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The Poverty-Growth-Inequality Triangle

François Bourguignon
Senior Vice President and Chief Economist
The World Bank

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Introduction

An issue which is often recurring in discussions on development is whether the main focus of development strategies should be on growth or on poverty and/or inequality. This paper argues that this way of formulating the question of the goal of development strategies is a false dilemma. The answer can be simply put in two statements. First, the fast elimination of absolute poverty, under all forms, is a meaningful goal for development. Second, the reduction of absolute poverty necessarily calls for strongly country-specific combinations of growth *and* distribution policies.

These statements, however simple they may appear, raise a number of conceptual, measurement, theoretical and empirical issues, which are discussed in the present paper. Before proceeding, it is important to make a caveat. It has to do with the distinction between absolute and relative poverty.

Absolute poverty is defined in reference to a poverty line that has a fixed purchasing power determined so as to cover needs that are physically and socially essential. Setting absolute poverty reduction as the prime development goal is thus simply saying that a fundamental objective of development is to ensure that everybody does satisfy his/her basic needs. Of course, the poverty line may be multi-dimensional, with an income poverty line for all needs that may be met through money spending and non-monetary lines for other needs. Absolute poverty lines need not be the same across countries, even after correction for purchasing power parity for income poverty, as basic needs are bound to differ across societies. They even do not need to be the same in the same country across long time intervals, as basic needs are likely to evolve over time.

This absolute definition of poverty, which is in use in a large number of countries, must be contrasted with a relative definition of poverty, where the poverty line is defined not in terms of some well defined basic needs, but as a fixed proportion of the mean income of the population. For instance, the EU officially considers as poor those people whose economic resources are below 50 per cent of the mean income in Member Countries. Of

course, one might consider such a relative definition of income poverty as the limit of the absolute definition of poverty when the updating of the poverty line is continuous and explicitly based on mean income changes, rather than being made at rather long time intervals and on a more discretionary basis. But, what matters for the purpose of this paper is that such a relative definition of poverty – sometimes referred to as 'relative deprivation' - becomes in some sense independent of growth. The absolute level of income and therefore a large part of the development process does not matter anymore with such a definition. Only relative incomes, or pure distributional features matter. Fixing the poverty line relative to average income can show rising poverty even when the standard of living of the poor have in fact risen. There is an increasing consensus among economists that relative deprivation matters, but there does not appear to be a consensus that individual welfare depends only on one's relative position, and not at all on absolute standard of living as determined by incomes.[1]

Once it has been accepted that the reduction absolute income poverty is a meaningful development goal, then a direct link may be established between development, growth and distribution. Analytically, it is easily shown that a kind of arithmetic *identity* links the growth of the mean income in a given population, the change in the distribution – or in 'relative' incomes - and the reduction of absolute poverty. In other words, poverty reduction in a given country and at a given point of time is fully determined by the rate of growth of the mean income of the population and the change in the distribution of income. As illustrated in figure 1 with the Poverty-Growth-Inequality (PGI) triangle, a development strategy is thus fully determined by the rate of growth and distributional changes in the population.

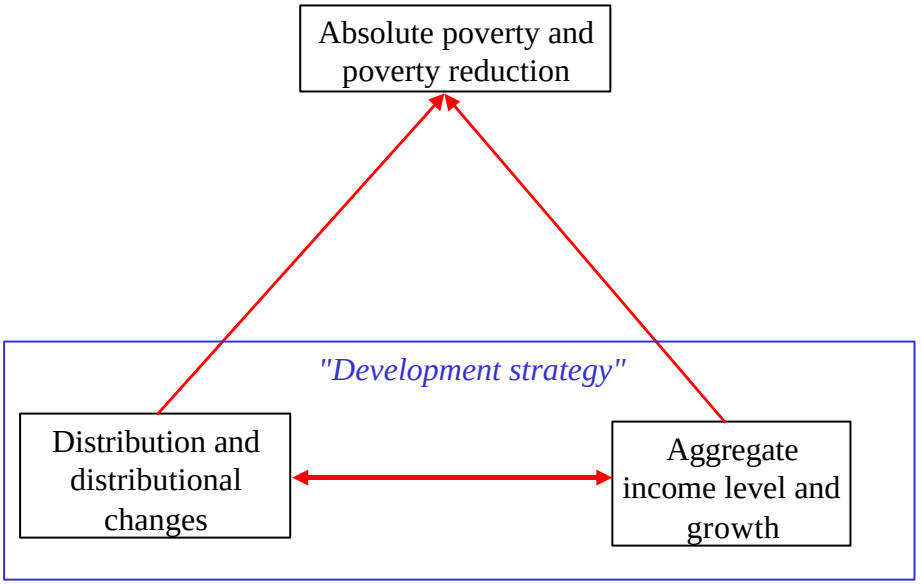
Formally, the relationships implicit behind the PGI triangle are not simple. For instance, the elasticity of poverty with respect to growth for a constant distribution turns out not to be constant across countries with different development levels and distribution

[1] Note that it is also possible to define poverty as some combination of the absolute and relative definitions. On this see Foster (1998), Atkinson and Bourguignon (2000) or Ravallion (2003).

and across the various ways of measuring poverty. The same observation applies to the elasticity of poverty with respect to inequality indicators.

The real challenge is establishing a development strategy aimed at reducing poverty is not so much in the preceding relationships between poverty and growth on the one hand and poverty and inequality on the other, which are essentially arithmetic. It lies in the interactions between distribution and growth. There is indeed little controversy among economists about the fact that growth is essential for (income) poverty reduction under the assumption that the distribution of income remains more or less constant. In effect, there is very much evidence which points in this direction (for example Deininger-Squire 1996, Dollar and Kraay, 2001, Ravallion, 2001, 2003, Bourguignon, 2003). Likewise, there is very much evidence that a worsening of the distribution tends to increase poverty. Yet, the real issue in establishing a development strategy is whether growth and distribution are independent of each other or, on the contrary, strongly inter-related. Is it the case for instance that faster growth tends to reduce inequality or on the contrary, to increase it? Or, are there reasons to believe that too much inequality in a given country is a factor that slows or on the contrary accelerates growth? On the distributional consequences of growth, the findings of a number of recently published micro-economic based case studies indicate clearly that the relationship is at the same time a strong and complex. This is in contrast to the large number of cross-country regressions which find no significant relationship between growth and inequality and on the basis of which it would be tempting to conclude that 'growth is good for the poor' whatever the nature of growth. On the effects of inequality on growth, cross-country studies are mostly inconclusive, too. The difficulty there is that it is not easy to think of direct micro-economic evidence that would permit identifying precisely that relationship.
This paper tries to clarify the debate about growth vs. distribution development strategies by providing a rigorous analysis of the relationships that exist among the three vertices of the PGI triangle. Section 1 discusses the simple arithmetics of poverty, inequality and growth. Section 2 briefly examines the two-way relationship between growth and distribution. Finally, Section 3 concludes by discussing the scope for, and role of redistributive policies.

The Poverty-Growth-Inequality triangle



Section 1. The simple arithmetics of poverty, inequality and growth

A change in the distribution of income can be decomposed into two effects, a proportional change in all incomes that leaves the distribution of relative income unchanged (a growth effect) and a change in the distribution of relative incomes, which, by definition, is independent of the mean (a distributional effect).[2]

To show this, it is useful to begin with the following definitions:

- "Poverty" is measured by the absolute poverty headcount index, i.e., the proportion of the population below a particular *poverty line* (e.g. 1$ a day) as derived from household survey data. Other indices as the headcount (with the same poverty line) could also be used.
- "Inequality" (or "distribution") refers to disparities in *relative income* across the whole population, i.e., disparities in income after normalizing all

[2] This decomposition has been discussed in details in Datt and Ravallion (1992) and Kakwani (1993). See also Fields (2002) and Bourguignon (2003).

observation by the population mean so as to make them independent of the scale of incomes.

- "Growth" is the percentage change in mean welfare level (e.g. income) in the household survey.

Then it may be shown that a change in poverty is a function of growth, distribution and the change in distribution. This is illustrated in figure 1, where the poverty headcount is simply the area under the density curve at the left of the poverty line (here set at US$1 a day). This figure shows the density of the distribution of income, that is the number of individuals at each level of income represented on a logarithmic scale on the horizontal axis. The move from the initial to the new distribution goes through an intermediate step, which is the horizontal translation of the initial density curve to curve (I). Because of the logarithmic scale on the horizontal axis, this change corresponds to the same proportional increase of all incomes in the population and thus stands for the pure 'growth effect' with no change taking place in the distribution of relative incomes. Then, moving from curve (I) to the new distribution curve occurs at constant mean income. This movement thus corresponds to the change in the distribution of 'relative' income, or the 'distribution' effect.

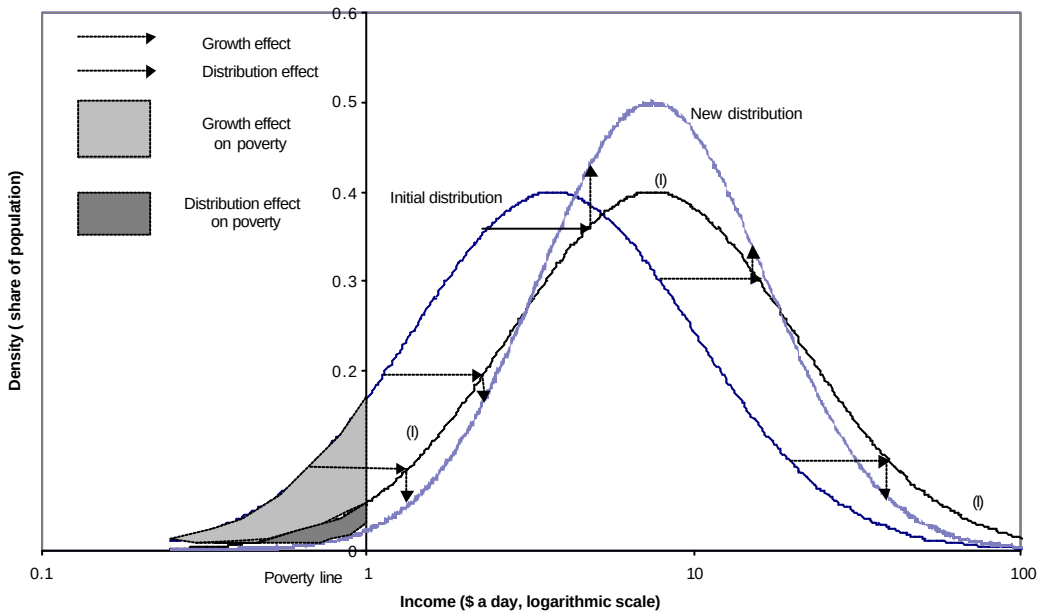
Of course, there is some path dependence in that decomposition. Instead of moving first rightwards and then up and down as in the figure, it would have been possible to move first up and down and to hand then to move rightwards. Presumably, these two paths are not necessarily equivalent except for infinitesimal changes. This is an issue that shall be ignored here, assuming in effect that all changes are sufficiently small for path dependence not to be a problem.

For sufficiently small changes in mean income and in the distribution, the preceding decomposition corresponds to an identity which expresses the change in poverty as a function of the growth in mean income and changes in the distribution of relative income.

Change in Poverty ° F(growth, distribution, change in distribution)

A formal statement of the above identity – i.e. the expression of function F( ) - is offered in Bourguignon (2003), under the assumption that the distribution function is log-normal—which is a standard approximation of empirical distributions in the applied literature. It is shown there that both the growth and the inequality elasticity of poverty are increasing functions of the level of development and decreasing functions of the degree of relative income inequality. The same reference also shows how the decomposition identity may be applied to observed growth spells for which distribution data are available at the two ends of the spell.

Figure 1. Decomposition of change in distribution and poverty into growth and distributional effects



This discussion leads to some simple facts. It shows clearly that both growth and inequality changes play a major role in generating changes in poverty. However, the impact of these phenomena will depend on the initial level of income and inequality.

Moreover, the relative effects of both phenomena may differ quite dramatically across countries.

Figure 2 provides a first illustration of the preceding conclusion. It is based on an actual sample of growth spells where both changes in mean income per capita – or consumption depending on the data source – and in the distribution of relative income is observed. Applying the identity discussed above, it is a rather simple matter to identify what, in the observed change in poverty, is due to growth – under the assumption of a constant distribution of relative income – and what is due to changes in the distribution of relative income. Figure 2 shows the contribution of distributional changes to the observed percentage change in poverty for the various growth spells in the data base. As actual poverty changes are on the horizontal axis, the distance between a point in that graph and the first bisector measures the distribution of the effect of growth on poverty changes. Thus, points above the bisector correspond to spells where growth was positive and contributed to a decline in poverty, whereas points below the bisector correspond to spells with negative growth.

The striking fact about figure 2 is the importance of the distribution-related change in poverty. Of course, it is not the mean that matters here – in effect it is arbitrarily set to zero in the identification of the distribution effect – but the dispersion of that effect. Mere observation of figure 2 suggest that variations of the poverty headcount larger than 20 per cent – in absolute value - over a few years are far from unlikely. Indeed, approximately 30 per cent of the observations shown in figure 2 are in that range, and practically twice that proportion show distribution related changes in poverty larger than 10 per cent.

It follows from this very simple exercise that *distribution matters* for poverty reduction. Over the medium-run, distributional changes may be responsible for sizable changes in poverty . In some instances, these changes may even offset the favorable effects of growth. Ethiopia is an example of such an occurrence. Between 1981 and 1995, growth could have reduced the poverty headcount by some 31 per cent. Yet, because of changes

in the distribution that contributed to a 37 per cent increase in poverty, the final effect has been a net increase in poverty of 6 per cent. The case of Indonesia between 1996 and 1999 is the opposite. There, distributional changes compensated for the adverse effect of growth on poverty.

As a second illustration, consider figure 3 where an hypothetical experiment is made on the basis of a Log-normal distribution of relative income calibrated on Mexican data. Extreme poverty in Mexico today affects 20 per cent of the population. Suppose that from now on, real income per capita grows at the annual rate of 3 per cent and no change takes place in the distribution – a rather large figure compared with past long-run trends. A simple application of the identity linking poverty reduction and growth shows that, given the degree of inequality prevailing in Mexico, poverty would be reduced by a little less than 7 percentage points over a period of 10 years, that is .7 percentage point a year. Imagine now that during these 10 years, the Mexican government is able to bring down the level of inequality observed today to the lower levels observed in the middle 1980s. This would be equivalent to bring Mexico from a 'high' level of inequality – a Gini equal to .55 – to a 'middle high' level - a Gini of .45. Then it can be see in figure 3 that the poverty rate would drop by more than 15 percentage points in 10 years, reaching less than 5 per cent of the population! A simple calculation shows that it would take approximately 30 years to reach the same result without any change in the distribution. The power of distributional changes for poverty reduction is indeed extremely high in such a context.

The preceding argument should not be interpreted as indicating that distributional changes are always important for poverty reduction in countries where inequality is initially high. Figure 4 shows an experiment that is more or less the opposite of the preceding one for a low income country with a middle initial level of inequality – a Gini coefficient equal to .4. Without any change in the distribution, a 3 per cent annual growth rate in incomes would reduce poverty from its initial level of 50 per cent to 35 per cent in 10 years. But, suppose now that, during these 10 years, inequality increases fro a 'middle' to a 'middle high' level – i.e. the Gini coefficient increasing from .4 to .45. Then,

Figure 4 shows that the reduction in poverty would be halved. In terms of poverty 5 years of growth would simply be lost.

Figure 2. Distribution-related poverty change in a sample of growth spells (percents)

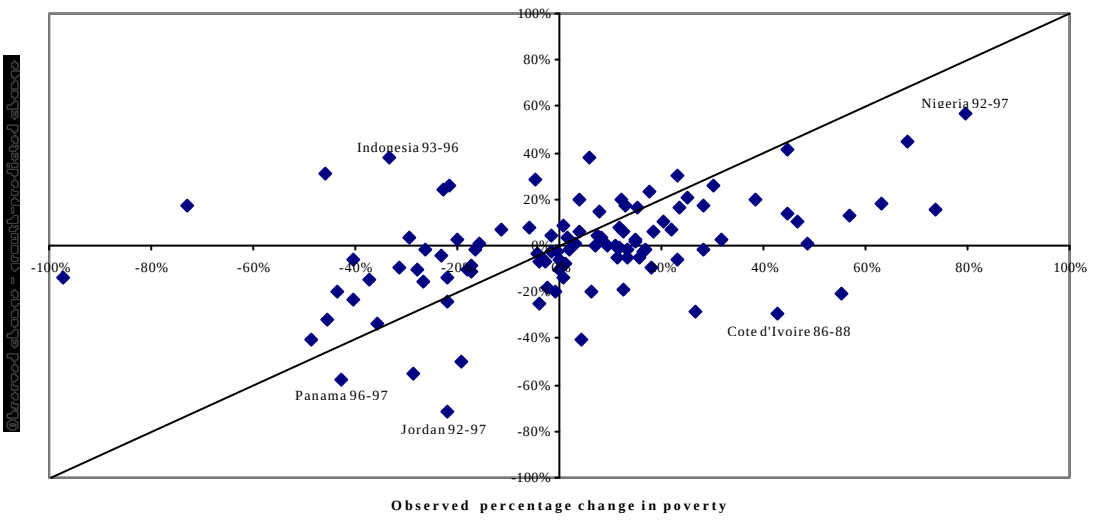


Figure 3. Change in poverty in a middle-income country with high inequality : 3% annual growth in income per capita

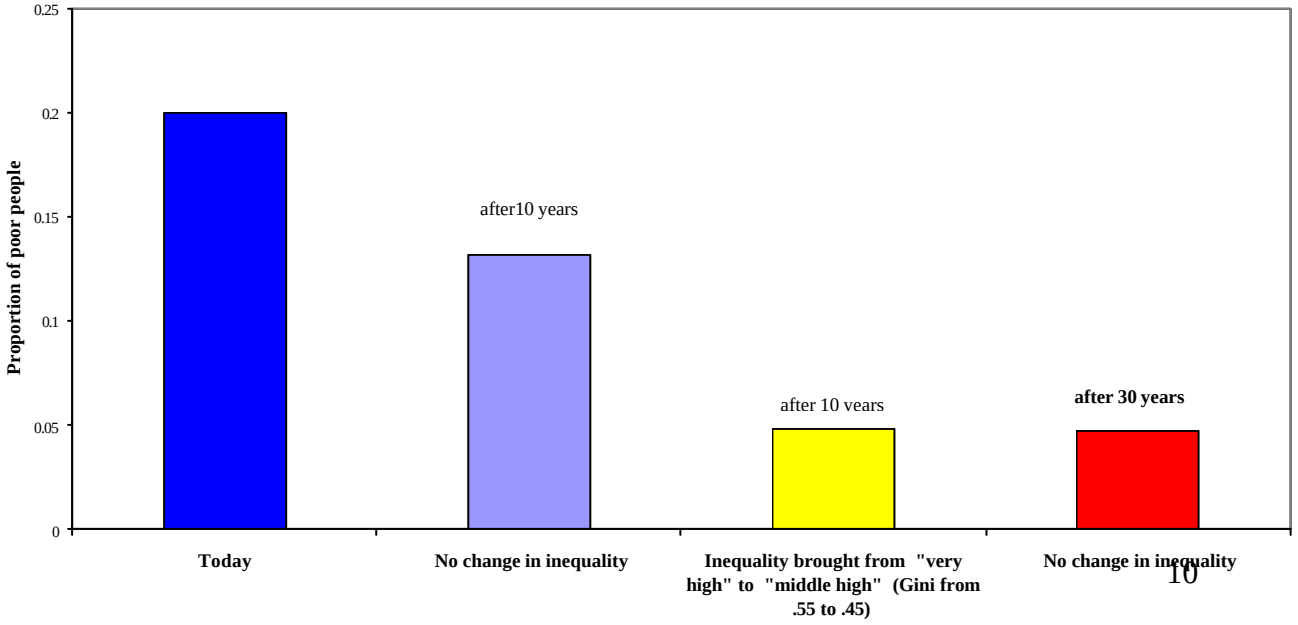
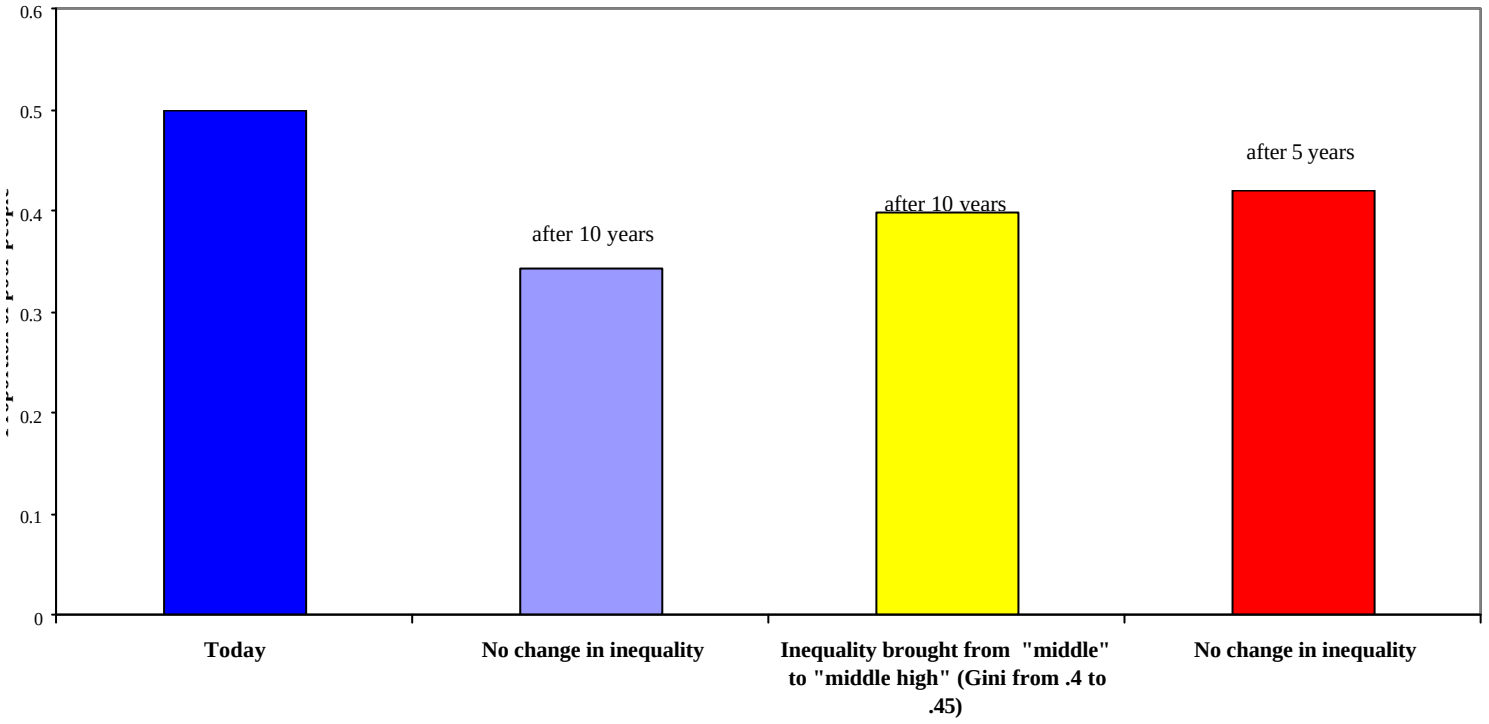


Figure 4. Change in poverty in a low-income middle inequality country with 3% annual growth in income per capita



What can we conclude from these simple exercises ? First of all, certainly that it is important to consider growth and income distribution *simultaneously* and that income distribution matters as much as growth for poverty reduction. Of course, one can object to the preceding examples that they necessarily refer to a limited time period. It is difficult to imagine that inequality will be increasing - or decreasing - continuously forever, or at least for very long periods of time. As there are probably limits to the level of inequality that one country may reach, if only for political economy reasons, then one may hold that growth is the main factor for poverty reduction in the long-run. Over a sufficiently long horizon, growth per se is indeed 'good for the poor'. However, development and poverty reduction goals include specific time horizons. We are not interested in eliminating poverty at some undetermined stage in the future but in a

specific time interval. The examples above show that inequality does change over time and that a poverty reduction strategy within a specific time frame may be endangered by an adverse evolution of the distribution.

A second lesson to be drawn from the previous examples is that country specificity matters a great deal. Comparing the first columns in figures 3 and 4, it can be seen that the same growth rate causes different percentage changes in poverty in the two hypothetical countries being considered. The growth elasticity of poverty is higher in the case of the middle-income country. As mentioned earlier, theory and evidence show that indeed both growth and distribution elasticity of poverty depend positively on the level of development and negatively on the degree of inequality. This means that optimal growth-distribution strategies aiming at poverty reduction in a given time frame should logically differ depending on initial conditions. For instance, it is likely that changing the distribution is probably more important for middle-income inegalitarian countries, while growth is probably more important, in relative terms, for low-income egalitarian countries. Also, this last point suggests that effective redistributive policies may in fact yield a double dividend: they reduce poverty today and accelerate poverty reduction in the future.

Is the knowledge of the identity that links poverty reduction, growth and distribution sufficient to establish what should be the optimal mix of growth and distribution oriented policies in a development strategy? Certainly not. On the one hand, it is also necessary to know what is the relative cost of achieving some progress on each front. On the other hand, it is also fundamental to know what interaction there may be between the two types of policies. In the preceding examples concerned with various combinations of growth and inequality reduction, a central issue is whether a 3 per cent annual growth rate in a given country may be obtained independently of the distribution of income, or whether such a growth pace is likely to cause changes in the distribution. Likewise, one may question whether the distributional changes considered in figures 3 and 4 can take place without some impact—negative or positive – on the rate of growth. This relationship between growth and distribution is discussed next.

Section 2. Two-way relationship between growth and distribution

This section focuses on the two-way relationship between growth and distribution. We know that economic growth modifies the structure of the economy and therefore may potentially affects the distribution of income and welfare. But is there any systematic pattern in that evolution? As for the effects of inequality on the rate of growth, the relevant questions are: Does the initial level of inequality affect the rate of growth of an economy in a systematic way ? If so, can progressive redistribution policies accelerate or slow down growth? There is a huge literature on these questions. The intention is not to try to survey it here in any detail but rather to summarize the lessons that can be drawn from it at this stage and the way they can feed the reflection on development strategies and redistribution policies.

A. Effects of Growth on Distribution

There are many channels through which the process of economic growth may modify the distribution of income and welfare and very much effort has been spent in formalizing the corresponding economic mechanisms. Out of steady states which are unlikely to obtain in the process of development, economic growth modifies the distribution of resources across sectors, relative prices, factor rewards (labor, physical capital, human capital, land; etc…); and the factor endowments of agents. All these changes are likely to have some direct impact on the distribution of income, whether factor and goods markets are assumed to be perfect or not. In effect, ever since Kuznets and Lewis, the theoretical constructs about the effect of growth on the distribution of income focused on one or several of these basic mechanisms. Labor-market imperfections and productivity differentials across sectors with changing importance in the main economy were the main theoretical explication of Kuznets' celebrated "inverted-U curve" relating inequality and development almost 50 years ago. Individual accumulation behavior and subsequent aggregate changes in factor rewards due to the falling marginal product of capital explained the same evolution in Stiglitz' (1969) neoclassical model of growth and

distribution. Since then, many other channels based directly or indirectly on these basic mechanisms – the 'segmentation' of the economy and changes in prices and factor rewards - have been uncovered, which, as a matter of fact, do not always lead to the inverted-U effect of growth on inequality.

Institutional change is also closely linked with the process of economic growth in the sense that growth tends to modify institutions, social relations, culture, etc. Various hypotheses have been made on the way in which this process is taking place. The most simple mechanism is through nonhomothetic preferences. As income grows the demand for social services changes. For instance, people become politically more active – as in Gradstein and Justman (forthcoming) – changing the distribution of political power and the evolution of institutions. Within the influential framework proposed by North (1990), it may also be that transaction costs which may prevent institutional changes become increasingly affordable with economic growth. More directly, it may also be observed that the process of urbanization that accompanies development comes naturally with an evolution of social relations in the population, for instance a bigger need for coordination.

All these institutional changes may be to the disadvantage of some groups and to the benefit of others. They are thus bound to affect the distribution of rights and of welfare in the society. They are also likely to prompt disadvantaged groups to react — in feedback fashion, and with an effectiveness that is a function of their power in society — and clamor for changes in their rights. Growth is thus likely to cause substantial changes in policies, and in particular in redistribution. This may be one of the explanation of the so-called Wagner law according to which the share of public expenditures in GDP tends to increase with the level of development.

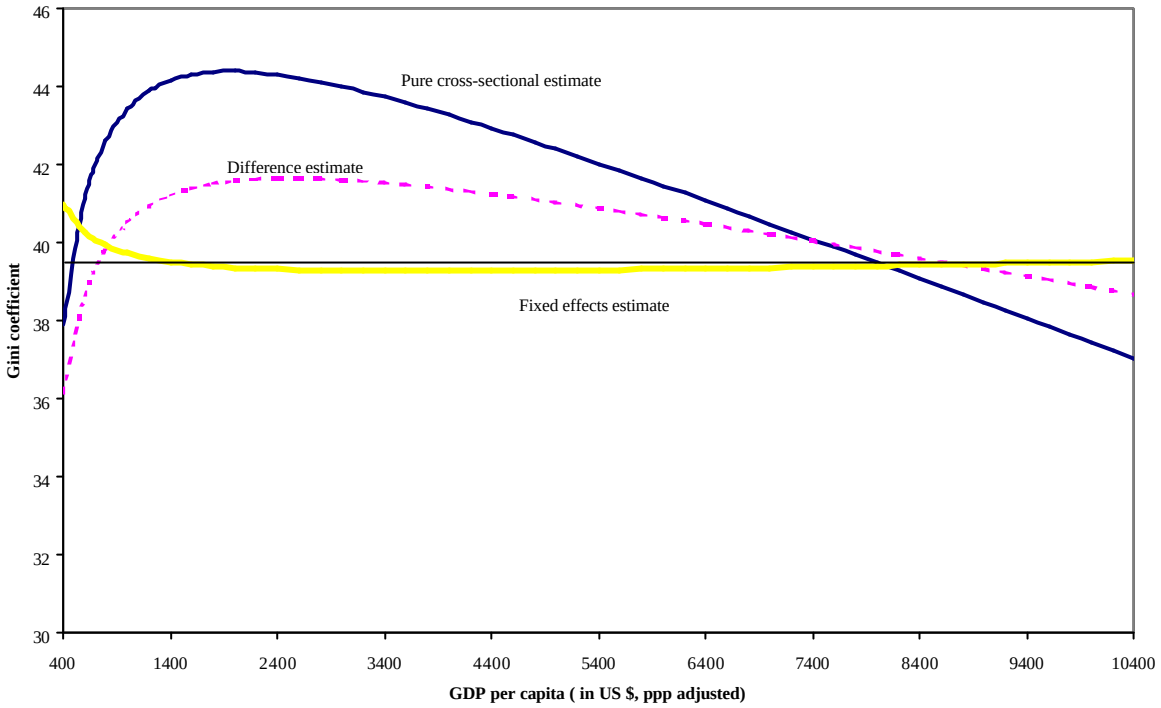
Taken together, do these various effect of growth on the structure of society that economic theory could identify sum up to a clear evolution of the distribution of resources? Is the inverted-U curve that Kuznets identified in the historical evolution of inequality in various countries and explained by the sectoral reallocation of the population in the development process a universal relationship? Or is the evolution of

distribution along development essentially country-specific? This question has very much dominated the debate on development during the 1970s and the beginning of the 1980s. There was a period during which it seemed that the inverted-U hypothesis was verified across countries at different levels of development — see in particular Paukert (1973), Chenery and his collaborators, including Ahluwalia (see e.g. Ahluwalia 1976 and Ahluwalia, Carter and Chenery 1976). After some time, however, and as more and better data became available, it appeared that this empirical relationship was perhaps valid across countries in the 1970s but did not at all fit the evolution of inequality observed subsequently in a sample of countries.[3]

The best illustration of the preceding point is provided by a thorough exploitation of the data base on distribution put together by Deininger and Squire (1996). Being a secondary data base putting together estimates published in studies on distributions around the world, this data base is far from perfect.[4] Yet, because measurement errors affect the variable to be explained – i.e. inequality – it should not be a problem to check the validity of the inverted-U hypothesis. Figure 5 summarizes the results they obtained. Data come from an unbalanced panel, with several observations for each country at approximately 10 year intervals. When all the observations are pooled together and a simple regression of the Gini coefficient over income per capita and the inverse of income per capita is run, then a clear inverted-U curve is obtained. However, the curvature loses significance when the estimation is made on decadal differences for each country in the sample, that is to say when only time changes are taken into account. In effect, one can see in figure 5 that the maximum difference in the Gini coefficient across development levels is now at most 2 percentage points, when it was approximately 5 percentage points before. Finally, when fixed country effects are introduced in the original estimation so that all countries are assumed to follow parallel paths, rather than the same path, then the inverted-U shape disappears. In effect the curve becomes practically flat, and even the inequality drop for low incomes fails to be statistically significant.

[3] Using an unbalanced panel of data in developing countries, Bourguignon and Morrisson (1998) show that the inverted-U hypothesis was probably verified in the 1970s but not in later periods as additional countries were added to the original sample.
[4] See in particular the critical analysis made by Atkinson and Brandolini (2001).

Figure 5. Cross-country estimates of the Kuznets curve (Deininger and Squire, 1998)



Do these results imply that growth has no significant impact on distribution? Certainly not. They simply mean that there is too much country specificity in the way growth may affect distribution for any generalization to be possible. Indeed, case studies, as opposed to cross-sectional studies, show that distributional changes in a given country have very much to do with the pace and structural features of economic growth in the period under analysis. Even in cases where no apparent change took place in the distribution over some time period, it is generally the case that growth-related phenomena tended to counteract long-run socio-demographic trends towards more or less inequality. The case of Brazil is a good illustration of this point. According to a recent study by Ferreira and Paes de Barros (1998), inequality did not change between 1976 and 1996, whereas mean income per capita increased overall by a couple few percentage points. *Prima facie*, this would seem to suggest that sluggish growth in Brazil had no impact on the distribution. Deeper analysis shows, however, that there were some socio-demographic forces that should have contributed to a drop in inequality during that period, this being the case in

particular of the drop in fertility and average family size among poor people as well as progresses made in education. From this evidence, it might be inferred that slow growth was indeed responsible for an increase in inequality that offsets the effect of those equalizing socio-demographic forces. In fact, a more detailed analysis shows that a major factor towards more inequality was the difficulty of poorest households to incorporate themselves to the labor market, a obvious consequence of slow growth.[5]

More case studies of the preceding type are certainly needed for a better understanding of the distributional consequences of growth – or stagnation. The country specificity of that relationship is encouraging in two respects. First, from an analytical point of view, it may mean that the various channels through which growth affects distribution identified by economic theory are indeed valid but are more or less relevant depending on the initial conditions prevailing in a country. If so, it may be hoped that further detailed case study work would permit to check the effectiveness of these channels. Second, from a policy point of view, country specificity may also mean that there is ample room for policy intervention in determining the distributional consequences of growth. A number of development strategies involving different "mixes" of growth and distribution have been proposed in the last three decades , e.g. redistribution with growth, pro-poor growth etc. (On this, see Bourguignon 1998; Rodrik 2003). It may be the case that some countries have deliberately chosen some particular strategy, or that a strategy was easier to implement than another given initial conditions. In any case, what matters is that, even if growth may have some automatic effects on distribution through different channels, the importance of these various channels may probably be modified by policy choices. More directly, redistribution undertaken alongside the development process may also contribute to modifying possibly adverse primary distributional effects of growth.

[5] For more case studies of this type see Bourguignon, Ferreira and Lustig (2003) as well as the general discussion in Bourguignon (2004).

B. Effects of Inequality on the Rate of Growth

What precedes is only one side of the relationship between growth and distribution. The other (related) side is the dominant view today, namely that inequality is not a final outcome but plays a central role in determining the rate and pattern of growth. This line of enquiry was pioneered by Galor and Zeira (1993), soon followed by the empirical papers by Persson and Tabellini (1994) and Alesina and Rodrik (1994) who were the first to point out that initial inequality seemed to be empirically associated with lower growth rates.

This literature has proposed several hypotheses which could explain why progressive redistribution may be growth-enhancing. First, credit market imperfections may explain that redistributing capital from capital rich enterprises or individuals to capital-poor and credit-constrained people increases efficiency, investment and growth. Second, political economy arguments have been proposed. Too much inequality in a redistributive democracy leads to more redistribution and less capital accumulation. Alternatively, too much inequality leads to collectively organized or individually-led violent redistribution. Others hypotheses (economies of scale in goods markets, etc) have also been put forward in the literature. These various hypotheses are briefly discussed below.

- Credit Market Imperfections

This strand of literature predicts a negative correlation between *wealth* inequality and economic growth based on a very simple mechanism. Assume to simplify that rich individuals in a society have access to a credit market with an annual rate of interest of 10 per cent, whereas poorest ones face a rate of interest equal to 50 per cent for lack of any collateral. In the absence of quantity constraint on the credit market, this segmentation means that all projects with a rate of return 10 per cent or higher in the first group of individuals are actually undertaken, the same being true of projects with rate of return 50 per cent or higher in the second group. What is clearly inefficient is that projects with rate of return just below 50 per cent – and above 10 per cent – are left unexploited in that group. But suppose now that some wealth is redistributed from the first to the second group. With this additional wealth, individuals in that group can now

undertake those projects with a rate of return slightly less than 50 per cent since they do not need to borrow for doing so. In this framework, wealth redistribution from rich to poor people thus generates more investment and/or a higher rate of return of capital.

The preceding argument, adapted from Piketty (1997), may be extended to several other situations. The basic point is that the impossibility of poor people to rely on borrowing, for lack of enough collateral or for more fundamental imperfections of the credit market, together with their low initial wealth prevent them to seize investment opportunities that would be more profitable for both society and themselves than some investments undertaken elsewhere in the economy. Thus, poor people do not have the same chances in life as richer people because they cannot give a good education to their children, however talented they may be, or because they can't get loans to start up a business, or because they can't afford insurance however profitable these operations may be. Countries with a high poverty headcount or with unequal distribution of wealth thus underutilize their productive and growth potential to a greater degree than countries with fewer poor people or with a more equitable distribution.

Formalized versions of the preceding argument may be found in the models of Galor and Zeira (1993), Banerjee and Newman (1993), Aghion and Bolton (1997) and others. In these models, credit is rationed because of asymmetric information. This affects the ability of poor people, or possibly of the middle class, to freely choose occupations or investments, and this influences the evolution of inequality and output. Note that some models (e.g., Banerjee and Newman 1993 and Galor and Zeira 1993) assume that indefinite accumulation of wealth is not possible so that the "poverty trap" persists over the long run. By contrast, if there is no exclusion, inefficiencies are temporary. People will save and their wealth will increase over time. Sooner or later they will be free of the credit constraint, because they will all have sufficient collateral to be entrepreneurs or to send their kids to secondary school and college if they so wish (Ray 1998).

These models have nothing to say about how high inequality comes about historically in the first place, but they do suggest that a history of high inequality may

persist indefinitely, carrying with it inefficiencies in production and slow growth. The same economy would exhibit different rates of growth if it were possible to redistribute wealth at no cost.

- Redistribution in a Democratic Context

A second strand of literature predicts a positive correlation between inequality and average tax rates. It is through this channel that early empirical studies (e.g., Persson and Tabellini 1994; Alesina and Rodrik 1994) attempted to explain why greater inequality leads to lower growth. When political rights to vote are extended to the majority of the population, the amount of redistribution is decided by the median voter and this determines directly or indirectly the rate of growth of the economy. The hypothesis of these models is that, first, more unequal societies generate more redistribution than more egalitarian ones and, second, that redistribution diminishes incentives to invest and slow economic growth because of the distortionary effects of taxation (disincentives to exert effort or to save).

It turns out that the existing evidence on taxation is not supportive of the hypothesis that tax rates are higher in high-inequality countries. Perotti (1996) even shows that the effect of the fiscal system in many high-inequality countries is actually regressive. A possible explanation of this apparent contradiction between theory and evidence is that, because of heterogeneous political weights, the 'decisive' or 'pivotal' voter may not be the 'median voter', even in countries which officially are democracies. If the 'decisive' voter has an income larger than the mean income, he/she will be in favor of a regressive distribution.[6] Under these conditions, an important issue seems to be the extent to which the inequality of the distribution of resources in a society determines at the same time the nature of the public decision process and the identity of the 'decisive' voter.[7]

[6] This argument is developed in Benabou (1996).

[7] A new class of model is obtained by endogenizing the 'decisive' voter. See for instance, Acemoglu and Robinson 1996; Ades and Verdier 1996, Robinson ,1997, Bourguignon and Verdier 2000a, 2000b.

- Redistribution through Social Conflict

Social conflict and political instability are other channels which may relate inequality to efficiency or growth. Alesina and Perotti (1996) argue that inequality can lead to less political stability, and this in turn can lead to sub-optimal investment levels. Rodrik (1997) finds that countries that experienced the sharpest drops in growth after 1975 were those with divided societies and with weak institutions, and this cripples the ability of their political systems to respond effectively to external shocks. Violence levels, as measured by recorded homicide rates, have recently increased sharply in both of the most unequal regions in the world (Latin America and sub-Saharan Africa), and in the one where its growth has been fastest (Eastern Europe, Russia and Central Asia). Bourguignon (1999) and others have documented the growing importance of the social and economic burden imposed on society by this rising violence, both in terms of the direct costs in lives and medical resources, and in terms of the opportunity costs of (both public and private) resources diverted from other activities towards preventing and fighting crime.

Other theoretical arguments may be called upon to justify a negative relationship between the distribution of resources, economic efficiency and growth. One of them, which actually extends an argument developed in the 1970s, is based on the presence of economies of scale in some consumption goods which could not be exploited if inequality reduced the demand for these goods – see Shleifer and Vishny (1998). But not all theoretical arguments go in the same direction. Indeed, the old Kaldorian argument that redistributing from rich to poor runs the risk of reducing the aggregate saving rate in the economy may certainly not be rejected on *a priori* grounds.

Tentative empirical verifications through "growth regressions" with inequality variables on the right hand side have yielded ambiguous (or even contradictory) results. Initial results based on pure cross-sections seemed to suggest that indeed more inegalitarian countries tended to grow more slowly over the last 20 to 30 years. But very much the same problems as with the Kuznets curve soon appeared. First, this result

depended very much on the sample and inequality data being used. Second, it turned out to be strongly influenced by country fixed effects. For instance, controlling for regions was sufficient to make inequality insignificant – see Deininger and Squire (1996). Of course, fixed effects models were also estimated on the basis of decadal country data on growth and initial inequality (Forbes, 199x, Zhou, 199x). However, the corresponding estimates then showed a positive association between inequality and growth, as with the Kaldorian argument. Overall, it is thus fair to say that the available aggregate evidence is essentially inconclusive.

It is also fair to say that panel data regressions, which should supposedly take care of fixed effect biases, ask too much from the data. To se this, it must be noted that it is not because inequality in year t is taken to explain growth between years t and t+10 that inequality may be considered as 'exogenous'. Some common unobserved determinants may actually be behind the two observations, and no convincing instrument may be available to correct for the resulting endogeneity bias.[8] Being able to identify the effect of inequality on growth would thus require relying on truly exogenous innovations in the inequality variables. But when and where did such an 'exogenous' change in inequality ever occur?

There are two ways out of this inconclusiveness of aggregate cross-country analysis. The first one consists in trying to estimate 'structural' models of the inequality-growth relationship, including in the analysis some formalization of the various hypotheses revised in this section and in the preceding one on the distributional consequences of growth. This is likely to be a rather formidable task, and it is not clear that all the data necessary for such an ambitious analysis are actually available.

The second strategy is to check whether the micro-economic mechanisms behind the preceding hypotheses are verified or not, and then derive from this some rough estimate

of the likely aggregate effect on growth of various types of redistribution. Concerning the credit market imperfection hypothesis, for instance, it would be sufficient to indeed identify the difference between the marginal product of capital, possibly human capital, in the poorest segments of society, say in the informal sector, and in the rest of the economy. Some simple calculations should then permit getting an order of magnitude of the inefficiency of the economy due to the credit market imperfection and how much potential gain there may be in getting rid of that imperfection through wealth redistribution. Not enough seems to have been done in that direction for the time being. Yet, this is probably the only way to confirm the intuition provided by economic theory that too much inequality is harmful to growth and that inequality tends to perpetuate itself.

Section 3. Scope for—and role of—redistribution in development

What does all this imply for policy and, more precisely, for redistribution policy? Taken at face value, the preceding arguments would seem to lead to the following virtuous circle scenario. Progressive redistribution of income over some period of time accelerates poverty reduction for given pattern and rate of growth, which definitely is a positive result. If one interprets the potentially negative relationship between inequality and growth literally, then this redistribution policy would enhance growth. It would then be sufficient to have at one's disposal some policy instruments that would guarantee that growth is pro-poor – i.e. reduces inequality - for the virtuous circle to start and lead progressively to faster growth, declining inequality and accelerated poverty reduction.

Until recently, this was the interpretation given to the idea that equality could be favorable to growth. "Reduce inequality through redistribution or through promoting 'pro-poor' growth and you will obtain sustainable growth". Unfortunately, this is not at all the conclusion that can be drawn from the arguments invoked to justify that inequality

[8] In this respect, it is not clear that lagged values of both inequality and growth used in GMM system estimates are valid instruments. They may also be influenced by the same unobserved variables as contemporaneous inequality and growth.

is harmful to growth. The argument and its implications are slightly more subtle and it is worth having them clearly in mind.

The arguments in the previous section tend simply to suggest that the redistribution of 'wealth' from rich to less rich people may have some positive impact on growth. This may occur through bypassing credit market imperfections that prevent some productive investment to take place; lowering the tax rate, or freeing other distortionary income redistribution mechanisms. The important point here is that it is redistribution of *wealth,* not of income, that may produce this favorable effect on economic efficiency and growth. In effect, income transfers (if they are not lump-sum) would have exactly the opposite effect on growth. By lowering the expected return from acquiring physical and human capital, they might distort the economy and reduce saving and investment, and therefore the rate of growth. In order to be efficiency and growth-enhancing, redistribution should thus ideally be concerned with wealth rather than with current income or possibly consumption expenditures.

Is such direct wealth redistribution indeed feasible at no cost? This is doubtful. Redistributing property can only be done under exceptional circumstances, which often involve political violence. Such circumstances can hardly be considered economic policy options. Land reform is a case in point. Today, few programs would actually involve authoritarian land redistribution. Instead they are generally based on subsidized transactions in the land market. Typically, land is being bought from large landowners at what is thought to be the market price. It is then sold to landless peasants or smallholders with some kind of subsidized credit scheme. Overall, the whole operation is somewhere between a wealth and an income transfer. Taxes levied – generally on the whole population - to finance the credit subsidy is typically an income transfer with obvious distortionary effects. The credit subsidy part clearly contributes to wealth accumulation among poor peasants. [9]

More generally, it must be realized that the theoretical arguments showing that wealth redistribution, but not income redistribution, enhance economic efficiency and

[9] For a comprehensive analysis of land reforms, see World Bank (2003b).

growth lead to a paradox.. This is because redistributing wealth generally involves some non-lump sum income transfers, and the latter have negative effect on efficiency and growth. In the long-run, it may well be the case that the positive wealth effect is stronger than the negative income effect. This is likely to depend mostly on the relative importance of the wealth accumulation part of the redistribution policy being considered.

Two final remarks are in order. The first one has to do with the fact that even pure income transfers generally spill over some kind of wealth accumulation. The second is about the recent appearance in the redistribution toolbox of policy makers of the so-called 'smart transfers'. Are pure income transfers so bad? Until recently, it is true that the conventional wisdom insisted on the negative effects resulting from their adverse incentive effects on the labor supply and savings of the beneficiaries of transfers and tax payers, effects which were reinforced by the natural leakage of benefits to non-target groups. As discussed by Ravallion (2003b), this conventional wisdom is now being questioned, partly as a result of the studies reviewed above and partly because new empirical findings have emerged.

To the extent that beneficiaries may improve their standard of living, income transfers may contribute to the accumulation of human capital among them, for instance through better nutrition. Under these conditions, apparently 'pure' income transfers in effect lead to some particular wealth accumulation among poor people. Another channel through which income transfers may affect the assets owned by poor people is through insurance. Indeed, many economists now consider that in presence of a high macro-economic volatility targeted transfers can be useful instruments for "social protection". They also may contribute to pro-poor growth (i.e., growth that reduces poverty) by avoiding dissavings – for instance by taking children out of school – or helping credit-constrained poor people be productive workers or take up productive opportunities for self-employment.

Strong arguments can also be made in favor of the "smart transfers" of the Progresa/Oportunidades (Mexico) and Bolsa Escola/Bolsa Familia (Brazil) type. These essentially are means-tested income transfer programs, with an additional built-in conditionality. Benefits are conditional on children under a certain age attending school and visiting a medical center twice a year. In effect, these programs are pure income

transfers for those households who would have sent their kids to school and to the doctor anyhow. Yet, they effectively contribute to human capital accumulation for the others – provided of course that the supply of education and health services match the induces increase in demand. A very serious evaluation showed these programs were indeed effective in raising school enrollment rates and health outcomes in the targeted populations – see for instance Skoufias and Parker (2001) on Progresa; Bourguignon, Ferreira and Leite (2003) on Bolsa Escola and the general discussion in World Bank (2003).

That redistribution tools can be effectively used to modify the distribution of physical and human capital in the economy is an important piece of knowledge that should inspire policy makers. Given the analytical framework developed in the preceding section, this indeed means that possible adverse consequences of growth on the distribution of income may be corrected by redistribution at a low cost, and possibly even at a negative cost. On the other hand, this redistribution is also likely to make future growth more favorable to the poorest segments of society. Very interesting experimentations are presently taking place at full scale in various countries, and are closely followed by researchers. Evaluating all the implications of these programs will take some time and much efforts by the development economics research community. Yet, existing results raise hope that the complementarity between growth and equity might be better exploited in development strategies.

Thus we see that developing the research agenda on the role of targeted transfers in developing countries in the light of the new theories on the social costs of uninsured risks and unmitigated inequalities is important to answer a key question for policy: Given the constraints faced by low-income countries, can efficient redistribution work in practice? There is good empirical evidence to support the theoretical arguments that have been put forward, but more work is needed.

What about asset redistribution programs? Their feasibility will be largely a function of the political context. Asset redistributive schemes have to satisfy political incentive compatibility constraints. While there are social benefits to be expected from

any exogenous redistribution of wealth in slow-growing and authoritarian societies, this would clearly be opposed by the ruling class. Such a redistribution is thus more wishful thinking than a true policy option.

We have learned much about the political economy of asset redistribution in recent years. Redistribution may be necessary for growth. Fixed costs of education and liquidity constraints prevent the poor from becoming educated without transfers from the upper-income and politically active class. But poor people are unlikely to mobilize themselves to ask for more transfers. Political participation depends on the educational level or income of economic agents.

Mechanisms of asset redistribution are more general than they appear. The mechanisms analyzed in the context of education and political rights in the previous section are relevant in other political economy contexts, such as trade reform or land reform. The arguments are in fact valid for any economic reform or policy that increases the economic payoff of the incumbent elite but also reduces its political power by enabling new segments of society to be politically effective and to ask for downward redistribution.

Initial conditions matter. Initial income per capita levels (initial income inequality) affect positively or negatively the likelihood that a country will achieve democratization and its average rate of growth on any given time horizon. Initial per capita income levels (initial income inequality) affect positively or negatively the speed of (full) democratization of countries that are experiencing a democratic transition.

Social stratification cannot be separated from changes in political institutions. The elite in power may favor the emergence of a middle class purely for reasons of political economy. Under some circumstances the elite group may have incentives for strategically "promoting" the creation of a restricted middle class by providing education. This allows them to reap the benefits of higher economic growth triggered by the accumulation of human capital, while at the same time mitigating the likelihood of expropriation after partial or full democratization. The process of social stratification thus cannot be separated in a historical perspective from the process of political transition.

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