POLICY BRIEF

EQUALITY OF OPPORTUNITY AS A MEASURE OF DEVELOPMENT
EQUALITY OF OPPORTUNITY AS A MEASURE OF DEVELOPMENT

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ABSTRACT

A society, regardless of average income, education and public health, is not truly developed unless all its citizens receive equal opportunities. An individual achieves success through three categories: an individual's choice, an individual's circumstances, and the public policy that enables economic and social environments in which an individual can find success despite their circumstances. Public policies should target specific categories that can make it more difficult for individuals to achieve equal social and economic opportunities, thus achieving success in their society. Four uncontroversial and universal circumstance that impact a person's circumstances are parental income or educational level, ethnicity, gender, and upbringing in a rural versus urban household. The following paper explains how public policies should combat the unfair disadvantages the above circumstances impress upon an individual if they do not experience unequal advantages, such as status advantages that come from belonging to certain ethnic or caste group, socioeconomic advantages, network and positional advantages that derive from living in the right place at the right time, and biological advantages that result from living without physical or mental disability. In addition to specific nations implementing policy changes that better address unequal opportunities, the United Nations Development Programme (UNDP) can also address this issue by determining regionally and nationally specific unequal opportunity circumstances – including income, education and health status – and collecting data on how to implement policies that will be most effective at reducing inequalities of opportunity in each country.
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INTRODUCTION:
DEVELOPMENT ENTAILS EQUALIZING OPPORTUNITIES

A society – even one that has achieved a high level of average income, education and public health outcomes – cannot be considered developed if its ordinary citizens do not believe that life is fair. But what exactly is fairness? However varied, most answers have their root in some notion of equality – equality before the law, equality of representation in politics, and so on. Building upon the work of one of the present authors (Roemer, 1996; 1998) we propose that fairness means that citizens have equal opportunities to achieve their goals. We will define the roles played by choices and circumstances in the origins of inequality and go on to propose metrics for measuring, and policies for achieving, equality of opportunity. We will conclude with a set of recommendations for policymakers.

We consider the goals of citizens as those that prior work in development has identified as important and influential in policy: Individuals seek to achieve a high income, good health, the empowerment afforded by education and other such objectives as measured and reported in past United Nations Development Programme (UNDP) Human Development Reports. We will refer to these goals as the objectives of individuals.

What does it mean for individuals to have equal opportunities to achieve their objectives? We postulate three categories of inputs that determine success. The first set of factors are the individual’s choices, which includes the effort she puts in, the decision of which sector to work in, etc. The second set includes those that we call the individual’s circumstances. This includes all individual-specific factors relevant for success but not chosen. For example, individuals do not choose the ethnic group to which they belong, the socioeconomic status of their families of origin, their rural or urban background, or their gender. But it is evident that these things will matter at least to a degree in determining their lot in life. Individuals ought to be held responsible for their choices, but not their circumstances. The final category is public policy which shapes the economic and social environment in which they live, the benefits they receive, and, importantly, the relative importance of their circumstances versus their choices.

“‘We cannot consider any society developed if its ordinary citizens remain steeped in a deep sense of unfairness, believing that the 'system is rigged’”

Good public policy, we argue, blunts the effect of circumstances, while amplifying the relative importance choices have in an individual’s success. When individuals consider fairness, they think not just about what they and their fellow citizens are entitled to, but also what they are responsible for. Circumstances, as we have defined them, are the aspects of their situations or environments for which individuals cannot be held accountable, whereas choices are, up to a degree, their direct responsibility. Many will consider inequality due to circumstances to be unfair, but not inequality due to choices. Why, after all, should children born to poor, uneducated parents belonging to a disadvantaged ethnic group have fewer opportunities than those born to wealthy, educated parents belonging to an advantaged ethnic group? On the other hand, if a pair of twins who received the same opportunities in life earn differential rewards because one was lazy while the other worked hard, it is harder to justify what we might term ‘correcting’ the inequality in some way.

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1 Since 1990, the UNDP has published Human Development Reports (HDRs) most years; see http://hdr.undp.org/en/humandev.

2 We discuss below how circumstances may influence choices.

3 Actually, a fourth factor that we did not mention also contributes to determining an individual’s success: ‘episodic luck.’ Two individuals with the same circumstances who worked equally hard may reap different rewards simply because one got lucky in life and the other did not. Developed societies are often ambivalent about accepting this kind of inequality, and implement social insurance policies to insure individuals against bad luck. Standard veil-of-ignorance arguments going back to the philosopher John Rawls (1971) are used to justify social insurance policies, besides the fact that there is a market demand for such insurance.
What we are saying is that the reason, or source, of inequality matters. In the introduction to his influential book, *Capital in the 21st Century*, Thomas Piketty (2014) wrote: “Inequality is not necessarily bad in itself: the key question is to decide whether it is justified, whether there are reasons for it.” We then go on to learn that much contemporary inequality in industrialized countries arises from inherited wealth and, thus, rests on circumstance. Most people find this more disturbing than if the data had shown that essentially all inequality depends on differences in earnings rather than inheritance; that would indicate perhaps that choices play a more important role than circumstances (although, of course, we could find other circumstances beyond parental inheritance as objectionable sources of inequality).

When opportunities are equal, how well individuals do in achieving their commonly held objectives does not depend at all on their circumstances. If opportunities are not equal, then public policy can seek to equalize them by neutralizing the effects of the circumstances on the objective. When public policy succeeds, then how well an individual did in achieving the objective depends entirely on the choices she has made and for which she may be held responsible, and not on her circumstances, for which she should not.

The United Nations should guide policymakers toward policies that equalize opportunities in their societies. It is not enough for developing countries to raise their average levels of income, health status and education, or lower the percentage of individuals living below the poverty line. They must also move towards creating a fairer society for their citizens. The way to do this is by implementing policies that equalize opportunities for all citizens.4

### HOW DO WE IDENTIFY CIRCUMSTANCES?

We have our own personal views as to which attributes define circumstances — those that individuals do not choose and for which they should not be held responsible. But, as a methodological matter, an important component of the equality-of-opportunity approach is cultural deference on this question. What serves as circumstance for some may prove a choice for others, and this may vary across cultures.

Consider, for example, religion. An individual’s faith can affect her success in pursuing an objective because members of some religions may face greater societal discrimination than others. In some cultures, religion may be a circumstance, whereas in others it is a choice. When individuals of a particular religious background cannot avoid the discrimination that comes with it, even by converting to another religion or abandoning religion altogether, then religion constitutes a circumstance. In other societies where this is not the case, we might consider religion a choice.

Another difficult question is whether we should consider even personal choices as completely determined by circumstances, because all choices may arise from mental or psychological states of mind outside the control of the individual. The materialist thesis says that any action a person takes has a correlated physical state in his or her brain. A person’s thinking and actions, in principle, can be read from physical brain states. Compatibilists say that the materialist thesis and the postulate of meaningful responsibility are mutually consistent. One can believe the materialist thesis and still assert that there are actions for which it makes sense to hold a person responsible. Incompatibilists say the two are inconsistent: if the materialist thesis is true, responsibility makes no sense. For an incompatibilist, everything is circumstance; there are no such things as choices.5

Most philosophers are compatibilists. What thinking supports the compatibilist view? If one has contemplated an action and undertaken it in a calm and sober state, with intact powers of thought, then one becomes responsible for the action. The fact that the

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4 See Appendix C for further reading on research into equality of opportunity.

5 Often, the language of ‘freedom of the will’ is used. Having free will means persons are responsible (to some degree at least) for their actions. An incompatibilist says this is impossible if the materialist thesis holds. A compatibilist does not consider the two to be inconsistent.
action and the thought that preceded it have physical correlations in the brain does not permit a person to say, “Don’t hold me responsible, my synapses did it.”

Of course, a society may, over time, hold people responsible for a smaller set of actions than it did earlier in history, as it learns how circumstances cause behaviour – that is, as social science advances. A compatibilist holds persons responsible for actions that they appear to have arrived at by calm, conscious thought, even though she recognizes that those actions may eventually appear as due to circumstances beyond the individual’s control. A compatibilist will recognize that what counts as a circumstance will not only vary across cultures; it will also change over time.

Finally, at what age should society start holding individuals responsible for their choices? Should children be held responsible in the same way that adults are? A child is an adult in the process of formation. As such, children should not be held responsible for anything, as far as equality of opportunity policies are concerned. Whatever the child does or accomplishes in adolescence, we should consider as ‘circumstance’ the entire biography of the individual up to that age! Some might object: if this were the case, then would not society end up holding adults responsible for very little, because the adult’s path is in large part determined by who he or she is at age 16? Perhaps, but this only means that society must invest a great deal in children under 16, and particularly in disadvantaged children, so that they have an equal starting point to others at 16 years of age. The alternative, of holding children responsible for their behaviour at age 10 (for example) is not acceptable, if we understand childhood as a period for learning what comprises morality and responsibility, and if we fix the age of moral consent at 16.

This view implies that up to a certain point that we call the age of moral consent, everything that a child does should be considered as due to circumstances. Each society sets the age of moral consent – often sometime in adolescence. Ideally, if we measure inequality of income opportunity in, say, a society of adults with 16 as the age of moral consent, then we should consider as ‘circumstance’ the entire biography of the individual up to that age! Some might object: if this were the case, then would not society end up holding adults responsible for very little, because the adult’s path is in large part determined by who he or she is at age 16? Perhaps, but this only means that society must invest a great deal in children under 16, and particularly in disadvantaged children, so that they have an equal starting point to others at 16 years of age. The alternative, of holding children responsible for their behaviour at age 10 (for example) is not acceptable, if we understand childhood as a period for learning what comprises morality and responsibility, and if we fix the age of moral consent at 16.

We have said that it is up to each society, given its culture, to decide what counts as a circumstance and what does not. Importantly, this implies that a planner who desires to measure inequality of opportunity in a society should decide upon the set of circumstances, for which they may be held responsible, and not on their circumstances, for which they should not.

“How well an individual did in achieving the objective should depend entirely on the choices he or she has made and for which they may be held responsible, and not on their circumstances, for which they should not”

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6 A few years ago, one of us was writing a paper measuring inequality of opportunity in several countries, and one of our collaborators proposed using brain scans of persons that were available in our data set as circumstances. We strongly opposed doing so. Why? As compatibilists, we believe that every action a person takes, for which she is responsible or not, has an associated brain state. Thus, showing that particular brain states were associated with an action tells us nothing about whether we should hold the person responsible for the action. Brain scan data are not irrelevant, but at present, we believe that using such data to excuse an individual from responsibility is only permissible if we have a causal theory of action. If we have a plausible theory of causation, in which the causes of the action are agreed to be circumstances beyond the individual’s control, then she should not be held responsible.

7 The reason that we say children should not be held responsible as far as equality of opportunity policies are concerned, is that when raising children, we do hold them responsible for their behavior and actions, as a way of teaching them what is acceptable. This is a pedagogical strategy and does not imply that children are indeed morally responsible for their actions.

8 The terminology here is that talent is an inborn trait and skill is the output when education and training are applied to talent.

9 It is clear that parental income and education matter everywhere. Ethnicity is often the focus of discrimination, and should be delineated as circumstances. The same goes for gender.
MEASURING EQUALITY OF OPPORTUNITY

As we have said, the important factors outside an individual’s control that determine her success will vary by society, and so the data and measures of inequality of opportunity will also vary. In India, for example, membership in a high caste makes it easier for one to succeed in life. But individuals cannot choose their caste, so it is a circumstance; they cannot be held responsible for its effect on their incomes. On the other hand, in a country like Iceland, we cannot consider caste a circumstance because it does not shape discrimination. But some circumstances will be common to all societies. In virtually every society, the children of wealthier and more educated parents have an advantage. Children do not choose their parents, so again they cannot be held responsible for any disadvantage that comes with poorer or less educated parents; therefore, the wealth and education of one’s parents become part of one’s circumstance.

Consider the following hypothetical scenario. Sangeeta is a Dalit woman in rural India from a poor background. She has worked hard to support herself and achieved a modest yearly income that is at the 80th percentile of income among all rural Indian Dalit women. Gopal is a Brahmin man living in Mumbai who comes from a privileged background, and whose income is much higher than that of Sangeeta’s. Gopal too has worked hard in life, and his income also sits at the 80th percentile of income among all urban Indian Brahmin men. If caste, urban-rural status, and gender are the main factors besides individual effort that determine success in earnings, we contend that the inequality in income between Gopal and Sangeeta is due entirely to these factors outside their control. This would call for policies that would equalize their incomes.

But what if Gopal worked much harder than Sangeeta to get to the same 80th percentile among his group? What if he put in more long workdays and sleepless nights? We can only attribute this additional effort to his circumstance as a high-caste urban male; perhaps membership in this category teaches children to work harder. But if Gopal sits at the 90th percentile of income among urban Brahmin males, then part of the inequality between him and Sangeeta would be due to the choices that they have made. In this case, a policy that fully equalizes opportunities across members of Indian society would give Gopal a higher income than Sangeeta. Correspondingly, if Gopal sits at the 70th percentile among his circumstance category, but still earns more than Sangeeta, who is at the 80th percentile among her circumstance category (what we will call a ‘type’ from here on), a policy that equalizes opportunities would give Gopal a lower final income than Sangeeta.

The claims that we make in the preceding two paragraphs rest on four important ideas. First, we characterize every individual as belonging to a type, a group of people who share the same circumstances. In the above example, Sangeeta is a member of the (female, rural, low caste) type and Gopal belongs to the (male, urban, high caste) type. Second, we define the degree of effort of an individual as his or her place (centile position) on the income distribution of his or her type. Third, we understand that the distribution of income of a type is itself a circumstance of that type: That is, it is a fact about society, determined by social policy, not by any individual. Therefore, it is a circumstance for that type and, as such, we should not hold persons responsible for belonging to a type with a low distribution of income or effort – a distribution with, let us say, a low mean. Fourth, given these terms, we say that the equal-opportunity ideal at which policy should aim is to equalize the type-distributions of income. In particular, the income differences between those at the same centile of income across types should be minimized by crafting policies that raise the income of those in the most disadvantaged types.

OPPORTUNITY MAPS

What does this imply about how we measure inequalities in opportunity? Suppose for the sake of illustration, that the only factor that affects an individual’s expected income besides that individual’s effort is parental educational level. Consider Figures 1 and 2, which present what we call ‘opportunity maps’ for Ecuador and Germany, respectively.
The UNDP Strategy, Policy and Partnerships (SPP) team in RBAP

Figure 1: Cumulative distribution function of seven parental-education types on individuals’ incomes in Ecuador (USD, annual)

This is not the case in Germany, which focuses on three levels of maternal education. We see that the three distributions of income in Germany fall much closer together. The distribution of income among persons of a given type precisely summarizes the income opportunities available to its members. Inequality of opportunity for income is a good deal higher in Ecuador than in Germany.

Of course, these inferences rest on the assumption that parental education is the only relevant circumstance in both societies, which is an unlikely scenario. Many more circumstances will play a part, and these will vary by country. In many developing societies, such as China, urban-rural status may prove an important circumstance, if children born and raised in rural areas become disadvantaged with respect to those from urban areas. In Figures 3 and 4, we present the evidence for this. Figure 3 shows the income distribution in the rural and urban parts of Southwest China, while Figure 4 shows the same distributions for Central China. We see that, although urban status confers an advantage in both regions, the advantage appears greater in Southwest China than in Central China.

In the language of statistics, the seven income distributions are ordered perfectly by first order stochastic dominance.

Source: Pinto et al. (2015); Cumulative distribution function computed by the authors.

Figure 2: Cumulative distribution function of three maternal-education types on individuals’ incomes in Germany (EUR, annual)

Source: Author calculations based on Peking University (2004)

Source: Eurostat (2005)
In determining how to construct the most informative opportunity map, each society’s citizens and policymakers should determine which circumstances it considers the relevant ones for which they do not hold individuals responsible. With these taken into account, the kinds of opportunity maps shown above for Ecuador, Germany and China can provide a clear picture of inequalities of opportunity. In Appendix A, we suggest a survey that can gather the information necessary to produce such opportunity maps, assuming the four circumstances that we have suggested above (parental education, ethnicity, gender and rural/urban status) will define the main types.

INDICES
Consider again the opportunity maps for Ecuador and Germany. These opportunity maps suggest less inequality of opportunity in Germany because the distributions for Germany appear tighter (to the extent that the mother’s income can be safely assumed as the only relevant circumstance – an assumption that we have already questioned). How can we formalize this in order to produce a simple measure of inequality of opportunity? One could measure the ratio of median income among the most disadvantaged type to the median income among the most advantaged type. We may infer that the higher the measure, the more equal the opportunities.11

In Ecuador, for example, we see that the median income for the most disadvantaged type is about 3,000, while that for the most advantaged type is 12,000. This gives us an equality of opportunity ratio (EOR) of 3,000/12,000 = 0.25. For Germany, the most advantaged type has a median income of 27,000 while the most disadvantaged type has 23,000. Therefore, in Germany, EOR = 23,000/27,000 = 0.85. By this measure, Germany appears significantly more developed than Ecuador.

Of course, this simple measure discards much information that becomes available in the opportunity map, which depicts the extent of inequality of opportunity — with the caveat that parental education is only one of several important circumstances that determine individual income, so that the figures presented here tell only part of the story. The EOR measure simply tells us how far apart the objective’s distributions are across a pair of types. It does not have any qualitatively interpretable meaning beyond that. But it may still prove a useful statistic that can guide policy evaluation and help track improvements in opportunity equality over time and across countries. For example, the Czech Republic has an EOR of 0.57, allowing us to assert that the Czech Republic is more developed than Ecuador but less than Germany.

Similarly, suppose that the government of Ecuador starts adopting policies that improve equality of opportunity, and the EOR measure 10 years from now climbs to 0.5. We would be able to say that Ecuador has made substantial progress in equalizing opportunities and is fast approaching the Czech Republic, although it still has some way to go before it reaches the level we see in Germany.

We must emphasize that this measure discards the fuller picture derived from the opportunity maps, and that the latter themselves may not tell the whole story; they surely do not consider all of the immutable circumstances that we know contribute to individual success, and that vary across societies. Since UNDP produces region- and country-specific Human Development Reports in addition to the global report, it could collect the data necessary to provide a more tailored picture of inequality in opportunity through regional and country-level opportunity maps, ones that account for important region- and country-specific circumstances. EORs can then be computed easily from the data in these maps.

Another measure of inequality of opportunity that has a clearer interpretation is the fraction of inequality due

11 Since we are comparing distributions, a best and worst distribution may or may not exist, but in practical applications, we have found in most cases the distributions of the objective across types can be ordered from worst to best according to the ordering induced by first order stochastic dominance.
to any given set of circumstances. We explain how to compute this measure in Appendix B.

COMPARISON WITH OTHER INEQUALITY MEASURES

Our (in)equality of opportunity measures can play a vital role in public policy by complementing other measures of inequality such as Gini coefficients (for income, landownership, etc.) or even the inequality-adjusted Human Development Index (IHDI) that the UNDP has published in recent years.\(^{12}\)

To see why equality of opportunity measures have such relevance, let us return to Gopal and Sangeeta whom we introduced above. If despite their different backgrounds, Gopal and Sangeeta truly had equal opportunities in life but Gopal became twice as successful as Sangeeta simply because he worked much harder, we would have a difficult time justifying public policies that compensated Sangeeta (particularly if they came at Gopal’s expense). But if Gopal is twice as successful as Sangeeta mainly due to his status as a high-caste urban male, where Sangeeta is a low-caste rural female, then it becomes easier, we would argue, to justify public policies that compensate Sangeeta for her disadvantage.

The conventional measures of inequality such as the Gini (and for that matter the IHDI) do not distinguish between these two very different causes of inequality: The overall level of inequality is the same in both. But the equality of opportunity approach does distinguish between them: Inequality of opportunity is nil in the former and substantial in the latter. And we argue that distinguishing between these causes matters if we study inequality in the first place in order to create a fairer society. It is precisely this view that guides our distinction between circumstances and choices, and we encourage policymakers to consider this distinction when they think about the right policies, as we discuss below.\(^{13}\)

“\textbf{If caste, urban-rural status, and gender are the main factors besides individual effort that determine earnings, inequality in income between two individuals in the same country is due entirely to factors outside their control, which calls for policies to equalize their incomes}”


\(^{13}\) Another critical point: the inequality of opportunity measures we propose are not utilitarian metrics along the lines of per capita gross domestic product (GDP) and the unadjusted HDI. (The introduction of the HDI made literacy and life expectancy important components of development in addition to per capita income, but the HDI is still an average of the whole society; in that sense, it remains a modified utilitarian measure. It does not record how well the most disadvantaged in the society are doing.) Like other measures of inequality, our equality of opportunity measures embody a special moral concern for the most disadvantaged members of society – in this case, those who have the most disadvantaged circumstances. In this sense, it is a Rawlsian measure that implicitly guides policymakers to maximize the average value of the objective for the most disadvantaged type: the one with the worst distribution of the objective.
WHAT POLICIES CAN REDUCE INEQUALITY OF OPPORTUNITY?

Equality-of-opportunity policy should aim to mitigate the effect of circumstance on individual ability to achieve objectives, and make success or failure depend entirely (or at least more) on individual choices – in particular, individual effort. Naturally, the policies that improve equality of opportunity will depend on the relevant circumstances, which, as we have said, will vary by society. Nevertheless, we can generalize that certain circumstances are likely to be important in all developing societies. These fall into four broad categories:

1. **Status advantage** that comes from belonging to a social category, such as a privileged ethnic or caste group (e.g., Brahmans in India), a group with the right ancestry (e.g., those of European descent in many Latin American countries), or membership in some kind of recognized nobility.

2. **Socioeconomic advantage** that comes from having successful parents who invest in their children. Even in a society with a homogenous ethnic group and no nobility or other notable divisions, individuals can derive advantage from having parents, family members and friends who support them in their objectives more than those who do not have this privilege.

3. **Network and positional advantages** that come from social connections, and from living at the right place at the right time. We can see a special case of this in China known as guanxi, through which individuals exploit their social networks and personal relationships for gains in business. In some cases, these networks come into being as a result of the choices that people make, but often they are inherited or derived from being at the right place at the right time, in which case they form part of an individual’s circumstances. For example, through these networks, people born and residing in a booming city may have an advantage compared to those who happen to live in depressed economic areas. Moreover, with the local economic environment as an important factor determining an individual’s success, geography itself can become a significant circumstance, particularly when moving is costly.

4. **Biological advantage** that comes with the absence of mental or physical disabilities. Individuals who suffer from these disabilities, through no fault of their own, may become inherently disadvantaged if they cannot perform as effectively in certain jobs, or if they face societal discrimination on the basis of their disabilities, in life and work, alike.

In Western countries, the rise of capitalism, which replaced feudalism, sought to eliminate the status advantages of category 1. But in many developing countries, status advantages akin to those of European feudalism remain quite prevalent. Policies that seek to eliminate these advantages also seek to abolish social discrimination. This includes abolishing titles; implementing laws that make it illegal to discriminate on the basis of race, ethnicity and social category; and adopting affirmative action policies and minimum quotas for disadvantaged groups in education, politics and the economy.

Additionally, even in the societies that have adopted capitalism, the structure of property ownership has preserved or even exacerbated the socioeconomic and network advantages of categories 2 and 3. For example, if successful wealthy individuals can bequeath their wealth to their children, this can give them advantages that others do not have – not because of any choices they made, or effort they applied, but simply because they had the right parents. Even where wealth cannot be easily transferred from one generation to the next (because of, say, high estate taxes), successful parents may still pass down their knowledge, skills, and social networks to their children, or invest more in their children’s education and human capital. Again, these advantages do not arise from the choices and effort applied by these children, but by virtue of their having the right parents.

Similarly, geography can provide advantage. Raj Chetty and his collaborators show in the case of the United States, how social mobility varies considerably by region (Chetty et al, 2014). Presumably, this occurs be-
cause opportunities to climb the economic ladder are more plentiful in some places than others. We have no reason to doubt that other countries besides the United States also display regional variation in economic opportunities. In fact, we have already demonstrated above that in China, a rural versus urban background is a source of disadvantaged circumstance.

Policies that target resources to the children of disadvantaged parents help reduce the socioeconomic advantages of category 2. This includes investment in public education and public health targeted to low-income families. These policies aid human capital formation, and alleviate inequalities in human capital. As James Heckman and his collaborators have argued, investments in early childhood education are likely to have the highest returns (Heckman et al., 2013). Similarly, policies that encourage the spread of economic activity across regional geographies, or that promote geographic mobility in the labour market, can alleviate the network advantages of category 3.

Lastly, policies designed to take care of those disadvantaged by physical and mental disability address the inequality in circumstances described in category 4. These include special needs education, access to mental healthcare, and supportive infrastructure that enables those with physical and mental disabilities to contribute and participate as active members of society.

Since every society has a distinct economic and social structure, the set of relevant circumstances (and the relative importance of any pair of circumstances) also differs in each. As a result, experts in each society ought to develop tailored policies that meet the needs of their society, and eliminate the inequality in outcome caused by circumstances. This includes the circumstances mentioned above, but also any others specific to that society.

“The inequality of opportunity measures we propose are not utilitarian metrics along the lines of GDP and the unadjusted HDI. Our measures embody a special moral concern for the most disadvantaged members and promote policies that increase their incomes rather than reducing the average income of the advantaged”
CONCLUSIONS AND RECOMMENDATIONS

As we have said, we cannot consider any society developed if its ordinary citizens remain steeped in a deep sense of unfairness — believing that the ‘system is rigged.’ We have argued that fairness entails equalizing opportunities rather than equalizing something else. Since one of the present authors began work on the topic in the early 1990s, research on equality of opportunity has exploded; we provide a partial bibliography of this literature as an addendum (Appendix C). But most of this prior work has focused on industrialized countries that have collected data in order to measure inequalities in opportunity and look at their various facets. We strongly recommend that UNDP collect this kind of data for developing countries as well. Fairness concerns are not the sole province of industrialized countries; they are just as important in developing countries, if not more.

An effective research program, we propose, would proceed via the following steps:

1. UNDP should convene in each country a group of its philosophers, public intellectuals, government officials, expert economists and other social scientists to determine the relevant set of ‘circumstances’ for its citizens and their ‘objectives,’ as we have defined these terms. We have suggested the following three objectives: income, education and health status. We have also suggested starting with the following four circumstances: parental income or education, ethnicity, urban/rural status and gender. But these circumstances must be tailored to each country, and any given country will no doubt have more of them to consider.

2. Based on the set of circumstances as defined in Step 1, the UNDP, along with country governments and local partners, should collect data on how distribution of achievement in each of the objectives varies with the circumstances, using the kind of step-by-step data-collection procedure that we describe in Appendix A. This calls for creating the kinds of ‘opportunity maps’ that we depicted above. After examining these opportunity maps, the same group of experts mentioned in Step 1 above should craft the policies that they think would prove most effective in reducing inequalities of opportunity in each country. We have mentioned general policies that eliminate status advantages, socioeconomic advantages, network advantages and biological advantages. But, again, these policies require tailoring to the needs of each society — hence the importance of convening local experts to craft them.

“Experts in each society ought to develop tailored policies and eliminate the inequality in outcomes caused by circumstances – the inherent advantages conferred by social status, socioeconomics, networks, biology, and so forth”
APPENDIX A: GATHERING THE DATA TO MEASURE EQUALITY OF OPPORTUNITY

As we have said, each society must determine which circumstances are important and how to categorize individuals accordingly. But suppose, for the sake of illustration, that we take the principal circumstances as the four that we have proposed: ethnicity, parental education, urban/rural status and gender. Suppose we categorize individuals into two ethnic groups: majority and minority. For parental education, let us focus on the education level of the mother and classify individuals into four groups: those whose mothers have no education, those whose mothers have only primary education, those with secondary education and those with at least some tertiary education. We consider urban/rural status as a binary category, and let us take gender as binary for the purpose of this illustration (although, of course, all societies have many members with nonbinary genders). The number of types of individual is then $2^4 = 32$. Each type comprises a group with the same set of circumstances.

Suppose we collect data from a sample of 10,000 individuals. On average, then, there will be approximately 300 individuals in each type. Let us suppose that we asked these individuals questions regarding their objectives, of which we consider two: income and education.

From these data, we can create opportunity maps for income and education by type, like the ones we depicted in the main text. These opportunity maps give us a picture of inequality and education by type, like the ones we depicted in the main text. These opportunity maps show the rural type in China, particularly in the Southwest, as disadvantaged relative to the urban type. How should we run the survey? The following are some sample questions:

1. What is your age?
2. What is your ethnicity?
3. How many years of schooling did your mother have?
4. How many years of schooling did your father have?
5. Were you raised up to the age of 16 primarily in a rural area (e.g., village, small rural town) or urban area (e.g., large town, major city)?
6. Please select your gender: Male, Female, Other/Nonbinary.
7. What is your approximate monthly income?
8. How many years of schooling have you attained?

These questions are merely suggestions. For example, in many developing countries, individuals cannot report their incomes, so the survey must ascertain their income or wealth status indirectly. In addition, we have asked individuals to self-report their urban/rural background, assuming that the age of moral consent is 16. However, it may be a better idea to simply ask them where they were born, where they lived when they were 10, etc., and then code their urban/rural status later. (The age of moral consent itself may vary according to what that society considers appropriate.) For the ethnicity question, giving the respondents a set of options may produce more precise results. Expert surveyors will do better than we have in framing these questions, but the sample questions above provide a basic idea of the information needed. The survey should also collect data on any additional circumstances relevant to that country, beyond the four proposed.

After creating the opportunity maps, one can measure the extent of inequality of opportunity using the equality of opportunity ratios (EORs) described in the main text, or by measuring the extent of inequality due to circumstance. A method of estimating this appears in Appendix B.

APPENDIX B: ESTIMATING THE FRACTION OF INEQUALITY IN INCOME DUE TO UNEQUAL OPPORTUNITIES

Let there be $T$ types. Let $F$ be the cumulative distribution function of income for the society. Let $F_t$ be the income cumulative distribution function (cdf) in type $t = 1, \ldots, T$. Let the fraction of type $t$ in the population be $f_t$.

For any distribution $F$, let $\Phi(F)$ be the ‘smoothed distribution’: this is a hypothetical distribution in which every member of a type is assigned the average income of that type, denoted $\mu_t$. The cdf $\Phi(F)$ is a step function with $T$ steps. In the distribution $\Phi(F)$, it is as if every member of a given type has expended identical effort: The inequality in $\Phi(F)$ is due only to circumstances, that is, to the individual’s type.

Let the mean log deviation (MLD) of a distribution $F$ be denoted $m(F)$. The ratio

$$r = \frac{m(\Phi(F))}{m(F)}$$

is the fraction of inequality (as measured by the MLD) ascribed to circumstances. In fact, there is a nice formula:

$$m(F) = m(\Phi(F)) + \sum_{i=1}^T f_i m(F_i).$$

That is, the MLD of $F$ is equal to the MLD of the smoothed distribution plus the weighted sum of MLDs of the type distributions. This formula implies that the MLD is decomposable. (The Gini coefficient, in particular, is not decomposable. That is if we substituted ‘Gini’ for ‘$m$’ in this formula, the two sides would not be equal.)

To calculate $r$, one would need the following data:

- The fraction of each type in the population
- The mean income of each type, and
- The income distribution in the aggregate population.
APPENDIX C: PARTIAL BIBLIOGRAPHY OF RECENT EMPIRICAL LITERATURE ON EQUALITY OF OPPORTUNITY


Justo, F., S. Tubeuf and A. Trannoy 2013. “Circumstances and efforts: how important is their correlation for the measurement of inequality of opportunity in health?” *Health Economics*, 22, 1470-1495.


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REFERENCES


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