dispossessed) or slaves (who were not imported, since soils and climates were not suitable for the crops that would justify the investment) meant that free populations of European descendants were soon in the majority. Rather than making rules designed to prevent the exploited native (or enslaved) masses from sharing in prosperity, these colonists soon demanded greater autonomy in decision making. Because population density was low and there was no way to extract resources from indigenous peoples, early commercial developments in Canada and the United States had to import British labor. And, relative to much of the colonial world, the disease environment was benign, stimulating settlement. Indeed, the Pilgrim fathers decided to migrate to the United States rather than Guyana because of the high mortality rates in Guyana.[12] Limited supplies of labor gave workers a greater bargaining power, forcing elites to extend political rights and create equal access to land and the law.

The World Development Report 2006, following Acemoglu, Johnson and Robinson (2001) and Engerman and Sokoloff (1997), argues that these initial institutional differences between North and South American colonies have persisted for centuries, and led to important differences in economic outcomes between the two sets of countries. The argument is that institutions that rely on a high concentration of property and control over resources, and that lead to limited opportunities for investment and innovation for large segments of the population, are less efficient. Because talent and ideas are widely distributed in the population, economies in which the property of all people is secure and in which there is equality before the law for all, rather than just for some, tend to do better. Similarly, political systems that provide access to services and public goods for all are associated with superior long-term economic performance.

[12] See Crosby (1986), 143–44.

4. Policy and Research Implications

The thesis of this paper is that inequality of opportunity, which has gained prominence in modern normative thinking about social justice, is also a highly relevant concept for understanding the positive links between distribution and efficiency. Wealth inequalities (combined with market imperfections), inequalities in power, and status differences have all been shown to lead to inefficiency, in a number of different contexts. It has also been argued, prominently and plausibly, that large inequalities in power and wealth can lead to institutional characteristics that are associated with lower subsequent growth.

The broad implication for public action is that the effects of any policy on the distribution of opportunities will in general have an impact on aggregate efficiency, which needs to be taken into account in any assessment or evaluation of the policy. In some cases, the impact may be direct, and relatively simple to measure. Building a road that connects a poor and geographically isolated area to markets may increase profit margins on sales of its produce and lower the costs of consumption goods in (possibly) measurable ways. In many other cases, however, measuring the efficiency gain from redistributing opportunities is much harder. How does one quantify the savings from ethnic conflicts avoided by a (hypothetically) successful integration or affirmative action program? How long must one wait until the full benefits of educating girls today shows up in their children's opportunities in the future?

We return to these measurement and long-term evaluation challenges below. Conceptually, however, the general point is that if highly unequal opportunities generate inefficiencies, then reductions in these inequalities may well be efficient. Ignoring the *full* long-run benefits (costs) of any reductions (increases) in inequality of opportunity will therefore generally result in an under-provision of efficient redistribution.[13]

The World Development Report 2006 discusses implications of this general point in considerable detail, and for a variety of policy areas. The lasting impact of early childhood nutrition and mental development on subsequent opportunities implies that the pay-offs to investment in early human development programs are likely to be large. The imperfections of insurance markets imply that the existence of appropriate social security systems can enable efficient (but riskier) investment decisions to be made. Complementarity between infrastructure and private capital often argues for an expansion of access to the poorest groups. Market rules and institutions are often skewed towards more powerful groups, sometimes generating substantial inefficiency in resource allocation.

[13] The term 'efficient redistribution' has been used before. In one prominent discussion, Bowles and Gintis (1996) argued that a number of "asset-based" redistributions – including of property rights over firms to workers; over houses to tenants; of school vouchers to parents; and of parental income streams to children – would increase efficiency, by transferring residual rights of control over assets to those whose actions more directly affect asset use or maintenance. While there are very substantial differences between their detailed proposals and the World Development Report's, there is also one basic broad similarity: both emphasize the potential for asset redistributions than enhance, rather than attenuate, productive incentives. Both approaches suggest that equity can and should be pursued in a market-friendly manner, with potentially large efficiency gains.

The report, which dedicates four chapters to these themes only briefly mentioned here, insists that appropriate policy recommendations can only be made with an adequate understanding of the local context. The question of whether the highest social return to a marginal dollar – even once the full benefits of equity are taken into account – accrues to improving the rural road network or expanding a conditional cash transfer scheme clearly *cannot* be answered in the abstract. The answer to any such question will surely depend on specific conditions in the country. In some cases, a priority for both efficiency and equity reasons will lie in reforming a captured and corrupt financial system. In others, it may be that the marginal dollar should be returned to the tax-payer, in the form of lower taxes. In others yet, the expected long-term returns on a publicly-funded expansion in basic health care may be so high, that taxes may need to rise.

Such context specificity, while rather fashionable these days, has serious implications of its own for applied research. If the concept of opportunity sets, and the distribution of opportunities, really turn out to matter for development policy, considerable progress will be needed in their measurement. We close this paper with a suggestion of three areas where further applied research would be helpful, if policymakers are to be presented with evidence on the basis of which better-informed decisions can be made.

Measurement of inequality of opportunities is surely one of them. If opportunities are perfectly correlated with incomes – or wealth – then clearly one just needs to measure those variables accurately. The hypothesis that is often proposed, however, is that the determinants of opportunity are many, so that the partial correlation with any one of them is imperfect. Wealth may very well affect opportunities but so, the argument goes, do race, disability, gender, caste, place of birth, etc. If that is so, can one compute acceptable summary indicators of this ex-ante set of potential outcomes? Initial attempts have been made, but the area is in its infancy, and more work is needed.[14]

Since inequality of opportunity is closer to the concept of distribution that is relevant to the theoretical literature on inequality and growth than income inequality, a related question is whether turning to such an indicator might shed light on the inconclusive empirical cross-country literature on the subject. While most cross-section regressions of growth on initial income inequality (with controls) have returned negative and significant coefficients on inequality, most panel regressions of growth on lagged, time-varying income inequality (with controls) have returned positive and significant coefficients.[15] If we were able to measure inequality of opportunity directly for a number of countries, so that one no longer needed to rely on income inequality as a proxy, would the cross-country result shed light on the 'macroeconomic' effect that corresponds to the micro-economic impacts identified through studies such as those discussed in Section 3? The question remains open.

[14] See Bourguignon, Ferreira and Menéndez (2003), Cogneau and Gignoux (2005) and O'Neill, Sweetman and Van de Gaer (2000).

[15] See Bénabou (1996) for a survey of the cross-section results, Forbes (2000) and Li and Zou (1998) for two influential panel studies, and Banerjee and Duflo (2003) for a possible interpretation of the differences.

Long-term evaluation of projects and policies aimed at greater equality of opportunities is a second policy-relevant area where the current stock of knowledge is insufficient. The World Development Report suggests, in a number of instances, that returns on some investments in the opportunity-poor may suffer from a considerable delay. The impact of better nutrition for expecting mothers may not show up until today's fetus becomes an adult. Gains from reduced ethnic conflict that may follow from investments in poor ethnic minorities today may accrue decades into the future. And so on. However difficult properly evaluating impacts over extended periods of time may be, attempts would have to be made, unless policy-makers are expected to take such benefits on pure faith.[16]

A related question is that of *quantifying* the costs and benefits. It has long been understood that policy choices depend not only on a careful identification of impact, but on a relative quantification of the costs and benefits of individual projects, relative to alternatives. The difficulties are many, but it is somewhat unfortunate that the basic insights from the literature on cost-benefit analysis - from Little and Mirrlees (1969) and Drèze and Stern (1987), for instance - are so unfashionable these days. However unglamorous such estimations may appear to contemporary journal editors, there is likely to be substantial policy payoff from combining the much improved techniques for measuring impact (from experimental and matching methods), with a preoccupation to value their costs and benefits.

The link between equal opportunities (or equity more broadly) and institutional quality is the third area where current knowledge is insufficient. While the historical evidence presented by Acemoglu, Johnson and Robinson (2001) and Engerman and Sokoloff (1997) is persuasive, it falls short of nailing down the precise mechanisms through which equity affects institutions in ways that are relevant to current policy design. The arguments are plausible, but more – and different categories of – evidence is needed. This is likely to require research that can both identify the determinants of institutional differences, and document the processes at work. One approach is to look for cases of natural experiments that allow for the identification of causal effects. Two studies from India provide examples of work that seeks to capture causal influences: Banerjee, Gertler and Ghatak (2002) examine tenancy reform in West Bengal; and Besley et al. (2004) analyze the effects of changes in the rules of local democracy (that increase representation of scheduled castes and tribes in village governments) on the provision of public goods. In this category of research, it will be important to link with the large tradition of political science, sociological and ethnographic work to understand the processes at work.

One area of particular interest is research that can link an understanding of institutions to core concepts and approaches of economics: a promising avenue in experimental economics is the use of laboratory experiments in which subjects play variants of a same basic game, with controlled changes in rules (institutions). One interesting example is the Repeated Public Good Game, in which individuals must decide whether to keep their

[16] The difficulties in carrying out even well-designed experimental evaluations over a long period are illustrated by a recent medium-term evaluation of student achievement following the PROGRESA (now *Oportunidades*) program (see Behrman, Parker and Todd, 2005).

money (at zero returns), or invest it in a common project with high returns. Rates are set such that the highest returns to all players are attained when all invest 100% in the common project, but the dominant strategy for each individual player is to try to free-ride on others: not to invest one's own resources, but seek to benefit from the high returns in the common pot. Fehr and Gachter (2000) find that actual behavior in the game differs substantially depending on whether punishment (expending real resources to punish non-cooperative behavior) is allowed or not. When punishment is permitted, even a small number of altruistic players can sustain a cooperative (and Pareto-superior) equilibrium. While in this example institutions are exogenous, and one investigates their effects on outcomes, it might be possible to design experiments where rules are endogenous, and where the distribution of endowments changes.[17]

As research on these different fronts evolves, we may learn more about the nature and extent of redistributive activity that governments should seek to pursue, even if they are concerned exclusively with dynamic efficiency. Normative considerations will always remain important, and they are additional to these insights. Such an agenda would complement the substantial evidence already presented in WDR 2006 about the extent of the inequality of opportunity that exists today, both within and between countries, and about its impact on investment and institutions.

[17] Other research strategies are evidently also possible, including detailed case studies of how particular institutions develop, or looking for governments, national or local, willing to conduct "institutional experiments".

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