

Poverty and Vulnerability

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INTRODUCTION

By global standards, Asia has done remarkably well in both economic growth and poverty reduction during the past thirty years. However, this performance has not been uniform across sub-regions and countries. Indeed, even within a country, there is a typically large diversity in income growth rates and poverty reduction outcomes across household groups, locations, or socio-demographic attributes. In part, the diversity may reflect various patterns of social stratification arising from the effects of a combination of market imperfections, initial conditions, and political-economy dynamics.

In this paper, we distill not only the experiences, key research issues and findings on the nature and causes of poverty and vulnerability, but also the policy lessons emerging from the rapidly expanding literature on growth, poverty, vulnerability, and inequality in Asia. Our focus is on rural Asia. In Section II, we provide an overview of the vast number of macro-level studies exploring the connection between economic growth and poverty reduction. In Section III, we examine the evidence on the link between agricultural performance and poverty reduction. We then selectively review — in Sections IV and V — recent developments in micro-level studies on poverty dynamics and vulnerability. While the macro-level studies make us understand policy questions related to long-term development processes, the micro-level studies draw insights from the heterogeneity and diversity of economic agents and focus directly on behavioural mechanisms leading to poverty. We then conclude, in Section VI, with policy lessons and implications drawn from the review.

GROWTH AND POVERTY REDUCTION

Asia's gross domestic product (GDP) growth has consistently outpaced those of other regions of the world in the past thirty years. The region's economic growth rate averaged about 4.0 per cent per year, while the corresponding figures for developed countries and the world were about 2.6 per cent and 2.7 per cent, respectively. The growth accompanied a historic rapid poverty reduction, especially in East Asia and Southeast Asia. Between 1990 and 2001, the number of people living on less than a dollar a day fell by about 129 million. Poverty incidence in East Asia dropped from 31 to 12 per cent, while that in South Asia fell from 41 to 29 per cent. At these rates, the Millennium Development Goal (MDG) of halving by 2015 the proportion of people whose income falls below one dollar a day looks attainable for Asia.

Even so, the region still accounts for about 60 per cent of the world's 1.1 billion poor. Moreover, other human development indicators show much less spectacular success. For example, the proportion of underweight children in the region fell by only 4 percentage points (from 35 to 31 per cent) between the early and late 1990s (ESCAP 2003). In Cambodia, Bangladesh, India, and Nepal, almost half of the children under five years of age are still moderately and severely malnourished. The proportion of undernourished people in the region remains high at 16 per cent, with very little progress in the 1990s for Bangladesh, India, Nepal, and the Philippines. Without renewed push and initiatives, the region will likely miss the MDG of halving the incidence of hunger by 2015.

Income growth has not been uniform across sub-regions and countries. GDP per capita in East Asia expanded by 6 per cent, driven by sustained growth in China, Korea, Thailand, and Malaysia. In South Asia where growth rates of output were relatively low, and those of population high, it was about 3 per cent per year. It is worth noting that, nonetheless, the growth patterns across countries in the region exhibit absolute growth convergence, i.e., countries with initially low per capita income have tended to grow faster than those with already initially high per capita income (see Figure 1).

The diversity of inter-country growth outcomes shows up as well in the diversity of poverty outcomes ((Balisacan and Ducanes 2005; Kanbur et al. 2006) Reflecting the tendency of cross-country data to exhibit growth convergence, Figure 2 shows a tendency for "poverty convergence."

Estimates of the responsiveness of poverty to growth corroborate the above patterns. In developing economies, the elasticity of poverty headcount index to mean income ranges from – 2.1 to –3.1 (Ravallion 2001; Cline 2004). This varies widely across and within countries due to differences in conditions prior to growth. Where access to land, credit, social services, and infrastructure is highly unequal, weak response is observed especially in the rural areas. Such is the experience of provinces/districts/regions/states in the Philippines, Indonesia, Vietnam, and India (Balisacan 2003; Pernia Pernia and Asra 2003; Ravallion and Datt 2002). In some cases, weak local institutions (including social capital), poor investment climate, and inward-looking policies favouring capital- over labor-intensive sectors like agriculture, exacerbate the feeble response. For East Asian countries like China and Korea, the effect of growth on poverty is stronger owing to their generally more favourable initial conditions — a salient one for China being the equitable distribution of land-use rights (Fan et al. 2002). Income distribution, besides

asset distribution, also affects growth elasticities. Those with lower levels of initial income inequality have more potential to lift people out of poverty (Ravallion 1997): countries with Gini below 40 have estimated elasticities of -5.7 to -6.1 ; for those with Gini above 40, the range is -2.4 to -3.3 (Adams 2002).

More disaggregated data from country studies provide ample evidence that income inequality blunts the impact of growth on poverty. In Lao PDR, for instance, if inequality had not changed or worsened, every 1 per cent growth would have reduced poverty incidence in the country by 3.2 per cent between 1992 and 1998; likewise for Thailand between 1988 and 1992. The actual decline for both countries, however, was about 1 per cent (Kakwani and Pernia 2000). If growth were distributionally neutral in 1994–97 in the Philippines, poverty incidence would have fallen from 32 to 22 per cent, instead of down to 25 per cent only (Balisacan 2003). Conversely in Thailand, a 1 per cent reduction in per capita income would have raised the percentage of the poor by 4.7 per cent only, but the actual increase in the 1997 financial crisis was 6.5 per cent (Kakwani and Pernia 2000).

During growth periods in Vietnam, households in communities with paved roads show larger increases in expenditures than those in communities with unpaved roads; those with higher levels of education experience larger declines in poverty incidence. Households that remain poor have about twice as much debt relative to assets compared with those that escape poverty (Glewwe et al. 2002). In the Philippines, irrigation and favourable terms of trade for agriculture positively influence the living standards of the poor (apart from their indirect impact via overall income growth), as does schooling if complemented with the presence of better roads. The welfare of the poor tends to be lower in provinces governed by political dynasties than in provinces characterized by competitive politics (Balisacan and Fuwa 2004). In Indonesia, improvement in access to technology, such as electricity and information channels, raises the incomes of the poor (Balisacan et al. 2003). Meanwhile, states with lower literacy rates, higher landlessness, and higher infant mortality rates, benefit less from non-farm growth in India (Ravallion and Datt 2002). Strong correlations among poverty, technology adoption, irrigation, agricultural productivity, education, road density, electricity, and non-farm employment growth are also observed (Fan et al. 2002). Overall, these observations suggest that policies, the quality of institutions, and the access of the rural population to infrastructure, credit, land, and human capital, are robust predictors of income and poverty.

Evidently, the nature of growth, not just its speed, matters to poverty reduction. In this regard, the quality of growth has to be made more broadly based than it has been for a number of the Asian countries.

As is the case in developing regions of the world, nearly three-fourths of the poor in Asia live in rural areas; the large majority of them are dependent on agriculture for employment and income. Thus, agricultural and rural development appears to be key to achieving broad-based growth and the MDGs.

AGRICULTURAL GROWTH AND POVERTY REDUCTION

As pointed out earlier, the large majority of Asia's poor live in rural areas and depend on agriculture. Thus, growth in agriculture directly reduces poverty and food insecurity by augmenting farm incomes. If broadly based, this growth stimulates rural non-farm activities through demand and supply linkages, thereby increasing employment opportunities and providing enduring sources of poverty reduction. Evidence indicates that this has been a powerful source of poverty reduction in Asia (Rosegrant and Hazell 2000; Timmer 2005).

Employing cross-country averages of recent decades, Bravo-Ortega and Lederman (2005) estimated the marginal impact of agricultural vs. non-agricultural growth on national welfare. In their formulation, national welfare (W) is determined by GDP per capita (y), average income of the poorest quintile (y_1), environmental quality (E), and a measure of the volatility or unexpected shocks (v). W increases with y , y_1 , and E , and decreases with v . The question they tried to resolve was how best to maximize national welfare — via agricultural or non-agricultural growth. Their results showed that the effect varied with the income level of the country. There was a positive causal effect running from agricultural to non-agricultural output in developing countries. But this turned negative for developed countries. While agricultural labour productivity had a significant effect on the average income of the poorest quintile, this was smaller than the impact of non-agricultural output per worker. The result with respect to environmental quality was mixed. The non-agricultural sector was the main determinant of CO₂ emissions, but the agricultural sector was the main source of deforestation. The volatility-reducing effect of the non-agricultural sector increased with the level of income, while that of the agricultural sector exhibited the opposite pattern.

Combining the findings on each of the determinants of overall welfare and using two weight scenarios (in one, using equal weights, while in the other, GDP per capita was assigned a 40 per cent weight), they concluded that the national welfare in high-income countries was best served through non-agricultural growth. In developing countries, welfare was also best served by non-agricultural growth, although the contribution of agriculture was positive and relatively larger than its share in GDP.

At present, we observe that the focus of development efforts is shifting toward developing the rural non-farm sector, with the hope that this shift will catalyze the development of the farm sector. Ravallion (2002) adopts the same distinction in his study of the externalities in rural development in China. First, there is the so-called “own effects”, where the level of economic activity in a given sector positively affects the growth of income from that source. Next, there are “cross effects” where farm output has a positive impact on the output of forestry, animal husbandry, and fishing, which, in turn, positively affects handicrafts, industry, processing, and transportation. Thus, rural development generates externalities. On the other hand, there is hardly any sign of reverse linkages. If anything, there are indications of negative external effects from some non-farm activities on farm output.

SHOCKS AND RISK-COPING AMONG RURAL HOUSEHOLDS

Our discussions in the previous two sections are mostly based on insights drawn from studies at relatively aggregated levels. They help us understand policy questions related to long-term development processes, resource allocation across sectors, and inter-sectoral linkages. However, there is a great deal of heterogeneity across sub-regions of Asia, across regions within a country, across localities within a region, and across households within a village, which tend to be averaged out in those aggregated studies. In contrast, micro-level studies, typically based on household survey data, focus on heterogeneity and diversity, and draw insights from the observed variations at the micro level. Using the household as the unit of analysis further allows us to focus directly on the behavioural mechanisms leading to poverty. The rest of the paper selectively reviews recent developments in the micro-level studies on poverty and some policy implications based on those studies.

The Link between Poverty and Vulnerability

The micro-level literature focusing on rural poverty dynamics has (collectively) highlighted the possible two-way causality between poverty and vulnerability (e.g., Morduch 1995; Dercon 2005). On the one hand, poor households tend to be more vulnerable to various income shocks than their wealthier neighbors. Due to their poverty (e.g., low level of asset holding, limited access to credit, etc.), they are often ill-prepared to cope with negative income shocks. Given their already low margin for survival, the direct consequences of suffering from the income shock could be quite severe.

The causality may not stop there, however; vulnerability could exacerbate the future depth of poverty. The very behaviour to cope with the risks could make their prospect of escaping poverty even more remote. Given the potentially dear consequences of negative income shocks, the poor may opt for “income smoothing” strategies by choosing safer but lower-return economic activities/investments, thereby forgoing potentially higher-return (but riskier) economic activities. In addition, some *ex post* risk-coping (consumption smoothing) behaviours (such as the depletion of assets) could erode the productive base for future income earnings. This section focuses on the nature of risks and household behaviour in response to such risks in rural areas in developing countries.

The potentially longer-term consequences of even a short-term income fluctuation (through the chains of causality above) naturally direct our attention to longer-term welfare trajectories among the poor and to a search for possible ‘poverty traps.’ The focus on the welfare trajectory/poverty dynamics/economic mobility over time, in turn, has led to the important distinction among the poor population between the ‘transient’ (or ‘transitory’) poor and the ‘chronic’ or ‘persistent’ poor. We discuss the literature on longer-term poverty dynamics (as opposed to short-term income fluctuations) and economic mobility in the next section.

Sources of Shocks and Imperfect Insurance

As noted earlier, the majority of the poor in developing countries live in rural areas and many of them depend on agriculture for their livelihood. Due to weather variations and other environmental factors affecting agricultural production (especially if permanent irrigation is not available), their income fluctuates from one season to another. There are other sources of uncertainty that aggravate income fluctuations, such as the risk of disease, injury, unemployment, price variability, and so on. Bad outcomes may tend to come together, such as heavier work, dearer food, and more infections, especially for the poor. The fluctuations of labour incomes for casual labourers have been well documented (Lipton and Ravallion 1995). To illustrate, the coefficient of variation in income for farm households found in southern India was 137, while that for white males in late twenties in the US was 39 (Rosenzweig and Binswanger 1993). With a relatively small margin for survival among the rural poor, the consequences of those risky events can be extremely severe, potentially leading to malnutrition, disease, starvation (or even worse, death). As a result, managing and coping with risks are an integral part of the daily lives of the rural poor. In addition, there has been a concern that the recent successes of market-oriented policy reforms (e.g., India and China) or the advance of globalization may have further increased the degree of potential income fluctuations, thereby exacerbating the already precarious position of the rural poor (e.g., Dercon 2005; Kurosaki 2006).

Some of the risks that households face are individual-specific or idiosyncratic, such as disease, injury, and death of animals. Others are common or aggregate risks that are covariate, such as drought, epidemic and economy-wide shocks, affecting everyone in the locality/community/region (or a country).¹ The distinction is important because idiosyncratic risks could potentially be insured among the members of a community. Aggregate shocks, on the other hand, cannot be insured within the areas where the risks are covariate. Managing aggregate risks requires either insurance transfers (credit or insurance) from outside the locality or inter-temporal transfers, such as savings (e.g., Dercon 2005).

Empirical Findings on Consumption-smoothing Outcomes

The increasing availability of household-level panel data in developing countries after the 1980s has triggered an explosion of the literature investigating the consumption-smoothing behaviour of rural households under various risks in developing countries.² What proved instrumental in this development was the pioneering attempt by the International Crop Institute for Semi-Arid Tropics (ICRISAT) which produced the Village Level Studies (VLS) data collection.³

¹ Weather shocks (e.g., amount and timing of rainfall) are aggregate risks but, due to heterogeneous climatic and soil conditions among individual farms, the consequences of weather shocks are likely to have large idiosyncratic elements (Morduch 2005).

² The literature is vast and has been accompanied by a number of survey articles: Alderman and Paxon (1994), Dercon (2005), Kurosaki (2006), Morduch (1995), Sawada (2006), Townsend (1995a). We draw on many of them.

³ This effort, covering a 10-year period between 1975 and 1985, and producing detailed information on household consumption and agricultural production, was unprecedented, and is still unsurpassed today. Not only is the data set unique in its panel nature and its coverage of all aspects of household behaviour, it is also considered to be of high quality. The high quality of the VLS data is partly due to the placement of the 'resident investigators' in each village and their frequent visits to the surveyed households to record economic transactions. A similarly meticulous

A large number of studies based on the ICRISAT-VLS data have been published, but perhaps the most well-known is the classic paper by Townsend (1994) testing the hypothesis of Pareto-efficient risk-sharing in the village as a benchmark; the basic idea is that if idiosyncratic risks are shared in an efficient manner, individual household consumption should not be affected by its income but only by the village-level income. His estimation results reject the complete risk-sharing hypothesis but nevertheless reveal that “(t)hese villages display a considerable amount of risk sharing, though pooling is less than perfect” (Townsend 1995, p. 92). The analyses using the ICRISAT-VLS data (Townsend 1994; Morduch 2005, among others) have challenged conventional views by showing that a large proportion of household income fluctuations (as much as 75 to 95 per cent⁴ of income variations; Morduch 2005) are due to idiosyncratic risks, rather than covariate risks, and the extent to which villagers are able to insulate their consumption from income fluctuations is considerably greater than previously assumed.

In his assessment, Murdoch (2005, p. 42) commented that “Townsend’s initial work was so striking because it came very close to not rejecting the full risk-sharing model”. In fact, Townsend’s work was followed by a number of studies addressing various econometric issues involved (measurement errors, specification of utility function and other possible ‘spurious’ factors generating results, etc.) and also examining the degree of risk-sharing within village communities in various contexts. Qualitatively similar results have been obtained, for example, by Morduch (1991), Ravallion and Chaudhuri (1997), Ligon et al. (2002), Kurosaki (2001), all using the same VLS data set, and also by Deaton (1997) using data from Cote d’Ivoire. Some studies moved away from the ‘village’ as the risk-sharing unit toward other groups, such as the caste; higher ranked caste members, for example, have been found to be relatively better able to insure themselves than members of lower ranked caste (Morduch 2005, p. 43). Also, households with larger landholdings were found to be better insured than less landed households (Kurosaki 2001). The general conclusion from these studies is that while complete/Pareto-efficient risk-sharing is almost invariably rejected, a considerable degree of consumption smoothing (possibly through risk sharing or self-insurance) does appear to take place in rural economies in developing countries. However, poorer households (lower caste or less landed households) are relatively more vulnerable to risks than richer households.

A key feature of Townsend’s (1994) approach is that, instead of focusing on specific behaviour for specific risks, he focuses on whether various markets and (formal and informal) institutions *jointly* provide optimal allocation of risk bearing. At the same time, however, by not looking into any specific types of risks or of risk behaviour, the approach is silent about how people actually insure themselves (or self-insure, as the case might be) in order to insulate their consumption from income fluctuations. We now turn to the literature addressing behavioural aspects.

collection of all aspects of household behaviour was conducted at about the same time by the International Rice Research Institute (IRRI) in the Philippines but the observation period lasted for just one year (Hayami et al., 1978).

⁴ This includes possible measurement errors.

***Ex post* Risk-coping Strategies or How the Poor Smooth Consumption**

To the extent that poor rural households are in fact able to insulate their consumption from income fluctuations, how do they do so? Household responses to risks can be categorized into *ex-post* “coping” and *ex-ante* “risk management.” *Ex-post* coping mechanisms, in turn, can be further categorized into: savings or asset holdings, reallocation of household resources (most notably, household labour force including children), and (mostly informal) risk-sharing institutions.

Savings/Asset Holdings: One way of smoothing consumption, in the face of fluctuating incomes, is to hold assets (as precautionary savings), to liquidate/deplete them when hit by a negative income shock, and to accumulate in the face of a positive shock. Given the general absence of financial assets (e.g., bank deposit), asset items for consumption smoothing can take a wide variety of forms including jewelry, animals, crop inventory, or land. Using the ICRISAT-VLS data, Rosenzweig and Wolpin (1993) show that holding of bullocks appears to serve as a consumption-smoothing measure, while Townsend (1995, p. 96) finds in the same data set that crop inventory, rather than bullock holding, is the main means of consumption smoothing. Kochar (1995) also questions whether Rosenzweig and Wolpin’s (1993) evidence supports the use of bullock as the main consumption-smoothing strategy. Fafchamps et al. (1998), based on African example, also find evidence that asset holding is *not* the main consumption-smoothing mechanism. On the other hand, using Thai data, Paxson (1992) finds that transitory incomes due to rainfall fluctuations are mostly saved rather than consumed, consistent with consumption-smoothing behaviour based on the permanent income hypothesis (PIH).

The importance of asset holdings as a means of consumption smoothing has been debated in the literature, but relatively few studies have directly addressed such behaviour. Furthermore, conceptually, the effectiveness of holding assets as a consumption-smoothing strategy can be limited for various reasons (Besley 1995b; Dercon 2005); the returns on assets can fluctuate due to macroeconomic shocks (introducing its own risk element), and, in addition, when a covariate shock hits (such as drought), the terms of trade between the asset and food can collapse when everyone wants to sell assets (e.g., animals) and buy food which is in short supply. In addition, the sale of productive assets (such as land and draft animals) for consumption-smoothing purposes will reduce the asset base for future income flows.

Reallocation of Household Resources: Households, in the face of shocks, can also reallocate their resources to cope with income fluctuations by, say, a reduction of consumption (e.g., cutting down on the consumption of non-essential or luxury goods) or a reallocation of household labour force. When a crop fails (and local labour markets are reasonably well-functioning), for example, the farm households could increase labour wage incomes to compensate for the lost (farm) income (Kochar 1995, based on ICRISAT-VLS). Such a strategy may also involve pulling out children from school and sending them to labour markets instead, which could potentially have long-term implications (e.g., Jacoby and Skoufias 1997, based on ICRISAT-VLS), although Jalan and Ravallion (2001) find a contrasting evidence showing little effect of income shocks on children’s schooling in China.

In addition to the ICRISAT data set, the Asian financial crisis has provided valuable insights into understanding the various coping strategies adopted by households. Based on a

Korean example, Kang and Sawada (2003) found that Korean consumers responded to the income shock (a 24 per cent reduction on the average) mainly by reducing consumption of luxury items, such as leisure activities, dining out and purchase of durable goods, while maintaining the expenditures for food, education and health. The effects of the Asian crisis on poorer countries, however, are likely to have been much less benign. A study on Indonesia (Thomas et al. 2004), for example, found that in the face of the income shock (a 15 per cent decline in per capita consumption), households reduced non-food consumption while maintaining the share of food consumption; also, both school enrollment and the share of the education budget decreased among younger children (aged 10-14), while the schooling of older children was shielded from such reductions in poor households (but not in better-off households). While it is not immediately clear whether the impact of such reduction in human capital investment observed in one year ends up as a short-term phenomenon (e.g., leading to a relatively small-scale delay in school enrolment) or involves serious long-term effects (i.e., a reduction in human capital stock in the next generation among the poor), it certainly raises a concern.

In attempting to understand household coping mechanisms, focusing on the household aggregate level may not be sufficient (e.g., Fuwa et al. 2000). Some studies have found, for example, that the reduction of consumption in response to income shocks is shared unequally within the household. Berhman (1988), for example, finds that the bulk of consumption fluctuations due to seasonal price fluctuation is borne by girls; Rose (1999) finds evidence that child mortality rates (especially for girls) increase when rainfall is low. Particularly in South Asia, there has been an accumulated evidence showing biases against female members in intra-household resource allocation (e.g., Behrman and Deolalikar 1990; Rosenzweig and Schultz 1982; Foster 1995).

Informal Risk-Sharing Arrangements/Institutions: In addition to the risk-coping mechanism noted above (mainly involving inter-temporal transfers within the households), there are a host of informal risk-sharing institutions in rural communities. Due to the informational problems (moral hazard and adverse selection), informal (non-market) institutions are likely to have comparative advantage in monitoring and enforcement capacity vis-à-vis formal institutions such as crop insurance schemes and formal banking arrangements, which often do not function satisfactorily (Besley 1994). Such informal institutions include credit cooperatives, informal credit and insurance arrangements (including state-contingent credit), rotating savings and credit associations (ROSCA), interlinked agricultural contracts, and inter-household transfers through gifts, combined with strategic decisions on marriages, etc.

Given the complexity and the richness of the phenomena, there has been a gradual accumulation of empirical studies drawing upon detailed information collected in particular localities. A classic study by Udry (1994), for example, finds in northern Nigeria the state-contingent credit functioning as an insurance mechanism to smooth consumption. In northern Philippines, on the other hand, consumption smoothing is attempted through gifts and informal loans (mostly with zero interest) among relatively small networks of friends and relatives, rather than through livestock or grain stocks, and village-level risk sharing is incomplete. In addition, such network risk-sharing appears capable of insuring only against specific types of risks (i.e., major life-crisis rituals like funerals and unemployment of the household head) but not other risks (Fafchamps and Lund 2003). In northern Thailand, a wide range of risk-coping mechanisms

has been observed, including buffer stocks, labor supply, and village-level institutions which provide credit, rice, and health insurance funds. The pattern is not uniform and substantial variations are observed across villages (Townsend 1995b). Taken together, observed risk-coping mechanisms among the poor rural residents are extremely diverse and highly location-specific.

***Ex-ante* ‘Risk Management’ (Income-smoothing) Strategies**

As far back as the late 1960s, farmers have been viewed as risk-averse and likely to trade off higher expected returns and lower variability in their investment decisions, as depicted in Roumasset’s RAUI (risk-averse and under-invest) hypothesis (see Chapter 2). This theme drew renewed attention with the increased availability of household-level panel data after the 1980s; as Morduch (1995, 2005) emphasizes, in addition to *ex-post* coping strategies, the rural poor may make considerable efforts to smooth income *ex ante* by opting for economic activities (mainly production and employment) with possibly lower but safer returns, thereby forgoing economic activities with potentially higher (but possibly more volatile) expected returns. For example, based on the ICRISAT-VLS data, farmers have been observed to overuse labor inputs than required for expected profit maximization (Antle 1987), delay the timing of cultivation in order to obtain better information of the seasonal rainfall (Walker and Ryan 1990), and diversify crops across plots (Morduch 1995). Northern Indian farmers were similarly found to underuse fertilizer in order to cut investment losses in the event of bad weather (Bliss and Stern 1982). Another means of possible income-smoothing would be diversification into non-farm activities (e.g., Rosenzweig and Stark 1989). However, poor households are often faced with significant entry barriers to income diversification involving relatively more profitable non-farm activities since these often require substantial amount of initial capital and/or education. Such entry barriers for activities with higher expected returns may be one reason for the possible unwillingness or inability of the poor to accept lower average incomes in exchange for smoother income flows (Dercon 2005). The findings of Jalan and Ravallion (2001) also appear consistent with this interpretation.

These income-smoothing production decisions, as described above, can involve significant efficiency losses (relative to the situation where full insurance is available). For example, Antle (1987) estimates the relative risk premium of 14 per cent of expected net profit, and Binswanger and Rosenzweig (1993) estimate the reduction in farm profits due to one standard deviation increase in the coefficient of variation of rainfall timing at 15 per cent at the median wealth level, and 35 per cent at the bottom wealth quartile (both studies based on the ICRISAT-VLS data).

One major methodological difficulty in quantifying the degree of income- and consumption-smoothing behaviour, however, is the following: The studies quantifying the degree of consumption smoothing (e.g., Townsend 1994) usually ignore the availability of income smoothing. Similarly, studies quantifying the risk premium of farmers (e.g., Antle 1987) usually assume that insurance for consumption-smoothing is absent; as a result, the degree of risk aversion from those studies is likely to be underestimated (Morduch 1995). In reality, farm households are likely to determine income-smoothing strategies depending on the extent to which consumption-smoothing strategies are available (as well as on the amount of risk, the

degree of risk aversion, etc.), and their consumption-smoothing strategies are chosen in response to the realized income fluctuations as a result of the (presumably optimally chosen) income-smoothing strategies. Disentangling the consumption-smoothing and income-smoothing strategies appears to be difficult. More recently, however, Rose (2001) focused on household labour supply to the market and measured the relative importance of *ex-ante* and *ex-post* responses to rainfall risks, and found that the quantitative magnitude of the labour supply response *ex-ante* was roughly twice the magnitude of *ex-post* labour supply response to weather shocks.

LONGER-TERM DYNAMICS OF POVERTY AND ECONOMIC MOBILITY

The possibility of a two-way causality between poverty and vulnerability suggests potentially longer-term consequences of (even short-term) income fluctuations/shocks and draws our attention to longer-term trajectories of income and consumption among poor (and non-poor) households. The increasing availability of panel data at the household level (with the coverage of increasingly longer time periods) in recent years has made it possible to track the poverty status of individual households over time. While Baulch and Hoddinot (2000) noted in 2000 that panel data suitable for addressing poverty dynamics were found only in eleven developing countries, with the observation period ranging between 18 months and 18 years (early contributions include: Gaiha and Deolalikar 1993; Grootaert and Kanbur 1995), the number of available data sets has increased rapidly since then.

Transient and Chronic Poverty

Some immediate findings from panel data sets are that, among the poor population at any point in time, there are those who are always poor and those who are only temporarily poor; furthermore, the observed number of households moving in and out of poverty is quite large compared with those who stay poor persistently. This observation leads to the important (and now-standard) distinction found in the poverty dynamics literature between ‘chronic’ and ‘transient/transitory’ poverty; the ‘chronically poor’ are those whose average income over the entire observation period falls below the poverty line while the ‘transient’ poor are the rest of the poor (Ravallion 1988; Jalan and Ravallion 2000).

Obviously, the share of the transient poor tends to be higher when household income, rather than household consumption expenditures, is used as the measure of welfare, since income fluctuation tends to be greater than that of consumption (as indicated by the consumption-smoothing literature). Also, household incomes (in developing country contexts) are arguably measured with greater measurement errors than are consumption expenditures, which further inflate the degree of apparent mobility. Even when measured by consumption expenditures, the proportion of the transient poor (*vis-à-vis* the chronically poor) appears to be considerable. A six-year panel data set on consumption expenditures in China reveals, for example, that the share of transient poverty varies across provinces between 43 and 84 percent (Jalan and Ravallion 2000). The annual panel data on per capita income in the ICRISAT-VLS reveal that only 12 per

cent of the sample households were ‘never poor’ and only 22 per cent were ‘persistently poor’ during the period between 1975 and 1984⁵. Some studies that have attempted to address the measurement error issues (e.g., McCulloch and Baulch 2000) also find that there is still considerable transient poverty.

Transient poverty is likely to be affected more by short-term luck or misfortunes, as well as by the lack of risk-coping capabilities, while chronic poverty is more likely to be determined by the factors with longer-term impact. Comparing the determinants of chronic and transient poverty in China, Jalan and Ravallion (2000) find that while greater wealth holdings and life-cycle stages are significant determinants of *both* transient *and* chronic poverty, other determinants of chronic poverty, such as demographic characteristics, human capital, size of cultivated land and grain yield level (a proxy for unit return on land) are significant determinants of chronic but not transient poverty.⁶ Variability (over time) in wealth holdings, on the other hand, is found to be a significant determinant of transient poverty but not chronic poverty. Effective policies addressing transient poverty are likely to be different from those geared toward chronic poverty.

Economic Mobility and Possible Poverty Traps?

Our understanding of potential mechanisms leading to long-term poverty dynamics and economic mobility has been partly aided by the significant developments in the theoretical literature (e.g., Banerjee and Newman 1993; Galor and Zeira 1993; and Ljungqvist 1993 [note: the preceding source is not found in References]). These dynamic models generally show that the combination of credit market imperfections and some kind of indivisibility of one of the investment activities (e.g., human capital investment) typically leads to various patterns of social stratification as steady-state equilibria that are dependent on the patterns of initial distribution of wealth/assets.⁷ Given the central role of assets in determining economic mobility (and thus chronic poverty), some studies have focused directly on the dynamics of asset-holding rather than the dynamics of income or consumption (e.g., Lybbert et al. 2004; Carter and May 2001; Swaminathan 1991). Other attempts rely on the occupational categories combined with contextual/qualitative knowledge of the localities (e.g., Dreze et al. 1992; Fuwa 2007) or other specific categories such as the elderly or the disabled (e.g., Barriotos et al. 2003; Yeo and Moore 2003), for identification and explanation of persistent/chronic poverty.

⁵ Somewhat different concepts have been used in the literature examining the patterns of changes in poverty status of a household over time. The ‘persistently poor’ (or ‘always poor’) has been defined as those households whose income or consumption level falls below the poverty line *in all observation periods*, while the chronically poor, whose *mean* income or consumption level *across the entire observation periods* falls below the poverty line, may or may not be poor in every observation period. The persistently poor are a subset of the chronically poor. However, some studies used the term ‘chronically poor’ to describe the ‘persistently poor.’

⁶ That stock of land and education are not significant determinants of short-term income changes is also in line (although the effects of demographic variables differ) with an earlier finding by Grootaert and Kanbur (1995) based on the short-term consumption growth in Cote d’Ivoire.

⁷ Earlier, Loury (1981) showed that the existence of credit market imperfection alone did not necessarily generate long-run stratification patterns that depended on the initial distribution. Thus, both the credit market failure and indivisibility conditions are necessary to generate the kind of social stratification patterns discussed in these models (Bardhan and Udry 1999, p. 130; also Barrett 2005).

Based on both theory and empirical evidence, there appears to be a general consensus in the poverty dynamics literature that the main causes of chronic poverty are: low asset endowment (low initial level, slow or absent accumulation), low asset returns, and relative inability to cope with (especially repeated) negative shocks. A series of studies have attempted to identify the major determinants of poverty dynamics and/or economic mobility by relating the level or the change over time in income or consumption to a set of potential determinants. Existing studies suggest that asset accumulation may play a smaller role; instead, the role of increases in returns to endowments emerges to be more prominent (Bauch and Hoddinott 2000; McKay and Lawson 2003)⁸; a recent study by Estudillo, Sawada and Otsuka (2005) in the rural Philippines, for example, attributes 90 per cent of the differences among households in income growth during the period 1997–2004 to the changes in the returns to assets (land and human capital) and only 10 per cent to the changes in endowments.

The introduction of Green Revolution technologies, coupled with investments in irrigation systems, is a classic example of an exogenous change altering returns to land (e.g., Gaiha 1988). More recently, however, increasing opportunities in non-agricultural sectors appear to have raised the returns on human capital significantly relative to those on agricultural land. (e.g., Estudillo, Sawada and Otsuka 2005). As documented in the Philippines, the expansion of non-agricultural opportunities (affecting returns to education) can come from various sources depending on the specific locations, including industrialization in the Metro Manila area (Hayami and Kikuchi 2000), domestic non-farm sector growth in general (e.g., Estudillo, Sawada and Otsuka 2005), and the expansion of international migration (e.g., Fuwa and Anderson 2006; Fuwa 2007). In contexts outside Asia, the effects of the abolition of apartheid (e.g., Maluccio, Haddad and May 2000) and of macroeconomic decline (e.g., Glewwe and Hall 1998) on returns to endowments have been documented.

In the examples mentioned above, returns to assets (land, human capital, etc.) are taken as exogenous. In other contexts, returns to household assets can more appropriately be seen as endogenous (Barrett 2005), although they have rarely been addressed in the existing econometric estimations. Investment in land quality, as documented in Zimbabwe by Gunning et al. (2000), is one example. The literature on income smoothing suggests that the poor households may hold assets of lower return as a risk-management strategy.

Identifying the long-term effects on economic mobility of negative income shocks (as well as of asset accumulation) is relatively more difficult due to the paucity of appropriately long-term data (Baulch and Hoddinott 2000), but some studies have found some significant effects (mostly in the contexts outside Asia). In rural Ethiopia, Dercon (2004) has detected significant negative effects of a major drought on consumption growth after roughly a decade. Other studies, mainly in Africa, identified long-term effects of shocks through anthropometric outcomes, rather than income or consumption (Dercon and Hoddinott 2005). Using yet another approach, Scott (2000) documented the effects of idiosyncratic shocks in Chile through an anthropological life-history inquiry.

⁸ This may not be too surprising, however. It is likely to be difficult to identify the effects of asset accumulation (or depletion) since asset holdings are typically slow to change and the observation periods in most of the existing studies are relatively short.

An alternative and more recent approach to the analysis of welfare trajectories over time is to search for the possible existence of poverty traps (or the threshold to chronic poverty) by directly characterizing the time paths of income/consumption or asset holdings over time and detecting possible nonlinearity patterns. For example, using a 17-year panel data set on cattle herd histories in southern Ethiopia, Lybbert et al. (2004) found, through a nonparametric approach, a non-convex wealth dynamics pattern and identified what appeared to be a threshold for a 'poverty trap.' Lokshin and Ravallion (2004), on the other hand, did *not* find a similar non-convexity implied by a poverty trap based on parametric estimation applied to panel income data from Hungary and Russia. Similarly, Jalan and Ravallion (2005), examining income and consumption dynamics in rural China for the period 1985-1990, also failed to detect the type of non-convexity consistent with poverty trap, although the speed of recovery from a negative income shock was found to be slower for the poor than for the non-poor. Through a somewhat different approach, Fuwa (2007) also failed to detect a 'poverty trap' based on occupational mobility data in rural Philippines. The empirical evidence regarding the existence of 'poverty traps' is still relatively thin and mixed.

Finally, the two main methodological issues that have arisen in all of those dynamic analyses of poverty are the measurement errors, and panel attrition. The issue of measurement errors (as mentioned earlier) remains unsolved. In particular, it is not yet clear to what extent the observed income (or consumption) mobility is inflated by the presence of the measurement errors contained in the income (or consumption) data. This has obvious implications for the estimation of the relative magnitudes of transient versus chronic poverty. Sample attrition in the household panel data is another potential problem which tends to be exacerbated as the observation period becomes longer. If relatively more destitute households among the poor have a higher tendency to move out (and thus drop out of the sample) than better-off households, for example, observed poverty persistence could be underestimated. While there are reasons for potential concern, relatively few studies have addressed the issue directly and the results are somewhat mixed. In one of the very few studies where the sample households moving out of the original locations were systematically traced, Thomas et al. (2001) found that 'attriters' tended to be systematically different, and that ignoring them could thus have significant effects. On the other hand, Alderman et al. (2001) found, in line with findings from the United States, that the potential effects of attrition could be (surprisingly) small even when attrition rates were relatively high.

Incorporating Dynamic Aspects into the Measurement of Poverty

Identifying the poor and monitoring the prevalence of poverty are important for policymakers, and quantitative measures of poverty play a major role in policy formulation, such as targeting interventions or setting public investment priorities. The Foster-Greer-Thorbeck (FGT) class of poverty measures, for example, has now become a standard tool for monitoring poverty. A similar idea of measuring vulnerability (rather than static poverty) and identifying the vulnerable has more recently been developed, in an attempt to develop the kind of quantitative measures that (like the FGT-type static poverty measures) are comparable across time and space; however, unlike the static poverty measures, these not only calculate the shortfall of income/consumption from the poverty line but also incorporate the welfare losses arising from

the income/consumption variability. A classic example by Ravallion (1988) and a more recent attempt by Kamanou and Morduch (2005) use expected values of (static) poverty measures with the expectation taken over the income or consumption. An alternative approach proposed by Ligon and Schechter (2003) uses expected utility function rather than poverty measures. Based on the ICRISAT-VLS data, Ravallion (1988) finds that the level of poverty, as measured by poverty gap or squared poverty gap, would have been reduced to about one-half if the observed variability in food consumption had been eliminated, while no such effect is found on the headcount poverty ratios. Based on a similar approach (but with an important difference, as mentioned below), Kamanou and Morduch (2005) argue that some populations (e.g., city dwellers outside Abidjan in Cote d'Ivoire) could be considerably more vulnerable than the pattern implied by the changes in the observed (static) poverty measures.

Taking a somewhat different approach, Ligon and Schechter (2003) use an expected-utility-based 'poverty measure' and attribute about half of its level to the low (expected) income level and the rest to welfare losses due to income variability (of which idiosyncratic risk is relatively unimportant), based on monthly data from Bulgaria. They also find that labour endowment (e.g., male workers and pensioners) is a major correlate (among a range of household characteristics) of vulnerability.

This literature is in its infancy, however, and, unlike the static poverty measures, a consensus appears yet to emerge regarding the relative merits of alternative approaches. The debate still continues, for example, as to the conceptual interpretations of the approaches based on expected (cardinal) utility versus those based on the expected values of commonly used poverty measures. In addition, since the vulnerability measures (by definition) require reasonably reliable measures of variability of welfare measures (income or expenditure), practical application has so far been limited to a small number of cases due to the paucity of suitable data; this issue, though, has been addressed by Kamanou and Morduch (2005) who proposed substituting hypothetical data generated by Monte Carlo estimates (drawn from the distribution of cross-section regression residuals) for the actual panel data which are typically unavailable.

POLICY IMPLICATIONS

Relationship between Growth and Poverty Reduction

Our review of macro-level studies on growth and poverty (invariably) shows that sustained economic growth is essential for substantial poverty reduction. At the same time, the 'quality of growth' also matters, and economic growth has to be broadly based. The varied experiences in Asia, as illustrated in the literature, show that the degree to which growth translates into poverty reduction (the impact of growth on poverty reduction) very much depends on various initial conditions. High inequality in the distribution of income and in the access to land, credit, social services and infrastructure all tend to weaken the impact of aggregate income growth on the speed of poverty reduction. A higher level of initial human capital is also associated with a stronger impact of growth on poverty reduction. The literature also suggests

that growth in the agricultural sector, relative to the non-agricultural sector growth, tends to have a strong impact on rural poverty reduction in the relatively earlier stages of economic development.

Safety Net Policies against Transient Poverty⁹

Empirical studies on micro-level poverty dynamics reveal that at any point in time the poor consist of the transient poor and the chronically poor and that the factors affecting the two types of poverty tend to differ. This suggests that effective policies addressing the two types of poverty are also likely to differ. In addition, the possibly circular nature of causality between poverty and vulnerability suggests that the policies addressing transient poverty and those addressing chronic poverty are likely to have complementary roles to play. For example, addressing transient poverty through safety net policies could prevent (some of) the transient poor from falling into chronic poverty, and thus reduce the burden placed on the policies addressing chronic poverty in the future, just as preventive medical care could save the medical bills later.

There are severe imperfections in insurance and credit markets in rural areas in developing countries, exposing the poor rural households to various risks. A wide array of empirical evidence suggests that informal insurance (including savings, consumption smoothing through informal risk-sharing, and income smoothing) is far from perfect. The rural poor are only partially insured at best, and are less insured than are the rich. Typically, informal risk-sharing can handle only particular types of risks. Worse still, all coping mechanisms (i.e., consumption smoothing) are likely to function poorly when insurance is most needed, namely: when hit by severe and covariate shocks such as droughts and floods, or by repeated shocks (e.g., Deaton 1991; Alderman 1996). Such findings provide both the justifications for, and the limitations to, intervention by the public sector. Such policy instruments are typically called ‘safety net’ (e.g., Barrett 2004; Morduch 1999) or ‘social protection’ (e.g., Dercon 2005), and their main aims are: (1) to protect the most vulnerable (who are also likely the chronically poor) from the costly consequences of negative shocks, and (2) to prevent the transient poor from falling into chronic poverty (e.g., Barrett 2004).

The preceding discussions provide an additional rationale for sound macroeconomic policies and for better governance (Morduch 1999; Baulch and Hoddinott 2000). Increasing macroeconomic stability by controlling inflation, for example, would reduce some potential risks of economy-wide shocks, particularly since covariate risks such as these are difficult to insure against. In addition, given the past failures of government schemes (such as crop insurance programs and targeted credit programs; see Chapter 2), public sector involvements have been proposed in the literature, alongside the usual caveats. Also, as a general principle, the potential roles by actors other than the public sector institutions, such as non-government organizations (NGOs) or the private sector, are recognized; thus, building on and scaling up existing informal institutions (which tend to have informational advantages vis-à-vis the public sector and thus

⁹ This section draws on the surveys by Barrett (2004), Dercon (2005), Morduch (1999), and Lipton and Ravallion (1995).

have a better prospect of mitigating moral hazard), whenever possible, are perceived as attractive options (e.g., Deacon 2005, chapter 19).

When it comes to the specifics of what governments can or should do, however, various schemes have been proposed and debated, but a clear consensus has yet to emerge as to the relative merits of alternative schemes. One policy instrument seen by many as a promising safety net device is the rural public work scheme (like the Employment Guarantee Scheme in India) because of its desirable features such as self-targeting, thereby avoiding the need for costly means testing, and its temporary nature, thereby avoiding long-term dependency (e.g., Morduch 1999; Barrett 2004). Other possible policy instruments may be more speculative. Public policy could potentially encourage putting in place savings instruments for low-income households (as exemplified by the Bank Rakyat Indonesia or SafeSave in Dhaka, Bangladesh); the income-smoothing role played by the widely successful micro-credit schemes has also been recognized (Morduch 1999). Limited-scale insurance (micro-insurance) schemes have also been experimented on (e.g., by the Grameen Bank in Bangladesh), although some potential limitations that differentiate micro-insurance from the much more successful micro-credit have been noted, dimming its prospects somewhat (Dercon 2005). Others propose a shift in public research, extension, or subsidies toward locally risk-reducing inputs (e.g., irrigation, pest management) or crop-mixes (Lipton and Ravallion 1995). If there is some risk-sharing within certain groups, then the better alternative might be the public transfer schemes with group targeting, rather than individual targeting (Dercon 2005, chapter 19). However, the typical conclusion is that ‘more research is needed.’

The design of policy interventions would need to take into account household behaviour *in response to* such interventions. In this context, the potential pitfalls of ‘crowding out’ have drawn particular attention in the literature; government transfers intended for the vulnerable population could ‘crowd out’ (and displace) existing schemes of private transfers. Studies from South Africa and the Philippines, for example, indicate that the introduction of a public transfer program could potentially displace 20 to 40 per cent of existing private transfers, leaving recipients with relatively small net gains in income (Cox and Jimenez 1995). While the study of Cox and Jimenez (1995) is based on predictions rather than on the measured impact of an actual transfer program, another study similarly finds 20 to 40 per cent reductions in private transfers in response to an (actual) extended pension benefit program implemented in South Africa (Jensen 1998, as cited by Morduch 2005). More generally, the consequences of transfer policies are likely to depend on the kinds of market and non-market institutions that exist in local communities. Ligon (2005), for example, theoretically discusses differential household responses predicted by alternative models/explanations for imperfect risk-sharing; a targeted (non-contingent) transfer scheme intended for compensating the vulnerable households is likely to be offset by household responses if informal insurance arrangements exist but combined with dynamic moral hazard (e.g., in labour markets) or with imperfect enforcement.

How much policymakers should actually worry about such ‘crowding out’ has been much debated and remains controversial. Morduch (2005) argues, for example, that even with some crowding out, as long as the private transfers that public interventions partially displace are mainly among poor households, such displacements would still contribute to the goal of poverty reduction. Perhaps more importantly, he further points out that some of the private insurance or risk-coping schemes may be highly discriminatory, say, along gender dimensions (e.g., arranged

marriages or child fostering) so that it may even be socially desirable to have some private insurance displaced by public safety nets.

Finally, in addition to household responses in terms of inter-household arrangements, *intra*-household resource allocation behavior may also be relevant in some cases. For example, while specific types of household members are found to be particularly vulnerable (e.g., female children, as found by Behrman 1988), targeted interventions, such as school feeding may induce household responses that (partially) compensate such intervention (e.g., Fuwa et al. 2000). The appropriate mode of policy intervention thus depends on the ‘correct model’ to account for particular policy needs in the locality, which is still actively debated in the literature.

Policies for Poverty Reduction

The foregoing policies discussed can be seen as one set of “effective safety net” policies that “may ... also help reduce chronic poverty” (Lipton and Ravallion 1995, p. 2622). There are other sets of policies directly addressing the causes of chronic poverty such as low levels of asset/wealth endowments and low levels of returns to those assets typically held by the poor. To use Barrett’s (2005) analogue, safety net policies can be seen as preemptive interventions, and poverty reduction or ‘cargo net’ policies as redemptive ones for chronic poverty.

In terms of potentially effective policy instruments for poverty reduction, the recent focus on chronic poverty, as distinct from transient poverty, often leads to familiar kinds of interventions addressing the low levels of asset-holding and the low asset returns among the chronically poor. Policy instruments listed as ‘cargo net’ policies by Barrett (2005, p. 48), for example, include: land reform, targeted school feeding, targeted microfinance, and agricultural input subsidies. One way the rapidly growing empirical literature on poverty dynamics and economic mobility could potentially contribute to practical policymaking may be to empirically identify (quantitatively or possibly qualitatively) the ‘threshold’ point in the asset space (or possibly in other spaces as well, such as occupation), below which the household is likely to fall into the poverty trap (or chronic poverty). Although such attempts pose significant challenges in both data and methodologies¹⁰, if successful, the results are likely to assist policymakers in more sharply focusing their attention on interventions aimed at the chronically poor. The transient poor, on the other hand, need not be covered by the ‘cargo net’ but rather, can be left on their own since, as long as the safety nets are in place, they should be able to escape from their temporary poverty situation (Barrett 2005).

CONCLUDING REMARKS

While Asia has generally done remarkably well, by global standards, in both economic growth and poverty reduction, performances have been far from uniform within the region, and

¹⁰ See, for example, a discussion in Barrett (2005).

the progress in some aspects of human development, such as child malnutrition, has been less spectacular. We see both growth and poverty ‘convergence’ patterns in Asia, but the macro-level studies reviewed in this chapter suggest that the pace of poverty reduction is dependent on such factors as: the level of initial income inequality; the access of the rural population to infrastructure, human capital and various markets (e.g., credit, land); the quality of institutions; and government policies. While the last couple of decades have also witnessed major advances in our understanding of household behaviour toward risk and income shocks, and of some dynamic aspects of rural poverty (e.g., transient versus chronic poverty), thanks to the rapid increase in the availability of micro-level data, the relative importance of alternative risk-coping mechanisms (e.g., income vs. consumption smoothing, alternative types of asset holdings, etc.) has been debated, and it is likely to vary across different localities. It appears clear, however, that the risk-coping mechanisms can insulate household consumption from income fluctuations only incompletely, and that poorer households tend to be less able to insure themselves than do better-off households. While this suggests potential roles to be played by the public sector, given the past experiences of many government failures in providing credit and insurance (see, for example, Chapters 1, 2 and 4), more research is arguably required before a clearer consensus could emerge as to exactly how the public sector should devise social protection policies. Another area where more research is needed is the empirical characterization of longer-term poverty dynamics, including the so-called ‘poverty traps.’ Enhanced understanding in such areas is likely to help policymakers in designing more sharply focused policy interventions addressing chronic poverty.

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Figure 5.1 Growth Convergence

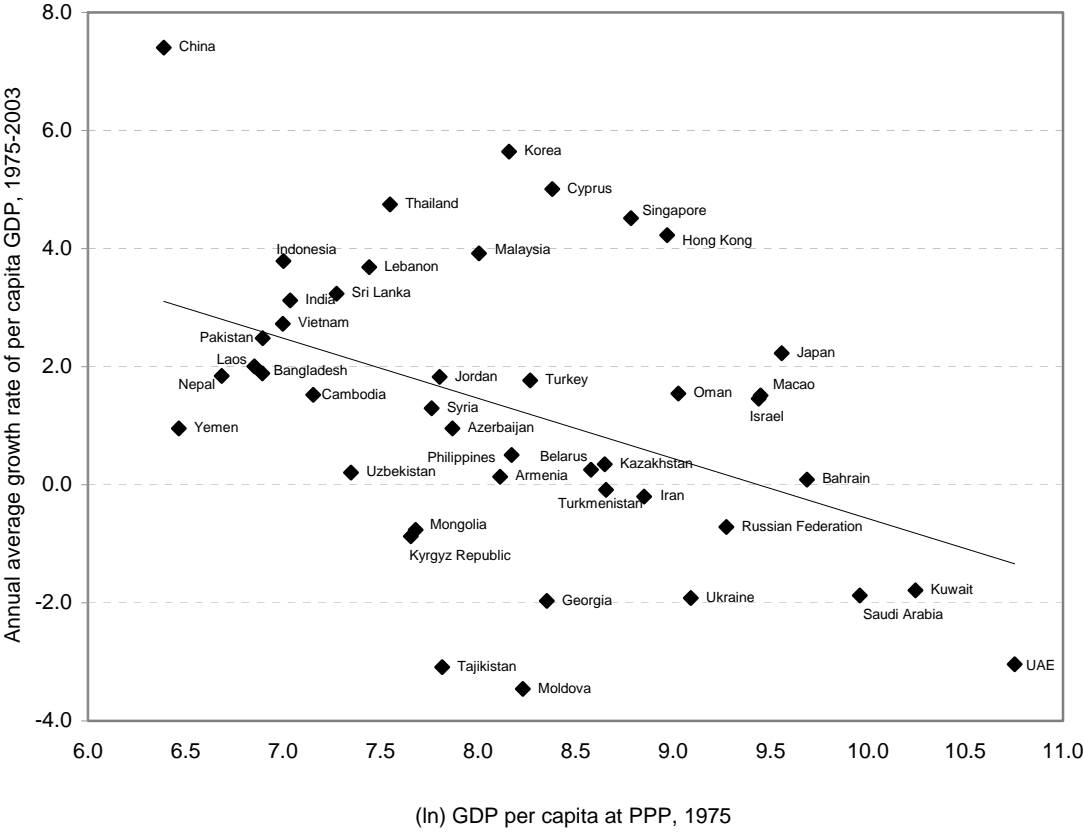


Figure 5.2 Poverty Convergence

