28102

The Poverty-Growth-Inequality Triangle

François Bourguignon
Senior Vice President and Chief Economist
The World Bank

---

* This paper was presented at the Indian Council for Research on International Economic Relations, New Delhi, on February 4, 2004. It is a modified version of a paper of the same title originally presented in Paris on November 13, 2003 at the Conference on Poverty, Inequality and Growth, sponsored by the Agence Française de Développement and the EU Development Network.

TABLE OF CONTENTS

Introduction

A recurring issue in discussions on development is whether the main focus of development strategies should be placed on growth, or poverty, and/or on inequality. This paper argues that this way of formulating the question of development goals poses a false dilemma. Rather, the answer can be simply expressed in two statements: First, the rapid elimination of *absolute* poverty, under all forms, is a meaningful goal for development. Second, to achieve the goal of rapidly reducing absolute poverty requires strong, country-specific *combinations* of growth and distribution policies.

These two statements raise conceptual, measurement, theoretical and empirical issues, including clarifying 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 satisfies his/her basic needs. The poverty line may be multi-dimensional, incorporating both an income poverty line for needs that can be met monetarily, and non-monetary lines for other needs. Absolute poverty lines need not be the same across countries, even after correcting for purchasing power parity for income poverty, as basic needs are bound to differ across societies. Nor do they need to remain fixed over time, as basic needs are likely to evolve.

This absolute definition of poverty, in use in many countries, must be contrasted with a relative definition of poverty, where the poverty line is established not in terms of some well defined basic needs, but as a fixed proportion of some income standard in the population, for example the mean or median income. The European Union considers as poor those 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 is accepted that the reduction of absolute income poverty is a meaningful development goal, then a direct link may be established between development, growth and distribution. An arithmetic *identity* links the growth of the mean income in a given population, with the change in 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 less 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 and across the various ways of measuring poverty. This also applies to the elasticity of poverty with respect to inequality indicators.

The real challenge to establishing a development strategy for reducing poverty lies in the interactions between distribution and growth, and not in the relationship between poverty and growth on one hand and poverty and inequality on the other, which are essentially arithmetic. There is little controversy among economists that growth is essential for (income) poverty reduction under the assumption that the distribution of income remains more or less constant. In fact, much evidence points in this direction (see Deininger-Squire 1996, Dollar and Kraay 2001, Ravallion 2002, Bourguignon 2003).

[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).

Likewise, much evidence suggests 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, strongly inter-related. Is it the case for instance that faster growth tends to reduce inequality or on the contrary, to increase it? Could too much inequality in a given country act to slow or, to accelerate growth?

On the distributional consequences of growth, several recently published micro-economic based case studies indicate clearly that the relationship is at once 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 its nature. Cross-country studies are also mostly inconclusive regarding the effects of inequality on growth, and it is difficult to conceive of direct micro-economic evidence that would identify that relationship with precision.

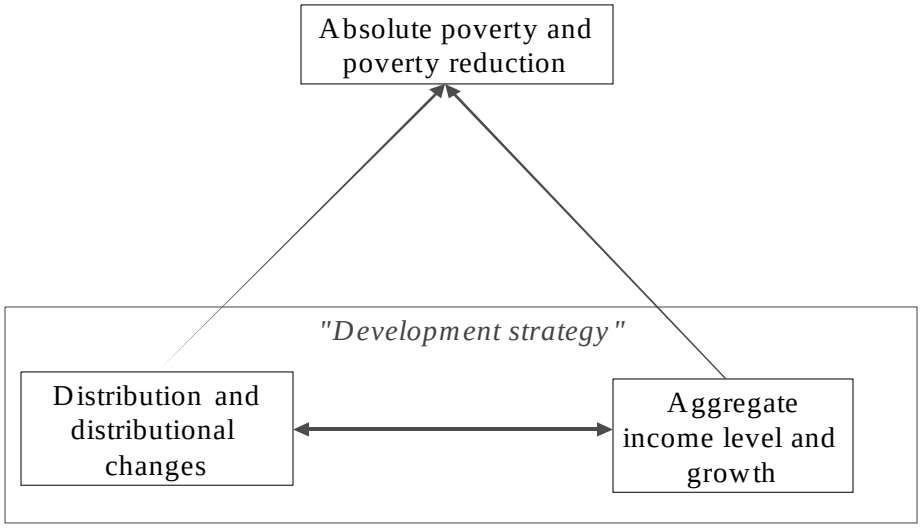
This paper seeks to clarify the debate about growth vs. distribution development strategies by providing a rigorous analysis of the relationships that exist among the three vertices of the PGI triangle (see below). Section 1 discusses the simple arithmetics of poverty, inequality and growth. Section 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.

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

A change in the distribution of income can be decomposed into two effects. First, there is the effect of a proportional change in all incomes that leaves the distribution of relative income unchanged, i.e. a *growth* effect. Second, there is the effect of a change in the distribution of relative incomes which, by definition, is independent of the mean, i.e. a *distributional* effect.[2]

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

The Poverty-Growth-Inequality Triangle



The following definitions help to clarify these linkages:

- "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.
- "Inequality" (or "distribution") refers to disparities in *relative income* across the whole population, i.e., disparities in income after normalizing all observations 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 or consumption) in the household survey.

A change in poverty can then be shown to be 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.[3]

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 that 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. It also shows how the decomposition identity may be applied to observed growth periods for which distribution data are available at the beginning and end of the period.

This discussion shows clearly that both growth and inequality changes play a major role in generating changes in poverty. However, the impact of these phenomena will

[3] There is some path dependence in this decomposition, i.e. it would have also been possible to move first up and down, and then to move rightwards. These two paths are not necessarily equivalent except for infinitesimal changes. We assume here that in effect all changes are sufficiently small for path dependence not to be a problem.

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 in the observed change in poverty what 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 in Figure 2 is the importance of the distribution-related change in poverty. Of course, it is not the mean change which matters here – in effect it is arbitrarily set to zero in the identification of the distribution effect – but the dispersion of that effect. Observation of Figure 2 suggests that variations of the poverty headcount larger than 20 per cent, in absolute value, over a few years are quite common. Indeed, about 30 percent of the observations in Figure 2 are in that range, and about twice that proportion show distribution-related changes in poverty larger than 10 per cent.

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

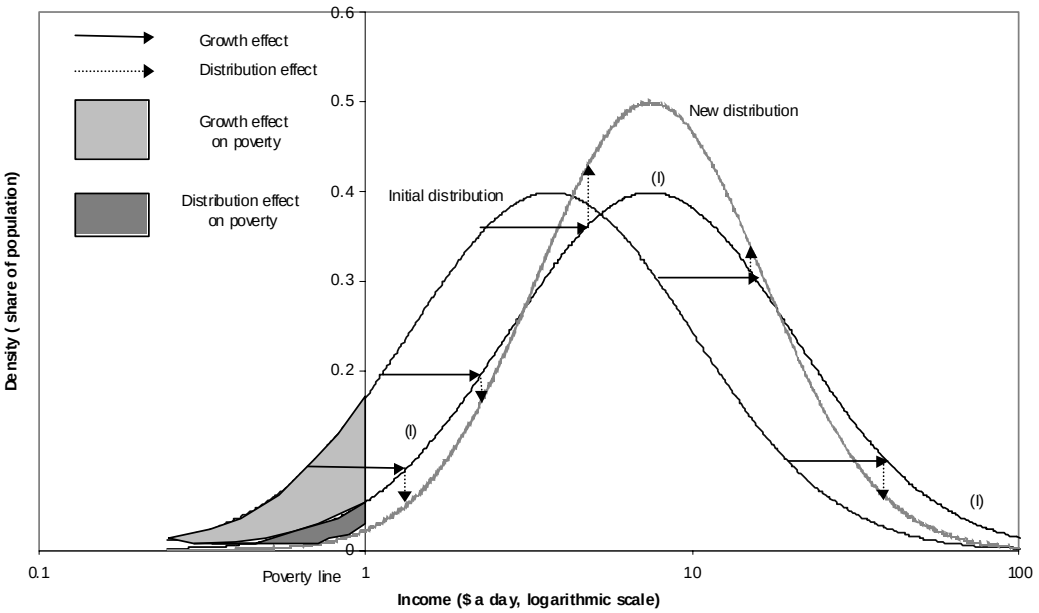
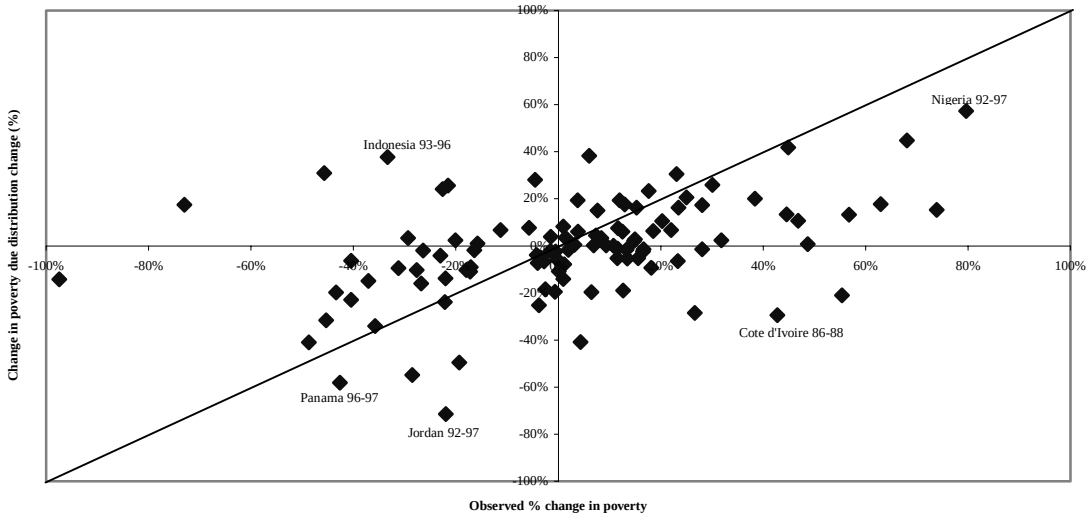


Figure 2. Distribution-related poverty change in a sample of growth spells (percents)

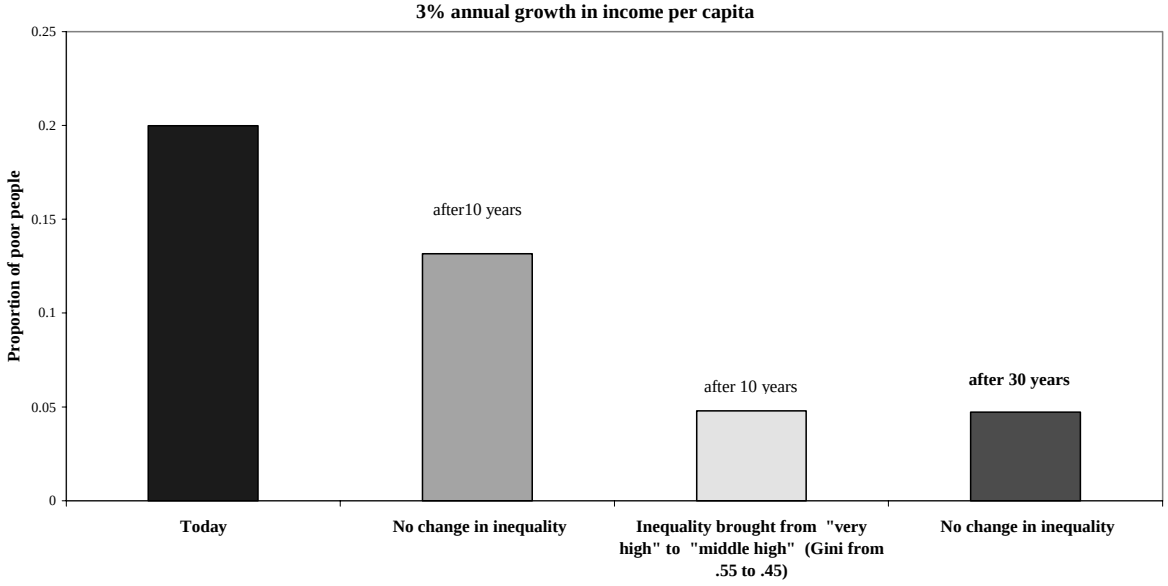


It follows from this simple exercise that *distribution matters* for poverty reduction. Over the medium-run, distributional changes may be responsible for sizable changes in poverty. In some instances, these changes may even offset the favorable effects of growth. In Ethiopia, for example, growth could have reduced the poverty headcount by some 31 per cent between 1981-95. Yet, because of changes in the distribution that contributed to a 37 percent *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.

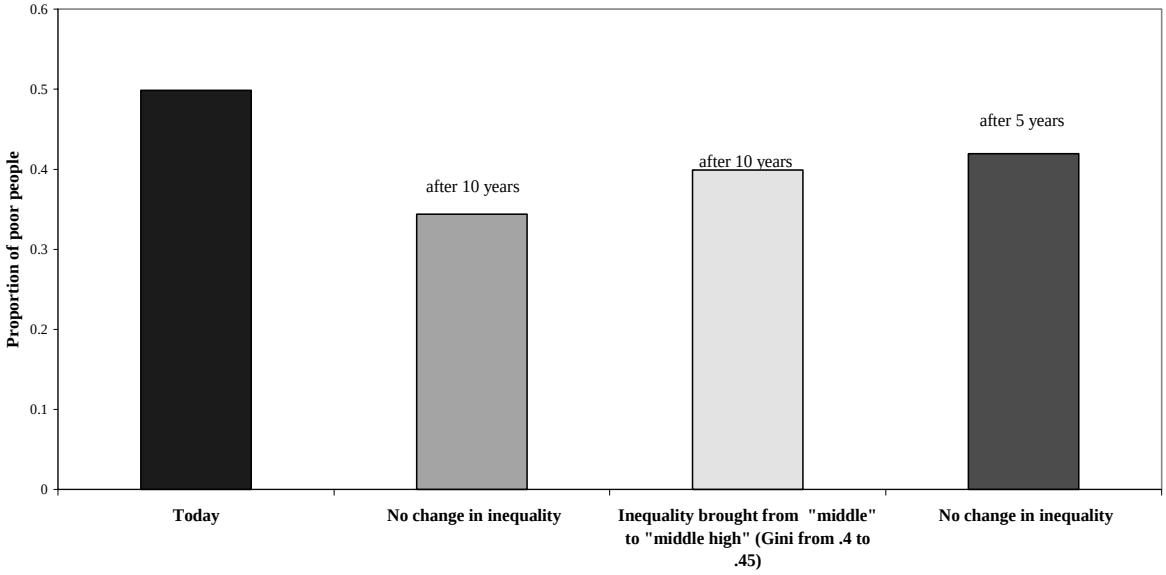
In Figure 3 a hypothetical experiment is made on the basis of a log-normal distribution of relative income calibrated on Mexican data. Extreme poverty in Mexico affects 20 per cent of the population today. Suppose that from now on, real income per capita grows at the annual rate of three percent and no change takes place in the distribution. 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 seven percentage points over 10 years, that is .7 of a percentage point a year. Suppose that during these 10 years, the Mexican government is able to bring down the level of inequality 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 seen in Figure 3 that the poverty rate would drop by more than 15 percentage points in 10 years, reaching less than five 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.

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



This argument should not be interpreted as showing the importance of distributional changes 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, initially with a middle level of inequality (a Gini coefficient of .4). Without any change in the distribution, a three percent annual growth rate in incomes would reduce poverty from its initial level of 50 percent to 35 percent in 10 years. Suppose, however, that during these 10 years inequality increases from a 'middle' to a 'middle high' level – i.e. the Gini coefficient increases from .4 to .45. Figure 4 shows that in this case the reduction in poverty would be halved. In terms of poverty reduction, five years of growth would simply be lost.

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, it is important to consider growth and income distribution *simultaneously*, and to recognize that income distribution matters as much as growth for poverty reduction. Of course, one can object to these examples as necessarily referring to a limited time period. It is difficult to imagine that inequality will increase or decrease for very long periods of time since there are likely to be limits to the level of inequality for political economy reasons. In this sense long run growth is the main factor for poverty reduction and per se is 'good for the

poor'. However, development and poverty reduction goals have specific time horizons. The examples above show that inequality does change over time and that poverty reduction over a specific period may be endangered by adverse changes in distribution.

A second lesson to be drawn from the previous examples is that country specificity matters a great deal. The first two bars in Figures 3 and 4 show that the same growth rate causes different percentage changes in poverty in the two hypothetical countries. The growth elasticity of poverty is higher in the case of the middle-income country. Theory and evidence show that both the growth and distribution elasticity of poverty depend positively on the level of development and negatively on the degree of inequality, as noted above. Optimal growth-distribution strategies aiming at poverty reduction in a given time frame should therefore differ depending on initial conditions. For instance, it is likely that changing the distribution is probably more important for middle-income and inegalitarian countries, while growth is probably more important, in relative terms, for low-income and egalitarian countries. Also, the preceding point suggests that effective redistributive policies may in fact yield a double dividend: they reduce poverty today and accelerate poverty reduction in the future.

Knowledge of that identity linking poverty reduction, growth and distribution is certainly not sufficient to establish the optimal mix of growth and distribution oriented policies in a development strategy. It is also essential to know the relative cost of achieving progress on each front. Moreover, it is also fundamental to know what interactions there may be between the two types of policies. In the preceding examples combining growth and inequality reduction, a central issue is whether a three per cent annual growth rate in a given country may be obtained independently of the distribution of income, or whether such a growth rate is likely to cause changes in the distribution. Likewise, one may question whether the distributional changes considered in Figures 3 and 4 may impact negatively, or positively, 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 affect the distribution of income and welfare. But is there any systematic pattern in that evolution? Does the initial level of inequality affect the rate of economic growth in a systematic way? If so, would progressive redistribution policies likely accelerate or slow down growth? The lessons from the literature on these questions, and possible implications for development strategies and redistribution policies, are briefly summarized below.

A. Effects of growth on distribution

There are many channels through which economic growth may modify the distribution of income and welfare, and much effort has been devoted to formalizing the corresponding economic mechanisms. 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. These changes are likely to directly impact on the distribution of income, regardless of whether factor and goods markets are 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 economy were the main theoretical explanation 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 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 non-homothetic preferences. As income grows the demand for social services changes. For instance, people become politically more active, as in Justman and Gradstein (1999), and change the distribution of political power and the evolution of institutions. Within the influential framework proposed by North (1990), it may also be held 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 greater perceived need for coordination.

Taken together, do these various effects of growth on the structure of society, drawn from economic theory, lead to a clear evolution in the distribution of resources? Has the inverted-U curve that Kuznets identified, regarding the historical evolution of inequality across countries and explained by the sectoral reallocation of the population in the development process, become a universal principle? Or is development and the evolution of distribution country-specific? This question 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). As more and better data became available, however it appeared that this empirical relationship, while perhaps valid across countries in the 1970s, did not fit the subsequent evolution of inequality observed in a sample of countries.[4]

The best illustration of this is provided by a thorough analysis of the database on distribution assembled by Deininger and Squire (1996).[5] Figure 5 summarizes the results they obtained. Data come from an unbalanced panel, with several observations for each

[4] Using an unbalanced panel of data in developing countries, Bourguignon and Morrisson (1998) show that the inverted-U hypothesis was probably valid in the 1970s but not in later periods as additional countries were added to the original sample.

[5] Deininger and Squire (1996) use a secondary and problematic database combining estimates published in studies on distribution from many countries. This should not, however, interfere with a check on the validity of the inverted-U hypothesis, since measurement errors affect the variable to be explained, i.e. inequality. See Atkinson and Brandolini (2000) for a critical analysis of the database.

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 estimate, 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 decline in inequality for low incomes fails to be statistically significant.

These results certainly do not imply that growth has no significant impact on distribution. Rather they indicate that there is too much country specificity in the way growth affects distribution for any generalization to be possible. Indeed, case studies, as opposed to cross-sectional studies, show that distributional changes 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 in distribution has taken place, growth has in general tended to counteract long-run socio-demographic trends in 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 few percentage points. Prima facie, this suggests that sluggish growth in Brazil had no impact on income 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 progress achieved in education. From this evidence, it might be inferred that slow growth was indeed responsible for an increase in inequality that offset the effect of those equalizing socio-demographic forces. In effect, a more detailed analysis shows that a major factor towards more inequality was the difficulty faced by the poorest households

in incorporating themselves to the labor market, an obvious consequence of slow growth.[6]

More case studies of the preceding type are certainly needed to deepen our 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 identified by economic theory for the effect of growth on distribution are indeed valid, but their relevance depends on the initial conditions. If so, it is hoped that further detailed case studies will serve 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. (see Bourguignon 1998; Rodrik 2003). It may be the case that some countries have deliberately chosen a particular strategy, or that one strategy was easier to implement than another given initial conditions. The important point is that even if growth may have some automatic effects on distribution through different channels, the importance of these channels can likely be modified by policy choices. Put more directly, redistribution undertaken alongside the development process may help modify potentially adverse primary distributional effects of growth.

B. Effects of inequality on the rate of growth

The preceding discussion is only one side of the relationship between growth and distribution. The other side, which is related, is that leading from inequality to growth. The dominant view today is that inequality is not a final outcome of growth 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 of 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.

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

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 may lead to social tension expressed through collectively organized or individually-led violent redistribution. Other 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

Broadly speaking, these hypotheses predict a negative correlation between *wealth* inequality and economic growth based on a very simple mechanism. If rich individuals in a society have access to a credit market with an annual rate of interest of 10 percent, while the poorest face a 50 percent interest rate for lack of collateral, all projects with a rate of return 10 percent or higher will be undertaken by individuals in the first group. But in the second group, only projects with a 50 percent rate of return or higher will go forward. Projects with rates of return just below 50 percent – and above 10 percent- would be forgone by members of that group. However, if some wealth were redistributed from the first to the second group, poorer individuals would have less need to borrow and could undertake projects promising a rate of return slightly below 50 percent. In this case, redistribution from rich to poor would actually generate more investment, and/or a higher rate of return of capital.

This argument, adapted from Piketty (1993), can be applied to several situations. The key point is that poor people cannot borrow as they lack collateral, face imperfect credit markets, or their poverty prevents them from seizing investment opportunities that would benefit both themselves and society. For example, poor people cannot offer their children a good education, cannot obtain loans to start a business, or cannot afford insurance, however profitable their enterprises may be. Countries with a high poverty headcount, or an 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.

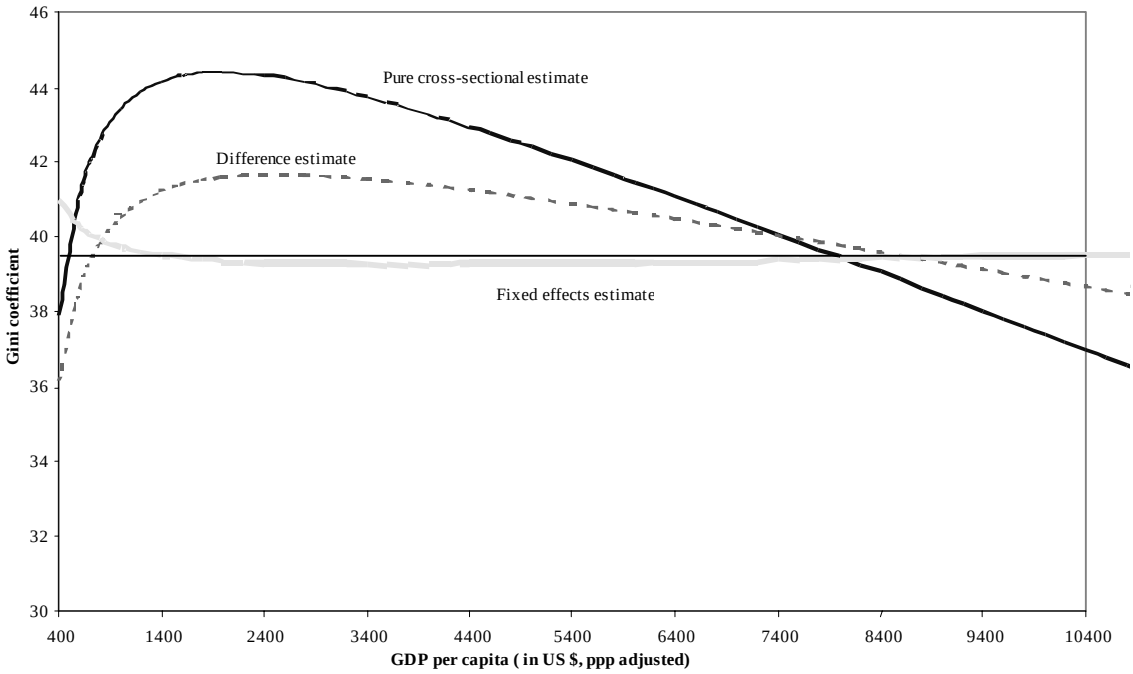
Formalized versions of this argument are found in the models of Galor and Zeira (1993), Banerjee and Newman (1993), Aghion and Bolton (1997) and others. In these models, credit is rationed because of asymmetric information. This affects the ability of poor people, and possibly of the middle class, to freely choose occupations or investments, thus influencing the evolution of inequality and output. 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 slower 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

Figure 5. Cross-country estimates of the Kuznets curve (Deininger and Squire, 1996)



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 (1998) 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 the two most unequal regions in the world (Latin America and sub-Saharan Africa), and in the region where growth has been the fastest (Eastern Europe, Russia and Central Asia). Bourguignon (1998) 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.

[7] This argument is developed in Benabou (1996).
[8] A new class of model is obtained by endogenizing the 'decisive' voter. See for instance, Acemoglu and Robinson 1996; Ades and Verdier 1996, Robinson ,1998, Bourguignon and Verdier 2000a, 2000b.

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 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 Schleifer, Vishny and Murphy 1989). 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 savings 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 similar problems arose as with the Kuznets curve. First, this result depended very much on the sample and the 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, 1998). Of course, fixed effects models were also estimated on the basis of decadal country data on growth and initial inequality (Forbes, 2000, Zou, 1998). 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 available aggregate evidence is inconclusive.

It is also fair to say that panel data regressions, which may supposedly take care of fixed effect biases, ask too much from the data. To see 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.[9] Being able to identify the effect of inequality on growth would thus require relying on truly exogenous innovations in the

[9] 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.

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 consists of trying to estimate 'structural' models of the inequality-growth relationship, including in the analysis of some formalization of the various hypotheses reviewed above on the distributional consequences of growth. This is a rather formidable task, and it is not clear that all the data necessary for such an ambitious analysis are available at present.

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 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. This is probably the only way to confirm the theoretical assumption that too much inequality is harmful to growth, and tends to perpetuate itself.

Conclusion: The scope for redistribution in development

What does this imply for policy or, more precisely, for redistribution policy? At face value these arguments would lead to progressive redistribution of income over some time period which accelerates poverty reduction for given patterns and rates of growth, thereby yielding positive results. If one interprets literally the potentially negative relationship between inequality and growth, then this redistribution policy would enhance growth. It would then be sufficient to have at one’s disposal policy instruments to guarantee that growth is pro-poor – i.e. that it reduces inequality – for a 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 indeed equality could be favorable to growth. "Reduce inequality through redistribution or through promoting 'pro-poor' growth and sustainable growth would settle". Unfortunately, this is not at all what can be drawn from the arguments invoked to justify that inequality is harmful to growth. The argument and its implications are slightly more subtle and it is worth having them clearly in mind.

The arguments summarized above tend to suggest that redistribution of 'wealth' from rich to less-rich people may have a positive impact on growth. This may occur by correcting credit market imperfections that would otherwise prevent some productive investments from taking place, by lowering the tax rate, or by 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 fact, income transfers that 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 efficient and growth-enhancing, redistribution should be concerned with wealth rather than current income or consumption expenditures.

It is doubtful that such direct wealth redistribution is feasible or without cost. Redistributing property can only be done under exceptional circumstances, which often involve political violence, and 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 that are levied to finance credit subsidies are generally on the whole population and typically constitute an income transfer with obvious distortionary effects. The credit subsidy part clearly contributes to wealth accumulation among poor peasants. [10]

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

More generally, it must be realized that there is a paradox in the theoretical arguments which show that wealth redistribution, but not income redistribution, enhances economic efficiency and growth. This is because redistributing wealth generally involves some non-lump sum income transfers, which may have negative effects on efficiency and growth. In the long run, the positive wealth effect may be 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. In fact, even pure income transfers generally have some spill over effects on wealth accumulation. This issue is addressed by the recent use of so-called 'smart transfers' (see below).

Are pure income transfers really so bad? It is true that until recently the conventional wisdom emphasized the negative effects of income transfers due to their adverse incentive effects on the supply of labor and the savings of transfer beneficiaries and tax payers. These effects are 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. Their nutrition could improve, for example. Under these conditions, apparently 'pure' income transfers in effect lead to some particular wealth accumulation among the poor.

Another channel through which income transfers may affect the assets owned by poor people is through insurance. Indeed, many economists now consider that in the presence of a high and possibly increasing macro-economic volatility, targeted transfers can be useful instruments for "social protection". They may also contribute to pro-poor growth (i.e. growth that reduces poverty) by avoiding dis-savings, for instance by taking children out of school or by helping credit-constrained poor people to be productive workers or take up productive opportunities for self-employment.

Strong arguments can also be made in favor of "smart transfers", such as Mexico's Progresa/Oportunidades and Brazil's Bolsa Escola/Bolsa Familia. These are essentially means-tested income transfer programs, with some additional conditionality built in. Benefits are conditional on children attending school and visiting a medical center regularly. These programs are pure income transfers for those households that would have sent their children to school and to the doctor anyhow. Yet, they effectively contribute to human capital accumulation for the other families – provided, of course, that the supply of education and health services matches the induced increase in demand. A serious evaluation of these programs has showed that they were effective in raising school enrollment rates and health outcomes in the targeted populations. (Skoufias (2001) on Progresa, Bourguignon; Ferreira and Leite (2003) on Bolsa Escola and also 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. In view of the analytical framework developed in the preceding section, this means that possible adverse consequences of growth on the distribution of income may be corrected by redistribution at 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. Interesting experiments are under way in various countries, and are being followed closely by researchers. Assessing the implications of these programs will take time and effort by the development economic research community. Existing results raise hope that the complementarity between growth and equity might be better exploited in development strategies.

Given the constraints faced by low-income countries, can efficient redistribution, work in practice? Much empirical evidence supports the theoretical arguments outlined above, but more research is needed on the role of targeted transfers in developing countries in order to answer this question. Specifically, we need to deepen our understanding of targeted transfers in the light of new theories on the social costs of uninsured risks, and of unmitigated inequalities.

What about asset redistribution programs? Their feasibility will be largely a function of the political context. Asset redistribution schemes have to conform with political realities. While social benefits would accompany any exogenous redistribution of wealth in slow-growing and authoritarian societies, this would clearly be opposed by the elites. Such a redistribution is thus an unrealistic 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 classes. But poor people are unlikely to mobilize to demand 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.

References

Acemoğlu, Daron and James A. Robinson. 1996. "Why Did the West Extend the Franchise? Democracy, Inequality and Growth in Historical Perspective." Massachusetts Institute of Technology, Cambridge, Mass.

Acemoğlu, Daron, Simon Johnson, and James A. Robinson. 2001. The Colonial Origins of Comparative Development: An Empirical Investigation. American Economic Review 91: 1369-1401.

Ades, Alberto, and Thierry Verdier. 1996. "The Rise and Fall of Elites: Economic Development and Social Polarization in Rent-Seeking Societies." Discussion Paper 1495. Center for Economic and Policy Research, Washington, D.C.

Aghion, Philippe and Patrick Bolton, 1997, "A Theory of Trickle-Down Growth and Development", Review of Economic Studies, 64: 151-172

Ahluwalia, Montek. 1976. "Inequality, Poverty and Development," Journal of Development Economics, vol. 6, 307-342.

Ahluwalia, Montek, N.G. Carter and Hollis Chenery. 1976. "Growth and Poverty in Developing Countries," Journal of Development Economics, vol. 6, 299-341.

Alesina, Alberto and Roberto Perotti, 1996, "Income Distribution, Political Instability, and Investment", European Economic Review, 40(6): 1203-1228

Alesina, Alberto and Dani Rodrik. 1994. "Distributive politics and economic growth." Quarterly Journal of Economics. 109(2). p. 465-490.

Atkinson, Anthony B. and Andrea Brandolini, 2001, Promises and Pitfalls in the use of Secondary Data-Sets: Income Inequality in OECD countries as a Case Study, Journal of Economic Literature, 39(30, pp 771-799, September.

Banerjee, A.V. and A.F. Newman, 1993, "Occupational Choice and the Process of Development", Journal of Political Economy, 101(2): 274-298

Benabou, Roland. 1996. "Unequal Societies." National Bureau for Economic Research Working Paper: 5583.

Bourguignon, François. 2004. ”The Social Consequences of Economic Growth,” (forthcoming in The Handbook of Economic Growth, Aghion and Durlauf, editors, Amsterdam:Elsevier).

———. 2003. “The Growth Elasticity of Poverty Reduction: Explaining Heterogeneity across Countries and Time Periods,” in: T. Eicher and S. Turnovsky, eds. Inequality and growth. Theory and Policy Implications. Cambridge: The MIT Press.

———. 2002. “The Distributional Effects of Growth: Case Study vs. Cross-country Regressions.” Paper presented at CEPAL, Santiago de Chile, in August 2001. Mimeographed, revised version.

———. 1999. “Crime, Violence and Inequitable Development,” Annual Bank Conference on Development Economics, edited by B. Pleskovic and J. Stiglitz, Washington, DC: The World Bank.

———. 1998. “Équité et croissance économique: une nouvelle analyse?” Revue Française d’Économie, vol. XIII-3, été: 25-84

Bourguignon, François and Christian Morrisson. 2002. “Inequality among World Citizens, 1820-1992,” American Economic Review, Vol. 92, No.4, September.

—-———. 1990. Income distribution, development and foreign trade: a cross-sectional analysis, European Economic Review, Vol. 34, 1113-1132

Bourguignon, François, and Thierry Verdier. 2000a. “Oligarchy, Democracy, Inequality, and Growth.” Journal of Development Economics 62: 285-313.

_____. 2000b. “Is financial openness bad for education? A political economy perspective on development.” European Economic Review. 44(4). p. 891-903.

Bourguignon, F., M. Fournier and G. Gurgand. 2001. "Fast Development with a Stable Income Distribution: Taiwan, 1979-1994", Review of Income and Wealth 47(2), 139-163.

Bourguignon, François, Francisco Ferreira and Marta Menéndez. 2003. Inequality of outcomes, inequality of opportunities and intergenerational education mobility in Brazil. The World Bank. Mimeographed, revised October

Bourguignon, François, Francisco Ferreira and Nora Lustig. 2003. The microeconomic dynamics of income distribution in developing countries. (Book in progress.)

Bourguignon, François, Francisco Ferreira and P. Leite. 2003. " Conditional cash transfers, schooling and child labor: micro-simulating Brazil's *Bolsa Escola* program." World Bank Economic Review. 17(2). p. 229-54.

Bourguignon, Francois, Jaime de Melo, and Christian Morrison. 1991. "Poverty and Income Distribution during Adjustment: Issues and Evidence from the OECD Project", World Development 19(11), 1485-1508.

Chenery, Hollis, Montek Ahluwalia, Clive Bell, John Dulloy and Richard Jolly. 1974. Redistribution with Growth. Published for the World Bank and the Institute of development Studies, Sussex. Oxford: Oxford U.P.

Chenery, Hollis, Sherman Robinson and Moshe Syrquin. 1986. Industrialization and Growth. A World Bank Research Publication. Oxford: Oxford U.P.

Datt, G. and M. Ravallion. 1992, "Growth and Redistribution Components of Changes in Poverty Measures : a Decomposition with Application to Brazil and India in the 1980s," Journal of Development Economics, 38(2), 275-295

Deininger, Klaus and Lyn Squire. 1996. "A New Data Set Measuring Income Inequality." World Bank Economic Review 10(3): 565-91.

Dollar, David and Aart Kraay. 2002. "Growth Is Good for the Poor." Journal of Economic Growth 7(3): 195-225.

Ferreira, Francisco and Ricardo Paes de Barros. 1998. Climbing a Moving Mountain: Explaining the Decline of Income Inequality in Brazil from 1976 to 1996, Inter-American Development Bank, Washington, D.C. (typescript).

Ferreira, Francisco. 1999. Inequality and Economic Performance. Brief Overview of Theories of Growth and Distribution, http: //www.worldbank.org/poverty /inequal /econ/ferreira.pdf

Fields, Gary. 1980. Poverty, Inequality, and Development. Cambridge: Cambridge University Press.

Fields, Gary. 2001. Distribution and Development: a New Look at the Developing World, MIT Press

Forbes, Kristin J. 2000. "A reassessment of the relationship between inequality and growth." American Economic Review. 90 (4). p. 869-887.

Foster, James, W. 1998. Absolute versus Relative Poverty, American Economic Review, 88(2): 335-341.

Galor, Oded and J. Zeira, 1993, "Income Distribution and Macroeconomics", Review of Economic Studies, 60: 35-52

Justman, M. and M. Gradstein, "Industrial Revolution, Political Transition and the Subsequent Decline in Inequality in Nineteenth-Century Britain", Explorations in Economic History, 36(1999), 109-127

Kakwani, Nanak. 1993. Poverty and Economic Growth with Application to Côte d'Ivoire, Review of Income and Wealth, 39, 121-39

North, Douglas. 1990. Institutions, institutional change and economic performance. Cambridge University Press.

Paukert, F. 1973. "Income distribution at different levels of development: a survey of the evidence," International Labour Review, Vol. 108, 97-125

Perotti. 1996. "Political equilibrium, income distribution and growth." In Gene Grossman (ed.), Economic Growth: Theory and Evidence. Elgar Reference Collection.

Persson and Tabellini. 1994. "Is inequality harmful for growth?." American Economic Review. 84(3). p. 600-621.

Piketty, Thomas. 1993. "Imperfect capital markets and the persistence of initial wealth inequalities." London School of Economics Suntory Toyota Centre for Economics and Related Disciplines Working Paper No. TE/92/255.

Ravallion, Martin. 1997. "Can High-Inequality Developing Countries escape Absolute Poverty," Economic Letters 56(1): 51-57, September.

Ravallion, Martin. 2001. "Growth, Inequality, and Poverty: Looking Beyond Averages," Working Paper No. 2558, Washington D.C.: The World Bank.

Ravallion, Martin 2002, "Externalities in Rural Development. Evidence from China," mimeographed, The World Bank, July.

Ravallion, Martin. 2003. "The Debate on Globalization, Poverty and Inequality: Why Measurement Matters," Working Paper No. 3038, April, Washington D.C.: The World Bank.

Ravallion, Martin. 2003b. "Targeted Transfers in Poor Countries: Revisiting the Tradeoffs and Policy Options," Working Paper No. 3048, May, Washington D.C.: The World Bank.

Ravallion, Martin, Gaurav Datt, and Dominique Van de Walle. 1991. "Quantifying Absolute Poverty in the Developing World," Review of Income and Wealth 37: 345-61, December.

Ravallion, Martin and Shaohua Chen, 2002. "Measuring Pro-poor Growth," Economic Letters

Ravallion, Martin and Shaohua Chen. 1997. "What Can New Survey Data Tell Us about Recent Changes in Distribution and Poverty?," World Bank Economic Review, 11(2), 357-82.

Ray, Debraj. 1998. Development Economics. Princeton University Press.

Robinson, James A. 1998. "Theories of bad policy." Journal of Policy Reform. 2(1). p. 1-46.

Rodrik, Dani. 1998. "Where did all the growth go? External shocks, social conflict and growth collapses." Centre for Economic Policy Research Discussion Paper 1789.

Rodrik, Dani. 2003. Growth Strategies (prepared for the Handbook of Economic Growth). http://ksghome.harvard.edu/~.drodrik.academic.ksg/growthstrat10.pdf

Saint-Paul, G. and Thierry Verdier. 1993. "Education, Democracy and Growth," Journal of Development Economics, vol. 42, p. 399-407.

Saint-Paul, G. and Thierry Verdier. 1996. " Inequality, Redistribution and Growth," European Economic Review, vol. 40, p. 719-28.

Shleifer, Andrei, Vishny, Robert W. and Murphy, Kevin M. 1989. "Income Distribution, Market Size, and Industrialization." Quarterly Journal of Economics. August. p.537-64.

Skoufias, Emmanuel, Benjamin Davis and S. de la Vega. 2001. "Targeting the poor in Mexico: An evaluation of the selection of households into PROGRESA." World Development. 29(10). p. 1769-84.

Stiglitz, Joseph E.. 1969, "Distribution of income and wealth among individuals," Econometrica, 37(3), p. 382-397.

Verdier, Thierry (2000). "Education as an Engine of Political and Cultural Change?" Deutsche Stiftung für Internationale Entwicklung. http ://www.dse.de/ef/instn /verdier.htm

World Bank. 2001. World Development Report 2000/1: Attacking Poverty. New York: Oxford University Press.

World Bank, 2003. World Development Report 2004: Making Services Work for Poor People. Washington, DC: Oxford University Press.

Zou, Heng-fu (1998), Income Inequality is not Harmful for Growth: Theory and Evidence, Review of Development Economics, Vol. 2, 1998.