Part I

Conceptual Issues

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Inequality *is* bad for the poor

Martin Ravallion

It has long been argued that high inequality should be of little concern in poor countries on the grounds that: (i) absolute poverty in terms of consumption (or income) is the overriding issue, and (ii) the only thing that really matters to the reduction of absolute poverty is the rate of economic growth. Some observers have gone a step further to argue that (iii) higher inequality is the unavoidable by-product of the economic growth needed to reduce poverty. The message for policy is that developing countries—including their poor— need not worry about inequality.

This chapter takes (i) as given but takes issue with (ii) and (iii) on the basis of empirical evidence for developing countries. The following section looks at the empirical relationship across countries between inequality and growth, while section 2.2 turns to the relationship between inequality and poverty reduction. Section 2.3 examines whether the evidence from the experiences of developing countries supports the view that there is an aggregate trade-off between growth and reducing inequality. China is discussed in some detail since this country is widely seen to exemplify the idea of a growth-equity trade off. Finally, section 2.4 tries to draw out some lessons for policy and for policy-relevant research.

2.1 Inequality and growth revisited

The classic argument for believing that inequality will rise, more or less inevitably, as poor economies grow, is based on the Kuznets Hypothesis (KH)

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(Kuznets 1955). This states that relative inequality increases in the early stages of growth in a developing country but begins to fall after some point, that is, the relationship between inequality (on the vertical axis) and average income (horizontal) is predicted to trace out an inverted U. As typically formalized, the KH assumes that the economy comprises a low-inequality and poor (low-mean) rural sector, and a richer urban sector with higher inequality.[1] Growth occurs by rural labour shifting to the urban sector. In the classic formulation of the KH, this is assumed to happen in a rather special way, such that a representative slice of the rural distribution is transformed into a representative slice of the urban distribution. Thus distribution is assumed to be unchanged *within* each sector. Starting with all the population in the rural sector, when the first worker moves to the urban sector, inequality must increase even though the incidence of poverty has fallen. And when the last rural worker leaves, inequality must clearly fall again. Between these extremes, the relationship between inequality and average income traces out an inverted U.

Kuznets was writing in the 1950s and he had very little survey data for developing countries to draw on. Since then, and notably since around 1980, there has been a huge expansion in the collection of nationally-representative household surveys for developing countries. These data do not suggest that most growing developing countries have seen the trend increase in inequality predicted by the KH; indeed, very few developing economies have seen a trend increase (or decrease) in overall inequality (Bruno, Ravallion and Squire 1998). Yet, many countries have seen periods of rising inequality, but this has only rarely been sustained, with periods of falling inequality following. (Later we examine one of the commonly identified exceptions, namely China, although even there we will see that the reality is more complicated.) Studies of specific developing countries have suggested a number of reasons why the KH does not hold, but in practice an important role appears to be played by distributional shifts *within* both rural and urban areas, including distributional non-neutralities of the migration process itself.

Simple generalizations of developing country experiences—such as the claim that rising inequality is more or less inevitable—do not fit easily with the accumulated data. A number of papers have found that changes in inequality at the country level have virtually zero correlation with rates of economic growth: see, for example, Ravallion and Chen (1997), Ravallion (2001) and Dollar and Kraay (2002). Among growing economies, inequality tends to fall about as often as it rises, that is, growth tends to be 'distribution neutral' on average. If all levels of real income grow at roughly the same rate then absolute poverty must fall. This makes it unsurprising that the literature has also found

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[1] For a more precise formulation of the KH, and necessary and sufficient conditions for the inverted U for various inequality measures see Anand and Kanbur (1993).

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that measures of absolute poverty tend to fall with growth—that 'growth *is* good for the poor' (to quote the title of an influential paper by Dollar and Kraay 2002). Supportive evidence for the view that absolute poverty tends to fall with growth can be found in Ravallion (1995, 2001), World Bank (2000), Fields (2001) and Kraay (2006).

There are a number of reasons for caution in interpreting this lack of correlation between changes in inequality and growth, and in drawing implications for policy. First, there can be considerable 'churning' under the surface, with gainers and losers at all levels of living and re-ranking, even when there is little or no change in overall inequality. The churning cannot be seen in cross-sectional surveys, but it is revealed in the (more limited) panel data sets available.[2] Simulations of the impacts of specific policy changes intended to promote growth also point to 'horizontal inequality' in the impacts of reform.[3] An aggregate measure of inequality will (implicitly) attach some weight to such horizontal inequalities, but one can question whether that weight is sufficient, given their import for social stability and social policies.[4]

Secondly, the measures of 'inequality' in this literature are typically measures of *relative* inequality, whereby multiplying all incomes by a constant leaves the measure unchanged. Finding that a relative inequality measure is unchanged during an aggregate economic expansion is perfectly consistent with large increases in *absolute* income disparities. Growth in average income tends to come with higher absolute inequality between the 'rich' and the 'poor'; in marked contrast to Figure 2.1 (discussed here), a strong positive relationship (a correlation coefficient of 0.64) is found between changes in the absolute Gini index and growth rates (Ravallion 2004). Arguably, it is the absolute changes that are more obvious to people living in a growing developing economy than the proportionate changes.[5] It may well be the case that much of the debate

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[2] A useful compilation of studies using panel data can be found in the August 2000 special issue of the *Journal of Development Studies*; see the introduction by Baulch and Hoddinott (2000). The churning also stems in part from time-varying measurement errors, though plausible covariates have been evident in the studies that tested for this (see, for example, Jalan and Ravallion 2000).

[3] For example, in the context of trade reform, Ravallion (2006) reviews evidence on the extent of horizontal inequality, as indicated by the dispersion in welfare impacts at any given level of pre-intervention income. This reflects differences in variables such as household demographics and location that influence the net trading positions in relevant markets and (hence) the welfare impacts of reform.

[4] There have been efforts to address this concern. In the context of tax reform policies, Auerbach and Hassett (2002) show how an Atkinson (1970) index of social welfare can be decomposed into vertical and horizontal components in which the inequality aversion parameters can be different between the two. In the context of poverty measurement also see Bibi and Duclos (2006), who allow differential weights on the horizontal versus vertical components of the impacts of targeted transfers.

[5] In surveys of university students, Amiel and Cowell (1999) found that 40% or so thought about inequality in absolute terms rather than relative terms. For further discussion, see Atkinson and Brandolini (2004) and Ravallion (2004).

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about what is happening to inequality in the world is actually a debate about the meaning of 'inequality' (Ravallion 2004; Atkinson and Brandolini 2006).

Thirdly, there are also signs that the growth processes seen in many reforming economies in the 1990s have been putting more upward pressure on (relative) inequality. Lopez (2006) reports evidence to support this view (though based on a smaller, selected, sample of countries than will be studied in this chapter). To re-examine the relationship between growth and changes in inequality, I created 290 observations of the change between two successive household surveys for a given country with more than one observation for most countries; there are about 80 countries represented, spanning 1980–2000.[6] I then compared the changes in the Gini index with the changes in the survey mean (in real terms, using local CPIs). Figure 2.1 gives a scatter plot of changes in the log Gini index against changes in the log real survey mean between successive household surveys. The correlation coefficient is −0.13 and is not statistically significant (at the 10 per cent level). Among growing economies, inequality increased about as often as it fell, and similarly among contracting economies. If one focuses solely on the period after 1992, one finds a mild positive correlation coefficient of 0.26, which is significant at the 5 per cent level.[7]

Fourthly, it must be acknowledged that there is likely to be considerable *measurement error* in the changes in inequality and the survey means. The errors can come from a variety of sources, including sampling errors (probably a minor concern in most cases for the surveys used here), errors arising from selective compliance (whereby certain types of households participate in surveys with lower probability than others), under-reporting of incomes and comparability problems between surveys arising from differences in questionnaires, interviewing procedures or processing methods. These errors can greatly weaken the power of the tests found in the literature for detecting the true relationship. This is obvious enough for tests that regress changes in inequality on growth. But the problem is no less severe when one regresses growth rates of the poorest quintile (say) on the overall growth rate (as in Dollar and Kraay 2002); time-varying measurement errors in inequality will bias the regression coefficient toward unity.

There are a couple of things we can do to test robustness to time-varying measurement errors. One is to use data over longer periods. Figure 2.1 uses whatever time periods are available between successive surveys. If instead one uses changes over *three* surveys (taking the log difference between the survey

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[6] The data are drawn from *PovcalNet* and the *World Development Indicators*. *PovcalNet* is a new interactive tool that provides the distributional data from about 500 surveys for 100 developing countries, drawing on the World Bank's data base; see http://iresearch.worldbank.org/povcalnet.
[7] All significance tests in this paper are based on White standard errors (corrected for heteroscedasticity, which is clearly present).

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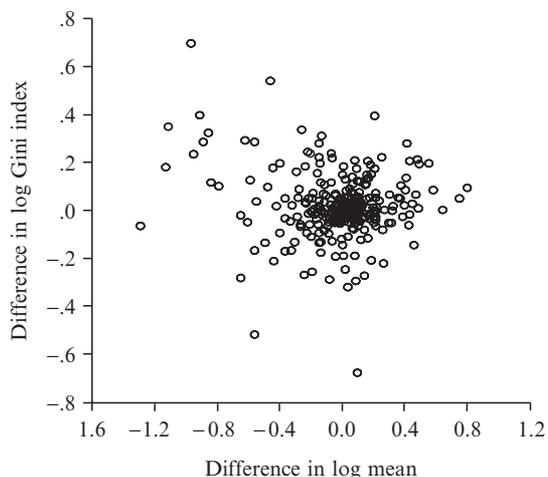
Figure 2.1 Changes in inequality and growth in the mean between successive surveys, 1980–2000

for date t and t–2) the correlation over the whole period becomes significantly *negative* (r = −0.24, n = 206), and that remains true for the data points after 1992. Alternatively, one can use the longest spell for each country; again there is no significant correlation (r = 0.10, n = 80).

Another test is to use growth rates in consumption from national accounts (NAS) as the instrumental variable for the growth rates based on the survey means (following Ravallion 2001). This assumes that the measurement errors in the two data sets are uncorrelated. While in practice there are sometimes overlaps in the underlying data sources used (such as when specific consumption items in the national accounts are benchmarked from household survey data), by and large the assumption is probably defensible for the purpose of testing robustness. By this test, one finds no significant correlation (in either direction) between changes in inequality and (instrumented) growth in survey means for either the 1990s, or the period as a whole since the early 1980s. Using all available observations, the IV estimate of the regression coefficient of the change in log Gini index on change in log survey mean using the change in log private consumption per capita from the NAS as the instrument is 0.04 with a standard error of 0.26. Confining the estimation to the post-1992 period, the IV regression coefficient rises substantially to 0.15, but this is only significantly different from zero at the 15 per cent level (White standard error of 0.11). So the claim that growth has seen inequality increasing in the 1990s is not particularly robust to allowing for time-varying measurement errors.

While acknowledging these data issues and caveats, the lack of a robust correlation between changes in relative inequality and growth does not

imply that policy-makers aiming to fight poverty in any given country can safely focus on growth alone. Putting measurement problems to one side, all this empirical finding tells us is that, on average, there was little effective redistribution in favour of the poor. It does not tell us that redistribution rarely happens or that distribution is unimportant to the outcomes for poor people from economic growth or that social protection policies are unnecessary. The rest of this chapter takes up these issues.

2.2 Inequality and the pace of poverty reduction

While it can be agreed that economies in which household income per person is growing tend to see falling measures of absolute poverty, there is still wide variation around the trend. Consider the rate of poverty reduction in a country with a 2 per cent rate of growth in per capita income (roughly the mean rate for the developing world in 1980–2000). The 95 per cent confidence interval of the regression coefficient of the proportionate rate of poverty reduction (log difference in headcount index) on the rate of growth (log difference in mean) found in Ravallion (2001) implies that a 2 per cent rate of growth rate will bring anything from a modest drop in the poverty rate of about 1 per cent to a more dramatic 7 per cent annual decline. For a country with a headcount index of 40 per cent (the mean '$1-a-day' poverty rate for the developing world around 1980), we have 95 per cent confidence that the index will fall in the first year by somewhere between slightly less than one half of a percentage point and a far more impressive three points.

Why do we find that the same rate of growth can bring such different rates of poverty reduction? In answering this question it is convenient to start with the identity that the proportionate rate of poverty reduction is the product of the 'growth elasticity of poverty reduction' and the rate of growth. Note that this is not the same as the elasticity of poverty with respect to the mean holding distribution constant. The latter can be thought of as the *partial* elasticity with inequality held constant, as distinct from the total elasticity given by the proportionate rate of poverty reduction divided by the rate of growth. The partial elasticity is negative by construction; the total elasticity can have either sign. Of course, if growth is distribution-neutral on average then the two elasticities will be similar on average, although they may differ greatly in specific countries and time periods. If growth tends to come with higher (lower) inequality then (minus one times) the partial elasticity will tend to be higher (lower) than the total elasticity.

Two factors can be identified as the main proximate causes of the differing total elasticities of poverty reduction found in practice: the initial level of inequality and how inequality changes over time. I consider these in turn.

INITIAL INEQUALITY

It is intuitive that the higher the initial inequality in a country, the less the poor will share in the gains from growth; unless there is sufficient change in distribution, a larger (smaller) initial share of the pie will tend to come with a larger (smaller) share in the pie's expansion. While this intuition is compelling, it is in fact theoretically ambiguous as to how differences in initial inequality will affect the growth elasticity of poverty reduction. Consider two countries, one with a Lorenz curve that unambiguously dominates the other, that is, inequality is higher in one country for all inequality measures with the standard properties (Atkinson 1970). Suppose first that the Lorenz curves remain unchanged over time. It can be readily shown that the proportion of the population below any given level of income will then be homogeneous of degree zero in the mean and the level of income considered.[8] Then it is plain that the growth elasticity of poverty reduction for the headcount index (H) is (minus one times) the elasticity of the cumulative distribution function evaluated at the poverty line.[9] Next note that there can be no presumption that the country with higher inequality will have a higher H; depending on the specific properties of the Lorenz curve at H, the higher inequality country could have either a higher or lower headcount index.[10] The implications for the growth elasticity are then also ambiguous. Non-neutralities in the growth process add a further source of ambiguity in the implications of initial differences in inequality for the elasticity of the headcount index to the mean (allowing the Lorenz curve to change). Even when the initial share held by the poor is low, their gains from growth can be sizeable if growth is accompanied by sufficient pro-poor redistribution.

Some special cases yield unambiguous results, which are achieved by collapsing the potential differences in initial distribution into just one parameter. Analytic results obtained under the assumption that household income or consumption is log-normally distributed predict that the partial growth elasticity of poverty reduction holding distribution constant will fall (in absolute value) as inequality rises (Bourguignon 2003). Son and Kakwani (2004) invoke the Kawkani (1993) assumption that the Lorenz curves across countries only differ in a rather special way, namely that the entire curve shifts by a constant proportion of the difference between the actual value on the Lorenz curve and the line of equality. They also assume that the growth process is distribution-neutral and that the poverty line is less than the mean. Under

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[8]   This follows from the fact that $L'(p) = y/\mu$ where $L(p)$ is the Lorenz curve and $p = F(y)$ is the cumulative distribution function.

[9]   In other words, the growth elasticity is $-zf(z)/H$ where $H = F(z)$ is the headcount index at the poverty line z and $f(.)$ is the density function. (Kakwani, 1993, provides formulae for the partial elasticity for many other poverty measures.)

[10]   This ambiguity stems from the fact that H is found at the tangency of the Lorenz curve at z/μ where z is the mean (i.e. $L'(H) = z/\mu$).

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these assumptions, Son and Kakwani show that the partial growth elasticity of poverty reduction (for the Foster-Greer-Thorbecke class of poverty measures) is monotonically decreasing in the initial value of the Gini index, which essentially becomes the sole parameter locating the Lorenz curve.

These theoretical results are for special cases but they are still instructive, and consistent with intuition. In practice, however, distributions vary by more than one parameter and growth processes are only (roughly) distribution-neutral *on average*. In fact, growth in specific countries and time periods is rarely distribution-neutral, so that assumption can be quite deceptive in predicting outcomes of specific growth episodes. For example, consider the growth process in Brazil in the 1980s. Datt and Ravallion (1992) show that if one had assumed at the outset of the decade that growth would be distribution neutral then one would have predicted a 4.5 per cent point decline in the headcount index of poverty. In fact, there was no change over the decade, with the headcount index staying at 26.5 per cent. Distributional shifts working against the poor exactly offset the gains from growth.

What does the empirical evidence suggest about the relationship between initial inequality and the growth elasticity of poverty reduction? Support for the intuition that higher inequality countries tend to have lower (absolute) elasticities was first presented in Ravallion (1997) and subsequently verified by Ravallion (2001) and Kraay (2006). These papers have used (parametric) regression-based methods (in which rates of change in poverty are regressed on rates of growth both on its own and interacted with initial inequality). We will return to this approach presently, but first it is instructive to look again at the empirical relationship in a more flexible way.

A simpler non-parametric test is to calculate the total elasticity as the log difference in the headcount index divided by the log difference in the mean, both based on successive household surveys. There is clearly a lot of noise in such a measure (as discussed we have already). To help reduce the noise, I smoothed the period-specific elasticities by taking the simple average of two-period elasticities (across three surveys). I also trimmed 15 extreme elasticities (below −20 or above 20). Figure 2.2 gives the results for the '$1-a-day' poverty rate. The elasticity is negative in 80 per cent of cases. We see a rather weak tendency for the elasticity to rise (become less negative) as inequality rises, from an average of about −4 at the lowest Gini index to roughly zero at the highest. The correlation coefficient is 0.26, which is significant at the 1 per cent level. The two high positive elasticities in Figure 2.2 are almost certainly measured with large errors, and this is exaggerating the slope of the line of best fit. Dropping these two observations, the correlation is still significant at the 1 per cent level, and the line of best fit still passes through an elasticity of zero at a Gini index of about 60 per cent. Among the highest inequality countries, poverty incidence is quite unresponsive (on average) to economic growth.

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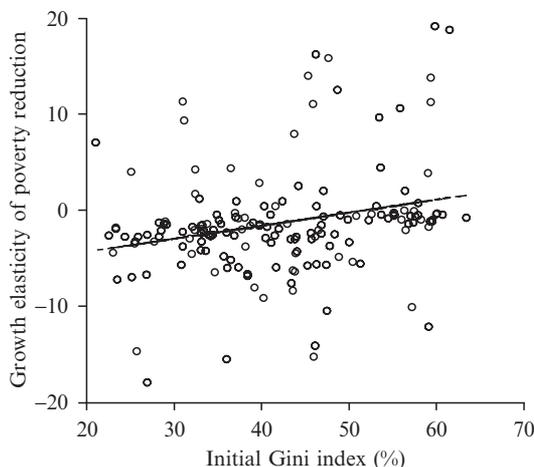
Figure 2.2 Empirical growth elasticities of poverty reduction against initial Gini index
Source: Author's calculations (see text)

In modeling the relationship between poverty reduction and growth, Raval-lion (1997) postulated that the rate of poverty reduction (measured as the difference in the log of the measure of poverty) is directly proportional to the 'distribution-corrected rate of growth' where the latter is given by the ordinary rate of growth (log difference in mean consumption or income) times a distributional term. In Ravallion (1997), the distributional correction used is one minus the initial Gini index. This model can be improved (in terms of fit with data on actual spells of changes in poverty matched with growth) by using instead an adjustment for nonlinearity in the relationship between the growth elasticity of poverty and the initial inequality, giving a simple model of the expected proportionate rate of change in poverty over any period:

$$\text{Rate of change in poverty} =$$
$$[\text{Constant} \times (1{-}\text{Inequality index})^{\theta}]\times$$
$$\text{Ordinary growth rate}$$

The constant term is negative and θ is a parameter not less than one. The total growth elasticity of poverty reduction is the term in square brackets.

To interpret this formula, note first that at high levels of inequality the poor will gain little or nothing from growth; at the extreme in which the inequality index is one, the richest person has all the income and so all the gains from growth will go to that person; the elasticity will be zero. For values of θ strictly greater than one, higher levels of initial inequality will have progressively smaller impacts on the elasticity as inequality rises. This is what one would

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expect intuitively as long as the poverty rate is sufficiently less than unity; growth will have no impact on poverty when the richest person has all the income, but equally well it would have no effect when the richest two people share all the income. The above model can be augmented by adding one or more terms for changes in distribution, to isolate the partial elasticity. This raises the R^2 but does not affect the results of interest here, given that (as we have already seen) changes in distribution tend to be uncorrelated with growth rates.

Quite a good fit with data on actual rates of poverty reduction across developing countries can be obtained using the initial Gini index as the measure of inequality and using $\theta = 2$.[11] The total elasticity of poverty reduction is directly proportional to the squared 'equality index' $(1–G)$. I find that the constant of proportionality is $−6.07$, with a standard error of 0.48 and $R^2 = 0.65 (n = 89)$.[12]

To help interpret this empirical model, consider again the rate of poverty reduction with a 2 per cent rate of growth and a headcount index of 40 per cent. In a low-inequality country, with a Gini index of 0.30 (say) the elasticity will be about $−3$ and the headcount index will fall by about 6 per cent per year (or 2.4 percentage points in the first year); the headcount index will be halved in 11 years. By contrast, consider a high-inequality country with a Gini index of 0.60 growing at the same rate and with the same initial headcount index. The growth elasticity of poverty reduction will be about $−1$. This is higher (in absolute value) than suggested by Figure 2.2. But, even so, it will take about 35 years to halve the initial poverty rate. Poverty responds more slowly to growth in high inequality countries; or (to put the same point slightly differently) high inequality countries will need unusually high growth rates to achieve rapid poverty reduction.

The argument works in reverse too; high inequality will help protect the poor from the adverse impact of aggregate economic contraction. Low inequality can thus be a mixed blessing for poor people living in an unstable macroeconomic environment; it helps them share in the benefits of growth, but it also exposes them to the costs of contraction (Ravallion 1997). There is evidence

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[11] The nonlinear least squares estimate of θ on a sample of estimates of the changes in the log of the '$1/day' poverty rates for the longest available spells between surveys for 90 countries gave 3.73 with a standard error of 0.93. However, on deleting one outlier this dropped to 2.10 (0.73). I constructed this data set from *PovcalNet*; see note 6.

[12] Measurement errors in surveys will now generate two sources of bias: the rate of poverty reduction and the growth rate are measured from the same surveys and there will be an extra bias from measurement error in the initial Gini index. Under plausible conditions (essentially classical measurement errors) these two sources of bias will work in opposite directions. As a check for net bias, I used a constructed variable based on a lagged value of the Gini index and the growth rate of private consumption from the national accounts as an IV. The net effect was a slightly higher (more negative) regression coefficient, which remained highly significant. However, this estimator requires that one must use shorter time periods (to retain the lagged Gini index for use in the IV) and one loses country observations as well (countries with only two surveys). So I rely on the OLS estimate in the following discussion.

that this also happens at the local level during an economy-wide crisis; high inequality districts of Indonesia experienced less dramatic rates of increase in poverty during the 1998 financial crisis than did low inequality districts (Ravallion and Lokshin 2004).

So far we have focused on how initial inequality affects the growth elasticity of poverty reduction. What about the initial mean? The theoretical relationship between the partial growth elasticity of the headcount index and the mean is ambiguous, although in the special case of a log-normal distribution of income, the partial elasticity is strictly decreasing in the mean (Bourguignon 2003) and this also holds for the poverty gap index and other 'higher order' poverty measures in the Foster-Greer-Thorbecke class under quite general conditions (Son and Kawkani 2004). However, the empirical evidence does not offer much support for this theoretical prediction. There is little or no robust evidence of a significant correlation between the growth elasticity of poverty reduction and the initial mean (either on its own, or controlling for initial inequality).

None of this is inconsistent with the findings in the literature indicating that a large share of the variance in rates of poverty reduction can be attributed to differences in ordinary rates of growth (Ravallion 1995; Ravallion and Chen 1997; Fields 2001; Kraay 2006). In a recent contribution, Kraay (2006) presents Datt-Ravallion decompositions of changes in '$1-a-day' poverty measures into growth and redistribution components for as many countries as possible. Kraay's growth component is the product of the growth rate and the partial elasticity.[13] Kraay finds that the variance in the growth component is largely attributable to the growth rate, rather than the partial elasticity or its covariance with growth. For example, he attributes 81 per cent of the variance in the log absolute value of the growth component of changes in the headcount index to the variance in the log absolute growth rate.

This is perfectly consistent with finding that poverty responds little to growth in specific countries. Kraay's results are based on averages formed from cross-country comparisons.[14] For a country with average inequality, which does not increase with growth, Kraay's results offer some support for his policy conclusion that for reducing poverty the main thing to worry about is achieving a higher rate of growth. However, that does not mean that growth is sufficient even when inequality is low. If growth in a low inequality country comes with a sufficient increase in inequality then it will by-pass the poor. And, as already noted, the empirical finding that growth is roughly distribution neutral on average is consistent with the fact that it increases roughly half the time during growth

[13] Recall that it is a partial elasticity because it holds distribution constant; by contrast the 'total elasticity' lets distribution vary consistently with the data; the elasticity in square brackets in the above equation is a total elasticity. The analytic elasticities of poverty measures discussed in Kakwani (1993) and Bourguignon (2001) are partial elasticities.

[14] A variance is an average too, namely the mean of the squared deviations from the ordinary mean.

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spells (Ravallion 2001). Policy efforts to keep inequality low may then be crucial to achieving pro-poor growth in many low-inequality countries.

Furthermore, as we have seen, for high inequality countries, growth can be quite a blunt instrument against poverty unless that growth comes with falling inequality. Here the heterogeneity in country circumstances cannot be ignored. Averages formed across countries can be quite uninformative about how best to achieve pro-poor growth in specific countries.

The preceding discussion has pointed to the role of initial income inequality as a proximate determinant of differing rates of poverty reduction at a given rate of growth. However, to help inform policy we need to probe more deeply into the relevant sources of inequality. There are inequalities in a number of dimensions that are likely to matter, including access to both private (human and physical) assets and public goods. Inequalities in access to infrastructure and social services naturally make it harder for poor people to take up the opportunities afforded by aggregate economic growth. For example, although India has relatively low overall inequality (of consumption, which tends to have somewhat lower inequality than income, given consumption smoothing), the country has high inequalities in some specific and important dimensions, including human resource development and access to markets (as influenced in part by rural infrastructure). These inequalities have interacted powerfully with the sectoral composition of economic growth in influencing India's progress against poverty, which has been disappointing in the 1990s, particularly given the (relatively high) growth rates.[15]

CHANGING INCOME DISTRIBUTION

A second factor influencing the rate of poverty reduction at a given rate of growth is changing income distribution. As I have emphasized, finding that growth tends to be distribution neutral on average does not mean that distribution is unchanging. Whether inequality is rising or not can make a big difference to the rate of poverty reduction. Among growing economies, the median rate of decline in the '$1-a-day' headcount index is 10 per cent per year among countries that combined growth with falling inequality, while it is only 1 per cent per year for those countries for which growth came with rising inequality (Ravallion 2001). Either way, poverty tends to fall, but at very different rates. (And similarly among contracting economies; poverty rises on average, but much more rapidly when inequality is rising than falling.) As one would expect, changes in distribution matter even more for higher-order poverty measures (such as the squared poverty gap), which can respond quite elastically to even small changes in overall inequality.

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[15] On the interaction effects referred to here for India see Ravallion and Datt (2002); on the implications for India's progress against poverty in the 1990s see Datt and Ravallion (2002).

What underlies the changes in distribution, as they affect poverty? There are a great many country-specific idiosyncratic factors, such as shocks to agricultural incomes, changes in trade regime, shifts in relative prices, tax reforms, welfare-policy reforms and changes in demographics. Generalizations across country experience are never easy, but one factor that is likely to matter in many developing countries is the *geographic and sectoral pattern of growth*. The greater availability of nationally-representative household surveys has revealed marked and persistent concentrations of poor people in specific regions and/or sectors. The evidence from such poverty profiles points to the importance of the pattern of growth to overall poverty reduction and this is consistent with cross-country evidence on how rates of poverty reduction vary with the sectoral composition of economic growth (Loayza and Raddatz 2006). The extent to which growth favours the rural sector is often key to its impact on poverty. The geographic incidence of both rural and urban economic growth is also important. Of course, there is country specificity here too. The extent to which the pattern of growth (rather than simply the overall growth rate) matters to the rate of poverty reduction is likely to vary from country to country, depending on, *inter alia*, how unbalanced the growth process has been in the past and, hence, how much difference one currently finds between sectors or regions in levels of poverty.

While it still appears to be the case that (relative) inequality falls about as often as it increases during spells of aggregate economic expansion, there are also signs that higher growth in a number developing countries has come with widening regional disparaties and little or no growth in some lagging poor areas. The two most populous countries, China and India, are examples (Chaudhuri and Ravallion 2006). We shall return to the case of China.

2.3   A growth–equity trade-off?

High inequalities in specific dimensions not only generate higher poverty now but can also impede future growth and poverty reduction.[16] A plausible way this can happen stems from credit market failures, such that some people are unable to exploit opportunities for investment. It will tend to be the asset poor for whom these constraints are most likely to be binding. With declining marginal products of capital, the output loss from the market failure will be greater for the poor. The higher the proportion of people who are poor, the lower the aggregate growth rate; poverty is then self-perpetuating. There are other ways this can

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[16]   There is now a sizeable theoretical literature on the various ways in which inequality can impede growth. Contributions include Galor and Zeira (1993), Banerjee and Newman (1993), Benabou (1996), Aghion Caroli, and Garcia-Penalosa (1999), and Bardhan, Bowles and Gintis (1999).

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happen. Even without credit market failures, high inequality can also foster social and macroeconomic instability and impede efficiency-promoting reforms that require cooperation and trust.[17]

These arguments do not justify the claim that higher income inequality will necessarily imply lower growth. Exceptions arise when the higher inequality is the result of removing a control regime that kept inequality low by compressing the labour-market returns to schooling or the returns to other forms of investment. In certain circumstances, inequality can be inefficiently low, bringing costs to the poor. Rising inequality can then play a positive role in facilitating rapid poverty reduction, such as when the rising inequality is the by-product of pro-poor institutional changes.[18]

However, economic theory does lead one to question any presumption that high inequality is good for growth, or even that a trade-off can be expected in general. That will depend on the specific sources of high inequality. When it comes from social exclusion, restrictions on migration, inequalities in human capital and in access to credit and insurance, corruption and uneven influence, then the inequality can entail that certain segments of the population are unable to escape poverty. There will almost certainly be more poverty and lower mean income than in the absence of these specific inequalities.

What does the evidence suggest? There is supportive evidence for the view that inequality is bad for growth from cross-country comparisons of growth rates, suggesting that countries with higher initial inequality experienced lower rates of growth controlling for other factors such as initial average income, openness to trade and the rate of inflation.[19] When combined with the findings reported earlier in this chapter, we see that poor people in high inequality countries face a double handicap: such countries will tend to experience lower growth rates and the growth that does occur will have less impact on poverty.[20] This is not to say that there are many countries for which inequality is too high to allow growth and poverty reduction; the available data and parameter estimates from the literature imply that the level of inequality needed to stall future poverty reduction is around the upper bound of the range found in the data (Ravallion 1997). Rather, the point is that the observed pace of poverty reduction will tend to be appreciably lower in high inequality countries, even if that inequality does not rise further.

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[17] Aghion *et al.* (1998) and Bardhan *et al.* (1999) review these and related arguments.

[18] For example, rising rural landlessness in the wake of an equitable land reform in Vietnam has proved to be a poverty reducing force (Ravallion and van de Walle 2006).

[19] See Persson and Tabellini (1994), Alesina and Rodrik (1994), Clarke (1995), Birdsall, Ross and Sabot (1995), Perotti (1996), Deininger and Squire (1998) and Easterly (2002).

[20] Inequality convergence (whereby inequality tends to fall in high inequality countries and rise in low inequality countries) will help compensate for these tendencies; the evidence on the extent and pace of such convergence is still somewhat unclear, but it does appear to be happening (Ravallion 2003).

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Not surprisingly, and despite the explosion of new data and analysis, there are still a number of concerns about the data and methods underlying these findings based on cross-country comparative analysis (Ravallion 2001). The data problems do not all suggest the same direction of bias. For example, the aggregation biases in cross-country growth empirics can actually hide the true costs to the poor of high inequality (Ravallion 1998). More geographically disaggregated (including micro) data have shown more robust evidence that inequality is bad for growth.[21] A continuing limitation of past work is that the empirical literature using cross-country growth regressions has generally failed to identify the relevant sources of inequality, recognizing that some inequalities are likely to be more inefficient than others (as I have already discussed). Future research will hopefully throw more light on the magnitude of the efficiency costs of specific dimensions of inequality.

China is often cited as an example of the idea of an aggregate growth-equity trade off. Probably no other country has had the steep rise in both mean income *and* income inequality that China has seen since the early 1980s. There can be no doubt that absolute poverty in China has fallen greatly since around 1980. While China's poverty rate today is probably slightly lower than the average for the world as a whole,[22] it was a very different story around 1980, when the incidence of extreme poverty in China was one of the highest in the world.[23] I estimate that only four countries (Cambodia, Burkina Faso, Mali and Uganda) had a higher poverty rate than in China around 1980.[24] Income inequality has also been rising, though not continuously, and more so in some periods and provinces. Figure 2.3 gives the estimates of the Gini index, which rose from 28 per cent in 1981 to 39 per cent in 2001.[25] Also notice that (in contrast to every other developing country I am aware of) inequality is higher in rural China than urban China, although there is a clear indication of convergence.

The Gini index is only one possible measure of inequality, and it need not reflect well the normative judgements one makes about how different levels of living should be weighted when measuring 'inequality' (Atkinson 1970). A more revealing way of representing the distributional impacts of China's

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[21] See Ravallion (1998), Ravallion and Chen (2006) and Benjamin, Brandt and Giles (2006), all using data for China.

[22] See Chen and Ravallion (2004) who estimate that in 2001, 17% of China's population live below $1 a day at 1993 Purchasing Power Parity; the corresponding figure for the world as a whole is 18% (21% for developing countries alone).

[23] The proportion of China's population living below $1 a day in 1981 is estimated to have been 64% (from *Povcalnet*, see note 6).

[24] Based on the '$1 a day' poverty rates for 1981 from *Povcalnet*.

[25] Note that the latter figure is somewhat lower than past estimates for China; this is because the estimates in Figure 2.3 include corrections for urban-rural cost-of-living differences, which have tended to rise over time because of higher inflation in urban areas. Without these corrections the Gini index for 2001 rises to 45%.

Inequality *Is* Bad for the Poor
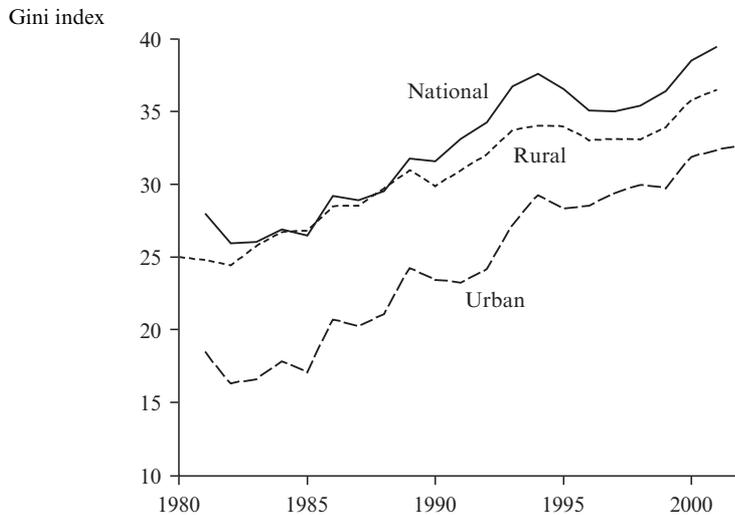
Gini index

Figure 2.3 China: income inequality in rural and urban areas and nationally, Gini index (%)

Source: Ravallion and Chen (2004).

growth is the growth incidence curve (GIC), as given in Figure 2.4 for the 1990s. The GIC gives the rate of growth at each percentile of the distribution (ranked by income per person).[26] We see that growth rates in China in the 1990s tend to rise as we move up the distribution; the annual rate of growth in the 1990s varies from about 3 per cent for the poorest percentile to nine per cent for the richest. While the growth rate in the overall mean was 6.2 per cent, the mean growth rate for the poorest 20 per cent (roughly according with China's '$1-a-day' poverty rate in 1990) was 4.0 per cent.[27]

Has China faced a growth-equity trade-off? It is undoubtedly the case that some of the rise in inequality was the result of efficiency-promoting economic reforms. From a pre-reform legacy of wage compression and low labour mobility, China moved gradually to a market-based system featuring a dynamic non-state sector and an increasingly open labour market. Wage dispersion within skill and

[26] The GIC is obtained by calculating growth rates on the date-specific quantile functions (obtained by inverting the cumulative distribution function); see Ravallion and Chen (2003). If the GIC is normalized by the growth rate in the mean then one obtains a curve giving the (total) elasticity to growth at each level of income; for further discussion see Essama-Nssah and Lambert (2006).

[27] This is the Ravallion-Chen (2003) 'rate of pro-poor growth,' namely the mean growth rate of the poor. This gives the change in the Watts index per unit time divided by the initial headcount index. Notice that the mean growth rate of the poor is not the same thing as the growth rate in the mean for the poor, which will not in general be consistent with even the direction of change in any sensible measure of the level of poverty.

experience categories has increased considerably and returns to schooling have also risen (Park *et al.* 2004; Heckman and Li 2004). In rural areas, in around 1980, the Household Responsibility System (HRS) introduced assigned land to house-holds who became the residual claimants on output. This policy reform restored incentives for work. The reform naturally put upward pressure on inequality within rural areas, as some farmers were more able than others, although the HRS clearly put downward pressure on inequality in the country as a whole by reducing the gap in living standards between urban and rural areas.

While some of the policy reforms and institutional changes in China's economic transition simultaneously increased inequality and reduced pov-erty, other economic and political forces have also been at work to generate less benign inequalities. These include geographic poverty traps (whereby prospects of escaping poverty depend causally on where one lives), emerging inequalities in opportunities for enhancing human capital, obtaining credit and insurance, protecting one's rights under the law and influencing public affairs.[28] These 'bad inequalities'—rooted in market failures, coordination failures and governance failures—limit people's opportunities to take actions that will help them escape poverty.

Strikingly, the evidence for China does not suggest an aggregate growth-equity trade off. We have seen that inequality in China has shown a tendency to rise over time just as GDP rose. The regression coefficient of the Gini index on GDP per capita has a t-ratio of 9.22 (a correlation coefficient of 0.90). However, this could well be spurious; the Durbin-Watson statistic is 0.45, indicating strong residual auto-correlation. This is not surprising since both inequality and mean income have strong trends, possibly associated with different causative factors.

A better test is to compare the growth rates with changes in inequality over time.[29] Then it becomes far less clear that higher inequality has been the price of China's growth. The correlation between the growth rate of GDP and log difference in the Gini index is −0.05. Now the regression coefficient has a t-ratio of only 0.22 (and a Durbin-Watson of 1.75). This test does not suggest that higher growth *per se* meant a steeper rise in inequality.

The periods of more rapid growth did not bring more rapid increases in inequality; indeed, the periods of *falling* inequality (1981–85 and 1995–98) had the highest growth in average household income (Ravallion and Chen 2006). Also, the sub-periods of highest growth in the primary sector (1983–4 1987–8 and 1994–6) did not come with lower growth in other sectors. Nor does

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[28] Chaudhuri and Ravallion (2006) review the evidence on these specific inequalities in China. For a more general discussion and review of the evidence on these sources of inequality of opportunity in developing countries see World Bank (2005).
[29] There is still positive first-order serial correlation of 0.48 in the first difference of log GDP although there is no sign of serial correlation in the residuals from the regression of the first difference of log Gini on log GDP. So the (first-order) differenced specification is appropriate.

Inequality *Is* Bad for the Poor
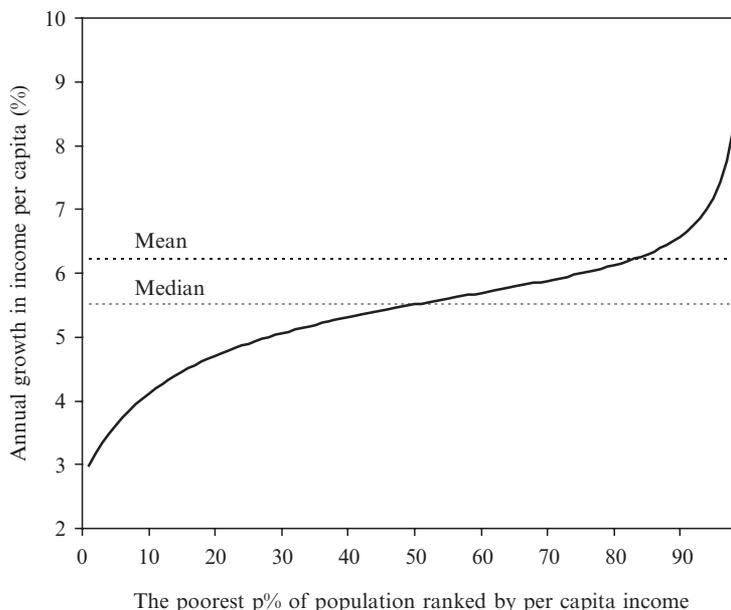
Figure 2.4 Growth incidence curve for China, 1990–99

one find that the provinces of China with more rapid rural income growth experienced a steeper increase in inequality; if anything it was the opposite.

To consider one of these periods more closely, Figure 2.5 gives the GIC for China in 1993–6, which (in marked contrast to Figure 2.4) took on an inverted U shape, with highest growth rates observed at around the 25th percentile. The growth rate for the poorest quintile for this sub-period was 10.1 per cent per annum—above the ordinary growth rate of 8.2 per cent, indicating the extent to which the distributional shift in this sub-period favoured the poor. (Note also that the overall rate of growth was higher in this sub-period than for the 1990s as a whole.) Ravallion and Chen (2006) argue that the main reason for this change in the mid-1990s was a sharp reduction in the taxation of farmers, associated with a rise in the government's procurement price of foodgrains. (China had a long-term policy of taxing farmers this way to provide cheap food to urban areas; naturally this was inequality increasing.)

The diverse post-reform growth experiences of China's provinces are also consistent with the evidence from cross-country comparisons in suggesting that high inequality impedes growth and poverty reduction. China's provinces did not all start out at the beginning of the reform period with very low inequality. The Gini index around the mid-1980s varied from 18 per cent to 33 per cent. These differences are correlated with the subsequent growth rates. Provinces starting with relatively high inequality saw slower progress against
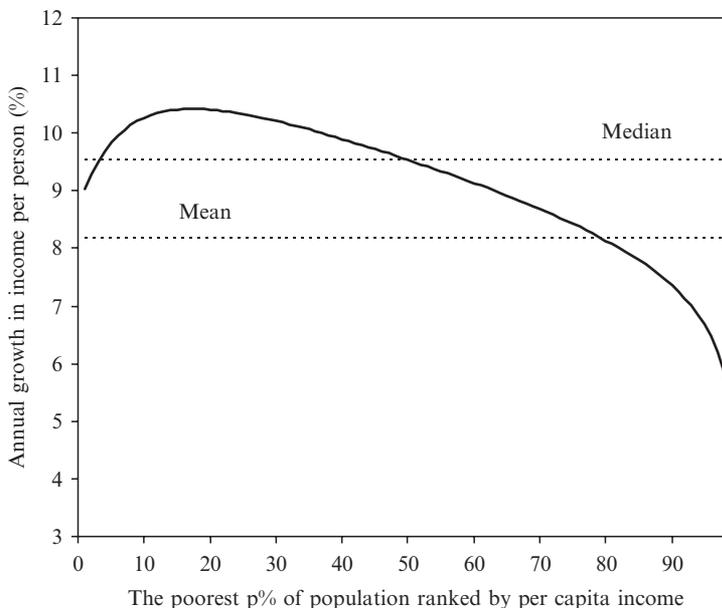
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Figure 2.5 Growth incidence curve for China, 1993–96

poverty, due both to lower growth and a lower growth elasticity of poverty reduction (Ravallion and Chen 2006). Similarly, Benjamin, Brandt and Giles (2006) find that Chinese villages with higher initial inequality (near the beginning of the reform period) tended to see lower subsequent growth rates through the 1990s. In explaining this finding, Benjamin *et al.* point to the adverse consequences of high inequality for the collective action within village economies that is needed for efficiency-enhancing reforms and public investments.

This lack of any evident aggregate trade-off has important implications. On the one hand, it means that growth will tend to reduce absolute poverty. Naturally, with the same growth rate and no rise in inequality, the number of poor in China would be lower; indeed, it would be less than one-quarter of its actual value (a poverty rate in 2001 of less than 1.5% rather than 8%). This calculation would clearly be deceptive if inequality rises with economic growth, as the 'price' of that growth. However, as we have seen, the evidence does not support that view. On the other hand, the absence of such a trade-off also means that rising inequality put a serious brake on China's pace of poverty reduction. That is also borne out by the finding reported by Ravallion (2005*c*) that the provinces that saw a more rapid rise in rural inequality saw *less* progress against poverty, not more.

As China's policy-makers now realize, it will be harder for China to maintain its past rate of progress against poverty without addressing the problem of rising

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inequality. To the extent that recent history is any guide to the future, we can expect that the historically high levels of inequality found in many provinces today will inhibit future prospects of poverty reduction—just as we find that the provinces that started the reform period with relatively high inequality faced a double handicap in future poverty reduction: they had lower subsequent growth *and* the poor shared less in the gains from that growth.

Other factors point to the same conclusion. It appears that aggregate economic growth in China is increasingly coming from sources that bring more limited gains to the poorest. The low-lying fruit of efficiency-enhancing pro-poor reforms are possibly getting scarce. Inequality is continuing to rise *and* poverty measures are becoming more responsive to rising inequality. At the outset of China's current transition period to a market economy, levels of poverty were so high that inequality was not an important concern. That has changed.

2.4 Lessons for development policy

If it is accepted that high inequality impedes poverty reduction, what should policy-makers do about inequality? First we must be clear on the objective. If we agree that poverty reduction is the overall goal for development policy rather than reducing inequality *per se*, then we should not accept redistributive policies that come at the cost of lower longer-term living standards for poor people. To accept that there is no aggregate trade-off between mean income and inequality does not imply that there are no trade-offs at the level of specific policies. Reducing inequality by adding further distortions to an economy will have ambiguous effects on growth and poverty reduction. But it should not be presumed either that there will be such a trade-off with all redistributive policies. The potential for 'win-win' policies stems from the fact that some of the things that impede growth also entail that the poor share less in the opportunities unleashed by growth.

More rapid poverty reduction requires a combination of more growth, a more pro-poor pattern of growth and success in reducing the antecedent inequalities that limit the economic opportunities of poor people. Even a distribution-neutral growth process—which is hardly a high standard for 'equitable growth' in high-inequality countries—can leave many poor people behind. The challenge is to better understand the specific factors that constrain some poor people from participating in the benefits of a growing economy, and to draw out the lessons for the types of policies that are needed for rapid poverty reduction.

A majority of the world's poor still live in rural areas and this is likely to remain true for some time to come (Ravallion 2002). It can be expected that agriculture and non-farm rural development will remain a high priority in

setting sectoral policies for poverty reduction. Higher agricultural productivity promotes growth in other sectors; in developing economies, the evidence suggests that agricultural growth tends to (Granger-cause) overall economic growth (Tiffin and Irz 2006). Higher farm productivity can be expected to reduce overall inequality within a typical developing economy (where food producers tend to be poor and poor consumers have high budget shares devoted to food). Achieving higher farm yields in rain-fed, drought-prone, settings will require both more research on appropriate farm technologies (including appropriate to labour-abundant settings) and policy reforms and public investments to help assure successful adoption of those technologies.

Spatial concentrations of extreme poverty remain even in the more rapidly growing developing economies. A recurrent issue is striking the right balance between investing in poor areas and reducing costs of out migration from those areas. Does it make more sense to move jobs to people, or people to jobs? Is there a trade-off between achieving greater regional equity—such as by focusing on areas with high poverty rates but low poverty densities—and poverty reduction in the aggregate? There is fertile ground here for future research. However, here too the trade-offs may not be as acute as some observers think; the right sorts of investments in poor areas (such as in education and managing risks) may well be necessary conditions for out-migration to begin.

By recognizing that it is typically the poor rather than the rich who are locked out of profitable opportunities for self-advancement by the failures of markets and governments, interventions that make these institutions work better can help promote pro-poor growth. Successful policies can focus on either correcting the underlying market and governmental failures or on directly intervening to redress the inequalities, notably by fostering the accumulation of (physical and human) assets by poor people. Here one can point to the potential importance of a wide range of policies including sound public investments in rural infrastructure, better policies for delivering quality health and education services to poor people, and policies that allow key product and factor markets (for land, labour and credit) to work better from the point of view of poor people. The right combination of interventions will naturally depend on country and regional circumstances.

There is still much we do not know about the most appropriate policy combinations in specific circumstances, although some pointers have emerged from research. Making the provision of health and education services more responsive to the needs of poor people is likely to be crucial to achieving pro-poor growth in most settings (World Bank 2004*a*). In rural economies, security of access to land through tenancy reform and titling programs is arguably no less important (World Bank 2004*b*). In some circumstances, rural infrastructure development can also play a decisive role; for example, research has revealed the importance of rural roads to achieving more pro-poor growth processes in

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rural China (Jalan and Ravallion 2002). Better instruments for credit and insurance can also help, in both smoothing consumption and underpinning otherwise risky growth-promoting strategies. Removing biases against the poor in taxation, spending and regulatory (including migration) policies can also play an important role. Again taking an example from China, reducing the government's taxation of farmers through its under-priced foodgrain procurement quotas has been a powerful instrument against poverty (Ravallion and Chen 2006).

The challenge for policy is to combine growth-promoting policies with the right policies for assuring that the poor can participate fully in the opportunities unleashed, and so contribute to that growth. If a country gets the combination of policies right, then both growth and poverty reduction can be rapid. Get it wrong, and both may well be stalled.

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Author Queries

[AQ1] Pls update status.