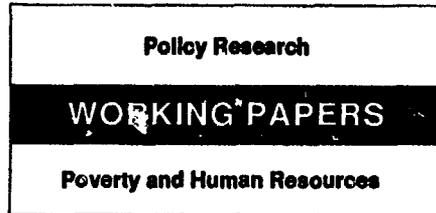


WPS 1130



Policy Research Department
The World Bank
April 1993
WPS 1130

Poverty and Policy

Michael Lipton
and
Martin Ravallion

Healthy economic growth is crucial to the well-being of poor people, who derive income mainly from their labor. Alleviating poverty should begin with reducing biases against the rural sector and the urban informal sector—not reversing the bias, but aiming for neutrality. Public action should foster the conditions for pro-poor growth, and should provide a safety net for those who cannot benefit from such growth or who do so only with exposure to unacceptable risks.

This paper — a product of the Poverty and Human Resources Division, Policy Research Department — is part of a larger effort in the department to review and disseminate research findings on poverty in developing countries, and the implications for policy. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Cook, room S13-064, extension 33902 (April 1993, 120 pages).

In this analysis of public policy to reduce poverty, Lipton and Ravallion point out, among other things, that typically the highest incidence and severity of poverty are still found in rural areas, especially if ill-watered. For many of the rural poor, the only immediate route out of poverty is by migration to towns, to face a higher expected income, although often a more uncertain one. This may or may not reduce aggregate poverty. We can be more confident, they say, that growth in agricultural output — fueled by investment in human and physical infrastructure — is pro-poor, though not because the poor own much land.

The policies pursued by most developing countries up to the mid-1980s — and by many still — have been biased against the rural sector in various ways. The same is true — although different policies are involved — of the other major sectoral concentration of poor, namely, the urban informal sector. There are clear prospects for reducing poverty by removing these biases. Looking ahead (far ahead, in some cases), it is less clear how much further gain to the poor can be expected from introducing a bias in the opposite direction. Neutrality should be the aim.

We need good data and measurement to identify which public actions are effective in

fighting poverty. There have been a number of advances in household data and analytic capabilities for poverty analysis over the last ten years. We are in a better position than ever to devise well-informed policies.

Lipton and Ravallion identify two important roles for public action. One is to foster the conditions for pro-poor growth, particularly by providing wide access to the necessary physical and human assets, including public infrastructure. The other is to help those who cannot participate fully in the benefits of such growth, or who do so with continued exposure to unacceptable risks.

Here there is an important role for aiming interventions by various means to improve the distribution of the benefits of public spending on social services and safety nets in developing countries. Those means range from the selection of key categories of public spending (such as primary education and basic health care) to more finely targeted transfers (including nutrition and health interventions) based on poverty indicators, or on some self-targeting mechanism. Though disappointing outcomes abound, many countries have demonstrated what is possible with timely and well-conceived interventions.

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POVERTY AND POLICY

Michael Lipton
Institute of Development Studies
University of Sussex

Martin Ravallion*
Policy Research Department
The World Bank

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* For their comments we are grateful to Harold Alderman, Jere Behrman, Tim Besley, Hans Binswanger, Gaurav Datt, Shanta Devarajan, Jean Drèze, Aly Ercelawn, Paul Glewwe, Peter Lanjouw, Lyn Squire, T.N. Srinivasan, Dominique van de Walle, Donald Winch, and participants at the First Asian Development Bank Conference on Development Economics, Manila. We also thank Rupert Baber and Kirsty McNay for research assistance.

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1 Introduction

By common usage, "poverty" exists when one or more persons fall short of a level of economic welfare deemed to constitute a reasonable minimum, either in some absolute sense or by the standards of a specific society. The literature on poverty in developing countries has often taken a fairly narrow definition of "economic welfare" to refer to a person's consumption of goods and services. "Reasonable minimum" is then defined by pre-determined "basic consumption needs", especially nutrition. Both these steps are controversial.

This definition of "economic welfare" can be made more or less comprehensive (in the goods and services embraced), but it is intrinsically limited. It may reveal nothing about the disutility of work, the length or health of the life over which consumption is expected, risk and variability etc. While recognizing the limitations of the concept of "economic welfare" as "command over commodities", we will largely confine ourselves to that definition, in order to review the many important issues treated in the literature that has evolved around it. Even this narrow definition poses serious problems, such as how to aggregate across commodities, across persons within households, and over time. We will return to some of these issues. However, it is not controversial that inadequate command over commodities is the most important dimension of poverty, and a key determinant of other aspects of welfare, such as health, longevity, and self-esteem. And it has been one of the most powerful motives for public policy.

"Economics is, in essence, the study of poverty" [Hartwell (1972:3)].¹ The structure, efficiency and growth of production affect - and are affected by - the distribution of consumption between poor and non-poor, and among the poor. Poverty analysis has three tasks: i) to define and describe "poverty", ii) to understand its causes, and iii) to inform policy. Each task overlaps with other branches of economics, but the second takes one far into the economics of (inter alia) human resources, labor markets, trade, and growth. We will often refer readers to other surveys of these topics.

In section 2 we sketch the history of economic thought on poverty since the Mercantilists, concentrating on relevance to current economic analysis and policy. Section 3 then examines how consumption poverty is defined and measured. These two sections - history and measurement - lay the foundations for the subsequent discussion, which moves from the "grand" (the dimensions of global poverty) to the "small" (the farm-household). In section 4 we provide a "snapshot" of poverty in the developing world today, looking first at the global picture, and then turning to the village and household levels. Evidence from modern household surveys has allowed us to examine the interactions between demographic, nutritional, and labor-force characteristics of poverty groups; in this process, modern economics is developing some of the central insights of the classical economists, though with measurement and modeling methods not available to them. New knowledge about poor households has

also greatly informed our understanding of how the economy and policy impinge on the poor, the topics of sections 5 and 6. In Section 5 we look at how a typical developing economy works - or, more accurately, how it has been modeled as working - from the point of view of the poor. Here we look at the classic development issue of the effect of growth on poverty and inequality, and (the recent classic) adjustment and the poor. From this base, and the evidence of section 4, we can then explore several issues that arise in governmental attempts to reduce poverty through direct interventions. Section 6 takes up these issues. Our conclusions in section 7 suggest some directions for future research.

2 The history of ideas about the poor

2.1 *The first transition*

Most cultures have sought to explain poverty, and to devise a moral approach to it [Illiffe (1987)]. However, a transition in thought and policy about poverty emerged in Europe around 1750-1850. This transition can help us understand a similar transition since 1945 in the LDCs. Before about 1750 in Europe² - and before about 1945 in Asia, Africa and Latin America - poverty was, by and large, trendless; subsequently, its secular reduction, by economic growth and by public action, became a widely-held expectation. Both transitions had similar correlates: accelerated investment in human and physical capital; faster technical progress in food production and disease limitation; some degree of demographic transition; diversification out of food-growing agriculture; and some political empowerment of the poor. The 18th century transition from mercantilist to classical economic analysis of poverty is also paralleled (in more sophisticated and quantified form) in the economics of LDCs since 1945. And both the economics and economies of LDCs were linked to Western models by emulation, colonialism, advice with strings, and world markets.

Today's underdeveloped world is heterogeneous, and faces different problems to those confronting the initiators of modern economic growth. Nevertheless, the insights of the founders of modern economics, as they analyzed the impact on poverty of the first "great transition", help us to understand the second. In responding to Smith (1776), Malthus (1798, 1824) asked a key question: to what extent is poverty a consequence of the impact of demographic change on real wages? While modern economics rejects Malthus's answers (mainly because he does not adequately endogenize either fertility or technical progress), his and other "classical" questions have influenced the modern economics of poverty.

Before about 1750, there was little durable growth of world product per person. Partly for this reason, moves to reduce poverty by peaceful redistribution - from the land reforms of the Gracchi [Tuma (1965: 31-6)] to the proposals of radicals within Cromwell's army [C. Hill (1972)] - proved politically unviable. In such a world, poverty did not seem curable, either through economic growth or deliberate

public action. There were four approaches to poverty: acceptance, palliation, insurance, or theft. Poverty might be accepted: "embraced as a sacred vow [or] tolerated (or railed against) as an unhappy fact of life" [Himmelfarb (1984:2-3)]. Poverty might be palliated, by private charity: normally by the works of the devout, financed by the alms-giving of the better-off, which most religions saw as a pious duty. Poverty might be socially insured against: exceptionally by the state (as with England's relatively comprehensive Poor Law of 1597); sometimes by implicit informal contract among members of a group or tribe [compare Platteau (1988)]; but usually by a lord or chief, providing insurance to free or serf laborers because of his interest in maintaining their military or productive power and loyalty in bad times as well as good [compare Bardhan and Rudra (1981)].

In the absence of palliation or insurance, theft was an ethically accepted cure for life-threatening poverty. A person "in imminent danger [who] cannot be helped in any other way ... may legitimately supply his own wants out of another's property" [Aquinas, ed. Gilby (1975: 2a. 2ae.q. 66.a.7)]. This view dominated jurisprudential and ethical theory from Aquinas through Pufendorf to Locke and his successors. The safety, as well as the morality, of capital required its owners "to provide with shelter and to refresh with food any and every man, but only when a poor man's misfortune calls for our alms and our property supplies means for charity" [Locke, cited in Hont and Ignatieff (1983:37)].

This was normative economics, recognizing constraints, but concerned with rights and duties, not allocations and utilities. Although production was secularly static, proto-economics recognized: a right to assistance in extreme deprivation, and a corresponding duty to work; a duty of the well-off to provide such assistance, and a corresponding right to the security of property. Long before Smith, several major problems with achieving these rights and duties were recognized. For example, legislators sought to avoid disincentives to work for the able-bodied poor (the "sturdy beggars" denied relief in England's 1597 Poor Law). Also, means such as tithing or poor-rates were used to avoid free-riding by those rich people who chose to leave the duty of charity to others [Olson (1982)].

Such problems were manageable. However, any duty to succor the poor created a deep problem for the first attempt to construct a rigorous economics of means and ends: Mercantilism. The end was to maximize a nation's export surplus. A strengthening currency, and hence import capacity, could then permit one country to grow, but in a static global economy this could only be at the expense of the rest of the world. The means to maximize the export surplus was cheap, and therefore poor, labor. Mandeville's epigram that "the surest wealth consists in a multitude of laborious poor" outraged fellow-economists [Home (1978: 68-9)], but followed from his and their assumptions.

Into this dark world of necessarily low real wages, zero economic progress (at least for the poor), and (for extremists such as Mandeville) the belief that even basic education would do the poor and the

economy more harm than good, came twin beams of light. First, from around 1740-1780 in England and somewhat later elsewhere, technical progress in producing both food and manufactures rapidly accelerated. Second, at the level of supportive economic theory, the light came from the Hume-Smith view of a progressive economy. The gains from specialization, rising demand for labor, and technical progress (embodied in rising rates of capital accumulation), taken together, would increase both the money-wage and the availability of corn for it to buy. Instead of low real wages to build up an export surplus, countries would trade freely at home and abroad, would experience rising real wages, and would balance their foreign accounts.

The view that economic development is feasible, that it can reduce poverty, and that such reduction is the main theme of economics, is thus quite recent. It stems from Smith's deeply anti-Mercantilist observation that "no society can surely be flourishing and happy, of which the far greater part of the members are poor and miserable" [Smith (1776: bk.I, ch.8), (1834: 33)]. Torrens epitomized classical economists' rejection of any "plan of financial and commercial improvement ... unless it raises the real wage rate" [1839: cited by Coats (1972: 160)].

It remained controversial to what extent a route through free-market growth to the reduction of poverty was feasible. Even for the first-comer (Britain 1740-1850), there were two important objections at the time. Malthus (1798) argued that not only free-market growth, but also policies such as poor-laws to underpin or increase real wage-rates, would self-destruct by inducing earlier marriage and therefore greater fertility, "...thus at once driving up the price of food while forcing down the price of labor" [Himmelfarb (1984:129)] until the living standards of the burgeoning poor had been reduced to subsistence level. However, in the second (1803) edition of his Essay, Malthus conceded that technical progress might raise wage rates and reduce poverty, provided "moral restraint" - delayed marriage and abstinence - prevented excessive fertility [Winch (1991: 42)]. By 1824, he was citing Swiss and other data to show how higher incomes, lower mortality, and better education could reduce fertility.³

Malthus himself destroyed the arguments for his earlier radical pessimism about policies to reduce poverty. This pessimism (unlike Nassau Senior's view that a disincentive to work would arise if poor-relief were insufficiently stigmatizing and unpleasant) played no part in the increasingly restrictive application of English poor relief after 1834 [O'Brien (1975:281-2), Williamson (1991)]. Nor did Malthusian fears about the fertility consequences deter European governments (notably Bismarck's in Germany) from attempting pro-poor policies [Ahmad (1993)]. The fears became even more remote with the spread of contraception - opposed by Malthus, but expected and vigorously advocated by the high priest of mid-century classical economics, J.S. Mill [Himmelfarb (1984: 115)]. This further de-linked the reduction of poverty from any subsequent increases in population. All this anticipates modern theory

of the demographic impact both of poverty and of its remedies.

The second objection to the Smithian view - that poverty reduction was at once the aim of policy and the outcome of growth in a now normally progressive economy - came from Ricardo. He came to accept [Coats (1972:152-3)] that mechanization, induced *inter alia* by higher real wage-rates, could permanently displace workers. Yet he did not advocate stopping it, or doubt its contribution to the embodiment of technical progress, ultimately enhancing national and labor income. Hence serious economics, building on Ricardo's concerns, did not relate to the Luddite (or Ruskinian) view that machinery was damaging, but to Marxist and Owenite advocacy of working-class action to own and manage the machines, and later to neoclassical and underconsumptionist/Keynesian accounts of the paths to full employment whatever the capital/labor ratio.

Economics, from Adam Smith, generally saw the accumulation of physical capital (especially if it embodied technical progress) as reducing poverty. What of "human capital", both as a long-term preventer of poverty and as a short-term insurance for the poor? Better health was seen by Smith [(1776: bk. I, ch. 8), (1884: 34)] as a consequence, and subsequently a cause, of greater working capacity, higher wages, and improved living standards. We do not know if the classical economists advocated publicly mediated health provision. Yet institutional care in old age and chronic infirmity was available to the poorest in many countries, long before the industrial revolution. In England even after 1834, workhouses offered the infirm pauper a refuge "more agreeable than life outside" [Himmelfarb (1984:164-5)].⁴ Bismarck's reforms of the 1880s brought some security to the aged and infirm in Germany.

Public and/or subsidized "mass" basic education was strongly advocated by the classical economists, partly because it was expected to reduce total fertility rates [Himmelfarb 1984: 120-1]. But human development was the main argument [Smith (1776: bk. V, ch. 1), (1884:327-8)]. The classical economists saw that education could well enhance the labor-productivity and hence living standards of the poor. But that outcome, and possible effects on growth, was viewed as a desirable but incidental by-product. Recent work on the returns to education in LDCs [Schultz (1975), Welch (1970), Jamison and Lau (1982)] provides some support for the classical insight here: that the transition to a progressive economy is what permits education to provide substantial income benefits for the poor as a whole.⁵

The demonstration by the classical economists that this transition could complement rising real wage-rates, and a healthier and better-educated workforce, was accompanied by a shift in moral and political philosophy. This took the view that, as capitalist civil society emerged, public institutions should accept responsibility not only for mass education, but also for poverty prevention and/or reduction [Wood (1991: xix)]. For this shift, Hegel was partly responsible. Hegel (1821/1991: paras. 238, 241) saw competitive political and economic action, by individuals and groups, to achieve both private and public

goals as characterizing the emerging "civil society", which

...tears the individual away from family ties [so that] he has rights and claims in relation to it, just as he had in relation to his family. For the poor, the universal power [State] takes over the role of the family. The contingent character of alms-giving ... is supplemented by public poorhouses, hospitals, street lighting, etc.

Smith had argued that (i) the modern economy requires division of labor; (ii) this risks deskilling the working poor; (iii) hence the State should provide means to educate them. Analogously, Hegel argued that (i) the modern progressive economy is associated with a stronger civil society; (ii) this endangers the kinship links that had previously protected the poor; (iii) hence the State should provide new safety-nets.

2.2 *The second transition*

The ethical and economic thinkers at the dawn of European industrialization were tackling many of the issues of poverty theory and policy that are central to development economics today. This is because, in some respects, the European transition that inspired the analysis of Hegel, Smith and their successors - and the effect of the transition on the poor - have close parallels in Africa, Asia and Latin America today. There too, civil society is gaining at the expense of familial society. Progressive (accumulating, specializing, innovating) economies are replacing stationary economies. There is temporary, but apparently alarming, population acceleration. And, on the whole, States are becoming less patrimonial, more dependent on consensual legitimacy. The first transition (so central in Europe after 1750) also had delayed effects on the economics of poverty and of anti-poverty policy in developing countries since 1945. Three effects can be identified.

First, the Western transition drove the colonization process. To some extent, though less than envisaged by Marx (1853/1951:312-324), that process reproduced European progressive economies, and the associated changes in poverty problems, in the Third World. Colonization helped to form the institutions, power-structures and intellectual climates for LDCs' post-colonial poverty policy.

Second, the first transition led to important experiments in anti-poverty policy. These ranged from the 1834 Poor Laws and the Factory Acts in Britain, via the more comprehensive social insurance pioneered in Bismarck's Germany in the 1880s, to the US "war on poverty" in the 1960s. These experiments are relevant to poor countries today [Ahmad (1993), Ahmad et al. (1991)].

Third, the transition in the Europe of 1750-1850 - to a stronger civil society, to a progressive economy, to "modern" demographics, and to more consensual States - was a precursor of the second transition in LDCs during the past half-century. This is not to support the crude, self-satisfied analogies of modernization theory and cultural evolutionism.⁶ Yet there are approximate similarities (alongside big differences) in processes and power-structures - and hence in changes in, and policies towards,

poverty - as between the Europe of Smith, Hegel and their successors, and the post-colonial Third World.

2.2.1 Awakenings

One should not confuse a belief in what were to become (with the benefit of hindsight) failed theories and policies with a lack of poverty-orientation in policy design. It is sometimes said that economics underlying early development policy in the "ex-colonies" paid little regard to poverty. This is doubtful even as a judgement of the theorizing of western development pioneers, whether in the Clark-Kuznets or in the Rodrik-Wis-Nurkse schools. More seriously, the judgement slights the poverty concerns of economists and politicians in the "ex-colonies" themselves [Quibria and Srinivasan (1992)]. Effective anti-poverty actions (even in some fast-growing ex-colonies) proved elusive in the early post-colonial period. However, this was not a result of a lack of concern for the poor in policymaking, but of the structures of power, technology, factor-intensity, and the "soft state" [Myrdal (1968:895-900)]. These structures often diverted, captured or frustrated those who (whether through markets or through public action) sought to enhance the prospects of the poor. This process led to "the distribution of public largesse to the not-so-poor" [Minhas (1972: 26)], as in the Indian case, which is instructive.

The Indian elite that took power in 1947 was trained in the school of Gandhi, but also of Macaulay, J.S. Mill and (much less) Marx. It was certainly concerned with poverty. Both Indian nationalists and establishment intellectuals had long focused the debate on "Poverty and un-British Rule in India" [Naoroji (1901)]. Mann's still classic village study of 1909 in Pimpla Saudagar [Thorner (1968: xxiii), Mann (1916/1968: 82-103), consciously modelled on Rowntree (1901)], like many others in the next few decades, was centered upon identifying and counting the poor and explaining their poverty.

Thus not only Gandhian (and earlier) traditions of religious and social service enquiry, but also socio-economic research emphases, had long prepared India for poverty-oriented policies. As Nehru (1946: 399-403) emphasized, the National Planning Committee put higher priority on the reduction of poverty and unemployment than on economic growth per se. The trouble was not lack of concern for the poor, but rather the specific policies pursued. After Independence, the First Five-Year Plan [Govt. of India (1953)] explicitly rejected growth maximization, in favor of anti-poverty planning. So did some other plans of the time, notably Sri Lanka's Ten Year Plan [Government of Ceylon (1959)]. The indigenous traditions documented by Iliffe (1987) demonstrate similar concerns about poverty in Africa.

Many of the anti-poverty intentions of early development planning were partly frustrated, as with land reform (section 6.4). Many plans (including Sri Lanka's) were largely or wholly shelved. In most of Asia, and in some of Africa and Latin America, schemes for land reform, mass education, health, 'community development' [Ensminger (1957)], and rural credit directed at the poor, burgeoned from the

moment of independence. Many such schemes were ill-considered or ill-implemented; most, perhaps, were not incentive-compatible. But the post-independence intellectual climate of economics, in and out of planning offices, was explicitly sympathetic to the poor.

2.2.2 A diversion: forced-draft industrialization

Yet the early industrialization plans of the post-colonial era largely failed the poor. They aimed at capital-intensive, somewhat autarkic, growth. They turned out to be over-hopeful of the capacity of such industrialization to raise the demand for labor, and so enrich the poor. Anti-trade biases did not help; the poor (more, as a rule, than the non-poor) tend to earn their living by converting non-tradable inputs, especially labor, into tradable outputs (section 4.2). Also, the poor tended to lose to the extent that accelerated industrialization is financed by extracting a surplus from agriculture, which provides most of their income, and produces their food (section 5.3). Agriculturally extractive and/or trade-restrictive paths to industrialization not only slow growth down; they reduce its benefits to the poor.

Some of these criticisms were made at the time [e.g., Vakil and Brahmanand (1956) on India's Second Plan]. But, by and large, they appeared to carry little weight with the theorists of industrialization via the "big push", balanced growth, and above all labor transfer, such as Rosenstein-Rodan (1943), Nurkse (1963), and Lewis (1954, 1955) respectively. These theorists shared the classical optimism about "trickle-down", but not the classical worries about real wage trends. Yet these worries should have loomed large; population growth since 1950 has been much faster than during the first transition.

The impact of closed-economy assumptions on the poor was also little discussed in the 1960s. Indian approaches to industrialization - Nehru, Mahalanobis (1957), Pant - were heavily influenced by Preobrazhensky's (1921) model of the extraction of a surplus from agriculture via the intersectoral terms of trade (the "price scissors") and by Fel'dman's model of the impact on growth of accelerated savings and investment [Domar (1957: 223-261)]. These were essentially closed-economy models, and were based on the then heavily protected economy of the USSR.

The costs to the poor of an industrializing "big push" were unexpectedly heavy. Compared to the predictions of the planning models, forced-draft industrialization demanded less unskilled labor, supplies of unskilled labor grew faster, and the supply of food staples (typically 50-60 percent of poor people's spending) grew more slowly. This last problem arose partly because, as Hansen (1969) and others showed, the marginal agricultural product (lost when unskilled laborers were attracted to industry) was far from zero. Contrary to Lewis's (1954) model, when labor moved from farms to factories (and there was no "green revolution") capital moved as well, and food output per person declined. Also, industry proved unexpectedly capital-intensive as it grew. Hence unskilled wage rates, but not food

prices, were sluggish. The poor fared worse than expected, and to little industrializing effect.

2.2.3 Counterblasts to planned industrialization

The policy approach of the Second and Third Indian Plans, and of many other (usually less operational) LDC planning documents prior to the mid-1970s, was in one key respect classical. Growth was to be achieved via accelerated capital accumulation and industrialization, thereby bidding up the demand for labor and the capacity to import; that was to be the main weapon against poverty.⁷ Not all classical were central planning itself; anti-trade-biased policies on quotas, tariffs and exchange-rates; and, above all, neglect of Smith's warning that food supply would constrain urban growth [Lipton (1977: 94-95)]. These elements combined to discredit closed-economy, forced-draft industrialization.

Taiwan and South Korea were outstanding exceptions both in the success of their industrializations and in their management of poverty. Yet they too had directive planning processes, "distorting" domestic relative prices and foreign trade, and extractive from agriculture. The key difference was that in these countries current-account rural extraction was offset by capital-account rural recirculation. This comprised (i) public investment in infrastructure for agricultural production (especially irrigation and crop research); (ii) public support to human capital formation (health and education); (iii) support, including subsidy, for rural non-farm enterprise.⁸ Probably essential to the big, fast response of food output to such stimuli had been prior, radically redistributive, land reform. Although imposed from abroad, it led to productive and dynamic owner-farmed smallholdings, along late-classical lines [Mill (1848-71/1965: 142-52, 342-36)]. There are a number of similarities to China's experience [World Bank (1992d)].

Some developing countries made less full-blooded efforts at land redistributions, investment in education and health, and irrigation and agricultural research. Such countries - often despite anti-agricultural and anti-employment policies on exchange rates, protection and prices - avoided the extremes of retarded industrial growth (strangled for want of wage-goods and/or of human capital) and of deepening rural poverty as agricultural employment and output failed to keep up with unexpectedly high population growth. However, these countries typically achieved only modest growth in real income,⁹ and failed to convert this slow (but cumulatively substantial) growth into a detectable decline in poverty incidence, despite poverty-orientated "add-ons" to the inadequate macro-policies.¹⁰

From the mid-1960s to the early 1970s, counterblasts to the failed consensus around poverty reduction by planned industrialization came from a number of sources.

- Seers (1972), Usher (1963), Bauer (1965) and others (from diverse ideological stances) denied either that GNP was correctly measured by LDC statistics, or that, if it was, it could itself correctly measure changes in welfare. Seers questioned that an economy in which GNP per person, unemploy-

ment, and inequality were all increasing, could be counted as "developing" at all.

- The model in which the poor largely comprised unemployed or "underemployed" persons - to be absorbed productively in a labor-intensive (and probably industrializing) process of planned modern-sector growth - also came under attack. Theoretically, prevailing notions of "underemployment" - and indeed "unemployment" [Myrdal (1968: ch.21 and Apps. 6 and 16)] - were increasingly recognized to lack micro-economic foundations: the poorest must work. Empirically, following Hansen (1969), a succession of studies confirmed that farm labor had non-zero (albeit seasonally fluctuating) marginal product; and that overt and prolonged urban unemployment was largely confined to the educated and better-off, in search of "a good job" and able to afford to wait for it. The ILO reports on Colombia, Kenya and Sri Lanka [ILO (1970), (1972), (1971)] confirmed that the urban and rural poor were more seen as "underemployed" than overworked, especially as casual laborers and in the informal sector (section 4). From the rural end, it became clear that the poorest seldom migrated successfully towards durable, adequately earning urban employment [Connell et al. (1976)].

- The celebrated "Nairobi speech" [McNamara (1973)] signalled a shift in donor priorities, away from the heavy (and largely urban) infrastructural lending of the 1960s, toward rural development designed to benefit the "poorest 40 per cent" of populations, seen then as mostly "small farmers" rather than as landless laborers. "Urban bias" was increasingly recognized as bad for growth as well as for poverty reduction, though rooted in political structures in much of the developing world [Mamalakis (1970), Lipton (1968, 1977), Bates (1981)]. Apart from past disappointments, two facts supported the hope that a new, rural emphasis could accelerate growth and reduce poverty. First, the "green revolution" was seen, from the late 1960s, as potentially able to enrich even very "small" farmers [Lipton with Longhurst (1989: Ch.2)]. Second, there was increasing evidence that farm size was inversely related to both employment and annual output per hectare [e.g. Berry and Cline (1979), Binswanger et al, this volume]. Thus an emphasis on small farms would reconcile anti-poverty and pro-growth policies within the rural sector. This process was to be supported, in attacking poverty, by investments in rural health, education, roads etc. However, there was no clear evidence that a given outlay would have most impact on poverty or growth if divided among several sectors, let alone if also managed as multi-sectoral "integrated rural development projects".¹¹ These projects - at least while conceived as localized exercises in central planning - also overstretched the administrative capabilities of agencies and governments.¹² As regards agricultural spending (and rural anti-poverty emphasis) itself, the donors' new initiative from the mid-1970s, and much domestic spending too, suffered from two weaknesses. It depended heavily on the efficiency - and genuine poverty-orientation - of bureaucratically directed credit labelled "For the Poor" (section 6.4.2). And it carried no insurance against fungibility, i.e. against extra

agro-rural aid being offset by reduced domestic agro-rural investment [Singer (1965)].

- Policies to increase the earned incomes of the urban poor had been neglected in the swings of intellectual fashion. But one set of urban anti-poverty policies did emerge in the 1970s. The urban poor, it was argued, lived largely in slums or near-slums. They would thus be helped by a shift of investment away from publicly built, so-called "low-cost" housing for middle-class civil servants, towards loans for private site-and-service hut building (with provision of water and electricity), and for slum upgrading.

- The earlier emphasis on forced-draft industrialization had been partly driven by the identity between the rate of growth and the product of the savings rate and the marginal capital/output ratio. This identity was interpreted as explaining growth in terms of savings embodied in physical capital. The resulting neglect of the social sectors led to a counterblast in both thinking and policy. Berg (1973) and others argued that better nutrition could be instrumental in raising the productivity of the poor. The role of human-resource development in equitable growth was emphasized by Adelman and Morris (1973). Schultz (1981) summarized his earlier evidence for the importance of investment in human capital for growth; others, in analyses based on neo-classical production or earnings functions, had established high private and social returns to education, especially primary [Psacharopoulos (1981)].¹³

- The tilt towards poverty-orientation in the mid-1970s was informed by a view of public objectives summarized in the words "redistribution with growth" (RWG) [Chenery et al. (1974)]. RWG reflected disillusionment with the poverty-reducing potential of trickle-down industrialization, and with radical redistribution of income or land, in view of the interlocking power and self-interest of the rich and the bureaucracy. It has become fashionable to dismiss the poverty emphases of RWG, and of the 1970s as a whole, as unsophisticatedly reliant on the notion that the State is a benevolent "Platonic guardian" of the public interest, when in reality the state is permeated by rent-seeking and pressures to achieve political stability by distributing the fruits of growth to its friends. However, this is a caricature of RWG, which was quite explicit about such obstacles [Bell (1974: 52-61)], but argued that some redistribution towards the poor could still be induced out of a growing GNP. First, there were pro-poor islands - whether idealistic or self-interested - within the power-structure of most countries. Second, RWG envisaged donor support, foreshadowing "poverty conditionality" [compare World Bank (1991a) and World Bank (1975)]. The severe slowdown of growth after the mid-1970s meant a harsher climate for both aid and redistribution. When P.WG was written, however, this could not be foreseen.

- Data and analytic capabilities responded to the growing focus on poverty. While the collection of data on poor households had been used to generate social awareness and motivate policy since the 19th century, nationally representative surveys of household living standards are relatively new. From 1951, India's National Sample Survey had been tracking household expenditures. Using these and other data,

Bardhan (1970) and Dandekar and Rath (1971) were instrumental in setting in motion ongoing monitoring of poverty data in India [Kadekodi and Murty (1992)]. Bell and Duloy (1974, chapter 12) helped to advance reorientations of statistical services, in order to track the performance of particular countries, groups, projects and policy interventions. A succession of experiments with the prediction of policy impacts on the poor using Social Accounting Matrices [Pyatt and Round (1980)] and computable general equilibrium models [Dervis et al. (1982)] offered promise, particularly in LDCs with relatively advanced basic data. A number of new initiatives for gathering data on poor households was also initiated in the 1970s. The UN National Household Capability Programme [UN (1989)] helped put household surveys on a sounder and more consistent basis. The World Bank began its efforts to collect high-quality household data on a wide range of welfare indicators [Chander et al. (1980), Glewwe (1990), Grootaert and Kanbur (1990)]. The collection of panel data, even for small samples [Walker and Ryan (1990)], has proved of great value in illuminating the dynamics of poverty. These and other initiatives in household-level data collection facilitated both more systematic poverty monitoring and more sophisticated - and progressively more convincing - econometric analyses of the determinants of poverty and impacts of policies and projects; see Ravallion (1992d), and Strauss/Thomas and Deaton in this volume.

However, these data initiatives have not yet spanned more than a narrow range of countries. Also, there has been concern that, in some data-poor settings, national statistical systems have been diverted from other poverty-oriented data needs, such as reliable smallholder food production data. Furthermore, the development in data and analytic capabilities has been slow to permeate policy analysis; for example, despite well founded critiques from Sen (1976, 1981a) and others, uninformative and potentially misleading "head-counts" of poverty have tended to dominate policymakers' attention.

2.2.4 "Basic needs" and "capabilities": a constructive diversion

Almost all these components of the counterblast concentrated on what McNamara termed "the productivity of the poor": income corresponding to retained value added. However, many poor people earn no such income: children and the sick are heavily over-represented among the poor; old people are currently under-represented, but this is changing in Asia and Latin America (section 4.2.3). The "basic needs" (BN) approach instead stresses "... human needs in terms of health, food, education, water, shelter, transport" [Streeten (1981:7), Richards and Leonor (1982), Streeten et al. (1981)]. Two main arguments were advanced for tracking poverty reduction by observing BN, rather than incomes. First, increases in real income, especially in rural or sparsely populated areas, may be unable to command better health care, education, safe drinking water, sanitation, police protection, or other commodities with public-goods or merit-goods character (and/or produced under economies of scale or agglomeration).

Second, households vary greatly in their capacity to convert commodities into well-being. For example, there is notable "positive deviance" in the capacity of some poor households to convert income into adequate nutrition [Zeitlin et al (1987)].

Closely related to the BN approach in motivation, but entailing a more fundamental re-definition of "poverty" and its reduction, is Sen's (1985, 1987) subsequent "capabilities" approach. Its roots lie in the rejection of the "welfarist" paradigm in which individual utility is taken to be the sole metric of welfare, and the sole basis for social choice.¹⁴ Here commodities matter as one determinant of people's capabilities to function (rather than as a source of "utility"). The strength of this view is its emphasis on commodities not as ends, but as means to desired activities. This explicitly recognizes the contingent nature of benefits conferred by any claim over commodities: what these do for well-being depends on a host of factors, including the circumstances - personal and environmental - of an individual. In focusing on commodities and utilities (but not capabilities) we may thus be looking in the wrong space.

Unfortunately, focusing on capabilities is beset with its own problems. We rarely observe capabilities, but rather certain "achievements". The mapping from the latter to the former is not unique, but depends on factors such as preferences. For example, to conclude that a person was not capable of living a long life we must know more than just how long she lived; perhaps she preferred a short but merry life. The role ascribed to preferences in BN and capabilities approaches is not entirely convincing; it is one thing to reject the strict welfarist view that only utilities matter, and quite another to claim that utilities are not at least a part of the objective [Ravallion (1992c)]. For a great many choices, people do know what is best for themselves.¹⁵ If so, one should be cautious in forming judgements about poverty which are inconsistent with those choices. The capabilities approach has not established why higher consumption - especially for the poor - should not remain an objective of policy, even if it does nothing for capabilities. There is also the unresolved issue of how one should aggregate over capabilities or basic needs. Single BN measures, such as the "physical quality of life index" or PQLI [Morris (1979)], are arbitrary in what they include, and in the weights attached to the included items.¹⁶

The early 1990s have seen some ambitious attempts at operationalizing the capabilities approach, by measuring each nation's level of "human development". In the 1990s, the UNDP's "Human Development Reports" sought in large part to explore the impact of the economic vicissitudes and adjustments of the 1980s on key measures of "human development". However, it is much more difficult to draw convincing inferences about the effect of adjustment policies, over a decade or less, on outcome variables (such as health or literacy) than on income (section 5.4). There are various reasons, including: weak and out-of-date numbers; long (and varying) time-lags between macro-policies and BN outcomes; and reciprocal causation (simultaneity). Even the effect of adjustment on public spending for health care,

education, etc. is controversial.¹⁷ And the aggregation problem bites once again: the UNDP's attempt (1990) to finesse these problems via a single indicator of "human development" is subject to insuperable objections [Kanbur (1990b), Anand (1991)].

The surviving lesson from these approaches is: recognize the limitations of a commodities-centered conceptualization of well-being. It is agreed that command over commodities matters - at some level - to well-being. Where these approaches differ is in the view they take on why incomes matter. On the most simplistic commodities-centered approach, aggregate affluence drives attainments of BN, or capabilities. This seems consistent with cross-country comparisons; there is a quite good correlation (after appropriate transformations to reflect the non-linearities) of a country's average real income with the main indicators of BN satisfaction in nutrition, health, education, shelter, etc. [Preston (1975), Sen (1981b), Isenman (1980)].¹⁸ However, this correlation may well be spurious, in that it reflects other omitted variables correlated with average incomes, such as the incidence of absolute poverty, and access to key social services; on controlling for these, incomes may matter far less than is often thought. There is evidence for that view: when health spending and the incidence of poverty are held constant in cross-country regressions, the formerly strong relationship between a country's income-per-person and its health outcomes disappears [Anand and Ravallion (1993)]¹⁹. There is other evidence that capacity for both private and public spending is required to achieve BN in health.²⁰ The message here is not that affluence is unimportant to well-being, but that we must be careful in identifying the precise ways in which affluence matters. Ipso facto, this approach can also throw light on what can be done to enhance well-being at low levels of average income: China, Costa Rica, Cuba and Sri Lanka show much better levels (or improvements) in BN than are predicted by income per head (or its growth) - sometimes even allowing for other variables such as poverty measures [Sen (1981b), Drèze and Sen (1989)].²¹

The pressures that emerged [Cornia et al. (1989)] to give adjustment a more human face - spurred by the BN approaches - probably helped the poor. In the early 1980s, it was almost impossible to persuade donors to design adjustment assistance with a view to improving its impact on the poor. By the late-1980s, add-on programs to "compensate the losers from adjustment" were common, though often focusing on the articulate and somewhat poor, rather than the inarticulate and very poor. Today it is increasingly recognized that poverty mitigation has to be designed into adjustment programs initially - not added as a tranquillizer later on - if otherwise desirable reforms in food pricing, foreign trade and exchange, public expenditure and employment are not to harm the poor in the short term.

It would be flattering to economists if these pro-poor "adjustments to adjustment" had resulted mainly from theory (such as Sen on capabilities) and/or major advances in empirical methods and measurement (such as the new household surveys and econometric tools). These did illuminate the social

dimensions of adjustment. But a more important source of pressure to protect the poor during adjustment came from the less sophisticated analyses of the specialized agencies, UNICEF, ILO, and later UNDP. Though honest, these analyses were often dubious. Keynes has taught us that such "essays in persuasion" can do more to shift a stubborn policy than better theory and evidence - but also that these are needed as well, if policies are to be durably improved.

2.2.5 States, markets and poverty

In the 1980s there were strong reactions against state involvement in development policies and processes. It was widely seen as rent-creating, price-distorting, protectionist, inherently corrupt, and destructive of enterprise - and as preventing the state, with its limited resources, from providing the privately under-supplied goods (roads, education, health, etc.) that comprised its potentially useful contribution to development. Much state intervention was also deemed to harm the poor directly, by turning the terms of trade against poor producers of tradables, and by creating discretionary access to inputs, subsidies, licenses and credit. These, even if labelled "for the poor", often went to the wealthy - partly as rents, shared between powerful bureaucrats and their private clients. A smaller state would - it was claimed - accelerate growth and help the poor.

Some aspects of this "neo-liberal" position are better developed than others. The policies it led to entailed a partial removal of distortions, implying ambiguous effects on efficiency [Lipsey and Lancaster (1956)]. Evidence that the new (less-distorted) policy set would do what is promised has often been either lacking or unconvincing.²² And, while the wasteful rent-seeking behavior of elites was emphasized, the power structures which created those elites were typically ignored.

The last point may well be the most important. Shifting the boundaries between state and market may matter little to the poor while the balance of power is unaltered. Suppose that the poor are rural, dispersed and weak, but that "the state" is induced to desist from turning the terms of trade against the rural sector. On its own this is likely to help the poor. But, if the power-structure is unaltered, such a change will presumably be offset, due to the continuing power of non-poor groups. Hence the state will be pressured to make concessions to the non-poor, e.g. by increasing the share of public investments and expenditures in non-agricultural activities. Perhaps this is why, alongside the reduction of domestic terms-of-trade distortions against agriculture, the proportion of government spending (in oil-importing LDCs) fell from 7.9 per cent in 1975 to 4.5 in 1988, registering a fall every year [Lipton (1992: 232)].

The neo-liberal critique provided a valuable corrective to past statist excesses and errors, but was probably "a reaction too far" [Killick (1991:1)], requiring correction by a more balanced view of the developmental "comparative advantage" of states and markets, and of how citizens in civil society can

control abuses of each.²³

2.2.6 A new consensus?

In the mid-1980s, it was widely alleged that poverty reduction had lost salience for LDC governments and donors. Pressures for fiscal stabilization and market liberalization would raise food prices, reduce public expenditure and employment, and curtail poverty programs. Even primary education and health were exposed to cuts and user charges. The poor would be the main losers, and the most defenseless. The counter-arguments were that non-adjustment would be worse. The "poverty programs" and social services had often missed the poor. The poor would gain most, as governments switched towards a more efficient, labor-intensive, pro-rural, tradables-orientated, and non-interventionist policy set. The pain from public-sector cutbacks, food price rises, etc. would prove a brief evil.

The evidence is mixed. There was mass poverty long before adjustment - indeed, long before the imbalances and distortions that adjustment seeks to reduce. So it is not likely that either adjustment or its absence causes or cures most poverty. Neither theory nor evidence are conclusive on the impacts of adjustment on the poor (section 5.4). They gained where adjustment was not needed, or worked. They lost where adjustment was needed but not tried, or was tried but failed.

Early claims, that relaxing trade and other distortions alone could greatly stimulate poverty-reducing growth, have given way to more sober assessments. The emerging consensus is that successful adjustment, while it can help reduce poverty, is harder than had once been thought. It requires a large and not too slow aggregate supply response. Markets may achieve this best where states do more - by providing infrastructural, public, or merit goods - to enable the poor to be part of that response.

Where does this leave the poor? The World Bank (1990, 1991a), UNDP (1990), the Asian Development Bank (1992), the IFAD (1992), and other agencies have published criteria for anti-poverty lending or spending. Several have been followed up. For example, the World Bank (1992a) has set operational guidelines for supportive analysis and lending; implementation is completed or under way for most countries to which the Bank lends. These documents help us evaluate the current consensus on poverty [Lipton and Maxwell (1992)].

Some common principles can be found in UNDP (1990) and World Bank (1990). Central is the latter's strategy of combining labor-intensive growth with investment in poor people's human capital. The growth is to be based on private production, released in part by the removal of state-imposed market distortions that discriminate against agriculture and exports. The human capital is to be expanded through primary education and basic health care, largely provided (not necessarily produced) publicly. Additionally [but secondarily in World Bank (1990)] there is a perceived need for well-targeted social

safety nets, provided by the state, to guard the poor and vulnerable against food and other insecurities. While there are differences in emphasis, there is broad agreement on these basic elements of a poverty reduction strategy. But some unsettled questions still disturb the waters of consensus:

- If all distortions are removed, but many of the poor can find work only by accepting a return insufficient to prevent poverty, are further incentive or expansionary measures toward "labor-intensive growth" justified - or are the risks of inflation, new distortions, or logrolling too great?

- What is the role of asset redistribution in reducing poverty? The consensus is uneasy about unearned rents, but also about unstable regimes of property rights, and is somewhat evasive on this question (however, see the chapter by Binswanger et al). Asset redistribution may be essential for a reasonable rate of poverty reduction in some circumstances: when initial inequality is so great that distribution-neutral growth brings few gains to the poor; when poverty is so severe that growth and redistribution are both needed; or when rapid growth is for some reason unattainable.

- Should some safety nets (guaranteeing food or work) always be available, while protection against extreme or localized hardships is provided on an ad hoc basis? Under what circumstances do private insurance markets, informal insurance arrangements, or even public investments such as irrigation which help stabilize incomes, provide more cost-effective risk reduction for the poor than formal safety nets?

- Although poverty often induces its victims to degrade natural resources, so do some of its remedies [Barbier (1988), Dasgupta and Maler (1990), Leach and Mearns (1991), Vosti and Reardon (1992), Leonard (1989)]. Is there a trade-off, and if so, how should it be handled?

- The "country poverty strategies" [World Bank (1992a)] seek to reduce poverty mainly through economy-wide policies. Does this divert resources from, or does it stimulate, efforts to improve the poverty impact of major public-sector projects at each stage of the project cycle, from identification through post-evaluation? Or are such efforts useless because of fungibility [Singer (1965)]?

- What is the economics of international non-aid actions to reduce poverty? If a given amount of trade liberalization or debt restructuring is on offer, how (if at all) should it be allocated so as to favor the poor?

The smoke has cleared in the state-market battle. The extreme positions are deserted. A consensus about some key issues of anti-poverty policy has emerged. Yet this consensus still contains omissions and obscurities. Economic analysis and testing can help to improve the position.

3 Measurement

Assumptions made in measuring poverty can matter to policy. We give two examples:

i) Will a development strategy which transfers income from the rural (agricultural) sector to the

urban (manufacturing) sector increase or decrease poverty? The answer depends in part on the economy's poverty profile; is poverty incidence, depth, and/or severity higher in rural than urban areas? That is actually a difficult question to answer convincingly, and little of the policy discussion (summarized in the previous section) has been based on good evidence. And some common methodologies (discussed further below) could be quite deceptive on the answer.

ii) Should a poverty reduction scheme aim to reach the poorest, even if no beneficiary gains enough to escape poverty, or should it concentrate on those closer to the poverty line? The answer depends on the poverty measure used. The most common measure found in practice - the percentage of the population deemed poor - would suggest that one should only be concerned about getting people over the poverty line. Other measures will put little or no weight on this, and will instead indicate the need to raise the living standards of the poorest first. The choice of measure inevitably makes a value judgement, and can have considerable bearing on policy choices.

3.1 Living standards

A suitably comprehensive measure of current consumer spending on all goods and services is generally preferred to income as a measure of current living standards in LDCs.²⁴ There are two reasons. First, current consumption is often taken to be a better indicator than current income of current standard of living; it is assumed that instantaneous utility depends directly on consumption, not on income per se. Second, current consumption may also be a good indicator of long-term average well-being, as it will reveal information about incomes at other dates, in the past and future. This is because incomes (including those of the poor) often vary over time in fairly predictable ways - particularly in agrarian economies. In such circumstances, there are typically consumption smoothing and insurance opportunities available to the poor, such as through saving and community-based risk-sharing; for recent surveys see Alderman and Paxson (1992), Deaton (1992), and Besley's chapter.

A number of factors do, however, make current consumption a noisy welfare indicator. First, people will not in general prefer constant consumption over the life-cycle (even with unrestricted opportunities for smoothing). Two households with different lifetime wealth - one "young", the other "old" - may have the same consumption at the survey date. Second, different households may face different constraints on their consumption smoothing. The chronic poor tend to be more constrained than the non-poor in their borrowing options, so that not only lifetime wealth but its distribution over the life-cycle affect lifetime welfare. Third, even if current consumption varies less around long-term well-being than current income for a given household, it may not be the best ordinal indicator of who is poor in terms of typical long-term living standards. That also depends on how the various living standards

indicators rank different households; one cross-sectional indicator may vary less around long-term living standards than another, but cause more re-ranking and, hence, perform less well in identifying the chronically poor [Chaudhuri and Ravallion (1993)].

We rarely have data on the differences in living standards within households. Usual practice is to measure household consumption and assume arbitrarily that it is divided equally or according to some concept of need (discussed further below). However, in reality a change in total household consumption may affect the welfare of different household members in different ways, and even in different directions. This has implications for both measurement and policy [Haddad and Kanbur (1990, 1993)].²⁵

Household size and demographic composition vary, as do prices and access to publicly supplied goods. So the same total expenditure might leave one household poor, and another comfortably off. Welfarist approaches to this problem exist, based on demand analysis; these include "equivalence scales", "true cost-of-living indices", and "equivalent income measures".²⁶ These methods assume that demand patterns reveal consumer preferences over market goods; the consumer maximizes utility, and a utility function is derived which is consistent with observed demand behavior, relating consumption to prices, incomes, household size and demographic composition.²⁷ In all such behavioral welfare measures, the problem arises that one cannot (in general) deduce preferences over both market and non-market goods from preferences over market goods alone [Pollak (1991)]. Observed behavior in the marketplace may thus be consistent with infinitely many reasonable ways of making interpersonal welfare comparisons; it is a big step to assume that a particular utility function which supports observed behavior as an optimum is also the one which should be used in measuring well-being.²⁸ This is an important problem because some non-market goods will always determine well-being: children, many publicly provided goods and services, and common property resources.²⁹

Identifying assumptions are essential. One should look critically at the assumptions (implicit or otherwise) used in demand-based welfare measurement; for example, models of unequal bargaining power can yield quite different interpretations of empirical equivalence scales to the more common assumption of equality within households, with implications for anti-poverty policy [Ravallion (1992d)]. What looks like a difference in "consumption needs" may well be due to discrimination based on unequal power.

Consider household size. In developed countries, even poor people consume commodities with economies of scale in consumption; two can live less than twice as expensively as one [Lazear and Michael (1980), Nelson (1988)]. In LDCs, such commodities pay little part in the budgets of the poor - their consumption bundle is dominated by goods such as food and clothing for which few scale economies exist. For this reason, the developing country literature on poverty has tended to use a "flat" equivalence scale; the most common practice is simply to divide household consumption or income by

household size. As a first-order approximation this is defensible, though it almost certainly understates the extent of the scale economies in consumption even for the poor. However, that is not the only consideration. Welfare measurement may also be influenced by the purpose for which a measure is used. For example, recognizing the likelihood, but un-observability, of larger intra-household inequalities in larger households, a policy-maker may want to put higher weight on household size than implied by scale economies in consumption alone.

In view of the above difficulties in choosing between various indicators, it is useful to know how much the choice matters. A strand of recent research has been concerned with the comparison of how different indicators at the individual or household level identify different individuals as poor.³⁰ For example, surveys of individuals in a household can indicate whether an indicator of "household poverty", derived from the more common one-shot household survey, correctly identifies poor individuals. Panel surveys can similarly indicate to what extent a one-shot survey reveals chronic poverty [Chaudhuri and Ravallion (1993)]. The tools of dominance testing (section 3.3) also offer hope of achieving robust partial orderings when there are multiple dimensions of welfare but the precise welfare function is unknown [Atkinson and Bourguignon (1982, 1987)].

3.2 *Poverty lines*

There exist levels of consumption of various goods (food, shelter) below which survival is threatened. It is not clear what these levels are for any individual. Furthermore, in most societies - including some of the poorest - the notion of what constitutes "poverty" goes beyond the attainment of the absolute minimum needed for survival. Hence views differ on the location of poverty lines.³¹

However, for many purposes, what matters most is not the precise location of some poverty line, but rather the poverty comparison that is implied across dates, sub-groups, or policies. A serious concern here is that the comparison should be consistent; two individuals deemed to enjoy the same values of whatever indicators are being used to construct the poverty measure should not then be deemed to be at different levels of poverty. How do existing methods perform?

The most common approach in defining a poverty line is to estimate the cost of a bundle of goods deemed to assure that basic consumption needs are met.³² The difficulty is in identifying what constitutes "basic needs". For developing countries, the most important component of a basic needs poverty line is generally the food expenditure necessary to attain some recommended food energy intake. This is then augmented by a modest allowance for non-food.

The first problem is setting food energy requirements. These are usually set by US standards, and are often not even corrected for lower adult size, and hence energy needs to maintain a healthy body-

weight. There is little direct evidence on energy requirements.³³ The most widely used "official" estimates [FAO/WHO/UNU (1985)], give energy requirements relative to alternative levels of activity and body weight. Requirements also vary across individuals and over time for a given individual. An assumption must be made about desirable activity levels, and these then determine energy requirements beyond those needed to maintain the human body's metabolic rate at rest. Activity levels are, however, endogenous socio-economic variables rather than exogenous physiological ones, and are jointly chosen (under constraints) together with income and diet [Osmani (1987), Payne and Lipton (1993)].

The second problem arises in making an allowance for non-food consumption. There is no obvious anchor (analogous to nutritional requirements) for setting a relevant bundle of non-food goods. Also comprehensive and comparable non-food prices are rarely collected. One way round the problem, the "food energy method", proceeds by first fixing a food energy intake cut-off (in calories per adult equivalent), and then finding the consumption expenditure or income level at which an adult equivalent typically attains that food energy intake [Osmani (1982, ch 6), Greer and Thorbecke (1986 a,b,c), Ravallion (1992d)]. This can be estimated from a graph or regression of calorie intake against consumption expenditures or income. The method automatically includes an allowance for non-food consumption. It also has the appeal that it yields a poverty line which is consistent with local tastes, as well as prices. A variation on this method is first to find the minimum cost of a food bundle which achieves the stipulated energy intake level, and then divide this by the share of food in total expenditure of some group of households deemed likely to be poor. This is the "food share method".

If one is comparing living standards in terms of consumption then comparisons of absolute poverty across regions, sectors or dates can be misleading unless the poverty line has constant purchasing power (based on a cost-of-living index appropriate to the poor³⁴). However, the above methods are quite unlikely to generate poverty lines which are constant in terms of real consumption or income. In the case of the food energy method, the relationship between food energy intake and consumption or income is not going to be the same across regions, sectors or dates, but will shift according to differences in affluence, tastes, activity levels, relative prices, and publicly provided goods. There is nothing in the food energy method to guarantee that these differences are ones which would be considered relevant to poverty comparisons. For example, poverty lines constructed by the food energy method will tend to be higher in richer regions or sectors, where households choose to buy more expensive calories (such as by consuming "luxury" foods). It is even possible for the difference in poverty lines to exceed the difference in real consumption or income, so that the poverty gap appears to be higher for richer households [Ravallion (1992d)]. In the food share method, differences arise simply because of differences in average real consumption or income across groups or dates; those with a higher mean will tend to have

a lower food share which will thus lead one to use a higher poverty line. The differences can even be large enough to cause a rank reversal in measured poverty levels across sectors or regions of an economy.³⁵ This can be worrying when there is mobility across the groups being considered in the poverty profile, such as migration from rural to urban areas.

There are refinements to these methods which offer hope of making more consistent comparisons. These aim to purge the measured poverty lines for each sub-group or date of the implicit positive correlation with mean living standards [Ravallion (1992d), Bidani and Ravallion (1992d)]. For example, in the food-share method, one can use a model of the Engel curve to estimate the food share of a household in each region at a given food purchasing power of total income or expenditures. The most important point, however, is that (recognizing that a certain amount of arbitrariness is unavoidable in defining any poverty line in practice) one should be careful about how the choices made affect the poverty comparisons, for these are generally what matter most to the policy implications [Ravallion (1992d)]. A sound practice is to consider a second, lower poverty line. Lipton (1983b, 1988) argues for focusing on the "ultra-poor", identified as that sub-set of the poor who are at serious nutritional risk.³⁶ An extension of this approach is to consider a (potentially) wide range of poverty lines; this is the main idea underlying the "dominance approach" discussed further in the following section.

3.3 *Poverty measures*

Suppose now that a measure of individual well-being has been chosen, and estimated for each person in a sample, and that the poverty line is known. How do we aggregate this information into a measure of poverty for each of the distributions being compared?

3.3.1 *Alternative measures*

There is a large literature on poverty measurement, and a number of good surveys; for useful surveys see Foster (1984) and Atkinson (1987). Our aim here is to introduce the main issues with bearing on policy analysis, using a few illustrative measures.

Let y denote the living standard indicator, which has density function $f(y)$, and a cumulative distribution function (CDF) $F(y) = \int_0^y f(x)dx$. The poverty line is denoted z . All values of y and z are

associated with a measure of poverty $p(y,z)$, and this function is non-increasing in y and non-decreasing in z . An important class of measures have the property that $p(y,z)$ is homogeneous of degree zero in y and z i.e., they are "invariant to scale".³⁷

Following Atkinson (1987) we consider the class of additive poverty measures; the value of aggregate poverty is then given by:

$$P(z) = \int_0^z p(y,z)/f(y)dy \quad (1)$$

Additive measures satisfy sub-group consistency, as defined by Foster and Shorrocks (1991). This requires that when poverty increases in any sub-group of the population (such as rural areas) without a decrease in poverty elsewhere, then aggregate poverty must also increase. Sub-group inconsistent measures may mislead policy analysis; a well targeted poverty reduction scheme - in which poverty is reduced in a target region, say - may not then show up in a reduction in national poverty.³⁸

The widely used head-count index (H) is simply the proportion of the population for whom consumption (or another suitable measure of living standard) y is less than the poverty line; $H = F(z)$, obtained by setting $p(y,z) = 1$ in equation (1). It is easily understood and communicated, but for some purposes (including analyses of the impacts on the poor of specific policies) it has a serious drawback. Suppose that a poor person suddenly becomes very much poorer. What will happen to measured poverty? Nothing. H is totally insensitive to differences in the depth of poverty.

The poverty gap index PG is obtained by setting $p(y,z) = 1 - y/z$ (the proportionate poverty gap). This indicates the average depth of poverty, in that it depends on the distances of the poor below the poverty line. PG indicates the potential for eliminating poverty by targeting transfers to the poor (whether that potential can be realized or not in practice will be taken up in section 6).³⁹ The widely used income gap ratio is $I = 1 - \mu^p/z = PG/H$, where μ^p is the mean consumption or income of the poor; this measures the average proportionate shortfall below the poverty line. However, it can be a deceptive measure. If a poor person with a standard of living above μ^p escapes poverty then the income gap ratio will rise, yet no-one is worse off, and one of the poor is actually better off. PG is a better measure.

One drawback of PG and I is that they neglect income inequality among the poor; they may not convincingly capture differences in the severity of poverty. For example, consider two distributions of consumption for four persons; the A distribution is (1,2,3,4) and the B is (2,2,2,4). For a poverty line $z=3$, A and B have the same value of $PG = .25$ ($= [(3-1)/3 + (3-2)/3]/4$ for A). However, the poorest person in A has only half the consumption of the poorest in B. The poverty gap will be unaffected by a transfer from a poor person to someone who is less poor [Sen (1976) (1981a)].

The Foster-Greer-Thorbecke (FGT) (1984) measure P_2 has $p(y,z) = (1 - y/z)^2$ (the squared

proportionate poverty gap). This reflects inequality amongst the poor. In the above example of A and B distributions, P_2 is $[(2/3)^2 + (1/3)^2]/4 = 0.14$ for A and 0.08 for B, indicating the greater severity of poverty in A. The general class of FGT measures P_α is obtained when $p(y,z) = (1-y/z)^\alpha$ ($\alpha \geq 0$). (The head-count index has $\alpha=0$, while PG has $\alpha=1$.) Other distribution-sensitive measures include the Watts (1968) measure, $p(y,z) = \log(z/y)$, and that proposed by Clark et al. (1981), $p(y,z) = (1-(y/z)^\beta)/\beta$ ($\beta \leq 1$).

Poverty measures are typically calculated from sample surveys, and so they have sampling distributions. Like any estimate of a population proportion from a random sample, H has the standard error $\sqrt{[H(1-H)/n]}$ in a sample of size n . Kakwani (1993) has derived the standard errors of other common poverty measures; for example, the standard error of the P_α measure is $\sqrt{\{(P_{2\alpha} - P_\alpha^2)/n\}}$. Thus one can test whether (for example) a measured increase in poverty is statistically significant.

A long-standing poorly resolved issue in poverty measurement is whether there is a jump in well-being as one crosses the poverty line. The answer alters the effects of risk on expected poverty [Ravallion (1988)], and the properties of optimal poverty reduction policies [Bourguignon and Fields (1990), Ravallion (1991b)]. For measures such as P_2 (and others in the FGT class for $\alpha > 1$), the individual poverty measure vanishes smoothly at the poverty line, i.e., in equation (1) $p(z,z) = p_1(z,z) = 0$. This does not hold for all distribution-sensitive additively separable measures; e.g., for the Watts measure. Nor does it hold for non-additive measures, such as the Sen (1976) index.

Should poverty measures embody such kinks? There clearly are thresholds in food energy intakes below which health - and survival - is threatened. However, the poverty lines found in practice are typically well above such thresholds (section 3.2). Also, the uncertainty about the location of such thresholds, and their inter-personal variability, can make it hazardous for some purposes to rely on poverty measures which are not smooth at the poverty line [Ravallion (1992d)].

Does the choice of measures affect the policy choices? If all persons gain (lose) then clearly not; poverty cannot increase (fall). Otherwise, the differences between these measures can be pronounced. Consider, for example, two policies. Policy A entails a small redistribution from people around the mode, which is also where the poverty line happens to be located, to the poorest households.⁴⁰ Policy B entails the opposite change - the poorest lose while those at the mode gain. A moment's reflection will confirm that the head-count index H will indicate policy B; $H_A > H_B$ since H depends solely on which direction people cross the poverty line. However, P_2 will indicate the opposite ranking, $P_{2A} < P_{2B}$, since it will respond more to the gains or losses amongst the poorest than amongst the not-so-poor. The choice here concerns both value-judgements about interpersonal comparisons, and the empirical question of how closely poverty lines coincide with points at which there are discrete jumps in welfare.

3.3.2 Decompositions

Additive poverty measures, such as the FGT class and all measures which can be represented in the form of equation (1), can greatly facilitate the construction of "poverty profiles", which are simply decompositions of an aggregate poverty measure, showing how poverty varies across sub-groups of society, such as region of residence or sector of employment. A consistent poverty profile can be useful in assessing how the sectoral or regional pattern of economic change is likely to affect aggregate poverty. For example, if the poverty profile shows that there is significantly higher poverty incidence in region A than B, then a transfer in equal amount to all residents of A financed by a lump-sum tax on each resident of B holding their populations constant will reduce the aggregate poverty gap index [Kanbur (1987, 1990), Besley and Kanbur (1988, 1993)]. The poverty indicator for allocating additively absorbed transfers (whereby each income, within a given sub-group, changes by the same amount) to minimize the aggregate value of the FGT measure P_α is $P_{\alpha-1,j}$. To see why, consider regions A and B with population shares n_i ($i=A,B$) each resident of which receives a transfer x_i ($i=A,B$), and $n_A x_A + n_B x_B$ is fixed. The aggregate value of P_α is given by

$$P_\alpha = n_A P_{\alpha A} + n_B P_{\alpha B} \quad (2)$$

where

$$P_{\alpha i} = \int_0^{z-x_i} (1-(y+x_i)/z)^\alpha f_i(y) dy \quad (3)$$

for $i=A,B$. Consider the marginal impact of an increase in x_A (at the expense of B). On differentiating equation (2) one finds that (for $\alpha \geq 1$):

$$dP_\alpha = [P_{\alpha-1B} - P_{\alpha-1A}] \alpha n_A dx_A / z \quad (4)$$

Poverty will fall if (and only if) region A has the higher value of the $\alpha-1$ poverty index. Taking this argument further, it is also instructive to characterize the poverty minimizing allocation of a given budget across sub-groups. For example, consider again the additively absorbed transfer between two groups which minimizes the aggregate value of P_2 . With unrestricted powers of redistribution between groups, P_2 will be minimized when P_1 is equalized across groups.⁴¹

Similarly, the poverty indicator for allocating multiplicatively absorbed transfers (whereby all incomes increase by the same proportion) is $(P_{\alpha+1} - P_\alpha)/\mu_j$ [Kanbur (1987)].⁴² Since multiplicatively absorbed transfers leave the Lorenz curve unchanged, this result also implies that the elasticity of P_α with

respect to the population mean holding the Lorenz curve constant is given by $\alpha(1 - P_{\alpha-1}/P_{\alpha})$ for $\alpha \geq 1$ [Kakwani (1990a)]. In the case of the head-count index ($\alpha=0$), that elasticity is (minus one times) the elasticity of the cumulative distribution function of living standards when evaluated at the poverty line.⁴³

Changes in poverty measures can also be decomposed. It is of interest to ask: how much of a change in poverty is due to changes in distribution, as distinct from growth in average living standards? The usual inequality measures, such as the Gini index, can be misleading in this context. One cannot conclude that a change in any measure of inequality will change, in the same direction, any measure of poverty (e.g., H rises if people just above the poverty line lose income to the poorest). Even when it does, the change in the inequality measure can be a poor guide to the quantitative impact on poverty. A number of recent papers have looked at this problem.⁴⁴ Datt and Ravallion (1992a) discuss the relative merits of alternative approaches, and propose a simple decomposition for any change in measured poverty which allows one to quantify the relative importance of growth versus redistribution.

When analyzing the sources of reductions in poverty, we can also make use of another simple decomposition formula, also exploiting the additivity property of measures such as those in the FGT class, as discussed above. The idea here is to throw light on the relative importance of changes within sectors versus changes between them, such as due to inter-sectoral population or work-force shifts [Ravallion and Huppi (1991)]. The rapid rate of urbanization typical of many developing countries can make such a decomposition insightful, though it tells us little about the underlying causes of the changes observed.

3.3.3 *Assessing robustness*

At a number of points in the discussion so far we have seen that there is pervasive uncertainty in poverty measurement. There are likely to be errors in our living-standards data, unknown differences in needs between households at similar consumption levels, uncertainty and arbitrariness about both the poverty line and precise poverty measure. Given these problems, how robust are our poverty comparisons? Would they alter if we made alternative assumptions? A recent strand of research in poverty analysis has shown how we can answer such questions, drawing on and developing results from the theory of stochastic dominance.⁴⁵

Suppose we do not know the poverty line z , but we can be sure that it does not exceed z^{\max} . Nor do we know the precise poverty measure, though we do know that it is additive, as in equation (1).⁴⁶ Then it can be shown that poverty cannot have risen between two dates if the CDF for the latter date lies nowhere above that for the former date, up to z^{\max} [Atkinson (1987)]. And poverty must have fallen if the new $F(z)$ is everywhere below the old one. This holds no matter what the poverty line or precise poverty measure. If the CDFs cross each other (and they may intersect more than once), then the ranking

is ambiguous. Then we know that some poverty lines and some poverty measures will rank the distributions differently to others. We need more information. One can restrict the range of poverty lines, or one can impose more structure on the poverty measure. For example, if one restricts attention to additive measures which do reflect the depth of poverty such as PG and P_2 (but excluding H) then poverty cannot have risen if the area under the new CDF is nowhere greater than that under the old one.⁴⁷ If this test is inconclusive, one can further restrict the range of admissible poverty measures; see Atkinson (1987) and Foster and Shorrocks (1988).

Such tests can also allow robust poverty comparisons in the presence of certain sorts of measurement errors in the welfare indicator. Suppose that different households fall into poverty at different, but unknown, levels of real consumption per adult equivalent. This may happen because of inter-individual variation in dietary energy requirements; or because of errors in measuring the demographic composition of households, or differences in the prices they face. Provided that the distribution of measurement errors is the same for the two (or more) situations being compared and is independent of the distribution of living standards, non-intersecting CDFs imply an unambiguous poverty ranking. This holds no matter what the underlying distribution of the measurement errors.⁴⁸

In summary: recent practice has started to move away from preoccupations with the cardinalization of poverty, toward a search for consistent and robust poverty comparisons of distributions, whether viewed as a single variable or many variables for which only quite weak properties of their aggregation are known. A number of principles for guiding such comparisons can now be laid out: The poverty assessment should aim to treat identical levels of living identically. It should respect at least a weak version of the Pareto principle, in that a distribution in which no one has a lower standard of living could not have more poverty. It should also give higher weight to gains at lower levels of living. It should not demand identification of a precise "poverty line", but rather a range of admissible lines; it may well be that the qualitative comparison is unaffected by choice within that range.

4 Dimensions and causes

This section will try to provide a "snapshot" of poverty in the developing world from recent available data. We will begin with a broad regional overview, and move on to a summary of what we know about the characteristics of the poor.

4.1 A global "snapshot"

International comparisons of poverty statistics are plagued with both conceptual and practical problems. It is not clear what meaning can be attached to comparisons across countries in which the real

value of the poverty line varies. But then whose poverty line should be used? Poverty lines appropriate to the poorest countries, such as India, have been a popular choice in past work [Ahluwalia, Carter and Chenery (1979), Kakwani (1980a), World Bank (1980a, 1990), Ravallion et al. (1991)]. There are also comparability problems across the underlying household surveys (Deaton in this volume), though survey methodologies have now become somewhat standardized. An equally worrying problem is converting currencies, for which official exchange rates can be a poor guide in making poverty comparisons across countries. The International Comparisons Project of the U.N. has helped here, by facilitating the construction of Purchasing Power Parity (PPP) exchange rates [Kravis et al. (1975), Summers and Heston (1988) (1991)]. Though these are not ideal for international poverty comparisons (not being anchored to poor people's consumptions), they appear to be the best available method for setting internationally comparable poverty lines, and have been used for this purpose by Ahluwalia et al. (1979), Kakwani (1980a), World Bank (1980a, 1990), and Ravallion et al. (1991).

Recent estimates following this methodology indicate that about one-fifth of the population of the developing world - about 600 million people - in the mid-1980s had a real consumption level less than India's poverty line of \$23 per month in 1985 US prices (adjusted for cost-of-living differences between countries).⁴⁹ At a more generous poverty line of \$31 per month - one dollar per day - the head-count index of poverty increases to about one in three, or about one billion people. There are no strictly comparable earlier estimates, but the proportion of people poor has probably fallen since the mid-1970s, while the absolute number of poor has probably increased.⁵⁰ However, these aggregates hide great regional diversity; for example, while the proportion who are consumption-poor has declined in much of Asia, quite sharply in some countries, it has probably increased in Sub-Saharan Africa and Latin America during the 1980s [World Bank (1990, 1992b), Chen et al. (1993)].

Though the number who are poor by Indian standards is large, the aggregate poverty gap in the developing world is actually quite small. The aggregate poverty gap of the poorest fifth of the population of the developing world is about one percent of total consumption by the developing world in 1985; for the poorest third, the corresponding figure is about three percent [Ravallion et al., (1991)]. This suggests that only modest aid to LDCs would be needed to eliminate poverty, though this assumes perfect targeting without disincentive effects; that would be very difficult in real life (section 6.2).

Properties of the static consumption distribution in the developing world can help us understand how poverty is affected by growth and redistribution. First, the aggregate CDF of persons by consumption per person is quite elastic to changes in the poverty line or mean,⁵¹ reflecting a high density of observations around commonly assumed poverty lines. This suggests that poverty will fall quite rapidly with distributionally neutral growth in mean consumption. Comparison of the proportions

of the aggregate population of developing countries deemed to be poor at \$23 and \$31 per month implies an arc elasticity of the head-count index with respect to the mean consumption of about two, holding constant all relative inequalities (as indicated by the aggregate Lorenz curve). At the average rate of population growth in the developing countries, the total number of poor will decline as long as future growth and distributional shifts are equivalent to a distributionally neutral growth rate in mean consumption of about one percent per year [Ravallion et al. (1991)]. The steepness of the CDF also implies that aggregate estimates of the number of poor will be sensitive to the choice of the poverty line.

Second, aggregate prospects for poverty alleviation through future growth are sensitive to changes in relative inequalities. Suppose that the Lorenz curve shifts by a constant proportion of the difference between each income group's actual share of total consumption and equal-shares allocation.³² One then finds that poverty would respond very elastically to shifts in the Gini index of inequality for the developing world as a whole; for the \$23 poverty line, PG for the developing world would respond to the Gini index with an elasticity of over 13 [Ravallion et al. (1990)]. Thus, while poverty in the developing world would fall fairly rapidly with distributionally neutral growth, it would take only small deviations from neutrality to wipe out those gains. Consider a one percent rate of increase in mean consumption from 1985 until 2000. It would take only a 0.25% per year increase in the aggregate Gini index to eliminate the total effect of such growth on the poverty gap index of the developing world.

As for trends over time, the World Bank (1990, Table 3.2) compares H, roughly from the mid-1960s to the mid-1980s, using a constant real poverty line over time, in each of 11 developing countries (none of them in SSA). In every case the incidence of poverty fell over this period, and numbers of poor fell in most cases. Estimates of how poverty measures have evolved in the late 1980s are given in Chen et al. (1993). The methodology is consistent across time, and the poverty line is fixed (in terms of purchasing power parity) across time and countries. The estimates used available household consumption data sets from nationally representative surveys. The results show negligible change in the aggregate poverty measures between 1985 and 1990. The head-count index (percentage of persons consuming less than \$1 per day) has fallen slightly, from 34% to 33%, but this cannot be considered significant.

Poverty measures have fallen in the 1980s in both South and East Asia, but have risen in Sub-Saharan Africa (SSA), the Middle East and North Africa (MENA), and in Latin America and the Caribbean (LAC), though the extent of worsening varies by poverty measure and poverty line, and there have been improvements in some countries [Chen et al. (1993)]. SSA has now levelled with SA in the incidence of absolute poverty at poverty lines around \$1 per day. SSA is now the region with the greatest depth of poverty, as measured by PG.³³ Only in East Asia is there good evidence of falling poverty, and progress has been impressive. From the point of view of the poor, the low growth rates experienced

since the late 1970s - and currently being forecast - in most of SSA are particularly worrying [World Bank (1990), Walton (1990)]. The proportion of SSA's population who are poor by Indian standards is now at roughly the same level as in India, and SSA's growth prospects are lower.⁵⁴

4.2 *Demographic characteristics of the poor*

Much of our current empirical knowledge about specific characteristics of the poor is in the form of bivariate correlations; we know far less about the joint interrelationships with other characteristics of poverty, and attempts to infer causality are clouded in problems of simultaneity.⁵⁵ While we shall try to cast some light on these issues, better data and testing are needed.

4.2.1 *Poverty and family size*

National samples and micro-studies typically confirm that larger household size is associated with greater incidence of poverty, as measured by household consumption or income per person [Birdsall (1979: 132), Meesook (1979), Musgrove (1980), Visaria (1980: 47-9), Lipton (1983a), House (1989), World Bank (1991b,d), van de Walle and Ravallion (1992)]. In most cases, household size and consumption or income per person are inversely related over the whole range.⁵⁶

Children are more likely to be poor than adults [Birdsall (1980: 39), Musgrove (1980), Lipton (1983a)]. Usually this is not because households underfeed children [Schofield (1979)], but because child/adult ratios are larger in poor households. Higher infant and child mortality (leading to even higher replacement fertility) is caused by undernutrition; and high child/adult ratios cause income poverty. Also, heavy female burdens and child poverty often go hand in hand.

Poor households are thus larger and younger; their members - particularly the youngest - are less likely to live as long as the non-poor. Most mortality differences between rich and poor in LDCs arise in the first five years of life. In Asia and Africa, infant and child mortality increase steeply with poverty [Lipton (1983a: 15-18)]. Often, poverty is linked to high child death-rates partly because it proxies the impact of low maternal education [Hull and Hull (1976: 8,15), Caldwell (1979), Hill (1981: 35), Ruzicka (1982: Table 9), Roth and Kurup (1989)];⁵⁷ of inadequate housing or water supply [*ibid.*, Mitra (1978: 210)]; of farm labor or insecure tenancy [*ibid.*: 21; Natrajan, n.d.:12]; or above all of rural residence [*ibid.*: 7; Hill (1981: 35), Mitra (1978: 223), Ruzicka (1982: tables 5-6), Irfan (1989)]. However, poverty is causally related to this whole group of other correlates of high mortality [Flegg (1982)]. So the fact that poverty "proxies" the other correlates need not devalue its bivariate link to mortality.

Mortality is probably a non-linear function of income. Under certain restrictions on the properties of the household production function for health and the distribution of personal constitutions one can

derive a relationship between survival chance and consumption which is concave above some point [Ravallion (1987a, ch.2)]. At high levels of income, nutrition and health care, further reductions in already low death rates are not easily attainable, nor strongly linked to further income gains. There is supportive evidence for a concave relationship between survival chances and incomes. In cross-country comparisons, Preston (1975) finds that the income-slope of mortality is greater at the low end of the income range, though low income may be proxying for other variables such as low education, poor health services etc [Ahmed (1992), Heston (1992), Srinivasan (1992), Anand and Ravallion (1993)]. Farah and Preston (1982) for the urban Sudan, and Irfan (1989) for Pakistan, show a strong link of poverty to mortality rates for the poorest few deciles. Clear discontinuities are shown in death-rates between the landless and others; for Binar, India [Rodgers et al. (1989)] and Pakistan [Irfan (1989)]; and between those of low status and others [Mukhopadhyay (1989) for caste in West Bengal in 1983-4].

On its own, high mortality in poor households makes them smaller. Higher mortality among poor households might, however, be associated with their larger sizes if it (or anything else) induced them to raise fertility - relative to non-poor households - by a larger proportion. There is a problem in testing this; a positive cross-section link between fertility and poverty need not show that high fertility is a feature of already-poor households. The association might arise mainly because households become poor after, and perhaps partly because of, producing children. Only a large, and (because life events are rare) long-term, set of panel-data can resolve this issue convincingly.⁵⁸

There is some evidence that child deaths do stimulate excess replacement births, especially in rural areas [Schultz T.P. (1981: 137-40)]. This is due partly to lifetime earnings patterns due to lower education, especially female [Birdsall (1980: 52)]. Over-replacement is thus probably correlated with poverty, and with the associated "felt need" to insure against high risk of further infant and child death. In Guatemala [Pebley et al. (1979)], desired family size was positively correlated with previous child deaths, holding several other variables - but not poverty - constant. However, if poor people's higher mortality is actually to increase their household size, then the fertility response must involve enough over-replacement to outweigh the positive effect of sibling crowding on death risks. This is a substantial effect for the poor; in India the mortality of infants born within one year of a previous birth was twice as high as that of children born two or more years after a birth [Bennett (1991: 9.62); and cf. Ghosh (1987)].

One should look to overall fertility (not only replacement) to explain why poorer households tend to be larger despite higher mortality. Many data sets reveal an inverted-U relationship [Birdsall (1974: 5-7), (1980: 53-6), Hull and Hull (1976: 9), Schultz (1981: 177)]. As income and its correlates (farming status, housing type, education, etc.) increase from zero to a very low level, perhaps near the "ultra-poverty line", total fertility rate (TFR) and its components (especially age-specific fertility) initially also

increase slightly: extra income from very low levels is associated, via better nutrition, with earlier menarche [Huffman et al. (1987), Bhalla and Srivastava (1976)] and more generally with higher fecundability [Frisch (1978, 1980, 1982), Easterlin and Crimmins (1985)]; the ultra-poor are somewhat more exposed to marital disruption and interruption than the moderately poor [Hull and Hull (1976)]; and rising child wage-rates accompany increased fertility [Schultz (1981: 50-1)]. Fertility decreases as the level of living rises above ultra-poverty: women's time becomes valuable, and it becomes increasingly feasible to delay family income by educating one or two children, instead of using income from the wage labor of several [Becker and Lewis (1974), World Bank (1984), Birdsall (1988)]. The entire inverse-U relationship has been demonstrated for Pakistan in 1979 [Irfan (1989)]; for urban Juba, Sudan, in the mid-1980s [House (1989)]; and (to the extent that husband's education proxies income) for rural Bangladesh in 1968-70 [Stoeckel et al. (1980)] and Indonesia in the early 1970s [Hull and Hull (1977)].

This is an asymmetric inverted-U. Fertility indicators rise initially, reach a peak - though still at a low standard of living - then fall steadily to far below their initial level as income continues to rise. Thus fertility differences do explain part of the size-poverty link.

Although poverty is often positively associated to fertility over most of the range,⁵⁹ so is landholding [Mueller and Short (1983), Stoeckel and Chowdhury (1980)]. Schutjer and Stokes (1982), using data from Thailand and Egypt, show that operational (but not owned) farm size is positively linked to fertility [Mitra (1978: 209-10) confirms this for India]. It may be because family labor economizes transactions-costs in own-account farming; or because [Chayanov (1966), Nakamura (1986)] extra hands and mouths in a family raise the marginal disutility to it of incomeless leisure relative to that of total family drudgery. Cain (1984) and Cain and Mozumder (1981) question these explanations, relying rather upon differential frequencies of spouse separation and upon local tenurial and institutional conditions [see, however, Good et al. (1980), Stokes and Chowdhury (1980)]. There is, however, little question about the reality of the correlations, whatever their causal structure.

The association between high fertility and poverty has prompted wide advocacy of family planning programs as an instrument of anti-poverty policy [World Bank (1984)]. Yet, given the circumstances and risks in developing countries, it is feasible, common, and often rational for poor couples to choose earlier marriage, and higher marital fertility, than rich couples [ibid., Cassen (1978), Schultz (1981)].⁶⁰ Some scholars even deny that higher fertility normally slows down the growth of real income per person, or raises the rate of resource depletion⁶¹ [National Academy of Sciences (1985), Simon (19xx)]. The case for publicly subsidized family planning may then rest heavily on its prospects for helping the poor by redistributing income from profit and land rent towards wages. If the typical poor couple, by producing many children because this is individually optimal, raises labour supply and food demand, the real wage

rate for poor people is reduced [Malthus (1798)]. Thus there is a pecuniary external diseconomy [Scitovsky (19xx)] to the poor jointly from their high fertility. Family planning may then merit state subsidy. However, to take this further is beyond our scope, requiring a deep understanding of the determinants of fertility [Easterlin and Crimmins (1985), Cleland and Wilson (1987), Bongaarts (1992)].

4.2.2 *Gender and poverty*

Is there widespread "feminization of poverty"? In some parts of Asia and elsewhere, young females are often exposed to excess poverty-induced nutritional and health risk within households,⁶² and this appears to be one factor explaining the "missing millions" of women [Drèze and Sen (1989)]. However, females are not generally over-represented in consumption-poor households; nor are female-headed households more likely to be poor. Evidence against widespread feminization of income or consumption poverty appears in Visaria (1977, 1980) for Asia; Drèze (1990) on India; H. Standing (1985) on Calcutta; Svedberg (1991) for Africa; Haddad (1991) and Lloyd and Brandon (1991) on Ghana; and earlier sources cited in Lipton (1983a: 48-53). Lack of data on intra-household distribution often clouds inferences from such studies, but, even if it were true that consumption-poverty incidence is on average no greater amongst women, they are severe victims of poverty in other respects.

First, women work longer than men to achieve the same level of living. The burden of both parts of the "double day" - market labor and domestic labor - is more severe for poor women. Female age-specific participation rates increase sharply as income falls towards severe poverty; yet so do the ratios of children to adult women [Visaria (1977, 1980), Lipton (1983a: 43-4)].⁶³ There is evidence that, as women participate more in market work under pressure of poverty, their domestic labor is not substantially reassigned to men [K. Bardhan (1985), G. Standing (1985)].⁶⁴

Second, women face lower chances of independent escape from poverty, in part because women's large share of domestic commitments prevents them from seizing new and profitable work opportunities as readily as men [Haddad (1991) for Ghana, Birdsall and Behrman (1991) for urban Brazil]. Many LDC job markets appear to be segregated into "progressive": poverty-escaping, and usually male; and "static": poverty-confirming and usually female.⁶⁵ Even more important than the domestic burden, in explaining this poverty trap, may be cultural discrimination against females in both education and job assignments. In Taiwan, in some ways a model of "growth with equity", a 1978-80 survey showed that 25% of sons, but only 4% of daughters, had been apprenticed; and that, in the poorest 80 per cent of families, as the number of sisters rose from 0 to 4, the mean schooling per brother rose from 6.8 to 11.4 years, indicating that girls are sacrificing prospects of independent escape from poverty to pay for brothers' prospects via education [Greenhalgh (1985)]. In Ghana, much lower female literacy and numeracy after

age 15 greatly reduce female access to good jobs [Haddad (1991)]. In Bangladesh, non-formal and technical/vocational training - far from correcting the big gender disparities in schooling - generally makes no provision for female enrolment [Safilios-Rothschild (1991)]. In rural India in 1981, the gender gap in adult literacy was higher among the far poorer scheduled castes (22%-6%) and scheduled tribes (28%-8%), than among the population as a whole (40%-18%) [Bennett (1991)].

Third, in some cultures widows face effective barriers against employment or remarriage, and are treated as second-class citizens within the home, leading to high risks of poverty. One of the few systematic studies [Drèze (1990)] shows that nuclear, widow-headed households in India are by far the poorest (even average expenditure per person is 70% below the overall average). The younger the oldest male in such households, the deeper their poverty. Age-specific mortality for rural North Indian widows is also higher than for otherwise comparable wives [Chen and Drèze (1992)].

Thus an important way in which poverty is feminized is that male-dominated societies make the escape from poverty harder for women.⁶⁶ This suggests that poverty is more likely to be chronic for women, and transient for men; individual, panel data are needed to test this, though such data are rare.

4.2.3 Poverty and old age

Poverty is juvenizing and may be feminizing; is it greying? The over-65s comprised 3.8% of South Asians in 1980, but are projected at 4.8% in 2000 and 8.2% in 2025; in other developing regions the expansion is as rapid, except in Africa where even by 2025 the proportion is projected at only 3.9% [Deaton and Paxson (1991: 2)]. In the Ivory Coast, average income within rural and urban areas is no lower for the elderly, but they are worse off on a national basis because of rural concentration. In Thailand, older Thais do not have lower average income [ibid.: 22-7]. That does not tell us whether proportions in poverty are higher for the old. This was not so in Nigeria and India in the 1970s [Gaiha and Kazmi (1982: 56), P. Hill (1982: 187-8)]. Given their greater dependence on the uncertain support of others, we hypothesize that inequality among the old is greater than among those of prime age. If so, similar average incomes in these two groups would probably mean higher poverty among the elderly. With the ageing of many LDC populations, these issues merit further research.

4.3 Labor and poverty

4.3.1 Participation and employment

As a rule, poor households depend heavily on labor income. Its quantum depends on their age-structure; their age- and sex-specific participation rates (ASPRs); their prospect of employment (or self-employment) when they participate; and their wage-rates (or net daily rewards on own account) when they

are employed. The age-structure of poor households implies high dependency ratios.⁶⁷ Even if reflecting privately optimal couple fertility decisions, this is a horrendous drag on their overall participation in work. The drag appears to increase with early development and associated urbanization. The rich-poor gap in the dependency ratio is greater in cities than in villages, and in more than in less developed countries and regions [Lipton (1983a)].

It is to be expected that the poor will seek high ASPRs. Assuming leisure to be a normal good, poor people will work more, *ceteris paribus*. Second, with fewer assets (and often lower wage rates) the poor will have to work longer to reach any given income. Third, poor people's high dependency ratios increase the marginal household utility of income-per-worker relative to leisure [Chayanov (1966)].

Among men aged 14-60, ASPRs - except in the agricultural slack season - are seldom much below 95 per cent for any income group [Visaria (1980: 76-7); Lipton (1983:7,16)]. Therefore, if the poor are to raise ASPRs significantly, it must be mainly among the under-14s, the over-60s, or women. All we can say with confidence about child ASPRs is that they are understated by large official surveys; child labor is much more prevalent among the poor [Lipton (1983: 17-18)]. Many studies [Lipton (1983: 16-17)] confirm that women's ASPRs increase, but only modestly, with falling household income per person. However, the poorest 5-15% of households typically show female ASPRs no more than the moderately poor. Also, female ASPRs decline, given mean income, with rising household ratios of under-fives to women and older children [Dasgupta (1977: 153)].⁶⁸ Most seriously, urbanization - even for the poor - appears drastically to cut female ASPRs [Lipton (1983: 23-5), Visaria (1981: 13), World Bank (1989)]. Since urban proportions of populations (including poor populations) are rising, as are urban female/male ratios - especially for poorer adults [Lipton (1983a: 51)] - we need to know the reasons and remedies for poor urban women's low ASPRs.

Unemployment, as a usual status over a long period, is income-elastic [Udall and Sinclair (1982)] - a "luxury bad". However, the time-rate of unemployment (TRU) - the proportion of time in workforce spent in job search - is an inferior bad. It is generally higher among workers from poor households, often sharply so among the poorest, especially in towns. The linkage is stronger for the assetless and landless, than for those who can fall back on asset-based self-employment [Sundaram and Tendulkar (1988)]. Also, unemployment is concentrated among the assetless and in areas, age-groups, etc. that are likely to over-represent the poor [Lipton (1983: 42-54)].⁶⁹

4.4.2 Wages

Given the heavy dependence of the poor on unskilled labor, one would expect the real wage rate for such labor to be an important determinant of poverty. The evidence on the co-movement of rural

poverty incidence and real agricultural wage rates is mixed; poverty has often fallen without rising real wage rates for unskilled labor.⁷⁰ However, the lesson from these experiences is not that poverty incidence is unaffected by the real wage rate for unskilled labor, *ceteris paribus*, but rather that other variables can also matter greatly to the outcome for the poor. Skilling, sectoral shifts, increased cereal yields even on handkerchief-sized farms, rising employment, and remittance incomes, have been important in explaining falling rural poverty in most poor Asian countries.⁷¹ And it is critical whether or not a real wage rate increase comes at the cost of higher unemployment; it cannot be presumed that an exogenously imposed wage increase will be pro-poor. Certainly Kerala's persistent (and genuine) 25% unemployment rate - thrice the Indian rural average - alongside a uniquely enforced statutory minimum farm wage, does not suggest that the latter is very helpful.⁷² Only for India are there adequate time series data to test the strength of the empirical link between real agricultural wage rate and rural poverty incidence controlling for at least some of these other determinants; on doing so there is evidence that higher real wages have resulted in lower poverty incidence [van de Walle (1985)]. Household cross-sectional data for West Bengal suggest the same conclusion [Bardhan (1984, ch.14)].

There is controversy about wage-discrimination, and the issues are far from settled. Task-specific earnings differentials between genders, castes or ethnic groups reflect (at least in part) differences in productivity (due to education and experience) or in work period [Lipton (1983: 69-72, 83-4), Ashenfelter and Oaxaca (1991), Birdsall and Sabot (1991)]. However, such earnings differentials testify to inferior access to better-paid skills and productive tasks; these often themselves arise from prior forms of discrimination. This is harmful, not least because, where it most reduces women's earning opportunities, there appears to be greater neglect of (and death-rates among) little girls [Rosenzweig and Schultz (1982)]. Though wage discrimination has been observed in a few careful studies [Bardhan and Rudra (1981), Lluich and Mazumdar (1981)], access discrimination may well be the more serious problem.

4.4 Nutrition and poverty

4.4.1 The income elasticity of nutrient intakes

The link between poverty and nutrition has been looked at mainly in terms of dietary food energy deficiency, relative to requirements. Energy deficiency can be measured directly, by recording energy intakes relative to supposed requirements (section 3.2), or via its anthropometric correlates: upper arm circumference, and body mass index (BMI: kg/m²) in adults, and height-for-age (or, as an acute indicator, weight-for-age) in children. Except where roots and tubers are main staples, protein deficiency is rare in the absence of energy deficiency. However, micronutrient deficiencies are widespread, often occur without energy deficiency, and may or may not be closely linked to poverty.⁷³

The poverty-nutrition link is conditioned by other variables (behavioral and/or biological), and involves simultaneity. From household resources, the link runs to expenditures (conditional on prices and tastes); thence to calories; to intra-family distribution; and to the level, variability, and adaptability of the adequacy of individual intake for normal "requirements" of resting metabolic rate (RMR: body requirements to function at rest), work, growth, etc. This last linkage is mediated by health-affected capacity to ingest, absorb, and use energy.⁷⁴ Even given all this, energy absorbed (given requirements, health, etc.) is related in highly variable ways to health-nutrition outcomes such as survival, physical and mental performance, and wellness. Each link can be modelled as "health-seeking behavior" [Alderman (1993)]. Furthermore, some of these linkages are likely to have feedback effects; nutritional outcomes may affect (in turn) productivity and hence household resources [Strauss (1986), Deolalikar (1988)].

While the income-elasticity of food expenditure in poor populations is often close to unity [Bhanaji Rao (1981), Lipton (1983b), Edirisinghe and Poleman (1983), Pitt (1983)], several papers report low income- or expenditure-elasticities of either calorie intake or anthropometry [Bouis and Haddad (1992)]. The ICRISAT nutrition observations for South Indian villages, used by Behrman and Deolalikar (1987), Bhargava (1991) and others, cannot be properly matched with the times of the consumption and income observations. That is not true of other studies, such as Behrman and Wolfe (1984) on Nicaragua, and Bouis and Haddad's Philippines data (which suggest an income-elasticity of food energy intake of 0.05), and the Ivorian data of Thomas et al. (1992: 27) showing that most child anthropometry did not respond to extra income (though adult BMI, and urban child height, did). Not all careful studies have confirmed the very low CIEs found in the above data sets; see, for example, most of IFPRI's six studies on the impact of commercialization on nutrition [Kennedy and von Braun (1986)].

To believe that very poor, hungry and underfed people raise caloric adequacy - as distinct from energy intakes - by only 1 per cent or so when income rises 10-20 per cent does seem contrary to common sense. There is evidence for several possibilities, not mutually exclusive:

- Food energy intakes were not inadequate at the mean (where the elasticity is typically measured) to begin with, so that income rises could be devoted to food quality improvement, as Behrman, Bouis and others emphasize. Mean adult weights in most tropical rural places - and hence approximate energy requirements - typically lie 15-30% below reference weights used in estimating energy requirements [Lipton (1983b: 14-20), (1989a: 12)].
- There are strong non-linearities in the calorie-income function [Ravallion (1990e), Holleman (1991), Garcia (1991: 118), Thomas (1990)]. For example, in Java the CIE rises from 0.15 at the mean to 0.33 at half a standard deviation below the mean [Ravallion (1990e)].
- Income gains may have more impact on nutritional adequacy than on calorie intake per se,

because the poor are clustered around a critical threshold of caloric adequacy [Ravallion (1990e)].

□ In unhealthy environments, the use of income gains solely to obtain extra calories may do little for nutritional or health status. A health-seeking person should then spend extra income on health improvements (e.g., sanitation or even leisure) rather than nutrition. Similarly, low levels of public inputs, complementary with incomes in their impact on such outcomes [Taylor et al. (1978), Thomas et al. (1992: 25), Anand and Ravallion (1993)] may entail that extra income is wasted on nutrition.

□ Food energy adequacy may thus be much more elastic to income than is energy quantum. For Java in the early 1980s, a low CIE (0.15 at the mean) still implied an income elasticity of the incidence of undernutrition - relative to fixed caloric requirements - close to unity [Ravallion (1990e)]. To the extent that income rises are achieved in a way that reduces (increases) food energy requirements this will boost (diminish) the income effect on undernutrition [Lipton (1989a: 11)].

□ The value of the CIE is contingent. Female-headed households show a higher CIE than equally poor male-headed ones [Garcia (1991: Table 5), for the Philippines], perhaps due to smaller household size [Greer and Thorbecke (1986: 86), for Kenya]. The effect appears to be stronger in poor households, in Kenya and Malawi [Kennedy and Peters (1992)]. Who receives the income gain may also matter. Extra incomes going to household members (men) with relatively low marginal propensities to purchase food implies a lower response of food energy intake [Kennedy and Peters (1992)].

4.4.2 Adaptation

A low CIE may indicate effective - though seldom costless - adaptation. In some environments, poverty is associated with smaller stature, harder work, and therefore worse health; in other environments, moderately small persons select work requiring body translation (rather than heavy lifting), in which they have a comparative advantage over people who are taller or with higher BMI. Some doubtful use has been made of an excellent Norwegian study by Waaler (1984), showing sharp rises in mortality if BMI falls below levels as high as 20-23; but this appears to be synergistic with smoking, and in any event, it need not apply in warm LDCs [Payne and Lipton (1993)]. In India, agricultural laborers with BMI as low as 16 appear healthy and hard-working [Shetty (1984)]. In a study of 199 men in Bangladesh, risk of illness rose sharply when BMI fell, but only below 17 [Pryer (1990)].

The discussion of adaptation to dietary energy stress has emphasized two biological paths: child growth reduction and adult downward adaptation of RMR/kg. The latter is considerable in semi-starvation [Keys et al. (1950)], but in response to milder stress may reduce RMR/kg only a little (by 2-5%, rather than 8-10%). Most important, such biological adaptation (i) happens only if victims choose to maintain "voluntary" (work or leisure) energy expenditure when intake falls, or intake when

expenditure rises, yet do not fully compensate by weight loss; (ii) is an unknown quantity for children, the most seriously affected by a given proportionate energy shortfall; (iii) is much smaller than interpersonal variation in RMR/kg; given income, persons with lower RMR/kg select lower calorie intakes per day.⁷⁵

Much more important is the question of child growth faltering, and of possible consequent higher mortality or lower mental or physical performance. For extreme states - the anthropometries of the 5-7% of LDC populations classified as severely undernourished - there is no disagreement: these people are at substantial risk of increased infant and child mortality, and of physical (and perhaps mental) impairment in adulthood.⁷⁶ What about the effects of "mild to moderate" anthropometric shortfalls? It is important, because correcting such shortfalls - by inducing extra food acquisition among households that now "choose" a low calorie-income elasticity - is not obviously sensible: if children grow up mildly stunted without serious harm, they survive into lower adult energy needs, and hence (given continued poverty) smaller risks of wasting, which is usually far more dangerous than stunting.

Pelletier (1991) claims that a continuous positive relationship exists between sub-standard anthropometry and child mortality. However, his graphs show a greatly weakened or absent relationship once weight-for-age is at or above 65-70% of the US (NCHS) median, height-for-age 85-90%, or mid-upper arm circumference 105-115 mm [ibid.: 12-14]. A large bulk of evidence, and some supporting (immunological) theory, now shows clear turning-points, well below NCHS medians, above which few or no health impacts for stunting can be demonstrated. Further, we can find no evidence for claims [ibid.: xii] that 25-50% of "child deaths are statistically attributable to anthropometric deficits" and that "33-80 per cent of these deaths are associated with mild-to-moderate PEM". Even if it is correct, most non-genetic "anthropometric shortfalls", and much PEM, are due to infection, and may not be readily - if at all - prevented by pumping in calories (let alone income), rather than, say, by sanitation, clean water, and good primary health care [Payne and Lipton (1993), Lipton (1983b)].

In adults, much the most important adaptations of poor people to energy stress are weight loss and work adjustment. This ranges from rescheduling arduous tasks towards periods of greater food availability, to improving ergonomic efficiency at the cost of discomfort or inconvenience. Little has been done to study, to assist via price and technology policy, or to lower the costs of, these and other behavioral or biological adaptations. Excessive concentration on the intellectually fascinating but quantitatively unimportant issue of intrapersonal RMR adaptation, and on the important but oversimplified issue of child growth faltering, has blinded students of poverty to the many, but currently constrained, adaptations to food energy shortage by poor people, and their communities and institutions.

4.5 Income variability

Income variability has been a common concern in attempts to reduce poverty through direct intervention (section 6.3). This reflects a belief that intertemporal consumption smoothing possibilities are limited, or costly, for the poor. While informal credit and insurance arrangements are common, they do not appear to provide anything like perfect income insurance.⁷⁷ Even if surrogates for state-contingent commodity markets exist in these settings, they may perform inadequately for the poor, or may involve high cost to longer-term poverty reduction (e.g., if savings are shifted from productive investment to grain storage). Then programs to reduce poverty may be more cost-effective if they steer some resources into reducing income downturns (section 6.3).

Of the peak-to-trough quarterly fluctuations in ASPRs in India in 1977-8, changes among workers whose main activity is "casual labor" - a group that overlaps strongly with the poor - accounted for almost 70% for rural men, and about 100% for rural women. Where the time rate of unemployment is high on average, further seasonal rises produce "discouraged worker effects", so that periods with a higher TRU also feature a lower ASPR, especially among women. Nigerian and Indian village data confirm that seasonal variability in gainful worktime is greatest for the poorest [Lipton 1983: 34-6]. Moreover, the Javanese village in which the poorest workers were most driven to raise the proportion of workforce participation spent in job search [Hart (1980)] may well typify places where casual labor is a major source of income for the poor. In villages of West Bengal where uncertainty is greatest, employers provide a search-free work fallback for poor locals in slack times, thereby ensuring fealty during peaks [Bardhan and Rudra (1981)]; this transfers instability (and search costs) to poor non-locals.

Domestic tasks and cattle care do expand in slack seasons [Hopper (1955)]. Yet unirrigated, rural places with little non-farm employment continue to suffer great fluctuations in labor use. Hired labor, especially casual, shows much greater seasonal - and, more seriously because less predictably, annual - variability in employment [Lipton (1983: 54-9)]. Since rural poverty is associated with casual labor and with residence in places with little non-farm employment [e.g. Singh (1980: p. 110 and table 13)], the impact of agricultural fluctuations on not very mobile poor people appears large. Poor urban populations are also characterized by surprisingly high dependence on (unstable) agricultural work [Visaria (1977: Table 34) for Maharashtra, India].

Unemployment and ASPRs tend to fluctuate inversely, and so the harmful effects on labor income are covariant. This is serious because the variability of both employment and ASPRs increases with poverty, as does dependence on labor income, lack of reserves, and non-creditworthiness. Matters would improve if falls in ASPRs in slack seasons, or bad years, were large enough (compared with falls in demand for employees) to bid up wage-rates, given elasticities and plasticities of labor supply and

demand. Unfortunately, evidence [Bardhan (1982a), Ravallion (1987a Ch.5)] confirms common sense: in bad times many poor people must work for whatever they can get, so that (because ASPRs fall proportionately far less than demand for labor) wage-rates fall too. Since this often happens when food is dearest and disease is most rampant, we can see the importance to the poor of safety nets in bad times.

Nutritional and other impacts of agricultural fluctuations on the rural poor have received substantial recent attention.⁷⁸ Since poor people have low average monthly income, they face higher disutility - and perhaps significant extra risks to infant life - not only from a \$1 income fall, but probably even from a 1% fall; evidence from several countries indicates that poor households - compelled to maximize productivity in order to survive as units - are likelier to discriminate against vulnerable members in seasons of energy stress than at other times [Sahn (1989: 6)]. Worse, bad outcomes go together. The second half of the wet season frequently brings heavier work, dearer food, and more infections [Schofield (1974, 1979)]. Times and places of low employment, wage-rates and participation, tend to overlap strongly, especially for the poorest [Lipton (1983: 33-7, 56-60, 84-5)]. Also, the rural poor are more dependent than the non-poor on casual labor (which is much likelier to be laid off when the harvest is bad). Hence the rural poor seem likelier to lose income, in bad seasons or years, than the rural non-poor.

4.6 Sectoral and locational characteristics

It is common to postulate a "dualistic" structure to a developing country, typically based on the distinction between "urban" and "rural" sectors. Provided that LDCs comprise clearly distinct rural and urban populations, this distinction is useful in poverty analysis if levels (or types) of poverty clearly differ between them, or if poverty is clearly related to rural-urban interactions, or imbalances.

LDC settlement patterns usually concentrate the large majority of people into clearly rural or urban places. Around 1980 "intermediate" localities - with 5,000-20,000 persons - comprised only small proportions of population in most LDCs.⁷⁹ Unless such places have exceptionally severe poverty - a topic deserving research - this fulfills a necessary condition for the good sense of a "rural-urban" approach to poverty and to anti-poverty strategies. The contrast is usually sharp. Typically the rural places (<5,000) are sparsely settled, and employment is agricultural; the towns (>20,000) are densely settled, and employment is 85-95 percent non-agricultural.⁸⁰

Poverty comparisons between urban and rural areas pose a number of problems. This is partly because "urban" means different things.⁸¹ National "poverty lines" also vary greatly, though this is less worrying for comparisons of rural-to-urban poverty incidence ratios (RUPIRs) than of absolute levels. Cost-of-living adjustments pose a more worrying problem, as spatial cost-of-living indices are far less

common than inter-temporal indices, such as the CPI. And urban poverty lines are sometimes set at a higher real level than rural poverty lines (section 3.2).

We have no wholly satisfactory method of dealing with these problems, but data based on consumption or income per person, allowing for rural-urban price differences, from thirteen LDCs for the 1980s, suggest the following RUPIRs:⁸² Kenya 6.0; Côte d'Ivoire 4.6; Ghana 2.2; Indonesia 3.7; Malaysia 2.5; Thailand 1.7; Philippines 1.4; Panama, Peru, Venezuela, each 1.4; Guatemala, Mexico, India each 1.3 [World Bank (1990: 31)].⁸³ Similar differences were found in the (fewer) studies that estimate higher-order poverty measures (such as PG and P₂); see Ravallion and Huppi (1991) for Indonesia, Boateng et al. (1991) for Ghana, Datt and Ravallion (1992b,d) for India, World Bank (1992) for China, and van de Walle and Ravallion (1992) for Morocco.

What about the trends? It has been suggested that the very high African RUPIRs may have fallen substantially in the 1980s, due to increasing urban poverty and reduced policy biases against agricultural prices. However, there is little evidence of this. It does not seem very plausible, because even in Africa most of the rural poor are net food buyers. In India, there is some evidence of a declining RUPIR, though this is sensitive to the choice of price deflators for the 1980s [Ravallion and Subbarao (1992)].

Do RUPIRs understate or overstate the rural-urban differences in poverty? They allow only for price-deflated private income per person. The capacity of poor people to convert such income into well-being is probably lower in rural areas than in towns, due to worse rural public services, notably health care and sanitation. While the physical quality of life index (PQLI) has its limitations (section 2), it is telling that India's urban PQLI in 1971 was 61, as against a rural PQLI of 35 [Morris and McAlpin (1982: 62)]. Infant mortality in rural India in the 1980s was 105, as against 57 in urban areas [World Bank (1990: 31); for Africa, see A. Hill (1981: 35)].⁸⁴ This, together with comparable gaps in adult literacy rates, suggests that urban/rural ratios between poverty measures based only upon private real consumption or income are considerably lower than the urban/rural ratios (if such could be obtained) between poverty measured in terms of inadequate "welfare" or "capabilities". The health gaps are in sharp contrast to the development process in nineteenth-century Britain, where urban death-rates substantially exceeded rural rates [Williamson (1991: 127)].

Rural poverty is marked by its common connection to agriculture and land, whereas urban poverty is more heterogeneous in how incomes are generated. A comparative study of seven Asian developing countries in the late 1980s showed that the rural poor depended more on agriculture than the rural non-poor [Quibria and Srinivasan (1991)]; this has also been observed in West Africa [A. Hill (1981); Reardon et al (1992)]. It remains important that one-third of rural income, and one-quarter of employment, typically derive from non-farm activities [Chuta and Liedholm (1981)], but their prosperity

depends substantially on forward and backward production linkages - and even more [Hazell and Haggblade (1993), Hazell and Ramasamy (1991)] on consumption linkages - from farmers. Especially in view of agriculture's high labor-intensity and relevance to local food availability and price, an anti-rural poverty strategy for production activities should be based substantially on agriculture.

No such even moderately homogeneous base for anti-poverty policy is usually available in towns, with their normally much more diverse pattern of activities and problems. It is possible to focus rural anti-poverty policy on improving the amount, productivity, stability, and distribution of farm inputs, employment, and output, and their social and physical infrastructures. This is why - despite the urban bias of public spending and personnel allocation in most LDCs - there is a much clearer and more production-orientated menu of anti-poverty policies for rural areas than for towns.⁴⁵

The urban informal sector (UIS) has traditionally been perceived as a residual category, made up of those who have not obtained employment in the "formal" urban sector, and their fortunes are linked to those of both the rural sector and the urban formal sector through migration and remittances. In contrast to the urban formal sector, the stylized view of the UIS is of a sub-sector with easy entry, little unionization, no legal minimum wages, weak safety standards at work, low physical capital inputs, low returns to labor, and mainly small (often family-based) enterprise units, typically producing non-traded goods, disproportionately consumed by the poor. However, views of the UIS have changed in the light of new data. There is now greater recognition of its diversity, associated with the heterogeneity of its products, and the wide range of skills required. Large income inequalities are often found within the UIS, with some UIS workers earning far more than some formal sector workers [e.g., Telles (1993)]. In explaining poverty in the UIS, current thinking puts greater emphasis on individual characteristics such as human capital endowments than on the "structural" features of the economy arising out of Todaro-type migration equilibrium with a fixed urban sector wage. Poverty in the rural sector tends to be explained more by low access to physical assets (particularly land), farm technology, non-farm employment opportunities, and health care and schooling, than by labor-market distortions as in the urban sector.

Since the early 1970s, the UIS has increasingly been viewed as a sub-sector with substantial growth potential in its own right, rather than as a temporary holding area for the "reserve army" - though that potential is often seen as greatly hampered by market failures (particularly credit), and excessive governmental regulations and biases in favor of the formal sector, such as in the availability of credit. An early and influential exposition of this view was ILO (1972), expanded upon in (inter alia) ILO (1985) and de Soto (1989). This has also led to some optimistic assessments of the prospects for reducing urban poverty by the deliberate promotion of the UIS, e.g, through credit subsidies and protection from competition; this has been an important element of industrial policy in India.

While there are likely gains to the poor (as both producers and consumers of the services of the UIS) from removing existing policy biases against the UIS,⁸⁶ the anti-poverty case for a pro-UIS bias in policy is more contentious. Despite the stereotype, small-scale urban manufacturing enterprises may not significantly more labor-intensive or technically efficient than larger enterprises in LDCs [Little (1987), Little, Mazumdar and Page (1987)]. The structure of protection across industries is now thought to be a far more important determinant of aggregate labor demand [World Bank (1990 Ch.4)].

The emphasis on housing in urban anti-poverty policy might suggest that slum-dwelling provides a homogeneous environment, and hence an arena for cure, for most urban poverty risk - as agriculture does in the case of rural poverty risk. However, the ranking of fifteen Indian States by the proportion of urban people living in slums in 1981 [Malhotra (1988: 20)] is mildly negatively correlated with their correct ranking by incidence of urban poverty in 1983 [Minhas et al. (1991: 1676)].⁸⁷ Many of the urban poor are unaffected by slums, and many of the rural poor live in quasi-slums.

The rural-urban dichotomy has perhaps diverted some attention from even sharper regional disparities in poverty levels. Large disparities in rural poverty incidence have been documented for a number of countries; for example, in Indonesia in 1990 the RUPIR is estimated to be 2.2, while the ratio of the highest poverty incidence in rural areas of any province to the lowest is 4.3 [Bidani and Ravallion (1992)]. The regional variations in the incidence of rural poverty are often strongly associated with rainfall and dependence on rainfed agriculture [Bardhan (1984), Webb et al (1991), Lipton (1992)]. Regional factor mobility has plainly not equalized poverty risk.

5 Growth, inequality and poverty

5.1 Growth and poverty, with inequality constant

The relationship between growth and poverty can be complex. Let us first make the simplifying assumption that all incomes grow at the same rate. How will poverty respond? Consider the properties of the class of poverty measures given by equation (1), which can also be written in the form:⁸⁸

$$P = P(z/\mu, \pi) \quad (5)$$

where P is the measure of poverty, z is the poverty line, μ is the mean of the distribution of consumption or income, and π is a vector of parameters fully describing the Lorenz curve of that distribution.⁸⁹ For every well-behaved poverty measure, the function P is monotonic decreasing in z/μ , holding π constant. A growth path of the mean which maintains the same Lorenz curve implies a reduction in absolute poverty.⁹⁰ But how rapidly will poverty fall?

Consider the P_α class. The elasticity of H ($\alpha=0$) with respect to the mean holding the Lorenz curve constant is $-f(z)z/H$, the elasticity of the CDF at z . For $\alpha \geq 1$, the corresponding elasticity of the P_α index w.r.t to the mean is $\alpha(1-P_\alpha/P_\alpha)$ (section 3.3). Table 1 estimates the elasticity of some poverty measures w.r.t. the mean for various countries. Absolute elasticities of PG are in the range 1.5-4, and they tend to be higher for the P_2 index. Thus a 2% annual rate of growth in consumption per person at all consumption levels will result in a 3-8 percent rate of decline in the poverty indices.

Table 1: Elasticities of poverty measures to mean consumption or income

Country/year	Elasticity of poverty measure w.r.t. distributionally neutral growth in the mean	
	Poverty gap index	Foster-Greer-Thorbecke P_2
Bangladesh 1988/89	-2.9	-3.5
Nepal 1984/85	-2.7	-3.2
India 1987-88	-3.0	-3.8
Indonesia 1987	-4.1	-4.8
Cote d'Ivoire 1985	-2.0	-2.2
Morocco 1990	-2.9	-4.0
Brazil 1988	-1.5	-1.8

Sources: Bangladesh: Ravallion (1990a) (up-dated using data from Bangladesh Bureau of Statistics); Nepal: Calculations for this paper from World Bank data; India: Datt and Ravallion (1992a,c) (up-dated); Indonesia: Ravallion and Huppi (1991); Cote d'Ivoire: Kakwani (1990); Brazil: Datt and Ravallion (1992a). All calculations are based on local poverty lines.

The impact of changes in the Lorenz curve on poverty is less clear. Inequality can change without any absolute gains or losses to the poor, and hence no change in poverty. The ambiguity goes deeper for H (and an exposition also illustrates some useful properties of the Lorenz curve, as defined above).⁹¹ Inequality increases if there is an unambiguous outward shift in the Lorenz curve, i.e., the change in distribution satisfies the Pigou-Dalton criterion [Atkinson (1970, 1975)]. By the properties of the Lorenz curve, H as the value of p at which the slope of the Lorenz curve equals z/μ [Gastwirth (1971), Kakwani (1980a)]. An outward shift in $L(p, \pi)$ does not imply a lower slope at any given value of p , nor, therefore, a higher value of H for given z/μ . However, for higher-order P_α measures ($\alpha > 1$) a clearer relationship between inequality and poverty emerges; unambiguous outward shifts in the Lorenz curve at a given mean must reduce poverty.

5.2 Growth and inequality

Now relax the assumption that growth is distributionally neutral. During the 1970s and 1980s, it was widely believed that growth in low-income countries would be inequitable. A foundation for this view was provided by Kuznets (1955, 1963), and has come to be known as the "Inverted U Hypothesis".⁹² This claims that a process of growth through modern (urban) sector enlargement in a dualistic developing country will initially result in an increase in inequality, but, beyond some level of mean income, inequality will begin to fall. This assumes that growth proceeds under a "Kuznets process". Specifically, the economy is conceived of as comprising a low-mean, low-inequality rural sector and a high-mean, high-inequality urban sector, and the migration of workers from the former to the latter is assumed to be "representative": a representative "slice" of the rural distribution is transformed into a representative slice of the urban distribution, while preserving distributions within each sector.

What does such a process imply about the relationship between growth and inequality? Assume that everyone is initially in the rural sector. When the first (representative) sub-group of the rural sector moves into the urban sector under the Kuznets process inequality will appear that was not there before, namely that between a typical urban resident and a typical rural resident. Inequality will increase. Consider the last sub-group to leave the rural sector; the same inequality will now disappear. Extending this reasoning, an inverted U can be derived linking certain indices of inequality and the population share of the urban sector can be derived [Robinson (1976), Anand and Kanbur (1984, 1993), Kakwani (1988)].

What will happen to aggregate poverty? For all additive poverty measures [equation (1)], if the sub-group poverty index is initially higher in the rural sector then aggregate poverty must fall under the Kuznets process.⁹³ To see why, note that the aggregate cumulative distribution function is given by

$$F(z) = n_u F_u(z) + n_r F_r(z) \quad (6)$$

where n_i ($i=u,r$) and F_i ($i=u,r$) are the population shares and distribution functions for the urban and rural sectors respectively (where $n_u + n_r = 1$). Under the Kuznets process, the distribution functions F_i ($i=u,r$) are independent of the population shares. Thus

$$\partial F(z)/\partial n_u = F_u(z) - F_r(z) < 0 \quad (7)$$

for all z . Consider the sequence of CDFs resulting from successive increments in n_u . From (7), each CDF will lie entirely below the previous one; all poverty measures and poverty lines will show an unambiguous decline in poverty (section 3.3.3).

However, the poverty levels of the two sectors do not converge (the vertical distance between

distribution functions is also unaffected by urbanization; see equation 7); this follows from the assumption of representative migration. That assumption simplifies the analytics, but it is not appealing. Relaxing it can alter the conclusion that modern-sector enlargement is pro-poor. For example, Anand and Kanbur (1985) show that in Todaro's (1969) model (in which migration is a response to the expected income differential between sectors), aggregate poverty could increase with migration to the urban sector.⁹⁴ This is because (under the Todaro model) some new migrants will fail to find formal work in the urban sector, and will end up worse off than they would have been in the rural sector (though this is still an equilibrium, since expected incomes are equalized). Depending on the parameter values, economic growth through urban sector enlargement may increase or decrease aggregate poverty.

The way one models the migration decision could matter greatly to the results. The Todaro model of migration is quite restrictive. A broader set of motives is now seen to underlie migration behavior than expected wage differentials; individual migration is also increasingly seen as an outcome of family decision-making, particularly in response to uninsured risks [Stark (1991)]. It is not yet clear what this new migration literature implies for the effects of modern-sector enlargement on poverty.

In another strand of research on migration, a distinction has been drawn between two groups of migrants: the moderately "rich" going to towns to seek education and known jobs, and the relatively poor who tend to go first to other rural areas or small towns, and then chain-migrate towards uncertain urban jobs [Connell et al. (1976)]. Such data suggest that the "mainstream" urbanization process may thus be neutral, or even adverse, in its impacts on aggregate poverty.

Urbanization is not the only way growth can occur. Following Fields (1980) one can distinguish three sources of growth: "modern sector enlargement", "modern sector enrichment" and "rural sector enrichment". The latter is unambiguously pro-poor in these models (at least while the rural sector remains the poorer sector), while the effect on aggregate poverty of modern-sector enrichment - rising mean income in the formal urban sector, without any change in rural sector incomes - is unlikely to be pro-poor; there will be no change in aggregate poverty under Fields's (1980) assumptions (in which there is no urban sector poverty), though under the weaker assumptions of the Anand-Kanbur model (in which there is a poor urban informal sector) there will be an unambiguous increase in aggregate poverty.

Empirical investigations (typically on cross-country data) have explored these issues. The early compilation of country-level data on inequality and growth did suggest an inverted U relationship [Adelman and Morris (1973), Paukert (1973), Ahluwalia (1976), Tsakloglou (1986)]. However, the robustness of these results (such as to the choice of inequality index) has been questioned [Anand and Kanbur (1993)]. Other studies have not supported the view that inequality will increase in the early stages of development; from the (limited) time-series evidence, it appears to be just as likely to decrease

[Saith (1983), Fields (1989), World Bank (1990, Ch. 3)]. A careful study that provided some statistical support for the inverted U [Lecaillon et al (1983)] suggests that the impact on poverty is small, since the changes in distribution amongst the "poorest" 95% of persons were negligible. The current consensus is that several factors influence the effects of growth on inequality, notably the initial distribution of physical and human assets, the way the growth process influences the returns to those assets, and the effectiveness of governmental redistributive policies [Frank and Webb (1977)].

However, even when growth has been associated with rising inequality, it appears that poverty has usually fallen [Fields (1989), World Bank (1990, Chapter 3)]. The comparability over time and across countries of some of the poverty measures used in such comparisons is questionable. One recent study has looked at the experience of 16 countries for which distributional data were available for two points in time during the 1980s from nationally representative household surveys [Chen et al. (1993)]. Poverty measures were estimated using the same real poverty line at each date, with constant purchasing power exchange rates to assure that the poverty lines have similar real value across countries, and the estimation methods adjusted for some of the comparability problems, and allowed for measurement errors in the underlying household surveys.⁹⁵ About 60% of the variance in the rate of reduction of the head-count index of poverty could be attributed to differences in the rate of growth in mean household consumption per capita; changes in relative inequalities, and differences in initial conditions (determining how responsive poverty is to growth and/or redistribution), accounted for almost all of the rest of the variance in rates of progress in reducing poverty. The regression of rates of poverty reduction against rates of growth in mean household consumption implied an elasticity of -2, though this was also found to vary considerably between countries, reflecting differences in initial conditions [Chen et al. (1993)]. However, short-run elasticity with respect to growth in national income is probably somewhat lower than this figure, due to consumption smoothing.

The above strand of the literature has concerned how growth affects inequality (as one of the links from growth to poverty). The reverse causation - from initial inequalities to growth - has received less attention. Initial inequalities in the ownership of human and physical assets will influence initial market outcomes and the efficiency of those outcomes [Hoff (1992)]. Thus one would expect that the extent and type of economic growth would also depend on initial inequalities, though a unified theory is not yet available. This link has arisen in a number of models. A classic argument assumes that savings functions are non-linear, in which case aggregate savings will depend on the distribution of income. If the marginal propensity to save rises with income and the growth rate is determined by the aggregate rate of saving (though these are stronger assumptions than may appear at first glance) then there will be a trade-off between equality and growth. However, the link between inequality and savings rates is weak [Gersovitz

(1988)]. There are also examples of the opposite result. With incomplete markets, there will be potential efficiency gains from redistribution [Geanakoplos and Polemarchakis (1986), Hoff (1992)]. Equalizing redistributions of wealth can increase aggregate output in a competitive economy under the efficiency wage hypothesis [Dasgupta and Ray (1987)]. Under certain restrictions on preferences, the initial composition of demand (itself influenced by the initial distribution of assets) will also influence the type of growth observed [Murphy et al (1989), Eswaran and Kotwal (1991), Falkinger (1992)], with the prediction that high initial inequality can impede the prospects for a pro-poor growth process. The political economy of conflicts over distribution can also lead to a similar prediction, and there is some supportive evidence in country experience since the mid-1960s; countries with more equal initial distributions appear to have grown faster [Persson and Tabellini (1991)].⁹⁶ However, there is still much we do not know about the link between initial conditions and growth, let alone the policy implications.

5.3 The sectoral pattern of growth

Some observers have read the recent evidence, that economic growth is rarely associated with sufficiently adverse changes in relative inequalities to prevent a decline in absolute poverty, as suggesting that the role of government in reducing poverty can safely be confined to promoting growth. That does not follow. Even though past growth has often helped reduce poverty, some growth processes may do so more effectively than others. One potential role of government is then to foster a pattern of growth conducive to poverty alleviation.

The sectoral and regional pattern of investment - and hence of the resulting income gains - has often been identified as an important policy instrument. It is now widely believed that many LDCs could grow faster, as well as more equitably, by shifting investments towards rural, labor-intensive or "backward" activities (section 2). However, such a shift need not indefinitely increase mean income and reduce poverty, because rates of return (as conventionally calculated) to investments across sectors or regions need not remain positively correlated with the relevant poverty indicators.

How much impact on aggregate poverty is possible by altering the sectoral pattern of economic growth? The answer depends in part on the growth performance of existing allocations of investment. If past policies have been biased against growth in regions or sectors where it would have a high return and it would benefit the poor, then suitable policy reforms may allow both higher impacts on current poverty, and higher rates of growth and, hence, poverty alleviation in the future. There is strong evidence that this is so in a number of developing countries, notably those which have followed excessively capital-intensive, pro-urban development strategies through a variety of pricing and expenditure policies [Lipton (1977), Krueger et al. (1988), World Bank (1990, 1991c)].

The key sector identified for pro-poor growth in most LDCs is the rural farming sector. Agricultural growth, especially growth and stabilization of food staples production, is likely to benefit poor people. First, most of the poor - including the rural poor - are net food buyers. Smooth and ample local food supplies, even in open economies, carry special advantages for them, especially if international or national transport costs per ton of food staples are high. Second, while poor people's entitlements to food (rather than local availability per se) determine their nutritional levels [Sen (1981a)], poor people's rural exchange entitlements depend largely on earnings from growing food.

The empirical debate on the effect of agricultural growth on rural poverty continues.⁹⁷ Counter-examples to the proposition that agricultural growth is necessarily pro-poor do exist.⁹⁸ These indicate that there are some important contingent factors that mediate between some forms of growth and poverty reduction [Prahladachar (1983) emphasizes appropriate rural institutions]. It is also unclear to what extent agro-technical progress and the nature of rural institutions can be viewed as exogenous in this relationship.⁹⁹ This has implications for the type of policies that are needed to promote agricultural growth, though it need not dull the motivation for a pro-rural emphasis in anti-poverty strategies. The balance of evidence is that, globally [Binswanger and von Braun (1993)] and in important specific cases such as India [Mellor and Desai (1985), van de Walle (1985)], times and places of relatively high (growing) farm output, especially food output, per acre and per worker, have also featured relatively low (falling) rural poverty.¹⁰⁰ High-yielding cereal varieties have clearly benefited the poor, by restraining food prices, providing rural work, and raising incomes of small farms; but doubts remain about impacts on regions and countries unable to adopt HYVs, and on the stability of incomes and output [Lipton with Longhurst (1989)]. Tractorization and other labor-displacing sources of agricultural cost reduction, especially if subsidized, are likely to harm the poor, on balance. The impact of irrigation on poverty depends on the technical features of the type of system used [Narain and Roy (1980)].

In many LDCs the policy environment has, however, been decidedly biased against the rural farm sector. Three sources of such a bias can be identified: i) the direct effect of sector-specific pricing policies, appearing as a wedge between domestic producer prices and border prices for agricultural outputs; ii) the direct effect of non-price, sector-specific, policies, such as public spending on roads, schools, services, research etc; and iii) the indirect effect on the farm sector of economy-wide distortions operating through exchange rate and external trade policies. The latter bias is more subtle, though it should be evident in the real exchange rate (the price of tradables - typically including most agricultural outputs - relative to non-tradables) but policies to protect the manufacturing sector will also depress the relative price of farm outputs. Krueger et al (1988) look at price biases [(i) and (iii), though not (ii)] for 18 developing countries in the period 1975-84 and find that the indirect effect is stronger than the direct

price effect. It would be interesting to expand such an inquiry to include the direct non-price biases, particularly through the allocation of public spending on physical and social infrastructure.

However, once the possibilities for policy reforms eliminating these biases have been exploited (and their reform has been the aim of adjustment lending since the early 1980s; see section 5.4), further targeting of the pattern of growth will probably entail some loss of growth potential. One can still be readily willing to pay that cost if such targeting has sufficient impact on poverty, relative to the alternative policies. This is a relatively unexplored area. To better assess the case for a reverse bias in favor of rural areas or labor-intensive products, one needs to know more about both its growth costs and the poverty alleviation benefits. This information is not easily obtained. But let us make a couple of assumptions which will load the case in favor of sectoral targeting, so we can at least get some idea of the potential benefits. The case for such targeting is questionable if factor mobility is perfect across sectors or regions. Let us assume that factors are immobile, and that the growth cost of targeting is negligible. How then is poverty affected by redistributing aggregate incomes across regions or sectors?

For India, Datt and Ravallion (1991a) consider the effects on poverty of transfers among states, and between rural and urban areas. Effects on pre-transfer incomes and price effects are ignored. They find that the qualitative effect of reducing regional/sectoral disparities in average living standards generally favors the poor. However, the quantitative gains are small. For example, the elimination of regional disparities in the means across 20 states of India, with each state divided into urban and rural areas, while holding intra-regional inequalities constant, would yield only a small reduction in the proportion of persons below the poverty line, from an initial 33% to 32%. Regional/sectoral targeting may thus be quite a blunt instrument for aggregate poverty alleviation, although when administrative capabilities allow finer geographical targeting the gains will increase.¹⁰¹ Growth costs of shifting resources out of more profitable locations - once the gains from eliminating existing distortions have been exhausted - are likely to reduce the gains to the poor.

Such experiments are at best suggestive; provided its growth cost is not too large, regional and sectoral targeting can reduce poverty. But the above estimates of the benefits under ideal conditions do make one rather sanguine about the prospects for a really significant reduction in aggregate poverty by this means, beyond the likely gains from removing policy biases against the rural sector.

Cross-sectoral links have played little role in the literature surveyed above. These can arise in a number of ways, including migration across regions, and remittances. The key question for the present discussion is: to what extent do sectorally specific anti-poverty policies spill over to the poor in other sectors? Ravallion (1990d) looks at both intra- and inter- sectoral effects of anti-hunger policies in a dualistic developing economy, with linkages arising through a migration equilibrium condition; in this

case the cross-sectoral linkage creates multiplier effects which enhance impacts on the poor. Models of remittance behavior have suggested the opposite conclusion; policy interventions induce behavioral responses which dampen the net gains [Cox and Jimenez (1992)].

5.4 Macroeconomic adjustment and poverty

For most LDCs, the 1980s saw macroeconomic instability, with rapidly rising servicing costs on foreign debt, external terms-of-trade shocks, and rising fiscal and external imbalances entailing an unsustainable excess of aggregate demand over supply.¹⁰² An "adjustment program" is a set of policies to restore macroeconomic balance. The program combines fiscal contraction - cutting government spending and/or raising taxes - with supply-side measures aimed at reducing inefficiency (cutting, for example, trade distortions or wasteful parastatal organizations, or removing trade distortions).

Unless there is a rapid supply-side response, or the cuts are solely in government investment [a strategy followed by some adjusting countries; see World Bank (1990, Ch.7)], somebody's consumption must fall. Lack of adjustment may thus be an attractive short-term option, though there must eventually be a (potentially hard) landing. The ultimate case for an adjustment program depends on showing that the present social value of the future sequence of consumptions is higher with adjustment than without. How will adjustment (relative to not adjusting) affect the poor? To what extent are those impacts contingent on the initial conditions of an economy and the details of policy reform?

5.4.1 Theory

The main model underlying discussions of the effects of adjustment on real incomes identifies two categories of goods: traded and non-traded. Only for the latter do domestic demand and supply conditions affect price.¹⁰³ Adjustment will reduce domestic demand for both traded and non-traded goods. Producers of traded goods can sell to foreigners instead, but producers of non-traded goods will initially suffer unemployment and reduced incomes. To restore full employment, the price of the non-traded goods must fall, relative to the traded goods - a real devaluation. This stimulates a switch in domestic demand from traded to non-traded goods, and the opposite switch in domestic production.

How will this process affect the incomes of the poor? Assume that the poor are net suppliers of labor, and fairly mobile across sectors. From what we know about the characteristics of the poor in most developing countries, these assumptions are believable (section 4.2) though there are exceptions, which we comment on below. Then, from the Stolper-Samuelson theorem, the real wage of labor will rise during the adjustment if (and only if) the traded goods sector is more labor-intensive than the non-traded goods sector.¹⁰⁴ Most policy discussions assume this (because LDCs' comparative advantage lies in

labor-intensive products), and therefore predict that the poor will gain as employees from the relative price shifts associated with adjustment.

That prediction must be qualified. If domestic prices (both outputs and inputs) are flexible, and labor is mobile, then the process will be rapid. However, in reality, some prices adjust sluggishly and there are impediments to labor mobility; structural adjustment is very unlikely to remove all distortions. Some sectors of the economy, with flexible prices, will fare differently during adjustment to other sectors, where significant unemployment may persist. Then we must ask: are the poor concentrated in the sectors with relatively flexible prices. A common and plausible characterization of developing countries is that the rural sector tends to have flexible prices, while the modern sector has more rigid prices. Given that poverty tends to be concentrated more in the rural sector, this suggests that the positive impacts of adjustment via wages and employment may be felt quite quickly in the rural sector.¹⁰⁵

However, it is not just this response that matters, but how much the poor must pay for the goods they consume. If they do not consume traded goods, then the welfare outcome is clear: command over non-traded goods must rise. More generally, the direction of the change in welfare for a worker will depend on the magnitude of the real-wage response relative to the share of income devoted to traded goods.

A key category of goods for the poor is food staples. The common presumption is that (except for most roots and tubers) these goods are tradable. Then staple food prices rise during adjustment. In most countries, however, the poor are quite heterogeneous with respect to their trading position in food markets (section 4.2).¹⁰⁶ Some will gain and some will lose, and the assessment may then depend crucially on interpersonal comparisons of welfare amongst the poor (section 3.3).

Also, food staples sometimes behave more like non-traded goods in the short term, because government food storage policies buffer domestic food prices from fluctuations in world prices, or because internal market integration is impeded by inadequate rural infrastructure [World Bank (1990, ch.7)]. Short-term welfare impacts may thus be in opposite direction to long-term impacts.

The welfare impacts of adjustment will also depend on how public expenditures are cut. If the poor initially benefit little from public spending, then they will lose little from the cuts. That, however, is often not plausible. Though often poorly targeted, public expenditure in most developing countries does yield potentially important gains to the poor. Unless adjustment is to be associated with a short-term increase in poverty, public expenditure cuts will have to spare such programs. Several countries have combined aggregate budget contraction with rising shares (and occasionally rising absolute levels) of public spending in the social sectors, including targeted transfers.¹⁰⁷ Elsewhere, "golden handshakes" to retrenched workers figure prominently in compensatory packages, even though such workers are

neither poor nor evidently threatened by poverty.¹⁰⁸

However, the role of policy here goes well beyond compensating the poor for direct losses from adjustment. Complementarities often exist between the composition of public spending and the benefits to the poor of structural adjustment. The supply response of farmers to higher prices of traded goods will typically depend on the quality of supportive infrastructure (both physical infrastructure, such as roads, and information), and there are compelling arguments for believing that such infrastructure would generally be under-provided without public provisioning.¹⁰⁹ Yet the fiscal "crunch" of adjustment often tempts governments to cut exactly these infrastructural sectors.

For these reasons, we should be wary of simple theoretical arguments about the welfare impacts of adjustment. They can offer a useful guide to thinking, but evidence will typically be needed to resolve the issues; it is difficult to obtain. Fortunately, great strides have been made since the early 1980s in collecting the sort of household level data that can inform these questions for developing countries. Also, adjustment lending to LDCs now commonly includes resources for collecting such data, and monitoring welfare impacts.¹¹⁰ Few of the issues can be resolved solely by such data; both theory and casual empiricism will remain essential. However, household surveys have often helped to resolve ambiguities about impacts of policy reform on the poor.

5.4.2 Evidence

Much of the impact of adjustment on the poor is mediated through its impact on economic growth. Some household-level evidence on the evolution of poverty indicators during adjustment is now available.¹¹¹ One of the few clear patterns is that the head-count index tends to move with mean consumption or income of households; poverty increases during recession, and it falls during recovery, e.g., in Latin America [Morley (1992a,b)] and East Asia [Ravallion and Huppi (1991), Demery and Demery (1991)]. For an analysis across 16 countries in the 1980s see Chen et al. (1993).

Such observations do not, however, tell us the impact of adjusting relative to what would have happened under the counterfactual of not adjusting. One careful study of Peru's decision to avoid stabilization during the 1980s found sharply worsening living standards of the poor [Glewwe and Hall (1992)]. Yet we do not know how different the outcome would have been under a stabilization program.

To the extent that the change in mean income is typically the main correlate of changes in poverty measures, a key question is: did adjustment raise or lower the rate of growth? The answer depends on the speed of supply-side adjustment. That depends on initial conditions in the economy, notably the flexibility of price adjustment and the state of physical and social infrastructure. Normally, adjustment is associated with initially slower growth, and hence presumably with more poverty in the short term than

non-adjustment. The longer-term answer will depend on how long it takes for growth to be restored.

Distributional shifts can have an important impact. In Brazil, distributional shifts during the 1980s significantly worsened the effects of falling growth on poverty [Datt and Ravallion (1992a)]. Yet a slight improvement in distribution helped the poor in Indonesia [Ravallion and Huppi (1991)]. Dorosh and Sahn (1993) find that the distributional effects of real devaluations will tend to be pro-poor in a number of African countries, since the rural poor tend to be net producers of tradable goods.

The distributional impacts of adjustment depend heavily on the economy's initial conditions, particularly its openness, and the extent of flexibility in its output and factor markets. For example, Costa Rica's large, open, and labor-intensive traded goods sector allowed the poor to benefit from real devaluation; opposite conditions in Argentina and Venezuela induced distributional shifts, associated with adjustment, far less advantageous to the poor [Morley and Alvarez (1992)]. The importance of price flexibility is also clear from the results of Bourguignon et al (1991) for Morocco, who contrast the effects of adjustment under a "fix-price" closure - fixed prices in the modern sector and flexible prices in the rural sector - with a standard Walrasian closure. Impacts on the poor differ greatly. With the fix-price closure, quantity adjustments largely determine the distributional implications.

The policy response, particularly in the composition of public expenditure cuts, can greatly affect the poverty outcomes of adjustment. For example, the careful mix of public spending cuts during adjustment in Indonesia, and the rapid currency devaluations, helped mitigate the short-term consequences for the poor of declining growth [Thorbecke (1991)].

Our understanding of distributional changes during adjustment has been illuminated by combining direct observations, based largely on household level surveys, with models of alternative policy packages, typically in a general equilibrium (GE) model [Demery and Demery (1991), Thorbecke (1991), Bourguignon et al. (1991 a,b)]. Each mode of analysis has its strengths and weaknesses: household-level analysis tells us about actual impacts, and about key parameters; the aggregate models simulate alternative policies. To be computable, the aggregate models must sacrifice realism, and the assumptions need not be innocuous. For example, it is commonly assumed that distributional effects are neutral within sectors; the evolution of sector mean incomes drives the aggregate distribution. However, in one test of this assumption using household data (for Indonesia), there was a great deal of distributional change within sectors during adjustment [Huppi and Ravallion (1991)].

A class of "meso" level analyses have also emerged. These are less ambitious than the GE models, but still isolate the most relevant links of policy to welfare. For example, one might ask what the distributional effects are of an increase in food staples prices allowing wage rates to adjust, but assuming that other input and output prices are unchanged.¹¹² Compared to a full-blown GE model,

such analysis loses detail in the channels transmitting policy changes to households, but it can often be tailored more closely to time series evidence on the way prices move with each other and on detailed household level parameters estimated from cross-sectional surveys.

In these models, the link between economy-wide variables and household incomes is through the budget constraint and the supply functions for goods and labor. Theoretically, this link is well understood, and supports much of the economic analysis behind policy discussions of the welfare impacts of adjustment; yet some important issues remain poorly understood. For example, the popularity of the Stolper-Samuelson theorem in studying the distributional impact of real devaluations rests on its power in identifying effects on current factor prices. However, this approach does not sit comfortably with the abundant recent evidence from microeconomic studies and less formal anthropological investigations that behavioral responses intervene between price changes and living standards (sections 4.2 and 6.3).

The way household living standards are measured is critical. Most studies concur that the best single indicator is not income, but consumption (section 3.1). This is the outcome of inter-temporal choices by individuals or households. Yet policy discussions about how adjustment affects living standards often assume that income and price effects impact immediately on living standards. Under the standard formulation of the consumer's choice problem, consumption responds to income changes in so far as they alter life-time wealth; the current impact of a transient income change is slight. There remains much that we do not know about the link between macroeconomic conditions and living standards.

6 Interventions

The desire to reduce poverty has been used to justify various direct policy interventions by LDC governments. How well have the specific forms of intervention worked? This section cannot survey the full range of interventions. It seeks only to illustrate the arguments for and against them, and to give detail on a few examples. We focus on the rural sector, recognizing that - judged by a typical LDC's poverty profile - rural poverty should have higher priority (section 4.6).¹¹³

6.1 Evaluating targeted interventions

Many of the problems in evaluating targeted schemes are common to other policies; for example, it is often difficult to quantify the counterfactual of what would have happened without intervention.¹¹⁴ Here we comment solely on some selected issues concerning anti-poverty policies in LDCs.

Most recent policy discussions agree that anti-poverty schemes should aim for "cost-effectiveness", either by maximizing the gains to the poor for a given revenue cost, or by minimizing the cost of a given impact on poverty [World Bank (1990, ch. 6)]. An advantage of this criterion is that one does

not have to spell out any trade-offs between one policy objective, say poverty reduction, and others. One is concerned solely with efficiency in attaining a given objective; could one achieve greater impact at the same cost? But there is a potential hazard, particularly when efficiency rankings of policies alter with changes in the revenue cost; the most efficient policy for one outlay need not be the most efficient for all, and then one must specify the trade-off between poverty and revenue to rank policies.

In formulating objectives, value-judgements concerning interpersonal comparisons amongst the poor can also affect the policy choice. Should a public employment scheme aim for the widest possible coverage amongst the poor, recognizing that this may entail very low wage rates, or should it aim to allow a smaller number of participants to escape poverty, by setting a higher wage rate? The answer can be shown to depend on the available budget, administrative cost, the initial wage distribution, and the policy maker's ethical aversion to poverty-severity [Ravallion (1991b)].

A popular policy recommendation for more cost-effective interventions has been "better targeting", meaning that more of the poor and/or fewer of the non-poor gain. Household survey data have shown that benefits of undifferentiated transfers (such as general food subsidies) often go disproportionately to the non-poor [e.g., Grosh (1991)]. However, this does not mean that targeting will have a greater impact on poverty. Participation in a targeted scheme can be far more costly than an untargeted scheme. If the costs of participation (embodying behavioral responses) and the administrative costs are high enough, then better targeting will diminish cost-effectiveness in reducing poverty [Besley and Kanbur (1993)]. Empirically, the size of those costs will depend on the responses of participants and others; for example, intra-household time allocation responds to new "workfare" employment opportunities in rural India in ways which diminish the foregone income [Datt and Ravallion (1992b)].

Targeting can also undermine political support and funding for anti-poverty policies. For example, the switch from universal food subsidies to targeted food stamps in Sri Lanka in the late 1970s was associated with a substantial contraction in real funding over subsequent years; many of the poor ended up with a larger share of a smaller cake, and absolutely worse off [Besley and Kanbur (1993)]. However, one should be wary of oversimplifying the political economy of targeting, as the set of people who will support an efficient anti-poverty scheme is often far larger than the set of direct beneficiaries; for example, rural landlords and the urban rich have supported rural relief work schemes in India [Echeverri-Gent (1988), Ravallion (1991a)].

Policy discussions have also distinguished a scheme's ability to avoid "type 1 errors" (incorrectly classifying a person as poor) versus "type 2 errors" (incorrectly classifying a person as not poor) [Cornia and Stewart (1992)]. The values one attaches to these two errors in targeting are implicit in the poverty measure one uses;¹¹⁵ the concern with these errors arises because an appropriate measure of poverty

did not fall as much as it could have. The essential message from this strand of the recent targeting literature is that, while we should be concerned with avoiding leakage to the non-poor, we should also aim for a desirable coverage amongst the poor. Poverty measurement should reflect both concerns.

There can be no presumption that the most cost-effective policy has the lowest "errors of targeting". Given that there may be significant costs of targeting, the deliberate introduction of leakage or imperfect coverage (allowing a reduction in those costs) may well allow a greater total impact on poverty for a given budgetary outlay. One should be wary of assessments of targeted schemes based on their ability to "concentrate" benefits on (say) the poorest 40% [e.g., Grosh (1992)]. This is only one determinant of a policy's impact on poverty.

6.2 *Methods of targeting*

Administrative costs and related constraints on policy instruments are now widely appreciated in analytical discussions of targeted policies. These constraints are particularly relevant in underdeveloped rural economies. In rural sectors and the urban informal sector, negative income taxes are seldom feasible. Sometimes a means test is imposed, but without the administrative capability to implement it convincingly. And even with that capability, this type of scheme will entail high marginal tax rates on the poor.¹¹⁶ Both the problems of observing incomes and the incentive effects of means testing have led to a variety of schemes for "indicator targeting" whereby transfers are made contingent on correlates of poverty, such as landholding, caste, or place of residence [Besley and Kanbur (1993)].

Regional targeting of transfers has attractions. Substantial regional disparities in living standards are common in developing countries, and backward areas can often be readily identified. Place of residence may thus be a useful indicator of poverty. It can be manipulated by migration, which may or may not reduce the impact on poverty. Local governments provide an administrative apparatus. This has already been exploited in many LDCs. For example, the allocation of central government disbursements across states in India has been determined, in part, by regional disparities in poverty. Section 5.3 discussed such interventions in the context of regional/sectoral "growth targeting"; the same comments apply here: while regional targeting of transfers can help reduce poverty in developing countries if the growth cost is not too large, it may be a relatively blunt policy instrument on its own.

In much of Asia, and increasingly in Sub-Saharan Africa, the most promising single additional indicator is probably land-holding class. Where land and water are reasonably adequate and reliable, one observes a strong negative correlation between land-holding and poverty, especially in much of rural South Asia. This has motivated interest in a variety of forms of "land-contingent targeting", such as certain land reforms, and transfer payments to the landless (section 6.4.1). There are inherent limitations

to such targeting; landholding is an imperfect correlate of poverty. Simulations confirm the advantages of targeting poverty alleviation schemes in Bangladesh toward households owning little or no land [Ravallion (1989a), Ravallion and Sen (1992)], but also highlight the limitations. Even with complete control over the distribution of income across (but not within) 10 landholding classes in Bangladesh, the maximum reduction in the aggregate severity of poverty which is attainable this way is no more than one could obtain by an untargeted lump-sum gain to all households of about one tenth of mean income [Ravallion (1989a)]. Various factors may enhance the poverty alleviation impact, such as any effects of the income or wealth gains on future productivity of the poor.¹¹⁷ Other factors will detract from that impact. For example, plausible restrictions on the government's redistributive powers would further diminish the gains to the poor from such policies. There may be potential for combining land-contingent targeting with other types of targeting. For example, there are poor even amongst households with relatively large landholdings in Bangladesh [Ravallion (1989a)]. If these households can be identified with reasonable precision by other indicators, such as region of residence, then greater poverty alleviation would be informationally feasible in practice.

The prospects for reaching the poor also depend crucially on the institutional environment, including local administrative capabilities, the incentives facing local administrators, their social relations with the poor, and the extent of empowerment of the poor, through both governmental and non-governmental representation. Options for seemingly effective administrative targeting at local level do arise in some settings. For example, since 1980, the Indian state of Kerala has provided a pension to agricultural workers over 60 who have low self-reported incomes (including that of unmarried adult children). An official local committee including representatives of minority groups is in charge of verification [Gulati (1990)]. Future comparative research could reveal how much the institutional environment constricts poverty alleviation possibilities; when compared to autocratic structures of power, what are the gains from broad-based participatory forms of local political organization in which representatives and administrators face incentives consistent with poverty alleviation, and can an open political environment provide suitable checks on their efforts? For example, comparing the experiences of India and China, it appears that democracy and freedom of the press can facilitate public action to prevent or relieve famines [Drèze and Sen (1989)].

Disappointment with the prospects for poverty alleviation using administratively and politically feasible forms of indicator targeting has re-kindled interest in self-targeting. This works by creating incentives which encourage participation only by the poor. This is illustrated by one of the oldest anti-poverty schemes: relief work.¹¹⁸ The argument is not that such work alleviates poverty by creating assets (though all the better if it does), but that work requirements can provide seemingly excellent

incentives for self-targeting; the reservation wage rate for unskilled manual work is negatively correlated with poverty. Some of the largest schemes in South Asia have done well in screening poor from non-poor [Ravallion (1991)]¹¹⁹ at modest administrative cost. There may be lessons for achieving better targeting of other public services. For example, public health services can be better targeted to the poor if waiting rooms provide only minimal comforts. Fair-price outlets, free clinics, etc., can be located in the poorest areas (thus combining indicator targeting with self-targeting). Under certain conditions, the rationing of food or health subsidies by queuing can also be self-targeting [Alderman (1987)], as can subsidizing inferior food staples. However, none of these mechanisms is perfect: the poor may be unable to afford the work loss in queuing; the rich may jump the queue, or send their servants to queue.

There are two main caveats about self-targeted schemes. First, they screen participants by imposing a cost on them; good schemes ensure that the cost is higher for the non-poor than the poor (so that it is the poor who tend to participate), but it may not be inconsequential to the poor. An important cost is foregone income. We know little about its magnitude for rural public works schemes, though it is unlikely to be zero; the poor can rarely afford to be idle. Estimates for South Asia suggest that the net income transfer may be only half of the direct gain in earnings [Ravallion (1991)]. A recent estimate using survey data for two Maharashtra villages found that the foregone income from employment on public works schemes was quite low - around one quarter of gross wage earnings; most of the time displaced was in domestic labor, leisure and unemployment [Datt and Ravallion (1992b)].

Second, some sub-groups of the poor are not willing to participate in workfare schemes, often because they are physically unable to do such work. The non-poor are screened out, but so are some of the poor. Fortunately there are some obvious, relatively non-manipulatable and easily monitored, characteristics for identifying such households, such as physical disability and old age. A combination of self-selection through relief work and indicator targeting based on such characteristics could provide a fairly comprehensive safety net for the poor [Drèze and Sen (1989)].

6.3 Transient poverty

A distinction is often made between attempts to reduce transient poverty (experienced for only a short period of time) versus chronic poverty (experienced over a long period). Both sorts of poverty are usually substantial in LDCs,¹²⁰ though their relative importance depends on how well existing consumption smoothing and insurance arrangements work. Individuals - including, perhaps especially, the risk-prone rural poor - act, and set up demand for local institutions, to defend themselves from both expected and unexpected fluctuations in well-being (section 4.5). Hence the need to crowd in, not crowd out, private and community adjustments to fluctuations (as to much else) is an important theme of

anti-poverty policy [Morris (1974)]. However, even if optimal individually, most risk-avoiding responses are costly, and reduce the private prospects of escaping poverty; for example, low-risk crops normally produce low expected incomes. Social insurance can exist without markets or governments, but how well does it work? Community-based risk-sharing arrangements may well be less prone to moral hazard and adverse selection (in traditional village settings in which participants are well known to each other), but they must still be implementable without binding, legally enforceable contracts. This fact constrains performance for the poor, particularly in spells of transient poverty, or when the threat of destitution reduces the probability of continued participation in social insurance [Coate and Ravallion (1993), Fafchamps (1992), Besley's chapter]. All this may justify, even on pure efficiency criteria, public actions to partly insure or subsidize poor people's production risks, or to reduce or insure their "background" risks to health or food security.

What form should such actions take? There are many examples of ineffective interventions. Governments often try to stabilize foodgrain prices during a famine by banning "hoarding" and "profiteering"; even when current storage is excessive (relative to a rational expectation of future price) this policy can fail dismally, even making matters worse. A far better approach is to work directly on current and future food availability, to undermine any destabilizing speculation. Understanding how foodgrain markets actually work - and how public action can enable them to work better - is often the key to success in famine relief [Ravallion (1987)].

Compensating the victims is another approach with mixed results. Crop insurance often succumbs to problems of moral hazard [Hazell et al.(1986), Walker et al.(1986)]. Also, it is not obvious why this form of fluctuation should be favored; some of its poor victims might have had good fortune in other respects, while farmworkers - usually poorer, and (via unemployment) worst affected by yield decline - are unprotected by crop insurance. There are other options, such as social security [Ahmad et al (1991)], including rural public works and employment guarantee schemes readily "switched in" during bad times [Ravallion (1991a)]. All such approaches face issues of (i) cost containment, (ii) avoidance of perverse incentives (including moral hazard), (iii) ensuring coverage of the needy, while not discouraging the emergence of insurance markets for the better-off, (iv) distributing scarce public resources fairly and efficiently among types of events for which compensation might be important to the poor.

Policy may also shift resources toward low-risk areas, or risk-reducing inputs. Agricultural research, irrigation, or roads may be diverted to rural areas with relatively low variability in poor people's incomes: Punjab in India, Central Luzon in the Philippines, Sonora in Mexico. This approach aims, in part, to encourage migration away from riskier environments, but mainly to place a larger proportion of output and income in "safer" districts. Yet such "betting on the safe" may paradoxically

increase the variability of total farm output and income, due to the covariance among the districts - often climatically similar - into which the policy has concentrated a larger proportion of farm output and income [Hazell (1982)]. Moreover, unless the poor respond with substantial migration towards the areas of low fluctuations, there may be a perverse poverty impact from concentrating resources upon such areas, where initial poverty is often lower [Rao et al. (1988)]. A more promising approach is often to shift public research, extension, or subsidies towards locally risk-reducing inputs (e.g. irrigation and pest management), crop-mixes (e.g. from maize, towards more drought-resistant millets), or forms of work provision. For example, the income stabilization benefits of relief work schemes have probably been as important as the transfer benefits; there is no more important example than the role these schemes have played in famine relief in South Asia [Drèze (1990), Drèze and Sen (1989), Ravallion (1991a)].

6.4 Chronic poverty

Many actions affect both transient and chronic poverty. For example, certain traditional coping mechanisms during a famine - such as the sale of assets - can save lives but foster longer-term impoverishment. Direct interventions, such as relief work schemes, can help the poor, or near-poor, to avoid such costly forms of adjustment [Binswanger and Rosenzweig (1990), Ravallion (1991)]. An effective safety net may thus also help reduce chronic poverty. Conversely, one of the best defenses against transient distress is a long period of relative prosperity. For example, vulnerability to a famine may depend greatly on the prior history of poverty [Ravallion (1987)].

Typically, policies aimed at reducing chronic poverty try to make the poor more productive. Altered choices about land, human capital, and credit - inputs usually associated with extra output - can raise incomes among the poor.¹²¹ In each case, the poor can gain from seven sorts of event, including policy interventions, that affect inputs. The first three rows of Table 2 relate to the impact of events that improve input volumes; the next two, input productivity; and the last two, appropriate prices.

The first way in which poor people may gain from extra input volumes is by benefiting from a rise in resource availability, e.g. through a settlement scheme that provides each person (poor or not) with the same probability of extra land whatever their initial income levels. Second, at the other extreme, poor people's resources may be increased by pure redistribution from the non-poor, e.g. by land reform. Third, input volume and distribution can together shift in favor of the poor, e.g. by targeting land in a settlement scheme, or jobs in a public works program.

Fourth and fifth come events, including policies, that raise factor productivity,¹²² without necessarily varying the quantities of other inputs. These are typically concentrated on one factor, such as land, labor, or irrigation capital. Poor producers will probably share in the benefits, sometimes even

Table 2: Possible interventions against rural poverty

Production Input Adjustment	Inputs				
	a Land	b Labor	c Human capital	d Physical capital	e Credit
1. Distribution-neutral volume enhancement	Settlement schemes	"Population policy"; reducing participation costs (eg orchets); employment information	Proportionate rise in each type and location of health, education, etc.	Rural non-farm capital assistance; area-wide irrigation ("trickle-down"); "infrastructure"	Greater competitive public supply of, or incentives to, rural lending
2. Volume-neutral distribution enhancement	Land reform	Law enforcement against discrimination vs. poor groups of women ethnics, caste members, etc.	"Reverse discrimination", in access or new services, towards: school girls; poorer tribes or areas; places of high disease incidence	Landless to obtain capital (eg tubewells) and sell its product (eg water) to farmers (Prashika)	"Quotas" for poor, via instructions/incentives to lending institutions directed credit
3. Joint Volume and distribution enhancement	Transmigration of landless	"Directed" version of lb; workfare programs	Health and education spending increases slanted towards rural primary education and health	Poor-selective rural infrastructure; support for competitive hand-and animal-tool supply and maintenance	Credit expansion or incentives in "backward" regions
4. Distribution-neutral productivity enhancement	Yield-related "technology policy" e.g. on high-yielding varieties	Better health services for peak-season illnesses and agricultural injuries; buses to work	Extension to raise efficiency of use of skills, e.g. appropriate nonfarm stock control	Improved irrigation delivery or maintenance	Training and supervision - for bankers or for borrowers
5. Poor-orientated Productivity enhancement	As 4a for "poor people's crops", eg cassava, millets	Research and extension for standard agricultural labor tasks, esp. for women	Artisan up-grading and "recycling" courses steered to poorer people's trades	As above, concentrated on tail-ends; "barefoot management consultants"	Small NGO-based credit user groups; management support
6. Improving or stabilizing price of inputs bought mainly by the poor	Micro-packaged appropriate fertilizers	Labor-demanding technical or institutional change; competitive recruitment and transport to and from jobs	Primary health/schools cheaper, nearer, or timed for lower opportunity-cost	Subsidies for small asset purchases	Poor-selective capital or interest subsidies
7. Improving or stabilizing price of outputs produced intensively with inputs used by the poor	Coarse grain marketing co-operatives	Work and wage information; land ownership, or other alternatives, for employees. Minimum wage laws.	n.a.	Marketing co-operatives for family micro-enterprises	Credit linkage to organized/coop marketing

more than proportionately to initial income. The latter happened in Islampur, Bangladesh, where a rise in land productivity was achieved by a subsidy on handpumps; these become attractive for irrigation only to poor people [Howes (1985)].¹²³

Sixth and seventh, the poor may gain as producers (without direct changes in volume, distribution or productivity of any factor input) from changing prices. Such changes can either reduce (or stabilize) the prices of inputs bought mainly by the poor, or raise (or stabilize) the price of marketed outputs that are intensive in their use of poor people's preferred inputs, notably labor.

Table 2 uses this framework for classifying events, including policy interventions, that can alter inputs into rural production and thereby reduce poverty. Each box exemplifies one such type of event/input interaction (including some non-farm cases). Only a few boxes are reviewed below.

6.4.1 Land

"More land" is often what the rural poor say they need most. Also, when asked to farm in land-preserving ways - e.g. to reduce cattle stocking ratios - they often reply (demonstrably correctly) that they need more land before they can afford to do so [Drinkwater (1991:145)]. Indeed, from the Neolithic Settlement to about 1750, the usual response, in most rural areas suffering from an increase in chronic poverty, was to farm new lands, often nearby, or to shorten fallows [Boserup (1965)].

Spontaneous land expansion, without significant diminishing returns (or increasing marginal break-in-costs) per hectare, has until quite recently been a significant response to poverty. For example, millions of farmers resettled voluntarily in Ethiopia in 1934-77, in response to environmental problems, evictions, and other pressures [Chole and Mulat (1988: 165)]. However, such processes have much abated under pressure of land scarcity. They remain significant in parts of West Africa and Brazil, but even there the areas of new settlement are experiencing shorter fallows, increasingly inadequate land regeneration, and hence long-run threats of diminishing returns. In such circumstances, spontaneous settlement can seldom do much to cure poverty without major supportive public action.¹²⁴

The direct actions inducing land expansion for the poor are settlement schemes and land redistribution. How much can these reduce rural poverty? The rural poverty profile has bearing on the answer. The rural poor usually do overlap substantially with those who own and/or operate little or no farmland. But there are exceptions. Rural teachers, shopkeepers, and artisans are often well-off though landless; in parts of West Africa rural non-farm employment, not occupancy of farmland, appears to predict lower risk of poverty [P. Hill (1972), Reardon et al. (1992)]. Conversely, households that own and operate as much as 3-4 ha. of bad land can be very poor: in Western India, they are no likelier to escape poverty than are the landless [Visaria (1980), Lipton (1985)]. In better farming areas, lack of land

is a clear correlate of poverty, but it is an imperfect one: this constrains the prospects for reducing aggregate rural poverty by land-based redistributions [Ravallion (1989), Ravallion and Sen (1989)].

Another limitation on land redistribution or settlement - even among households deriving their livelihoods entirely from farmland - is that land inequality is less than it seems. First, household size almost everywhere increases with operated land area [Singh (1990)]. In a study of the Indian Punjab, the Gini index of operated land per household was double that of land per person [Julka and Sharma (1989)]. Second, in Asia [Bhalla and Roy (1988)], smaller holdings tend to be on higher-quality land, and to embody more land improvement (wells, bunds) per hectare, than do larger holdings. Third, tenancy usually enables some non-landowners to farm; operated land is almost always distributed less unequally than owned land [Singh (1985)].

For settlement schemes (Table 2:1a) to be effective against poverty, there are several prerequisites. Two are normally met. There must be differences among agricultural regions in (potential) marginal productivity of labor (MPL). And the scheme must be needed, and able, to overcome barriers, or deterrents, to poor people's spontaneous migration towards the regions with a higher potential MPL. More problematic are other prerequisites: fiscal sustainability; low "crowding out" of spontaneous settlement; motivation to identify potential settlers, genuinely willing to move and mostly poor, yet able to benefit from resettlement; and absence of severe conflicts, or environmental degradation, in the area of settlement, such that decreases in poverty among the settlers are unsustainable or are outweighed by increases among indigenous people. Oberai (1988) reviews alternative schemes.

Redistributive land reform - see the chapter by Binswanger et al., and Lipton (1993) - remains an important route to "more land for the poor". Its aims, of advancing the rural poor by increasing their land rights and by defanging multi-market "rural tyrants" [Bell (1990)], have often been achieved, though seldom sufficiently to meet initial excessive expectations. And there have been failures too. Several have involved incentives to shift control of land away from the poor. Restrictions on tenancy, without effective ownership ceilings, have harmed some of the landless poor, because landlords have responded by reducing the supply of land to rent, especially by resuming land for personal cultivation. This has prevented the poor from selling services as farm managers and entrepreneurs via tenancy.¹²⁵ State and collective farming usually excludes poor non-members (ex-employees), relies on economies of scale that seldom exist, and creates incentives to individual shirking and to farm-level capital-intensity.

These erroneous measures have often been redeemed by, or converted into, classic land redistribution. In Taiwan and Korea, tenancy restrictions were redeemed by effective ceilings on holdings, so that incentives to ex-landlords were not (as is usually the case) to evict ex-tenants, but to sell, or accept compensation for, excess lands. Across Latin America, collective and State farmers have

"voted with their feet" to convert the lands into private smallholdings [Thiesenhusen (1989)], leaving State and collective farming as a "detour" on the road from unequal to equal private farming [Bell (1990)].

Public policy for land settlement, and (much more) for land redistribution, has comprised a major, and partly successful, response to the pressures created by rural poverty and population growth. As the composition of the rural poor shifts increasingly from farmers to employees, however, the employment effects of reforms will become more critical. Fortunately, above all in the extremely unequal circumstances of (say) Brazil, it is clear that smaller family holdings are not only more labor-intensive, but more employee-intensive, than large commercial farms. Moreover, this fact (itself due mainly to costs involved in search, screening and supervision of large hired farm workforces) probably creates an "inverse relationship" between farm size and annual output per hectare, as shown in the chapter by Binswanger et al [also see Berry and Cline (1979), Thiesenhusen (1988), Lipton (1993)]. Thus land redistribution - unlike collectivization, or in most cases tenancy reform - normally creates extra GNP, out of which the losers can in part be compensated.

However, "more land for the poor", whether through settlement or distribution, has limits as an anti-poverty policy. First, in India [Dev et al. (1991)], Zimbabwe, and elsewhere, it is often second-rate land, needing supportive expenditure or infrastructure, that reaches the poor (seldom the poorest) in such reforms. Second, there are diminishing returns to increasingly "difficult" reforms, both economic (as the poor acquire marginal land) and political. Third, even if the poor do gain some land, old farmland is being lost, possibly to net desertification,¹²⁶ certainly to salinity and urbanization [Eckholm (1976)]. Fourth, poor rural populations in many countries continue to increase. A major part of rural poverty policy, therefore, depends on higher productivity of land already owned, rented or worked by the rural poor. Fortunately, a growing body of evidence confirms that biochemical and hydraulic innovations tend to help the poor (though not generally to reduce inequality) by reducing food prices, raising demand for labor, and often stabilizing farm-specific output. The effects on poor farmers in nonadopting regions and countries, however, may be harmful [Lipton with Longhurst (1989)].

6.4.2 Credit

In much of Asia, Latin America, and parts of Africa, rural credit has been widely regarded as the key to poverty reduction. In urban production, inputs and outputs usually flow fairly smoothly over the year. In agriculture, especially field-crop production, (i) input requirements are concentrated into a few critical, climate-related periods, especially breaking the soil and harvesting the crop; (ii) output flows are also concentrated, in rainfed annual crops typically into a month or two; (iii) input costs are incurred months before outputs arrive. Poor rural people, with few own resources, appear to need credit to

smooth consumption. Farmers, especially poor farmers, also need credit, to obtain current and capital inputs well before farm incomes become available.

But can this need be avoided? Seasons and their risks are obvious; hence farm families do adapt through non-crop labor inputs [Hopper (1955)], savings and storage. Yet such adaptation is costly, and itself risky; credit might reduce those costs. Also, while rural people may adapt labor supply to the rural nonfarm economy so as to be contravariant with farm requirements, the time-distribution of farm-nonfarm linkages means that some nonfarm labor demand, especially for processing and transport, is covariant with farm labor demand. Hence consumption smoothing (see Besley's chapter), input finance, and investment demand generate quite exceptional demands for rural credit, especially among the poor.

Is it normally supplied to the poor? It is often alleged that this or that African society, for example, lacks rural credit. However, almost invariably there exist non-cash substitutes, and/or "hidden" informal cash-credit mechanisms such as "rotating credit and savings associations" [Besley et al. (1992)]. Moreover, many rural transactions, usually analyzed in the context of land and labor, also operate as forms of credit. For example, sharecropping, as a "loan" of land for a rent that varies with output, helps to address an otherwise largely unprovided farmer demand for equity loans; so does the lending of cattle by owners to managers in Botswana's mafisa system. Many of the forms of social insurance discussed in section 6.3, too, are imperfect substitutes for credit markets.

To attack "wicked moneylenders" as a cause of rural poverty has long been the mode of demagogy, but seldom of economics.¹²⁷ Yet even those who recognize the need for rural credit supply, and hence for incentives to provide it, fear local moneylender monopoly and power, sometimes operating in "interlocking markets" [Bell (1988)] - e.g. lenders who insist that needy borrowers rent their land, or work for them, if they wish to borrow at all. As general concerns, these fears are exaggerated. Informal-sector interest rates usually reflect costs of administering small loans, together with risks of default, rather than substantial monopoly profit [Bottomley (1964), Adams et al. (1984)].

Nevertheless, there has been much concern that informal credit fails to reach the poor, and is inadequate for expanded farm output. Partly due to market responses to that concern, partly to government actions and subsidies, formal credit has displaced much informal (family, trade, curb, moneylender) credit in much of Asia and Latin America.

Yet formal credit too, it is often claimed, does not address the needs of the poor. It is usually restricted to lending for productive inputs, to creditworthy persons; the rural poor are increasingly often landless, lacking in non-land assets and hence collateral, and in need of loans mainly for consumption smoothing. Further, small borrowers offer formal lenders two serious disadvantages: high fixed costs per unit of lending [Bottomley (1963)]; and problems of adverse selection, moral hazard, and above all

enforcement (or, in cases of genuine hardship, rescheduling) of repayment that are much more readily met face-to-face by local informal lenders than impersonally by banks or other remote organizations. Even when a means test is applied - aimed at directing subsidized credit to the poor - the outcome often falls far short of perfect targeting; for example, a comparison of the incidence by consumption group of participation in the (credit-based and income means-tested) Integrated Rural Development Programme in Maharashtra, India, reveals that the scheme is a good deal less well targeted than that state's Employment Guarantee Scheme (which involves neither credit nor a means test) [Kavallion and Datt (1992)].

Some of these problems can be overcome. Group-based lending schemes (such as the Grameen Bank in rural Bangladesh) have often achieved excellent repayment rates, though some assessments of the rates of return have been less encouraging [Hossain (1984)]. The default/loan ratio of small farmers in formal credit systems is usually lower than that of large ones [Lele (1974); Lipton (1981)]. The speculation [ibid.] that this is largely due to more intensive screening of small farmers - and hence not replicable if formal lending to such farmers grows substantially - may be mistaken. In India, marginal farmers (below 1 hectare) operated only 12.2 per cent of farmland in June 1985, yet received 33.0 per cent of agricultural credit from commercial banks, the main source [Reserve Bank of India (1989: 85)].

However, it is hard to maintain hope that chronic poverty can be reduced appreciably by credit-based interventions. Chronic poverty is rarely due to "market failure" in credit or other markets, but to one or more of the following: low real total factor productivity, low endowments-per-person of non-labor factors, and/or a distribution - of those factors and/or of the skills and resources to use them with high TFP - which is unfavorable to the poor. If these conditions prevail, even perfect responses of all factors, product, and credit markets to undistorted incentives will seldom remove chronic poverty.

6.4.3 Public services

To what extent can chronic poverty be reduced by policies concerning the provision and pricing of public services? Physical and human infrastructure is dealt with more fully in the chapter by Jimenez in this volume; here we only flag some key issues meriting further research in the context of poverty.

There is evidence on the productivity effects of physical infrastructure development, suggesting that investments in rural infrastructure can generate sizable income gains (both farm and non-farm) in underdeveloped rural economies [Antle (1983), Binswanger et al. (1989), Jimenez chapter]. The benefits to the poor are rarely dealt with explicitly in this literature (except in the context of the use of infrastructure development in relief work schemes; see sections 6.2 and 6.3). However, given the evidence that agricultural growth tends to reduce rural poverty (section 5.3), there is a compelling case that rural infrastructure development is generally poverty reducing. The causal links that have been

identified in the literature and policy discussions include both direct effects of improved water control on agricultural output, and more indirect effects (particularly of roads) in reducing impediments to the flow of information and commodities. There is also evidence of positive productivity effects from human infrastructure development, particularly basic health and education; for reviews see Schultz (1988), Behrman and Deolalikar (1988), and the chapters by Jimenez and Lau in this volume. Nor are those benefits confined to the urban sector [Jamison and Lau (1982)].

In all such assessments, a recurrent issue is that infrastructure is typically a locally provided good. Public decisions are made about the location of such investments, which may be influenced by income level or growth rate differences between regions. Empirical assessments of income gains from infrastructure development may then be plagued by a simultaneity bias. The (few) studies which have dealt with this problem do confirm the existence of sizable productivity effects; see Binswanger et al. (1989) on physical infrastructure in India, and Pitt et al (1992) on human infrastructure in Indonesia.

None of this implies that the expansion of public investments in local infrastructure at the expense of other public programs - including infrastructure in other regions - is unambiguously pro-poor. That is a far more problematic. It depends crucially on how well markets can provide those goods (almost certainly markets will under-provide some components of infrastructure, but not all; see the Jimenez chapter), and at what prices. "Infrastructure" is also a heterogeneous category; some components are more pro-poor than others. The outcomes for the poor can depend critically on what type of infrastructure is developed.

Consider human infrastructure. Undifferentiated subsidization of human capital formation is unlikely to be inherently pro-poor. Income elasticities of demand for education and health care of unity or higher are plausible for LDCs.¹²⁸ However, a consensus is emerging in favor of differentiated expansion in primary education and basic health care, as an instrument for poverty reduction [e.g., World Bank (1990)]. This is seen as desirable in its own right, and as an important complement to achieving the right conditions (incentives and infrastructure) for promoting a labor-intensive growth path.¹²⁹

A "social services trickle-down" argument is often made in favor of this type of intervention. The argument rests on the assumption that the non-poor are now satiated in their consumption of these social services in most LDCs, so that public spending to these services would go disproportionately to the poor.¹³⁰ However, these services can differ greatly in quality (lower staff-student ratios in schools, better facilities in health care clinics), and the non-poor (even when they have themselves reached universal enrollments) are very unlikely to be satiated for improved quality. The extra benefits of greater budgetary allocations to these social services may then go to the non-poor in the form of higher quality. The same factors in a country's political economy which resulted in the bias against the poor will

presumably continue to operate toward that end.

Another - and somewhat more persuasive - argument is based on the existing utilization of categories of public spending on social services, as revealed by household surveys (an increasingly important use of such surveys).¹³¹ There have been a number of empirical studies of the incidence of subsidies.¹³² These typically find that existing allocations to primary education and basic health care tend to be at least mildly pro-poor, in that subsidies per head received by the poor account for a relatively higher proportion of their income or expenditure, and (in some cases) are also absolutely higher than for the non-poor. The explanation appears to lie in a tendency for the rich to shift into the private market for health and education, and also for family size to be higher for the poor (so that primary education and health care subsidies act like a family allowance scheme). Allocations to education and health care above primary level tend, however, to favor the non-poor.

Such studies are informative, but they tell us little about how the benefits of public expenditure reforms - extra spending on some categories - will be distributed. What they do suggest is that targeting of primary education and health care will be pro-poor, provided that average pre-intervention incidence reliably indicates the incidence of the benefits from selective expansion. However, that need not hold; marginal gains to the poor may be high for categories of spending which do not currently have a pro-poor average incidence. This can be assessed by directly examining how the incidence of benefits of public spending on social services evolves when budgetary outlays alter. Two such studies are Hammer et al (1992) for Malaysia (comparing 1973 with 1984) and van de Walle (1992) for Indonesia (comparing 1978 and 1987). Both countries experienced a sizable expansion in aggregate budgetary outlays on health and education; in both cases, aggregate school enrollments and public health care utilization expanded considerably. The distribution of the benefits of subsidies to these services, already quite pro-poor, did not worsen; in the case of Malaysia, it improved somewhat. Thus the poor gained from the expansion in social sector outlays. More evidence of this sort is needed, given the weight attached to this type of intervention in current policy discussions.

Similar comments can be made about physical infrastructure; some components (rural roads) are almost certainly more pro-poor than others (urban highways). However, the evidence is even more contentious than for human capital investments, not least because the measurement of "who benefits" is more problematic; few surveys of household living standards surveys, for example, assess road utilization, and (in any case) the pervasive second-round benefits would make such assessments unduly narrow. Compelling evidence is likely to come via the more indirect route of first establishing that a particular growth process reduces poverty, and secondly establishing that a particular infrastructure initiative will promote such growth. This is a feasible route, but needs further research.

7 Conclusions

The idea that economic development is possible, and that it can reduce poverty, dates from the eighteenth century; there was little sign of it before Adam Smith. This idea came hand-in-hand with a significant shift in moral and political philosophy. The emerging capitalist civil society was seen to require public institutions which accepted responsibility for mass education and basic health care, and also for protecting the vulnerable in the market economy.

The early translations of this idea into the development policies of many post-colonial LDCs were (with few exceptions) failures. For the most part, the failure was in the translation, not the idea. Smith's vision of the "progressive economy" was mistranslated into overly optimistic plans for a capital-intensive industrialization path; that was how - it was believed - poverty would eventually be eradicated. (There was quite wide agreement that eradicating poverty was the goal). And the role of the state in providing social services was seen more in terms of universities and hospitals than primary schools and clinics.

The attempts at forced-draft planned industrialization offered little for the poor. Growth was often retarded; even when not, it brought few gains to the poor. Indeed, they were often the hardest hit by anti-trade biases, since (much more than the non-poor) they earned their living by turning non-tradables into tradables. And, to make matters worse, the forced-draft industrialization was financed in large part by extracting a surplus from the main source of income to the poor: agriculture. The welfare of today's poor was sacrificed, but not for tomorrow's poor.

The revolt against this failed approach to poverty reduction emerged in the mid-1970s. Disillusionment with the potential of trickle-down industrialization to reach the poor, and with the prospects for radical redistribution of income or land, spurred a move away from the policies and projects of the previous two decades. "Urban bias" started to be seen as damaging to both growth and poverty reduction. Instead, efforts turned to rural development, supported by agro-research and investment in physical and human infrastructure in rural areas. This accompanied a smaller-scale revolution in thinking about urban sector development priorities. Like their predecessors, some of the new plans proved too optimistic, given the real constraints on finance and organization. However, from the mid-1970s, this new direction offered greater hope for the poor, and brought real benefits to them in many countries.

In this context, it remains surprising that the early responses to the macroeconomic crises of the 1980s paid so little explicit regard to the interests of the poor. There were some reasons for believing that adjustment might well benefit the poor even in the short term. The traded goods sector in LDCs tends to be labor intensive, because that is usually their comparative advantage. Then the poor will probably gain from the relative price shifts associated with adjustment. However, that prediction must be qualified. The circumstances in most developing countries - the extent of price and wage flexibility,

the mobility of the poor, the extent to which food behaves as a traded good in the short-term, the extent to which the poor consume traded goods, the extent to which they lose from cuts in public spending - are far more diverse than is allowed for in many of the models which guide policy-making. With the benefit of hindsight, many of the arguments that adjustment - relative to non-adjustment - had unambiguously hurt the poor were implausible. But so were some of the high expectations of supply-side response to adjustment, and hence of a rapid transition to a more favorable growth path.

A more balanced, and realistic, consensus on how poverty can be most effectively reduced started to emerge from the late 1980s, though one with deep roots in the history of thought on poverty, going back to Adam Smith. In this view, the main role of the state is to facilitate provision of privately under-supplied goods (infrastructure, but also social equity itself) in an otherwise market driven economy. With neutral incentives, growth in such an economy is seen as being in the best interests of the poor, who are intensive suppliers of the main factor of production likely to benefit, labor. Growth in private-sector economic activity is a key part of this story, both as an instrument for income poverty reduction, and as one of the means of financing public support where it is needed. But it is only a part. As much emphasis is given to successful public action, in the areas where it is called for.

What issues endure? A comprehensive list should include (in no particular order): the political economy of poverty reduction; country-incentive issues in pro-poor aid policies; the costs and benefits to the poor of asset redistribution; the extent to which poverty considerations should influence macroeconomic and trade policies; fighting chronic poverty versus fighting vulnerability to poverty; the status of the so-called "special poverty groups" (women, children, remote areas); environmental effects (positive and negative) of poverty and its reduction; the impacts of developed country policies on distribution within developing countries.

However, one generic issue stands out: the need to better understand how to make a success of public action in fighting poverty. The history of development efforts - including some of the best intentioned - has clearly dulled expectations of what governments can do effectively. Yet how confident can we be in those expectations while we remain as ignorant as we are about the benefits and costs of much of what governments and donors do? Development agencies still devote few resources to proper evaluation. Granted, it is difficult to properly evaluate any project or policy after it is introduced, given that one is aiming to compare living standards "with" and "without" the project (which is quite distinct from "before" and "after"). The best hope is to build in the evaluation methodology - including the survey instrument - right from the start, prior to intervention. This is rarely done.

Effective public action needs good data and measurement. There are signs of an emerging consensus on poverty measurement, which might fruitfully guide future efforts at evaluation. Recent

theory and practice has moved away from the earlier obsession with a single number - the count of how many people do not reach some arbitrary poverty line - or even a single measure of poverty, no matter how many axioms it satisfies. Instead, the aim is to form consistent comparisons of poverty, such as between different places or dates, or under alternative policies. Recent literature has identified a number of principles to guide such comparisons. The more challenging questions in poverty measurement now lie right at the heart of the problem of normative economics in general: how do we measure the "standard of living"? The welfarist approach - by which only information on individual utilities should be considered - infers preferences from behavior and makes ethically acceptable inter-personal comparisons of utility functions which reproduce those preferences. But the chances of convincingly retrieving individual preferences from observed behavior remain slim, recognizing that there are many non-market determinants of welfare even in the most market-oriented economy. The need for value judgements about individual utilities, and the search for convincing and applicable non-welfarist approaches, will continue.

Recognizing these pervasive uncertainties, what do we know about the world's poor, to help guide policy? The proportion of people deemed poor, by local poverty lines, decreased in most LDCs (for which we have data) between the mid-1960s and the mid-1980s. However, there has been negligible progress in the aggregate since then, and by any reasonable standard, numbers of poor have almost certainly been increasing since the mid-1980s. Around 1990, a little over one billion people were living on less than one dollar per day.

More striking than this observation is the marked regional imbalance in the current rate of progress in poverty reduction. Poverty is probably worsening in Africa (though data inadequacies warn against confidence), and Latin America. But in Asia the poor appear to be seeing some real gains, and can reasonably expect them to continue, albeit with ups and downs in some countries.

At micro level, some reasonably robust generalizations about the poor are emerging from household-survey data. By most measures, poor households tend to be larger, due mainly to more children. The children are less likely to reach average life expectancy, but it is the higher replacement fertility of the poor - which is perfectly rational - that makes up the difference. The working members of poor households thus have more mouths to feed, but they also face higher risks of unemployment, and of illness preventing work. Women are worse off, though this need not be evident in the incidence of current consumption poverty, but rather in terms of the demands on their time, and their opportunities to escape poverty.

The poorest depend mainly on their labor; there is typically little else that they can derive income from. They typically face varied, and uncertain, employment prospects from one time of the year to another. Other risks pervade their lives, such as the threat of illness. They do many things to help

insure themselves (including having many children), and to help insure each other, though often at a cost to longer-term prospects for escaping poverty.

In many respects relevant to policy, the poor are quite heterogeneous. The depth of current poverty varies, as do the endowments which might help in escaping poverty. Net trading positions (consumption minus production) in key markets - notably for food - also vary among the poor, so some gain while others lose from a given change in relative prices. In much of South and South-East Asia, for example, higher prices of the domestically produced food staple will generally benefit those near the poverty line, but many of the poorest will lose at least in the short term.

Typically, the highest incidence and severity of poverty are found in rural areas, especially if ill-watered. For many of the rural poor, their only immediate route out of poverty is by migration to towns, to face a higher expected income, though often a more uncertain one. This may or may not reduce aggregate poverty. We can be more confident that growth in agricultural output - fuelled by investment in human and physical infrastructure - is pro-poor, though not because the poor own much land.

The policies pursued by most LDCs up to the mid-1980s - and by many still - have been biased against the rural sector in various ways. The same is true - though different policies are involved - of the other major sectoral concentration of poor, namely the urban informal sector. There are clear prospects for reducing poverty by removing these biases. Looking ahead (far ahead in some cases), it is less clear how much further gain to the poor can be expected from introducing a bias in the opposite direction. Neutrality should be the immediate aim.

However, provided that the sectoral composition of growth is not biased against the poor - though political-economy considerations suggest that this proviso should not be taken lightly - the overall rate of economic growth matters enormously to their well-being, more so than some past discussions of anti-poverty policy have recognized. Earlier concerns that growth in a dualistic developing country must increase inequality have declined, both as a result of a deeper understanding of the contingent nature of such effects, and due to the belief that, for the poor, absolute levels of living matter more than relative positions. Elasticities of poverty measures with respect to distributionally-neutral growth in aggregate consumption of two or more are now common in LDCs, though there is considerable variation according to initial conditions, including wealth inequalities. While the potential for reducing consumption poverty through a growth process which is not biased against the poor is now undeniable, adverse initial conditions can mean that this potential is only realized painfully slowly.

Two important roles for public action can be identified. One involves fostering the conditions for pro-poor growth, particularly in providing wide access to the necessary physical and human assets, including public infrastructure. The other entails helping those who cannot participate fully in the benefits

of such growth, or who do so with continued exposure to unacceptable risks. Here there is an important role for interventions aiming by various means to improve the distribution of the benefits of public expenditures on social services and safety nets in LDCs. Those means range from the selection of key categories of public spending, such as primary education and basic health care, to more finely targeted transfers (including nutrition and health interventions) based on poverty indicators, or on some self-targeting mechanism. Though disappointing outcomes abound, many countries have demonstrated what is possible with timely and well-conceived interventions.

Notes

1. The remark is noteworthy because it originates not from a warrior against poverty but from an economic liberal, writing for an institution destined to become a think-tank for Mrs Thatcher's government.
2. "Anyone, before the middle of the eighteenth century, who expected a progressive improvement in material welfare...would have been thought eccentric. There was little variation in the lot of the unskilled [European] laborer in the two thousand years...to the France of Louis XIV" [Keynes (1923: vii)].
3. On the 1803 and later editions, see Himmelfarb [(1984:114-7)]. On the 1824 article - which prefigures the "substituting quality for quantity" approach in Becker and Lewis (1974) - see Lipton (1990).
4. Yet the English poor lost part of this safety net, as the rules were applied more harshly. The value of State support in old age, about 90% of working-class average incomes around 1837-8, fell to below 30% by 1890-1900 [Thomson (1984:453)]. However, from 1911 national insurance pensions restored the proportion to around 40%, and "by 1913 outdoor pauperism among the elderly had fallen to 5% of its 1906 level" [Polak and Williamson (1991:135)]. Public relief was only part of the reason; the growth of friendly societies was massive [Hanson (1972:118-27)].
5. This is in marked contrast to Mandeville's denial - so shocking to his contemporaries - that, in a stationary economy, charity schools could raise the income (or the well-being) of workers, rather than merely delaying their earnings, in an epoch when there was no technical progress to complement the extra literacy or numeracy of, or add to the wage-bill for, labor as a whole. See Home (1978).
6. In political science, "modernization theory" suggests that, as developing countries progress economically, they approach the forms of political organization of developed Western countries. In anthropology, "cultural evolutionism" is the view that ways of domestic, economic and social organization follow an evolutionary sequence from lower to higher forms.
7. Though not the only weapon; Indian and other LDC governments did subsidize and protect (via restrictions on big firms) craft, village, and cottage industry.
8. On these experiences see Fei et al. (1979), Kuo (1983) and Wade (1991).
9. For example, India's rate of growth in national income was 1-1.5 percent per person yearly between 1950 and 1973.
10. See, for instance, Datt and Ravallion (1992c) on the generally sluggish reduction in poverty measures in India since Independence.
11. See Birgegaard (1987), Lipton (1987a). Most of the spending of governments such as India's, and of agencies such as the World Bank, that was labelled "rural development" went mainly to smallholder agriculture, not to "integrated" projects. The arguments against such projects in Asia, however, have been greatly exaggerated, especially for second-generation, less top-down projects that invested in technology and institution-building before costly infrastructures [*ibid.*; Limcaoco and Hulme (1990)].

12. The fault may lie with inappropriate planning methods, not with integrated area development as such. Recent area projects such as Solidaridad in Mexico, which offer fiscal incentives instead of dictates from area authorities, appear to work better.
13. Many of these estimates were almost certainly biased upwards. The main problem is that few of the estimates of the earnings gains from extra schooling controlled for differences in ability, family environment, and school quality. On these and related issues see the surveys by Schultz (1988), Behrman (1990), and also the chapters by Jimenez and Strauss/Thomas in this volume.
14. See, in particular, Sen (1979, 1985, 1987). For an attempt to clarify the issues, and their implications for development policy, see Anand and Ravallion (1992).
15. Gulati (1977) showed that in Trivandrum (Kerala), India, mothers sold food stamps to purchase better health care - even though in Kerala State free basic health was widely available. A BN approach appears to claim that planners know better than peasants how to allocate income.
16. Thus Morris's PQLI gives equal weights (1/3) to three rates - infant mortality, life expectancy at age 1, adult literacy, and the reciprocal of infant mortality - and nothing else. Of course, the price-weights in GNP comparisons can also be criticized as arbitrary. But they are, up to a point, justified by a theory according to which relative prices measure relative values to users (marginal utilities) and relative opportunities foregone in production (marginal costs). No such revealed preferences underlie the weights in PQLIs and the like.
17. See Jolly and Cornia (1988), Pinstrup-Andersen (1989), Maasland and van der Gaag (1992), Lenaghan (1992), and Kakwani et al. (1993).
18. And also with indicators of social and political rights [Dasgupta (1992)].
19. However, when educational spending and poverty incidence are held constant at the mean, average GNP per person still remains correlated with literacy rate [Anand and Ravallion (1992)].
20. It is not clear under what circumstances private poverty reduction and public health activities are substitutes, as opposed to complements, in the production of health. Substitutability is suggested by the fact that health outcomes are much better in Kerala, with widespread public health provision, than in many Indian States with far lower levels of poverty. Complementarity is suggested by a large study in the Narangwal area of the Indian Punjab; there a given outlay had much more impact on child health if divided between (private) food supplementation and (public) health provision than if used exclusively for either [Taylor et al. (1978)].
21. Outliers also include countries with much worse than expected outcomes on BN indicators, notably "rich" oil-producing nations.
22. Agarwala's (1983) work stimulated much enthusiasm at the time, but the robustness of some of the conclusions is questionable [Aghazadeh and Evans (1985), Taylor and Arida (1988)]. World Bank (1988) shows that countries receiving conditional adjustment loans - especially if repeated over several years - outperformed comparators on most indicators, but with rather important exceptions: low-income countries, heavily indebted countries, and Sub-Saharan Africa! World Bank (1991c, ch.4) argues that trade restrictions reduce rates of return to Bank projects, though Taylor (1993) points to the possibility of spurious correlation. More rigorous empirical work is needed.

23. See Colclough and Manor (1991), Wade (1991), and the papers in the symposium on this topic in the Summer 1990 issue of the Journal of Economic Perspectives including Bardhan (1990).
24. It is beyond our scope to go into any detail on data sources here. Household surveys are the single most important source of data for making poverty assessments; indeed, they are the only data source which can tell us directly about the distribution of living standards in a society, such as how many households do not attain some consumption level. However, a lot of care must go into setting up and interpreting such data; see Ravallion (1992d) for a survey of the issues that the analyst should be aware of, and a full set of references. Discussions of the generic issues of survey methodology - such as sampling, questionnaire design, survey operations, and the treatment of self-consumed products and consumer durables - can be found in U.N. (1982, 1989), and Delaine et al (1992).
25. For example, in Morocco, animal husbandry is intensive in child labor. While a poor farm household will enjoy higher total consumption from higher meat prices, the behavioral responses may involve longer-term losses to poor children, taken out of school to tend livestock [de Janvry et al. (1991)].
26. These issues are not specific to poverty measurement; there are a number of good expositions, including Deaton and Muellbauer (1980) and Deaton (1980). Also see Deaton, in this volume.
27. This assumes that the parameters of the empirical demand model satisfy the theoretical conditions of utility maximization [see, for example, Deaton and Muellbauer (1980)]. The utility function is derived from the estimated demand model either as an explicit functional form [as in, for example, Rosen (1978) and King (1983)] or by more flexible numerical methods [Vartia (1983)].
28. For further discussion see Pollak and Wales (1979), Deaton and Muellbauer (1986), Fisher (1987), Pollak (1991) and Browning (1992).
29. The latter are often very important to poor people's welfare, yet they are typically not valued in budget surveys. Access to common property resources appears to have been declining in India [Jodha (1986)]; hence market-based valuations of consumption tend to underestimate the level, but over-estimate the rate of growth, in poor people's living standards.
30. Examples include Anand and Harris (1991), Glewwe and van der Gaag (1990), Haddad and Kanbur (1990), Lanjouw and Stern (1991), and Chaudhuri and Ravallion (1993).
31. The following draws in part on Ravallion (1992d), which elaborates on these issues. Other surveys (though more from a developed country perspective) include Hagenaars and de Vos (1988), and Hagenaars and van Praag (1985).
32. The basic needs approach to defining poverty lines goes back to Rowntree's (1901) study of York, England [Atkinson (1975, Chapter 10)].
33. After forty years and endless sterile controversy, the Dunn team's work on pregnant and lactating women [Nestlé (1987-1990)], and a few good papers on specific work tasks under laboratory conditions, comprise almost all the LDC exceptions.

34. A Laspeyres index is common. One issue is where amongst the poor one should anchor the index. Some have preferred to use a bundle of goods appropriate to someone at the poverty line (implying minimization of the head-count index of poverty; see section 3.3), while others have sought a bundle of goods more typical of the middle poor or poorest (minimizing the error in higher-order poverty measures). While homotheticity is implausible in general, there is some evidence that it is more common amongst the poor, in which case this choice will matter little. See Ravallion (1992d).
35. For example, Ravallion and Bidani (1992) show that rank reversals in Indonesia's regional poverty profile are quite common when comparing different methods of setting poverty lines.
36. This may be revealed by "thresholds" in behavior, such as at income levels where the income-elasticity of the age- and sex- specific participation rate is not significantly different from zero, where the food-share does not fall as income rises, or where the income elasticity of demand for food is unity.
37. On the arguments for and against this property see Blackorby and Donaldson (1980).
38. Sen (1976, 1981) offers an otherwise attractive measure of the severity of poverty which is not, however, sub-group consistent; this is also true of the measures that have proposed as generalizations of Sen's measure [Thon (1979), Anand (1983), and Kakwani (1980b)].
39. In particular, PG can be interpreted as ratio of the minimum cost of eliminating poverty with perfect targeting to the maximum cost with no targeting [Ravallion (1992d)].
40. This is actually a fair characterization of how a reduction in the prices of domestically produced food-staples would affect the distribution of welfare in some Asian countries; an example is given in Ravallion and van de Walle (1991a).
41. Ravallion and Chao (1989) show how the optimal allocation can be calculated. This can be instructive in quantifying the potential gains from targeted transfers aimed at reducing poverty, such as between regions [as in Ravallion (1992b)] or land-holding classes [Ravallion (1989a)]; sections 5.3 and 6.2 will give examples. Also see Thorbecke and Berrian (1992).
42. This is readily proved by differentiating through (1) w.r.t. z and using the fact that for the FGT measures $p(y,z)$ is homogeneous of degree zero in z and y .
43. This follows from the fact that, for any given Lorenz curve, the value of $F(z)$ is homogeneous of degree zero in z and the mean; see Kakwani (1980a).
44. See Kanbur (1987a), Kakwani (1990a), Kakwani and Subbarao (1990), Jain and Tendulkar (1990), Datt and Ravallion (1992a).
45. We shall give an elementary exposition of the approach. For a fuller introduction see Ravallion (1992d). On the use of dominance conditions in ranking distributions in terms of measures of inequality see Atkinson (1970); on rankings in terms of poverty see Atkinson (1987), and Foster and Shorrocks (1988). Our exposition will be confined to single dimensions of welfare, though the approach can be generalized to multiple dimensions (though, naturally, unambiguous poverty orderings become more illusive); on the multi-dimensional approach see Atkinson and Bourguignon (1982, 1987).
46. More precisely, attention is restricted to poverty measures which are additive, of the form in equation (1), or any measure which can be written as a monotonic transformation of an additive measure.

All the FGT measures discussed in section 3.3 qualify. Atkinson (1987, 1989, Chapter 2) characterizes the set of admissible poverty measures and gives other examples from the literature.

47. This can also be tested (equivalently) using the generalized Lorenz curve, obtained by scaling up the ordinary Lorenz curve by the mean. If the generalized Lorenz curve (ordinary Lorenz curve scaled up by the mean) of distribution A is everywhere above that of B then the area under A's cumulative frequency distribution must be everywhere lower than B's. On the generalized Lorenz curve see Shorrocks (1983).

48. The theory is formally identical to the problem of measuring undernutrition when nutrient requirements vary in some unknown way; see Kakwani (1989) and Ravallion (1992a).

49. See World Bank (1990) and Ravallion et al. (1991); the latter paper describes the assumptions and data used. The estimate is based on distributions of persons ranked by household consumption or income per person, as derived from household surveys for the mid-1980s covering 76% of the population of developing countries, and on econometric extrapolations based on national accounts and social indicators for the remainder. Currency conversions use the Summers and Heston (1988) exchange rates adjusted for differences in purchasing power.

50. See World Bank (1990, Chapter 3). Using comparable estimation methods, an earlier study at the World Bank estimated that 38% of the population of 36 low income countries in 1975 did not reach the consumption per capita of the 46th percentile of the Indian distribution [Ahluwalia et al. (1979)]. This implies a poverty line close to the lower one used by World Bank (1990) and Ravallion et al (1991). Note that the earlier study did not include China.

51. Almost all poverty measures used in practice are homogeneous of degree zero in the poverty line and mean; this is implied by the property of "scale independence", meaning that if all consumptions and the poverty line increase by the same proportion then poverty will remain the same.

52. This is an analytically convenient assumption (Kakwani, 1990a), but it also accords very well with the observed pattern of shifts over time in the world Lorenz curves reported by Berry et al., (1989). See Ravallion et al (1991) for details. Kakwani (1990a) gives formulae for the elasticities of various poverty measures w.r.t. the Gini index under this assumption about how the Lorenz curve shifts.

53. Thus low poverty lines indicate higher poverty in SSA, while at sufficiently higher lines the ranking reverses; for further details see Chen et al. (1993).

54. Though data inadequacies result in quite a wide confidence interval around estimates of poverty in Africa; see Ravallion et al. (1991) for estimates of the 95% confidence intervals around point estimates of poverty levels by region in 1985.

55. While the methodology of bivariate poverty profiles remains popular, there are alternatives, based on multi-variate models of the distribution of the poverty indicator which allow straightforward dominance tests; see Ravallion (1992a).

56. However, in a sample in 20 urban centers in India in 1984 - while the 819 poor households averaged 5.9 members, the 1190 non-poor households 4.7 - the strong negative size-income relationship ceased to hold among the non-poor [National Institute of Urban Affairs (1989)]. Similarly, in rural Bangladesh, larger family size lowered monthly meals per person, and of kgs. of food staple, more substantially for poorer villages (and for females and children) [Mahmud and McIntosh (1980)].

57. These data may overstate the impact of maternal education, because they do not control for ability, family background, etc [Behrman (1990)].

58. Mortality is less of a problem. Each birth, ceteris paribus, itself cuts a household's average income, confounding the causal sequence in any claimed negative cross-sectional association of it to fertility. But each death, being typically that of a non-working household member, tends to raise household mean income; the effect therefore means that any negative association between income and mortality is more likely to involve a causal sequence from poverty to higher risk of death.

59. Exceptions can arise when higher income is not associated with rising opportunity costs of mother's time [Schultz (1981)].

60. First, to achieve a given completed family size, the poor require more births, due to higher child mortality. Second, the poor are likelier to need support from children in old age than are the rich, yet those children will face lower income, higher time-rates of unemployment (sec. 4.3.2.), and fewer incentives to remit in order to inherit. Third, the poor face worse prospects of education (which would allow them to 'substitute quality for quantity' in children [Becker and Lewis (1974)], and especially of female education (which raises the opportunity-cost of motherhood).

61. The latter argument, however, depends on market transmission of higher expected demand for natural resources (due to higher population) to suppliers's actions to economize in, and/or to discover, such resources. Where real long interest-rates are both exogenous and high (or rising sharply), this transmission mechanism does not work well [Lipton (1992a)].

62. This has been found for some subsets of girls under 5 in North India [Levinson (1974), Bardhan (1982), Dasgupta (1987)] and in Bangladesh [Chen (1981), Muhuvi and Preston (1991)].

63. The increase, with deepening poverty, vanishes among the very poorest 5-10% of households in most samples [Lipton 1983a: 43-5].

64. In Peru, the excess female burden was even more severe for single-headed households, where female heads even had to work 39% more "market" hours than male heads; even in multiple-earner households, market plus domestic work occupied female heads for 76 hours per month more than male heads [Rosenhouse 1989].

65. See H. Standing (1985), Anker and Hein (1985), Guhan and Bharathan (1984) on silk-weaving work in South India; von Braun, Puetz and Webb (1989) on irrigated rice-farming in the Gambia; Telles (1993) on urban labor markets in Brazil.

66. For sociological explanations see Alam and Martin (1984), and Schiegel (1976).

67. See, for example, Visaria (1977), Lipton (1983a) and van de Walle and Ravallion (1992).

68. Since child/adult ratios rise sharply with falling living standards, this probably explains why the associated increase of female ASPRs is so modest.

69. For theories and evidence on unemployment in LDCs see Rosenzweig's (1988) survey. Recent contributions include the work on tacit collusion on the supply side in rural labor markets [Drèze and Mukherjee (1989), Osmani (1991)], and the general equilibrium theory of unemployment under the efficiency wage hypothesis [Dasgupta and Ray (1986), Dasgupta (1992)]. The latter explains higher

unemployment amongst those with fewest assets as the competitive equilibrium of a labor market in which the cost of labor per efficiency hour is high for those with few assets, who are thus priced out of the market.

70. Though rural poverty clearly fell in Indonesia, Egypt, and Kenya in 1950-75 or so, real farm wage-rates showed no clear uptrend [Lipton (1983: 86-7)]. Real wage rates showed little gain - and by some accounts fell - during the 1980s in Java, while poverty measures fell markedly [Ravallion and Huppi (1991), World Bank (1991b)].

71. Schooling is associated with higher productivity even for farm laborers [Chaudhri (1979), Jamison and Lau (1982), Otsuka et al. (1992)], and can help people to escape from low real wage-rates in unskilled agriculture by shifting or diversifying sector, or place, of work. In Malaysia, Thailand and Korea, this process eventually "turned round" the rising trend of farm labor supply; female education also helps this process in the long run by inducing lower fertility.

72. For a stark example of how the poor can lose from statutory minimum wage rates imposed on public works employment see Ravallion et al (1993).

73. In a sample of Philippine farm households, Bouis (1991) finds that the incidence of certain micronutrient deficiencies (iron, calcium, thiamin) tends to be greatest amongst the poor.

74. See Schiff and Valdès (1990); on Ivory Coast evidence, such capacity depends on local endowments of quite precisely specifiable health inputs [Thomas et al. (1992: 32)].

75. See Payne and Lipton (1993); for more enthusiasm about RMR-adaptation, see Sukhatme (1981); for less, see Dasgupta and Ray (1990).

76. Despite the controversies about calorie-income elasticities we have not seen, and would not readily believe, data showing high incidences of severe undernutrition well above an ultra-poverty line.

77. See Schofield (1974), Bardhan and Rudra (1981), Platteau (1988), Ravallion and Dearden (1989), Rosenzweig and Stark (1989), Walker and Ryan (1990), Townsend (1991), Ravallion and Chaudhuri (1992), Fafchamps (1992), Coate and Ravallion (1993), Saha (1993), and Besley's chapter in this volume.

78. See, for example, Anderson and Hazell (1989), Chambers et al. (1981), Sahn, (1989), Ravallion (1988), World Bank (1990, chapter 2), Walker and Ryan (1990), and Morduch (1990, 1991).

79. 4.7% in Cameroon, 7.1% in Peru, 0.3% in Bangladesh, 3.0% in India, 4.8% in Sri Lanka and 2.2% in Thailand. They were slightly more significant in Turkey (9.7%), Syria (14.7%) and Paraguay (16.0%). Only in two of the ten countries with substantial populations and available data (Ecuador, Nepal) did over 30% of people live in "intermediate" settlements. See UN (1983:896-907) and (1988:711-718).

80. Exceptions do exist. In parts of Kerala (India) and SW Sri Lanka, rural areas are not much less densely settled than are small towns.

81. National definitions of "rural" and "urban" do not refer to comparable (or sometimes to any) population sizes of settlements. In Africa, five of the available (1980s) national data sets give no definition; ten give political definitions (e.g. "municipalities"); for five, the main criterion is ">5000"; for one, ">3000"; and for three, ">2000". In Asia, the respective numbers are 4 (including China),

15, 2 (including India), zero and 1. In South America, they are 1, 6, 0, 0 and 2, plus one country each using ">2500" and ">100 dwellings". In Asia a further two countries use ">10,000", and one each ">9000" and (Japan) ">50,000". See UN (1988: 205-6).

82. For example, an RUPIR of 3 means that a randomly selected person living in rural areas is three times more likely to be poor than one living in urban areas.

83. The Bank estimate is 1.1. However, the 1.3 figure makes use of a subsequent reworking of the Indian data, which developed alternative (income-group- and State-specific) rural and urban price deflators. This new series gives somewhat higher estimates of rural poverty incidence, and of RUPIRs: respectively 59 per cent and 1.27 for 1970-71, 51 per cent and 1.28 for 1983, and 49 per cent and 1.29 for 1987-8 [Minhas et al. (1991:1670)].

84. Large excess rural mortality exists in India for both sexes at all ages; for under-fives, the gap appears to have widened since 1961 [Mitra (1978: 223), Ruzicka (1982: tables 5-6)]. Rural infant mortality typically exceeds urban [World Bank (1990: 31)].

85. However, even the urban poor, especially female casual workers, depend significantly on agricultural and allied employment and income.

86. Such as banning street vending, or low-cost transport from the streets, or favored treatment to large firms in access to institutional credit.

87. Spearman's rank correlation coefficient is not significant even at 10 per cent; but, of the five States (out of 15) with highest urban poverty incidence, three are among the half-dozen with the lowest proportions of urban population living in slums.

88. Notice that the function P is homogeneous of degree zero in the poverty line and the mean. Poverty measures with this property are "invariant to scale". In some of the literature, these are referred to as "relative poverty measures", as distinct from "absolute poverty measures", which are invariant to adding the same absolute amount to all incomes and the poverty line; see Blackorby and Donaldson (1980) and Foster and Shorrocks (1991). Almost all poverty measures currently used in practice are "relative poverty measures" in the above sense.

89. The Lorenz curve can be written as $L(p, \pi) = \int_0^p F^{-1}(t, \pi) dt / \mu$ where F^{-1} is the inverse of the CDF

i.e., a proportion p of the population have a standard of living less than $F^{-1}(p, \pi)$ [Gastwirth (1971)].

90. This assumes that z is constant, though this can be readily relaxed to the assumption that z has an elasticity with respect to μ which is less than unity; from the cross-sectional relationship between national poverty lines and mean income that assumption is plausible for developing countries [Ravallion et al. (1991)].

91. These comments also apply to the Sen index, and others with a kink at the poverty line.

92. Also see Adelman and Morris (1973), Robinson (1976), Ahluwalia (1976), Ahluwalia et al. (1979), and Adelman and Robinson (1988).

93. Anand and Kanbur (1985) prove this for FGT measures, though it readily generalizes to all other sub-group consistent poverty measures. Kakwani (1988) proves a similar result for generalized Lorenz curves (and, hence, all monotonic poverty measures), though it will also hold for the poverty incidence curves (section 3.3). Anand and Kanbur (1993) contains the essential analytic results, though the implications for poverty are not drawn out.

94. This is in contrast to Fields's (1980) conclusion that migration into the urban sector will unambiguously reduce aggregate poverty; the difference lies in Fields's assumption that no one is poor in the urban sector.

95. An important concern is the possibility that measurement errors in the poverty measure will be correlated with those in the survey mean; if, for example, survey measurement error leads one to overestimate the rate of growth in the real mean then it will lead to an overestimation of the rate of reduction in poverty incidence. Chen et al. (1993) used an instrumental variables estimator, with instruments derived from independent data sources, such as the National Accounts.

96. In a cross-section of countries (both developed and developing) Persson and Tabellini (1991) find that the higher the income share of the middle class (the third quintile) around the 1960s, the higher the real rate of growth in GDP per capita 1960-85.

97. On India alone see: Ahluwalia (1978, 1985), Saith (1981), Rahakrishna et al (1983), van de Walle (1985), Mellor and Desai (1985), Dev (1988), Gaiha (1989), and Bell and Rich (1990).

98. A classic instance of immiserizing growth being the fate of smallholders in Chilalo, Ethiopia, following intensification in the early 1970s [Cohen (1975)].

99. The new institutional economics emphasizes the choices made by farmers in adopting innovations, those choices being seen as dependent on (inter alia) evolving relative factor scarcities. On the agro-technical progress from this perspective see Hayami and Ruttan (1985), Richards (1985), Binswanger and Ruttan (1977), and Binswanger and Ros:nzweig (1986).

100. In 1987-8, the best estimates of rural poverty incidence in major Indian States were much lower in the Punjab (21.0 per cent) and Haryana (23.2 per cent) than in any of the other, more agriculturally sluggish and less productive, States [Minhas et al. (1991: 1676)]. Research gaps include statistical analysis, and causal modelling, of the regional links between FGT measures of (1) rural poverty and food (not farm) output, (2) urban poverty, or total poverty, and farm (or food) output.

101. Similar experiments for Indonesia, where the regional disparities in the incidence and severity of poverty across islands are larger, have suggested greater gains from this type of targeting - and also that those gains are far from being realized by existing inter-regional transfer policies [Ravallion (1992b), Bidani and Ravallion (1992)]. But even then regional targeting is no panacea; the impact on national poverty of unrestricted income redistributions across Indonesia's provinces would be equivalent to a four percent increase in national mean consumption. We should look for other indicators to enable finer targeting within regions or sectors.

102. Many developing countries are heavily dependent on a few primary commodities for both foreign exchange and as a source of revenue for public spending. The prices of these commodities proved to be highly volatile in the 1970s and 1980s. Increases in the prices of these goods often led to public spending sprees, which led to large budget deficits when primary commodity prices fell.

103. For an exposition relevant to the present discussion see Edwards and van Wijnbergen (1989). For analyses of the distributional impacts of adjustment within this framework see Knight (1976), Addison and Demery (1985), and Kanbur (1987b). This type of model also underlies the analysis on this issue using computable GE models, such as in the recent OECD project [Bourguignon, de Melo and Suwa (1991)].
104. On the Stolper-Samuelson theorem see (for example) Dixit and Norman (1980).
105. See, for example, the simulations of the effects of structural adjustment on the rural sector of Morocco by Bourguignon, Morrisson and Suwa (1991).
106. For example, while persons at the poverty line in Java, Indonesia, tend to be net suppliers of rice, the poorest tend to be net consumers, and there is also a great deal of variability in net trading position at any income level [Ravallion and van de Walle (1990)].
107. For reviews of country experiences with the use of public expenditure reforms to dampen adverse effects of adjustment on the poor see Ribe et al (1990), and World Bank (1990, Chapter 7).
108. See, for example, the discussion on adjustment in India in Ravallion and Subbarao (1992).
109. On the supply response in agriculture and how it is affected by infrastructure see Binswanger's (1989) survey. Also see de Janvry et al. (1991).
110. Household survey instruments funded this way have included a number of the surveys done under the World Bank's Living Standards Measurement Study; see Glewwe (1990).
111. We shall continue to focus on consumption poverty. Impacts of adjustment on a range of social indicators are examined by van der Gaag et al. (1991) and Maasland and van der Gaag (1992). These studies find little evidence that the evolution of social indicators was any different between adjusting and non-adjusting countries.
112. As in Ravallion's (1990b) study for Bangladesh. For further discussion of this type of approach in an adjustment context see Kanbur (1987b). Also see Azam et al. (1989).
113. See section 4.6 on the urban informal sector. Discussions of the main instruments of direct intervention to reduce urban poverty include Mayo et al. (1986) and Mayo and Gross (1988) on "sites-and-services" and slum up-grading projects; World Bank (1992c) on the potential costs and benefits to the urban poor of urban infrastructure and some other urban policy interventions; and Ravallion (1989b) on urban planning regulations.
114. For a recent review of the issues in evaluating targeted interventions in the U.S. see Manski (1990). For more general discussions of project evaluation see Drèze and Stern (1987) and Squire (1989).
115. This is analogous to the role of the "loss function" in balancing type 1 and type 2 errors in statistics.
116. See Kanbur et al (1992) for an analysis of the optimal benefit withdrawal rates for targeted poverty reduction schemes which effect labor supply.

117. Ravallion and Sen (1992) examine the impact of land-based re-distributions when they are accompanied by pro-poor productivity effects; they find that plausible allowances for such effects will add to the poverty impact, though the effect is not large.

118. There is a large literature; contributions include Dandekar (1983), Basu (1981), Acharya and Panwalkar (1988), Echeverri-Gent (1988), Drèze (1990a), Drèze and Sen (1989), and von Braun, Teklu and Webb (1992). For a recent survey of the theory and evidence see Ravallion (1991a).

119. For example, 70% of the employment provided by Bangladesh's Food-for-Work Program in the early 1980s went to the poorest 25% of rural households, ranked by annual income per person [Ravallion (1991)].

120. A panel study in six semi-arid Indian villages over 1975-83 showed that "...only about 12% of households were [poor in none of] the nine years [while] 44% were poor for six or more years, and 19% were poor in every year [and] 50% were poor in a typical year. The transient component is large [yet] there is a substantial persistent core of chronic poverty" [World Bank (1990: 35)].

121. Credit, though not an input itself, facilitates production. The poverty impact of raw-material input choices (on gross output) is not explicitly reviewed. Subsidies to fertilizers, irrigation, etc. normally accrue mainly to better-off farmers, though the poor may gain indirectly. Technology choices, changing input uses in ways that may reduce poverty, appear in Table 2 under col. (a), rows (4-6); and institutional choices, mainly in col. (e) (credit).

122. Local knowledge - about the structure of both poverty and technology - is essential before policy-makers intervene to induce, or to accelerate, gains in the productivity of labor. Do laborers own most of the capital and land that "employs" them? If not, is the price-elasticity of total farm supply low, and the elasticity of substitution between labor and other factors high? If so, "gains" in labor-productivity (e.g. better weedicides) can mean large net losses for the rural poor.

123. Of course, output gains achieved with all inputs held constant cannot in general be attributed to "factor-specific productivity increases". However, in practice, such rises can generally be traced mainly to changes in the type, or mode of utilization, of one or another factor.

124. There remains the possibility that, by expanding the proportion of land growing crops that loom large in poor people's consumption (viz. food staples) or employment, an intervention or incentive might help the poor, via cheaper food or more employment income.

125. Sitting tenants who escape eviction, of course, gain from rent controls, etc. But potential tenants lose, as land-to-rent is resumed for commercial farming on own account. It is notable that tenancy almost always renders the distribution of operated farmland more equal, i.e. more pro-poor, than that of owned farmland; and it is not, as a rule, a barrier to innovation [Bardhan and Rudra (1980), Lipton with Longhurst (1989), Singh (1990)].

126. It is controversial to what extent, if at all, this is really happening [Bie (1989)].

127. The same is true of the view that "excessive" indebtedness arises from the "extravagance" of myopic peasants when exposed to new opportunities for credit; see Ravallion (1990c).

128. See Theil and Finke (1985), Schieber and Poullier (1989), and Gertler and van der Gaag (1990).

129. World Bank (1990, 1991a) has been prominent amongst recent exponents of this view.

130. Outcomes for the poor will depend on policy design within any given category of social-service spending, as well as the allocation across broad categories. How well can the poor be identified (to allow price discrimination based on means-testing, or some form of indicator targeting, such as by locating new facilities in poor areas)? What are the costs and benefits of such targeting? But these policy problems are generic, and have already been dealt with earlier in this section.

131. These are often termed "benefit incidence" studies. This is somewhat misleading, since one is not really quantifying benefits (in the sense of welfare gains), but rather utilization. Utilization of multiple services is then being aggregated according to the service-specific rates of subsidy (public spending less cost-recovery). So these are better thought of as "subsidy incidence" studies. For further discussions of these studies, and their limitations, see Cornes (1992), and Selden and Wasylenko (1992)

132. Examples include Meerman (1979) for Malaysia, and Selowsky (1979) for Colombia, Foxley (1979) for Chile, Meesook (1984) and van de Walle (1992) both for Indonesia, Bahl et al (1986) for South Korea, World Bank (1989) for Bangladesh, Hammer et al (1992) for Malaysia, and Selden and Wasylenko (1992) for Peru. Also see the Jimenez chapter.

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