Empirics of the link between growth and poverty

Growth reduces poverty, but its impact can vary widely.

Recently, there has been much debate about the impact of growth on poverty. Many people have questioned whether the world’s poor share in economic growth. Others have argued that growth is generally beneficial for the poor. This debate has been given impetus by the World Bank’s just-published World Development Report 2000/2001: Attacking Poverty.

Drawing on that report, this note synthesizes the empirical evidence. (Forthcoming notes will analyze the broader definitions of poverty and offer policy conclusions.) The data show that economic growth typically reduces poverty and can usually be deemed pro-poor. But there is wide divergence across countries. In some cases the poor have gained relatively little from growth; in other cases they have benefited disproportionately. Available data may have weaknesses, though, so there is a need for caution in interpreting the empirical results.

Because most empirical studies of poverty are based on measures of income or consumption, this note is restricted in similar fashion. But poverty is a state in which the quality of a person’s life falls short of some recognized standard of well-being—and as such, it requires that additional dimensions be considered. The prevailing concept of poverty encompasses not only material deprivation as defined by income or consumption, but also low achievement in education and health. This concept underscores the International Development Goals for 2015.

World Development Report 2000/2001 further extends the notion of poverty to include vulnerability, voicelessness, powerlessness, and exposure to risk. While these dimensions of poverty are hard to measure, they reflect a broader concept of overall individual welfare, as opposed to a narrower concept of material well-being. Wherever possible, measures of poverty should reflect not just income and consumption, but also levels of human development (as measured by education and health), exposure to risks (such as illness and injury, violence, price variations, and loss of employment), and powerlessness to improve one’s situation. The impact of growth on these additional dimensions deserves more attention.

Evidence on growth and poverty

A number of studies have examined the impact of changes in per capita income on standard measures of poverty. Such studies typically use international cross-sectional data or time series data for individual countries. This work has produced some important findings.

Growth tends to reduce poverty

For nearly every accepted indicator, poverty falls as per capita income rises. Two poverty indicators are commonly used in empirical studies: the mean income of the poor and the portion of the population with income below a given poverty line (such as $1 a day at purchasing power parity—the headcount ratio; Dollar and Kraay 2000). Recent research based on international cross-sectional data shows that, on average, the...
income of the poorest 20 percent rises at the same rate as GDP per capita (figure 1).

For the headcount ratio, based on the $1 a day cutoff, Ravallion and Chen (1997) find that it falls systematically with higher GDP per capita, with an average elasticity of −3.1. For example, a 1 percent increase in per capita income in a country with a poverty rate of 20 percent is, on average, associated with a reduction in poverty of 0.62 percentage points, to 19.38 percent. Other indicators, such as the infant mortality rate, also fall with higher per capita income.

**But there is great variation**

Although growth normally reduces poverty, its effects vary significantly across countries in a given period and across periods in a given country. Typically, no more than 50 percent of the variation in the poverty measure is explained by income growth. In terms of figure 1, points above the fitted line are strong examples of countries experiencing pro-poor growth. Of the 102 periods for which there is information on the income of the bottom 20 percent of the population in developing countries with positive per capita growth, 14 were anti-poor—in the sense that the poor failed to gain from economic growth. But in 53 cases growth seemed strongly pro-poor, with the income of the poor growing faster than average.

As noted, data limitations call for caution in comparing country data. Still, the divergence in country experiences is remarkable. During 1988–97 the average income of Ghana’s poor increased by 3.3 percent a year while national per capita income grew by 1.2 percent a year. By contrast, in Thailand the average income of the poor is estimated to have risen by 3.7 percent a year in 1969–92 while national per capita income grew by 5.1 percent a year. Similar examples can be found by observing residuals around the estimated relationship for the headcount ratio. For example, during the 1990s Bangladesh and Uganda experienced similar economic growth rates, but Uganda was able to achieve a much sharper reduction in the prevalence of poverty.

The recent experience of transition economies in Eastern Europe and Central Asia has been particularly bad for the poor. These economies have not only experienced a general drop in per capita income, they have also seen the distribution of income worsen in response to the move away from socialist systems that guaranteed full employment, provided adequate safety nets, and kept wage differentials very narrow. As a result poverty impacts appear extreme in these economies. For example, real per capita income dropped by 37 percent in Estonia in between 1988 and 1995—but the average real income of the poorest 20 percent fell by nearly 62 percent. Some transition economies are now well advanced in their move to market systems and are experiencing a resumption in growth that should reduce poverty.

**Inequality matters**

Even when inequality is stable, high initial inequality reduces the impact of growth on absolute poverty. In two countries with the same per capita income, the poor will on average be closer to the poverty line in the country with less inequality in incomes. Thus, with the same growth in average income, a country with persistently low inequality can expect to see a higher reduction in absolute poverty than can a country with high ineq-
ity. The higher is the initial income share of the poor, the higher (on average) will be their share in the growth in total income.

This relationship is reflected in the estimated impact of growth on absolute poverty: the elasticity of the poverty headcount ratio with respect to per capita income is lower in countries with more unequal income distributions. For example, in countries with low initial inequality—a Gini coefficient of around 0.2—the estimated elasticity is twice as large as in countries with high inequality—a Gini of around 0.6 (World Development Report 2000/2001).

Changes in the level of inequality are also important. Although there is no clear relationship between inequality and the level of economic development, in many countries (China, India) inequality has risen with economic growth. A rise in inequality impacts the impact of growth on poverty.

As noted, high initial inequality reduces the poverty impact of economic growth. It can also undermine poverty alleviation by lowering overall economic growth. Early thinking suggested that increased inequality might be good for growth. More recent thinking and empirical evidence have weakened the case for such a tradeoff. A recent study surveying the evidence finds no consensus that growth is affected by initial levels of income inequality (Ferreira 1999).

Some studies find that high initial income inequality hinders growth (Alesina and Rodrik 1994, Deininger and Squire 1998), while some others draw the opposite conclusion (Li and Zou 1998, Forbes forthcoming). Evidence based on inequality of assets (human capital and physical assets such as land) and gender inequality is generally clearer. It finds that such inequality has a negative impact on growth (see Birdsell and Londono 1997, Ravallion 1998, Thomas and Wang 1998, Deininger 1999, and Klaseen).

The poverty impact of growth does not vary much with the level of development
The estimated elasticity of the mean income of the poor with respect to national per capita income is equal to 1 both in samples of richer and poorer countries and in samples of growing and contracting countries. This result invalidates the widely believed inverted U-shaped relationship between inequality and the level of development—that inequality first rises and later falls with development. This finding is in line with earlier work by Fields (1989) and others that challenged this proposition. Indeed, if Eastern European and Central Asian countries are omitted, there is no tendency for overall inequality—as measured by the Gini coefficient—to change systematically with levels of economic development (Ravallion and Chen 1997). This result also raises questions about the view that economic contractions are disproportionately bad for the incomes of the poor.

Pro-growth policies tend to be pro-poor
Policies believed to encourage growth also appear not to worsen the income distribution, thus allowing the benefits of growth to reach the poor. Four policies are increasingly believed to be good for growth: keeping inflation low—preferably below 10 percent (Fischer 1993; see also Barro 1995, Bruno and Easterly 1995, Judson and Orphanides 1996, and Ghosh and Phillips 1998 on the threshold rate above which inflation is found to hurt growth), restricting government consumption (Easterly and Rebelo 1993), maintaining high trade openness (Frankel and Romer 1999), and upholding property rights and the rule of law (Knack and Keefer 1995). Dollar and Kraay (2000) find no evidence that any of these policies reduces the impact of growth on the poor. In fact, high inflation is found to have adverse distributional consequences. Avoiding high inflation improves the impact of growth on poverty.

It should be noted that the estimated aggregate relationship between growth and poverty observed in various studies misses some important movements that occur at a less aggregated level. In all economies, even those with little or no growth, there is a churning effect in that people are continuously moving in and out of poverty. Aggregate statistics hide this. A fall in the poverty rate from,
say, 20 to 18 percent in a given period will be picked up by the statistics—but not the fact that 6 percent of the population moved into poverty and 8 percent moved out.

This explains why, even when aggregate poverty declines, there could be a large and vocal group of people who are dissatisfied with the outcome. Little is known about how growth affects churning. For example, do pro-growth policies such as greater openness to international trade increase mobility in and out of poverty? Questions like this remain to be answered (see Dervis and Robinson 1977, Ravallion 2000, and the August 2000 issue of the Journal of Development Studies).

Data weaknesses and interpretation difficulties
There are several conceptual and practical problems in comparing poverty measures across countries and over time. Although some of these problems are addressed in empirical studies (including Dollar and Kraay 2000), their existence means that poverty numbers and estimated relationships should be interpreted with caution.

Survey quality
The quality of household surveys can vary considerably between countries and over time. Potential sources of error when measuring poverty include inaccurate data, sampling error, and missing information. Inconsistencies in the treatment of consumption from own production, income from self-employment, and imputed income from nonmarket activities also cause difficulties, with the problems generally being more serious in older surveys.

An example of the difficulties is that in India growth rates of consumption spending per person estimated from the national sample survey were much lower than those implied by the consumption component of the national accounts, though it is unclear which source was subject to greater error. In China the rate of poverty reduction may be underestimated because urban survey data do not include rural-urban migrants.

Income and consumption measures
Some country surveys yield income measures of living standards, while others yield only consumption measures. Income-based measures are likely to give different poverty estimates than those based on consumption for a variety of reasons—including higher consumption rates among the poor, consumption smoothing, and typically larger measurement errors in income. For example, in Thailand in 1988 the estimated poverty headcount based on the $1 a day purchasing power parity measure was 6.9 percent on an income basis and 15.2 percent on a consumption basis.

Exchange rates
International measures such as those based on $1 a day at purchasing power parity are subject to error because of difficulties in establishing suitable exchange rates. Estimates of purchasing power parity exchange rates have varied widely because of differences in the bundle of consumption goods used as the basis of calculation. When the World Penn Tables changed their base consumption bundle, their estimate of real per capita income in China in 1988 rose nearly 75 percent. Changes of this sort affect comparisons of absolute but not relative poverty.

Data errors
These data weaknesses can affect the results from econometric studies using international cross-sectional data. If errors occur only in the measurement of the poverty variable, then the estimated average relationship still holds—but there is uncertainty in categorizing which countries have experienced better or worse outcomes relative to the average relationship. Errors in the income measure are more serious and usually bias the results. Dollar and Kraay (2000) acknowledge this possibility but argue that, in their study, the relationship between errors in the poverty and income measures is such that it avoids this problem.

Omitted variable bias
Omitting other relevant variables from the estimating equations (for example, policy variables and initial conditions like inequal-
ity and economic structure) may create biases in the estimated relationship between growth and poverty, such as attributing to growth what may be attributable to other factors. While various studies have experimented with possible additional variables, this is likely to be a growing subject of future research.

Work by Fallon and Hon (2000) indicates, for example, that the elasticity of the poverty headcount ratio (on a $1 a day purchasing power parity basis) with respect to GDP per capita can change by as much as plus or minus 30 percent when alternative measures of the change in labor intensity (change in the capital-labor ratio, difference between labor demand and supply growth, and so on) are included as additional explanatory variables.

**Conclusion**

While we can be fairly confident that growth tends to reduce poverty, the exact nature of this relationship is hard to pinpoint. Future research will likely address a number of issues. First, in terms of the econometric work, which variables other than growth in income best explain changes in poverty? For example, the labor intensity of growth and the level of agricultural performance are strong candidates for further explaining why some growth episodes are more pro-poor than others, but more work needs to be done. Second, and related to the first question, how can policy interventions improve the impact of growth on poverty? What policies explain the wide divergence across countries in the poverty impact of growth?

Third, much research has been based on cross-country data. As noted, this introduces problems of comparability and interpretation. More research based on subnational data, such as work on India by Datt and Ravallion (1998), may yield stronger results and new insights.

Fourth, while there has been work on the impact of growth on nonincome poverty indicators (such as levels of human development), there has been little research on the multidimensional measures of poverty that combine indicators (insecurity, disempowerment) such as those proposed in *World Development Report 2000/2001*.

Thus there remains a rich agenda for research. Past work on the relationship between growth and poverty has established a good foundation on which to build. Future work should help focus the debate on specific policy issues on how to foster growth with a bigger impact on poverty.

**Further reading**


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