

## Agriculture in poverty alleviation and economic development

### 8.1 Introduction

This chapter deals with some of the most contentious issues in the field of economic development. The first section sets the stage with a discussion of the importance attached to poverty reduction by the international community. World leaders have repeatedly proclaimed their commitment to poverty reduction at various summits. In addition, a set of internationally agreed development targets and indicators for measuring progress have been accepted by the Development Assistance Committee (DAC) of the Organization for Economic Co-operation and Development (OECD) and the United Nations General Assembly. In general these targets relate to various aspects of poverty. Sections 8.2 and 8.3 describe the international poverty targets and lay out the main features of the different strategies proposed by international organizations for achieving pro-poor growth.

Few people would quarrel with the proposition that the reduction of hunger should receive priority in the fight against poverty, since hunger is surely the most dire manifestation of poverty. What is often forgotten is that fighting hunger is itself essential for fighting poverty: hunger reduces productivity, increases susceptibility to illness,

reduces cognitive ability in children and reduces the willingness to undertake risky investments, thus affecting the rate of economic growth. Hunger also transmits itself from one generation to the next. Evidence of these effects is presented in Section 8.4. Fighting hunger is thus one of the most effective ways of promoting pro-poor economic growth.

Section 8.5 takes up the issue of promoting pro-poor growth. The central theme of this section is that poverty is still disproportionately concentrated among the rural population who still rely heavily on agriculture and on rural off-farm activities for their livelihood strategies. This observation forms the basis for the main argument of Section 8.5, that the best hope of achieving pro-poor growth lies in the interaction between agricultural development and the growth of rural off-farm activities, provided certain conditions are met.

### 8.2 Internationally agreed poverty reduction targets

#### 8.2.1 Setting the targets

Starting in the early 1990s the international community has adopted a series of targets for the reduction

**Table 8.1 Millennium Development Goals (MDGs)**

<b>Goal</b>	<b>Target</b>
1. Eradicate extreme poverty and hunger	<p>1. Halve, between 1990 and 2015, the proportion of people whose income is less than US\$1 a day</p> <p>2. Halve, between 1990 and 2015, the proportion of people who suffer from hunger</p>
2. Achieve universal primary education	<p>3. Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling</p>
3. Promote gender equality and empower women	<p>4. Eliminate gender disparity in primary and secondary education preferably by 2005 and in all levels of education no later than 2015</p>
4. Reduce child mortality	<p>5. Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate</p>
5. Improve maternal health	<p>6. Reduce by three-quarters, between 1990 and 2015, the maternal mortality rate</p>
6. Combat HIV/AIDS, malaria and other diseases	<p>7. Have halted by 2015, and begun to reverse, the spread of HIV/AIDS</p> <p>8. Have halted by 2015, and begun to reverse, the incidence of malaria and other major diseases</p>
7. Ensure environmental sustainability	<p>9. Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources</p> <p>10. Halve, by 2015, the proportion of people without sustainable access to safe drinking-water</p> <p>11. By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers</p>
8. Develop a global partnership for development	<p>12. Develop further an open, rule-based, predictable, non-discriminatory trading and financial system</p> <p>13. Address the special needs of the LDCs</p> <p>14. Address the special needs of landlocked countries and small island developing states</p> <p>15. Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term</p> <p>16. In cooperation with developing countries, develop and implement strategies for decent and productive work for youth</p> <p>17. In cooperation with pharmaceutical companies, provide access to affordable, essential drugs in developing countries</p> <p>18. In cooperation with the private sector, make available the benefits of new technologies, especially in information and communication</p>

Source: Adapted from UN (2001b).

## Box 8.1 The problems with international poverty data

A discussion on the quality of poverty statistics is beyond the scope of this chapter. Serious doubts do however exist as to the significance of the widely used global data on poverty (namely the World Bank's US\$1 a day poverty line) that cannot be ignored. A few major objections are reported here, to warn the reader about important caveats that should be borne in mind concerning the global numbers in this section. For a fuller discussion of the shortcomings behind the international poverty lines the interested reader is referred to Deaton (2001) and Srinivasan (2000), on which the following list is based.

- Poverty is sensitive to temporal and spatial variations (due partly to cultural norms) that are ignored in international poverty lines.
- International poverty measures, even for the same country, are highly sensitive to the way purchasing power parity (PPP) indexes are calculated. Introducing a different PPP data set causes the 1993 poverty headcount for sub-Saharan Africa to jump from 38.1 to 48.7 percent (Deaton, 2001, p. 5).
- PPP data are available only for a limited, albeit increasing, set of countries and years, and are applied to the other countries by extrapolation.
- The price indexes used in poverty calculations have several flaws: (i) they are often national averages, not those actually faced by the poor; (ii) they are seldom updated; (iii) they may have an "urban bias", in the sense that price data collection is often more accurate in urban than in rural areas; and (iv) a rural versus urban breakdown is not always available.
- Survey data also have flaws linked to: (i) coverage (publicly provided goods are not captured); (ii) different recall periods across countries, which generate data that are not comparable; and (iii) inconsistencies in the way income survey data are transformed to make them comparable with expenditure survey data.
- There is often a discrepancy between national account data and survey findings (for instance in India). This makes it impossible to draw any meaningful inference about the relationship between variables measured on the basis of surveys (such as poverty) and variables measured on the basis of national accounts (such as GDP growth).

of poverty in its various dimensions. Goals have been set for reduction of poverty and hunger; for school enrolment; gender equality; reduction of infant, child and maternal mortality; access to reproductive health services; and the adoption of national strategies for sustainable development.

In 1995, the Copenhagen declaration issued at the UN World Summit on Sustainable Development (WSSD) established the general goal of eradicating poverty and eliminating hunger and malnutrition, but no date was specified.<sup>1</sup> The following year the members of the DAC of OECD adopted the goal of halving the proportion of people living in extreme poverty by 2015, initially with no specific base, later specifying 1990 as the base year (OECD, 1996). Also in 1996, the WFS set the goal of halving the number of undernourished by 2015.

Other UN conferences convened in the 1990s agreed on targets for education; child health, labour

and nutrition; reproductive health and infant and maternal mortality; education; gender equality; employment; housing and access to safe water and sanitation; and the environment. International targets have also been agreed for political and civil rights, crime prevention and drug control. The UN Millennium Declaration, adopted in September 2000, consolidated most of these goals.

In 2001, in order to harmonize reporting on progress towards the goals of the Millennium Declaration and other International Development Goals (IDGs), the UN General Assembly adopted a set of eight Millennium Development Goals (MDGs), 18 targets (Table 8.1) and 48 indicators. The MDG on undernourishment differs from that agreed upon at the WFS. The former is about halving the proportion of people who suffer from hunger, while the latter has the more ambitious aim of reducing the number of undernourished

<sup>1</sup> The Copenhagen declaration is frequently claimed to have set the target of halving poverty by 2015. However, no such target is found in the text of the declaration or the annexed plan of action, which only talk of "eradicating absolute poverty by a target date to be specified by each country in its national context" (UN, 1995).

by half by 2015. There is some discrepancy among the goals in the choice of base year: 1990/92 for the WFS goal, 1990 for the MDG on halving hunger.

Does it make sense to have internationally agreed development goals? The short answer is yes.

It is true that internationally agreed development goals, and the indicators used to monitor progress towards their achievement, are prone to endless critiques. Maxwell (1999) and Gaiha (2001) wrote specifically on the shortcomings of the IDGs, while Deaton (2001) and Srinivasan (2000) are two recent examples of many contributions to the problems of measuring poverty, and particularly of arriving at internationally comparable poverty statistics (see Box 8.1).

Nevertheless, even critics acknowledge that “simple targets have real value, and that politicians have a perfectly legitimate need to find simple messages that will galvanize public opinion” (Maxwell, 1999); or that “they are ... useful in drawing attention to pervasive deprivation in developing countries, and to the need for a determined and coordinated effort on the part of the development community to reduce it substantially in the not-too-distant future” (Gaiha, 2001).

Such targets and indicators should not be seen as accurate measures of progress, or as finely tuned criteria to guide policy and to prioritize spending at the international, national or subnational levels.

They should be judged and used for what they really are: crude targets and indicators to raise international consciousness among the public and within the development community, and to assess roughly whether progress is being made. However, seeing indicators as a means to focus attention and action can only be meaningful as a step towards some kind of priority setting.

### 8.2.2 Measuring progress

Thus far the discussion has focused on putting order in the sometimes confusing web of internationally agreed development commitments. In this section, the discussion will be centred on the actual trends towards the achievement of some of these goals and the prospects up to 2015.

Table 8.2 presents the latest World Bank estimates and projections of poverty (less than US\$1 per day). The data show that progress towards the 2015 target is being made. At the global level, poverty has declined both in absolute numbers (if only marginally) and in relative terms. Table 8.2 also presents the baseline scenario for the future as developed by the World Bank (2001c). These forecasts suggest that the world as a whole is roughly on track to reach by 2015 the MDG of halving the proportion of poor people.

The global data hide huge discrepancies between and within regions. East Asia may achieve

**Table 8.2 World Bank estimates and projections of poverty**

	1990	1999	2015	1990	1999	2015
	Million persons			% of population		
Developing countries	1 269	1 134	749	32.0	24.6	13.2
Sub-Saharan Africa	242	300	345	47.7	46.7	39.3
Near East/North Africa	6	7	6	2.4	2.3	1.5
Latin America and the Caribbean	74	77	60	16.8	15.1	9.7
South Asia	495	490	279	44.0	36.9	16.7
East Asia	452	260	59	27.6	14.2	2.8
Transition countries	7	17	4	1.6	3.6	0.8
Total	1 276	1 151	753	29.0	22.7	12.3
<i>idem</i> excl. China	916	936	700	28.1	24.5	14.8

Source: Adapted from World Bank (2001c), Table 1.8. The definition of regions is not always identical to that used in this study, e.g. Turkey is not included in the developing Near East/North Africa and South Africa is included in developing sub-Saharan Africa.

the target early in the new millennium. South Asia made considerable progress in percentage terms during the 1990s, and achieving the goal of halving US\$1/day poverty is deemed feasible.

The goals seem much more challenging in the other regions. In sub-Saharan Africa poverty has in fact increased between 1990 and 1999. The available projections suggest that for sub-Saharan Africa the MDG poverty goal may be beyond reach. Very little progress will be achieved unless performance is significantly enhanced in the near future, and the absolute number of poor may in fact rise considerably. Should this scenario materialize, close to half the world's poor will live in sub-Saharan Africa in 2015.

Latin America and the Near East/North Africa have made only marginal progress (in relative terms) during the 1990s. If the forecasts are accurate they should at least come within reach of the poverty reduction target.

The transition countries in Eastern Europe and Central Asia present a different picture. A big surge in poverty occurred in the region after 1990 (the base year for the target). Most of these countries were then on the brink of a recession after the collapse of the centrally planned regimes and the beginning of the transition towards market economies. The first years of the transition recorded substantial increases in poverty rates across the region (Milanovic, 1998) that have since been only partially reversed. Achieving the target would require faster poverty reduction than at present.

To summarize, the poverty projections imply that:

- the goal of halving by 2015 the proportion of people living in poverty from that prevailing in 1990 may be achieved – the proportion falls from 29.0 percent in 1990 to 12.3 percent in 2015;
- the absolute numbers in poverty may not be halved, as they decline from 1.27 billion in 1990 to 0.75 billion in 2015;
- much of the decline results from prospective developments in East Asia and South Asia;
- in contrast, sub-Saharan Africa's absolute numbers in poverty kept increasing in the 1990s

and are projected to continue to do so until 2015.

The World Bank baseline scenario reported in Table 8.2 is based on the assumption of somewhat higher economic growth than in the past. In fact, the World Bank in its penultimate (2001) report stressed that “if policies are inadequate to achieve more than the slow growth of the 1990s, then the number of people living in extreme poverty would remain near current levels for the next 15 years” (World Bank, 2001a, p. 42).

Shane *et al.* (2000) use a world general equilibrium model to run alternative poverty scenarios to 2015.<sup>2</sup> The broad trends yielded by their projections are generally consistent with those produced by the World Bank. Two aspects of their results are of particular interest. First, they point to the sensitivity of the projections to the income distribution parameters for China. If China's income distribution is forecast to deteriorate significantly over the time horizon considered, the decrease in the number of world poor would amount to a mere 6 percent (against 20 percent in their baseline). Second, their simulations of different types of growth patterns show that growth in agricultural productivity is the most promising avenue to achieve poverty alleviation. In their model, growth based on increases in total factor productivity (TFP) in agriculture is more poverty reducing than either general TFP growth or labour productivity growth.

Developments in a few large countries that host the majority of the world's poor (China, India, Indonesia, Brazil, Bangladesh and Nigeria) are crucial in determining global numbers. It is therefore also interesting to look at prospects for individual countries. In a recent study, Demery and Walton (1999) show that if per capita growth continues along the path recorded during the 1990-95 period the poverty target will be met, as poverty would be reduced by more than half in large countries such as India, China, Indonesia and Brazil. However, 22 out of their sample of 36 countries will fall short of the poverty reduction target.<sup>3</sup>

<sup>2</sup> They actually refer to food insecurity rather than poverty, but define food-insecure people as those under a certain income threshold, which is the common definition of poverty.

<sup>3</sup> Demery and Walton (1999) also build two alternative scenarios to account for a change in policy regimes. Not surprisingly, they arrive at the result that “better” policies would lead to significantly faster poverty reduction.

It is also recognized that where income is very unequally distributed, the poor fail to connect to the growth process (Timmer, 1997). According to some estimates, high-inequality countries would need twice as much growth as low-inequality countries to meet the poverty target (Hammer, Healey and Naschold, 2000).

A word of caution is needed about such perspective analyses. While the data definitely point to the feasibility of achieving the target for poverty reduction at the global level, even the pessimistic scenarios assume higher growth rates than those historically recorded. When past rather than forecast GDP growth rates are used to predict future trends, future poverty reduction will fall short of the 2015 target. The only exception is the Demery and Walton (1999) study, which is based on a smaller sample of countries.

Hence, such perspective analyses do not leave room for unqualified optimism. Business as usual will not result in achieving the targets: stronger commitment and faster results are needed. This is especially true for the two regions that account for more than half of the world's poor. Unless current trends are reversed, South Asia and sub-Saharan Africa face much less rosy prospects and a possible increase in the number of poor.

### 8.3 The main international strategies for poverty reduction: a summary assessment

The ranking of poverty reduction on the international development agenda has probably never been so high. With the symbolic landmark of the new millennium, several multilateral and bilateral donors and agencies felt the urgency to take stock of their own and others' experience with poverty alleviation programmes, and to come up with new strategic proposals for poverty reduction in the years to come. The years 2000-2001 have seen a flurry of strategic poverty reduction documents and reports.

This section briefly reviews these reports, focusing in particular on those by the World Bank, the International Fund for Agricultural Development (IFAD) and the United Nations Development Programme (UNDP). We shall

consider only selected aspects: the definition of poverty; the role of growth; the role of inequality and redistribution; the role of agricultural growth; and empowerment and participation. The aim is not to provide a complete review, nor a comparative evaluation of these reports, but to highlight some major elements of consensus and divergence that are of particular relevance to this chapter.

#### 8.3.1 Definition and measurement issues: the multiple dimensions of poverty

Reflecting the recent evolution of thinking about poverty (Kanbur and Squire, 1999), all agencies now define poverty as having multiple dimensions. Poverty is not seen as simply lack of income or consumption: it includes deprivation in health, education, nutrition, security, power and more. It is also widely accepted that these dimensions of deprivation interact with and reinforce each other.

Some differences persist in the emphasis each agency places, implicitly or explicitly, on the various dimensions of poverty, and on the consequences that are drawn in the strategic documents concerning measures of poverty, and implications for policy and action.

The World Bank's *World Development Report 2000/1* broadens the World Bank's earlier definition of poverty, which included income, education and health dimensions (World Bank, 1990) to include vulnerability and exposure to risk, and voicelessness and powerlessness (World Bank, 2000b, p. 15).

Much of the initial part of the *World Development Report 2000/1* deals with the problems of measuring poverty in its multiple dimensions. When it turns to policy discussion, however, poverty is identified mainly in terms of income poverty. This reflects the difficulty of building a good poverty indicator that is both multidimensional and robust to cross-country comparisons. The problems of constructing such an indicator are introduced in the report itself (World Bank, 2000b, p. 22).

IFAD's *Rural Poverty Report 2001* (IFAD, 2001) discusses these problems at greater length. Three categories of poverty measures are defined (see p. 19-20): a scalar approach (using a single indicator for a single dimension, e.g. income or consumption); a multidimensional-indexed

approach (several indicators are combined into a single indicator); and a vector approach in which several indicators are used to classify people according to each indicator. The IFAD report explicitly chooses one indicator (the scalar absolute poverty line fixed over time) which it finds best suited for its purpose of international comparison.

UNDP's approach is different. The multidimensional definition of poverty is key to their *human poverty* approach, which focuses "not on what people do or do not have, but on what they can or cannot do" (UNDP, 2000b, p. 22). This approach is reflected in their choice of a poverty indicator. UNDP's human poverty index combines "deprivation in a long and healthy life" (measured by the percentage of people expected not to survive to age 40), "deprivation in knowledge" (measured by adult illiteracy), and "deprivation in economic provisioning, from private and public income" (measured by lack of access to health services and safe water, and percentage of children under five who are underweight).

All indexes have advantages and disadvantages. Some may ignore relevant information (e.g. income poverty measures). Others may attribute somewhat arbitrary weights to the different dimensions of poverty (e.g. the human poverty index). Others again may not be suitable for comparisons across different groups (e.g. the multidimensional vector approach).

Of course there is no such thing as a perfect poverty indicator. Rough poverty indicators such as the US\$1/day poverty line are usually thought to provide an adequate approximation to the other dimensions of poverty at the national and regional level of aggregation (see, for instance, Kanbur and Squire, 1999). More detailed information on the other dimensions will normally be needed when the poverty measure is supposed to inform policy programmes at the local level, or policies to target some specific non-income objective.

It is important to stress that the multidimensional definition of poverty adds further complications to the task of measuring poverty. Poverty measurement issues form a substantial part of the existing literature on poverty. The generalized acceptance of a multidimensional definition is likely to give new impetus to this debate, as it did in the past following the introduction of UNDP's human development index (HDI).

Such a debate may not develop an "ultimate" indicator of poverty (i.e. one that is both multidimensional and robust to international comparisons). Its key contribution may rather be to develop a consistent framework for choosing appropriate indicators for each particular need, in research as well as in policy-making.

### 8.3.2 Strategies for poverty reduction: the quest for pro-poor growth

Starting from similar definitions of poverty, most of the documents reviewed here broadly agree on the basic determinants of poverty, and on the issues that well-conceived poverty alleviation policies should tackle. Most strategies now include topics such as institutions and access to markets, human and social capital, empowerment, decentralization, democracy, accountability and governance, international finance and trade, technology, the environment, social policies and aid.

Although differences of emphasis still remain, it is tempting to say that a new consensus has emerged on a poverty reduction recipe. This can be summarized as follows: foster broad-based, pro-poor economic growth, favouring poor people's access to markets and assets, basic education, health and sanitation services, safe water, and power/decision-making. Such access is seen as an end in itself (in that it addresses some of the dimensions of poverty directly, a "welfare" effect), and as a means for poverty reduction through increased economic growth (an "efficiency" effect).

Economic growth is considered central in all the strategic documents surveyed. This is neither new nor surprising. What is new, though, is the range of issues that are now required for achieving sustained growth. In the World Bank report (World Bank, 2000b, p. 49) divergences in growth rates are said to depend on the interaction among a range of factors including initial conditions, policy choices, external shocks and even "no small measure of good luck". The World Bank document also discusses the roles of education, life expectancy, population growth, trade openness and sound macro policies, institutions, ethnic fragmentation, geography and environmental degradation as determinants of growth and its sustainability.

IFAD's approach, partly because of the nature of the Organization and its mandate, calls much

more specifically for labour-intensive, food production based growth. IFAD's approach also explicitly mentions transient and chronic poverty as different problems requiring quite different approaches to analysis and action (a point that does not appear to receive the same attention by the World Bank). The focus on labour-intensive growth is also emphasized in IFAD's report but not in that of the World Bank. This is a surprising omission, since it was key to the World Bank's strategy in its previous poverty report (World Bank, 1990).

The UNDP strategy is different in many respects. The UNDP document does not deny the role of economic growth in poverty reduction, but it focuses more on the need to include poverty alleviation and empowerment targets and policies in growth strategies explicitly and consistently, rather than treating them as largely separate issues.

All agencies seem to accept the qualification that, to be effective in reducing poverty, growth needs to be "pro-poor" or "broad-based". While this may appear to be part of the new consensus, different participants in the debate may have different understandings of the meaning and implications of these terms, which are rarely articulated in full. To a large extent such understanding may depend on how the roles of inequality and redistribution measures are viewed. It may also depend on two other features that figure prominently in all documents: the role of the agricultural and rural sector in growth and poverty alleviation, and the role and importance of the empowerment and participation of the poor. In what follows these three aspects are briefly reviewed.

### 8.3.3 Strategies for poverty reduction: the role of inequality

The World Bank's recipe focuses on win-win measures that are both growth enhancing and equalizing, such as improving the poor's access to land (especially through market-based schemes), basic education and health. However, the World Bank's position on policy measures that may involve a trade-off between a little less but more equal growth is not spelled out clearly.

The IFAD strategy stresses even more strongly

the need for redistributive measures for effective poverty reduction. It points to the overlooked success of many traditional land reform programmes (with beneficial efficiency effects), and to the need to combine redistribution of land assets with redistribution of water and education assets, and provision of complementary services.

UNDP's main criticism of traditional antipoverty strategies is that they did not properly link policies to promote economic growth with social policies addressing poverty concerns. Although its flagship report lacks specific policy suggestions on the issue, UNDP clearly affirms that "many poverty programmes do not adequately address inequality". In particular, it stresses that they "rarely deal with inequality in the distribution of land, which continues to be the most important asset of the rural poor", and that "in some regions with high inequality ... economic growth cannot be accelerated enough to overcome the handicap of too much income directed to the rich" (UNDP, 2000b, p. 42-3).

### 8.3.4 Strategies for poverty reduction: does agriculture matter?

The role of agricultural growth in alleviating poverty has attracted wide attention. This is hardly surprising as most of the world's poor still live in rural areas. This section focuses only on how the reports reviewed see the role of agricultural growth in poverty reduction. A more extensive analysis of this role is provided in Section 8.5 below.

IFAD's approach explores the issue in greater detail, and also takes a more distinct position. It points in particular to food staples production as the subsector with the greatest potential for rural poverty reduction. IFAD's argument is based essentially on (i) the large share of food (and particularly staple food) in the total consumption of the poor; (ii) the large share of calories the poor derive from staple food consumption; and (iii) the large share of income the poor derive from staple food production. The other strategic documents reviewed do not share this focus on staple food production.<sup>4</sup>

The World Bank report asserts that growth in the agricultural sector may benefit the poor dispro-

<sup>4</sup> Although IFAD's report (IFAD, 2001) does not deny the importance of cash crop production, off-farm income and income diversification in general for the welfare of the rural poor, a "critical role" is assigned to staples (see, for instance, p. 3).

portionately and may thus be associated with declining inequality. The World Bank and UNDP share the view that agricultural growth has a particular role to play in poverty alleviation, but their argument is based largely on the more familiar observation that this is one of the sectors from which the poor derive much of their income. The World Bank recommends removing the remaining biases against agriculture, and seems to put a lot of faith in this type of intervention when it states that “the winners (of past reforms) are often those in rural areas” (World Bank, 2000b, p. 66).

The UN *World Economic and Social Survey 2000* (UN, 2000) makes agricultural growth a central issue for “escaping the poverty trap”. It states that agricultural growth can contribute strongly to poverty reduction, mainly because of its demand linkages, and because agricultural and related activities tend to be more labour intensive and less import intensive than manufacturing activities.

### 8.3.5 Two new issues: empowerment and participation

Issues such as growth, inequality and the role of agriculture have always featured prominently in the development debate. What is new in the current wave of poverty reports is the focus on empowerment and participation. All three agencies stress the importance of empowerment of the poor, and encourage their participation in the poverty reduction process. A significant feature in the World Bank’s approach is the inclusion of “voicelessness and powerlessness” among the main dimensions of poverty (World Bank, 2000b, p. 15). This perspective leads to treating empowerment as an end of poverty alleviation strategies, rather than primarily as a means.

IFAD’s perception is very similar to the World Bank’s. “Lack of power” enters IFAD’s definition of poverty (IFAD, 2001, p. 2). Empowerment and participation are seen as essential means for effective poverty reduction in the rural sector.

UNDP has a similar understanding of the matter in that it includes “[not] participating fully in the life of the community” as one of the dimensions of poverty and “empowering the poor” as one

of the key elements of the “new generation of poverty programmes” it calls for. Unlike the World Bank and IFAD, however, UNDP puts more stress on issues such as governance, fighting corruption and decentralization than on empowerment *per se*. The “means” aspect of empowerment is emphasized more than the “goal” aspect. Empowerment is, for instance, seen as an essential tool for achieving more effective targeting in poverty alleviation programmes.<sup>5</sup>

### 8.3.6 From vision to action: putting the strategies to work

An evaluation of the merits of these strategies is far beyond the scope of this chapter. A few general remarks are however possible.

First, the concepts of empowerment and participation. As a technique for field-level development work, participation has a long and well-established history of successes. It assumes different and new meanings when it is linked to the concept of empowerment, and when it is viewed as one of the main ends of poverty alleviation efforts. However, such meanings are not always fully spelled out in terms of operational concepts and policy guidance. If empowerment and participation are to serve as powerful tools in the quest for poverty reduction, considerable efforts will be needed to make them workable concepts.

By recognizing the multiple dimensions of poverty, and by opening to a wealth of new concepts, the recent wave of strategies reviewed here run the risk of generating an all-inclusive framework that may lack focus. Hence it may not serve what should be one of the main tasks of a poverty report, that is, helping to outline the priorities for concerted international action. It is certainly true that poverty is a multidimensional concept, but it does not automatically follow that each of its dimensions may relate to a specific set of causes and, hence, of policies.

The most welcome conclusion of this brief review is that both poverty and inequality are universally placed at the top of the international development policy agenda. It was not so a decade ago. Still, continued efforts are needed to enhance

<sup>5</sup> The United Kingdom’s Department for International Development (DFID) seems to have a similar position, viewing the role of the “voices of the poor” as an element largely embodied in democracy and good governance, rather than a key dimension in itself (DFID, 2000b).

our understanding of what works in terms of poverty reduction and increased food security. In particular, the focus should be partly shifted from the pursuit of win-win policies, towards policy options that involve trade-offs, with which policy-makers are more often confronted. Growth is certainly good for poverty, but what else is needed? What kind of growth is more poverty reducing? How can the related goals of poverty reduction and enhanced food security be best pursued? The rest of this chapter explores some of these questions.

## 8.4 Micro and macro evidence on the impact of undernourishment

This section presents arguments in favour of a focus on fighting hunger as a complement to fighting poverty. Hunger is a violation of a basic human right, and also imposes significant economic costs on society. Hence its reduction and ultimate eradication are the most urgent tasks facing national governments, civil society and the international community.

The plan of this section is as follows. The next subsection documents the serious economic costs of widespread hunger for individuals and nations. This is followed by a discussion of the relationship between household income growth and nutrition, showing that income growth alone, at the rates observed in the recent past, cannot be expected to remove hunger in a reasonably short period. It follows that direct public interventions are also required. However, rapid income growth is needed, since it is a necessary condition for poverty and hunger alleviation, and would make it possible to finance public action against hunger. In Section 8.5 it is argued that agricultural development, coupled with the development of rural non-farm (RNF) activities, is one of the most effective means of promoting income growth.

### 8.4.1 The economic impact of hunger

It is necessary to define some frequently used terms. The definitions used here correspond to

those used in FAO (1999a). The term “undernourishment” is used to describe the status of persons whose food intake does not provide enough calories to meet their physiological requirements on a continuing basis.<sup>6</sup>

An alternative approach is to assess nutritional status through the physiological outcomes of poor nutrition. The term “undernutrition” is used here to describe the status of persons whose heights and weights lie below the lower limits of the ranges established for healthy people. It is critical to note that poor anthropometric status is the outcome not only of insufficient food intake but also of sickness spells. Infectious diseases tend to raise nutritional needs and lower the capacity to absorb nutrients. Food intakes that are adequate for a healthy person may be inadequate for someone in poor health, leading to weight loss in adults and children and growth retardation in growing children. Thus anthropometric measures incorporate information about food consumption as well as health inputs.

Among adults a commonly used measure is the body mass index (BMI), defined as the ratio of bodyweight in kg to the square of height in metres. A BMI in the range of 18.5 to 25 is considered to be healthy for adults, as recommended by FAO, WHO and others. BMI can clearly vary over an adult’s lifetime, but physical stature is determined by the time an individual reaches adulthood.

A natural question at this point is whether it makes sense to collect information on both food intake and stature. The answer is yes, because data on heights and weights are expensive to collect and for that reason are not collected on a regular basis. This makes it hard to use them for regular monitoring.<sup>7</sup> Data on dietary energy supply (DES), using FAO’s methodology, do have the merit of being relatively easy to collect and can be used for monitoring purposes. Another reason for collecting both types of information is that they are needed to guide public policy. It is not usually clear simply by looking at a country’s undernutrition record whether this results from inadequate food intakes or from frequent sickness spells, despite calorie intake levels that would otherwise be sufficient. The

<sup>6</sup> See Box 2.1 in Chapter 2 for a discussion of the data and criteria used to measure undernourishment.

<sup>7</sup> On the other hand, since anthropometric data do not change rapidly (except during wars or famines) it is not necessary to collect these data more often than once every five years.

implications for public policy are quite different in these two cases. In the former case the aim should be to increase food intakes, while in the latter the emphasis should be on public health, sanitation and the provision of clean drinking-water, etc.

What then are the economic costs of undernourishment and undernutrition? First, at the most basic level a person requires adequate nutrition in order to perform labour. If this nutrition is not forthcoming, or if the person lives in an unhealthy environment, the result is poor nutritional status and the person's ability to do sustained work is reduced. Furthermore, if the person is shorter or has a smaller body frame as a result of past nutritional deprivation, he or she may lack the strength to perform physically demanding but also better rewarded tasks. Thus one would expect to find poor nutritional status, as measured by height, associated with lower wages and earnings.

Second, there is evidence that poor nutritional status leaves people more susceptible to illness. Thus a vicious cycle may exist whereby inadequate food intakes combined with frequent sickness spells result in poor nutritional status, which in turn creates an increased susceptibility to illness. Evidence on this point is presented below.

Third, there is a risk of intergenerational transmission of poor nutritional status. For example, women who suffer from poor nutrition are more likely to give birth to underweight babies. These babies thus start out with a nutritional handicap.

Fourth, there is evidence that poor nutrition is associated with poor school performance in children of school age. At its simplest, this is expressed as "a hungry child cannot learn". This would not necessarily imply any impairment in the child's cognitive ability, but merely that because of hunger the child is listless or tired and inattentive and cannot participate in learning activities. Unfortunately, it may also be the case that cognitive ability itself is impaired as a result of prolonged and severe malnutrition. In either case, the upshot is that children do poorly at school, thereby damaging their future economic prospects.

Fifth, people who live on the edge of starvation can be expected to follow a policy of safety first with respect to investments. They will avoid taking risks since the consequences for short-term survival of a downward fluctuation in income will be catastrophic. But less risky investments also tend to

have lower rewards. Once again, the tendency is for poor nutrition to be associated with lower income.

Finally, there is some evidence that the macroeconomic performance of the whole economy may suffer as a result of the cumulative impact of these effects. It has been shown recently that the overall effect may be to reduce a country's rate of economic growth.

**Nutrition and productivity.** What is the mechanism by which poor nutrition affects productivity? Dasgupta (1997, p. 15) explains that a person's physical work capacity can be measured by his or her maximal oxygen uptake. The higher its value, the greater the capacity of the body to convert energy in the tissues into work. Here is the crux of the matter: clinical tests suggest that the maximal oxygen uptake per unit of muscle cell mass is more or less constant in well-nourished and mildly undernourished people. Since lean body mass is related to muscle cell mass, it follows that a higher BMI implies a higher maximal oxygen uptake and hence greater work capacity. Also, if two people have the same BMI, the taller of the two has more lean body mass, and hence higher maximal oxygen uptake and work capacity. Studies also suggest that maximal oxygen uptake depends on the concentration of haemoglobin in the blood. Since that depends on iron intakes, the connection between iron-deficiency anaemia and low productivity is also explained.

Empirical studies are now available on the impact of poor nutrition on individual productivity and wages in ten developing countries in Asia, Africa and Latin America. The evidence convincingly bears out the hypotheses advanced above. Table 8.3 below summarizes the main features of these studies.

It is useful to distinguish between the effect of current undernutrition, as expressed in BMI, from the crystallized effect of past undernutrition, as expressed in adult height.

As far as the former is concerned, all the studies referred to above found that increased BMI had a significant impact on output and wages. For example, Croppenstedt and Muller (2000) found that in rural Ethiopia an increase of 1 percent in BMI increased farm output by about 2.3 percent and wages by 2.7 percent. Thomas and Strauss (1997) found that a 1 percent increase in BMI in

**Table 8.3 Summary of studies on the productivity impact of poor nutrition**

Study authors	Country	Group studied	Main findings
Croppenstedt and Muller (2000)	Ethiopia	Rural households, mainly agricultural	Output and wages rise with BMI and WfH. Adult height has positive impact on wages
Bhargava* (1997)	Rwanda	Rural households, mainly agricultural	BMI, energy intake have positive impact on time spent on heavy activities for men, but not women
Strauss (1986)	Sierra Leone	Rural households, mainly agricultural	Calorie intake has positive impact on productivity
Satyanarayana <i>et al.</i> (1977)	India	Indian factory workers	WfH is significant determinant of productivity
Deolalikar (1988)	India	Southern Indian agricultural workers	Significant effect of WfH on farm output and wages
Alderman <i>et al.</i> (1996)	Pakistan	Rural households, mainly agricultural	Adult height is significant determinant of rural wages
Haddad and Bouis (1991)	Philippines	Sugar-cane growers	Adult height is significant determinant of rural wage
Strauss and Thomas (1998)	Brazil and United States	Adult male population, Brazil, United States	Adult stature, BMI have positive impact on wages in Brazil. Only stature has positive effect on wages in the United States
Thomas and Strauss (1997)	Brazil	Urban population sample	BMI, adult height have strong, positive impacts on market wages
Spurr (1990)	Colombia	Sugar-cane cutters and loaders	Weight, height are significant determinants of productivity
Immink <i>et al.</i> (1984)	Guatemala	Coffee and sugar-cane growers	Adult height has positive impact on productivity

Notes: BMI=body mass index, i.e. weight (kg)/square of height (metre). WfH=weight for height.

\* This study is not directly relevant since it focuses on time allocation decisions. However, it could be argued that *ceteris paribus* the ability to spend more time on heavy activities enhances one's productivity and earning capacity in agriculture.

their sample from urban Brazil was associated with a 2.2 percent increase in wages.

Another possibility is to measure current nutrition through calorie intakes. Here also Strauss (1986) and Thomas and Strauss (1997) reported significant impacts of increased calorie consumption on farm output and wages. For example, the latter study found that an increase of 1 percent in calorie intakes increased wages by about 1.6 percent at calorie intake levels of around 1 700 calories per day, but that this effect ceased to operate

after calorie consumption levels reached around 1 950 calories per day.

The role of micronutrient deficiencies in reducing work capacity has also received increased attention lately. Horton (1999) states that "Studies suggest that iron deficiency anaemia is associated with a 17 percent loss of productivity in heavy manual labour, and 5 percent in light blue-collar work (studies cited in Ross and Horton [1998])".

Strauss and Thomas (1998) present a succinct and illuminating review of the impact of adult

stature and BMI on productivity through an analysis of two data sets from the United States and Brazil. They found that adult stature is positively correlated with wages in both countries, but the effect is strong in Brazil and weak in the United States. However, stature is also positively correlated with education. The suspicion naturally arises as to whether the seeming effect of stature on wages is simply a reflection of the fact that taller people are also better educated. Since it is widely accepted that better education does lead to higher wages, perhaps that is the underlying cause of the dependence of wages on stature. However, Strauss and Thomas (1998) show that this cannot be the explanation since in Brazil the impact of stature on wages was strong even in those adults who had no education.

Low stature and low BMI are also associated with lower labour force participation – not only do people with lower stature or BMIs earn less, but they are less likely to be in a position to earn wages at all. The probable reason for this is that people with low BMIs and low stature are also more likely to fall sick.

This evidence supports the hypothesis that higher stature and BMI are associated with higher wages because of their impact on maximal oxygen-carrying capacity, not because they are proxies for otherwise unobserved qualities that are attractive to employers. Even if one were to argue that stature captures other unobserved investments in human capital in childhood, it is hard to explain the finding that people with no education are likely to earn higher wages if they are taller. Since manual jobs done by uneducated people typically involve heavy labour and do not require much initiative, but rather a willingness to carry out instructions, it is difficult to see what employers could be looking for in a tall person other than sheer physical strength. More evidence for this hypothesis is provided by the finding that the impact of higher stature on wages is weaker in the United States, where mechanization is more prevalent, than in Brazil where mechanization is less prevalent and thus physical strength matters more. Also note that even in Brazil, the better educated, who presumably do more sedentary labour, cannot expect to get higher wages if their BMI is 26 or higher, while in the United States, obesity actually lowers one's chances of getting a higher wage.

For adults, the arrow of causation seems to point from stature to wages and not the other way round. Stature does not vary over a person's adult lifetime, so when a correlation between stature and wages is found, it can safely be assumed that a change in wages cannot cause stature to vary, yet variation in stature can cause wages to vary.

The implications of these findings are profound. The loss of income to those suffering from under-nutrition can be large. Thus it seems that in Brazil people with BMIs of 26 earn wages that are considerably higher than wages earned by those with a BMI of 22 (both BMIs are well within the range of good nutritional status). Furthermore, people with BMIs of 26 are far more likely to find work than people with BMIs of 22.

**Nutrition and health.** Inadequate consumption of protein and energy as well as deficiencies in key micronutrients such as iodine, vitamin A and iron are key factors in the morbidity and mortality of children and adults. It is estimated that 55 percent of the nearly 12 million deaths each year among under five-year-old children in the developing world are associated with malnutrition (UNICEF, 1998). Similarly, it has been estimated that 45 percent of all deaths in developing economies in 1985 can be attributed to infectious and parasitic diseases such as diarrhoea and malaria, while these diseases account for about 4.5 percent of all deaths in industrial countries (Strauss and Thomas, 1998, p. 767). Based on research on the European past, Fogel (1994) finds that improvements in stature and BMI explained “over 80 percent of the decline in mortality rates in England, France and Sweden between the last quarter of the eighteenth century and the third quarter of the nineteenth”.

Modern evidence from a number of Asian countries is presented in Horton (1999). As many as 2.8 million children and close to 300 000 women die needless deaths every year because of malnutrition in these countries. Also noteworthy is the fact that anaemia is responsible for 20 to 25 percent of maternal deaths in most of these countries. This last observation points to the importance of micronutrient deficiencies in malnutrition. Iron deficiency is also associated with malaria, intestinal parasitic infestations and chronic infections. Chronic iodine deficiency causes goitre in adults and children,

besides having an impact on mental health. The importance of subclinical vitamin A deficiency in child mortality has only recently been recognized through meta-analysis of clinical studies (Horton, 1999, p. 249). The relative risk of mortality for a child with subclinical vitamin A deficiency is 1.75 times that for a child who does not suffer from this deficiency. Thus in the Asian region, if about 10 percent of children suffer from subclinical deficiency, a conservative estimate, then 300 000 child deaths could be prevented through a successful vitamin A supplementation programme.

**Nutrition and school performance.** Considering the importance of nutrition in human development, there is a relative dearth of studies focusing on the role of the different malnutrition aspects on cognitive achievement among children in developing countries. Nevertheless, there is sufficient empirical evidence to indicate that early childhood nutrition plays a key role in cognitive achievement, learning capacity and ultimately household welfare. Available studies have shown that low birth weight, protein energy malnutrition in childhood, childhood iron-deficiency anaemia and iodine deficiency (e.g. being born to a mother with goitre) are all linked to cognitive deficiencies and the effects are more or less irreversible by the time a child is ready to go to school (Horton, 1999, p. 249). Childhood anaemia is associated with a decrease in score of one standard deviation in cognitive tests. Children are most vulnerable to malnutrition *in utero* and before they are three years of age as growth rates are fastest and they are most dependent on others for care.

**Nutrition and macroeconomic performance.** Horton (1999) provides a rough measure of the overall economic costs of malnutrition as a percentage of GDP for selected Asian countries. The author presents evidence for India, Pakistan and Viet Nam on the losses of adult productivity as a proportion of GDP resulting from stunting, iodine deficiency and iron deficiency. Estimates are also presented for losses, including childhood cognitive impairment associated with iron deficiency, for Bangladesh, India and Pakistan. When a significant proportion of the population is undernourished, potential rates of GDP growth can be curtailed. Adult productivity losses arising

from the combined effect of stunting, iodine deficiency and iron deficiency are equivalent to 2 to 4 percent of GDP every year in these countries. These are very large totals indeed. It should be noted that these estimates were produced under conservative assumptions.

Thus there is evidence that there are considerable losses at the national level from malnutrition and that these losses accumulate over time. A recent FAO study (Arcand, 2001) indicates a strong relationship between economic growth and nutritional factors, as measured either by the prevalence of food inadequacy (PFI) or the dietary energy supply (DES) per capita. The impact of nutrition on economic growth appears to be strong and to operate directly, through the impact of nutrition on labour productivity, and indirectly through improvements in life expectancy.

Based on historical studies of single countries, Fogel shows that improvements in nutrition and health explain half the economic growth in the United Kingdom and France in the eighteenth and nineteenth centuries (Fogel, 1994). Using an accounting approach with concepts from demography, nutrition and health sciences, he stresses the physiological contribution to economic growth over the long term. Reductions in the incidence of infectious diseases, together with changes in diet, clothing and shelter, increased the efficiency with which food energy was converted into work output and translated into higher economic growth.

#### 8.4.2 Income growth and hunger

Not only is undernutrition an unacceptable violation of human rights, it also imposes a heavy economic burden on nations.

Given that the reduction of undernutrition is vital, how can it best be tackled? Can income growth among poor households take care of the problem on its own, or does it need a helping hand in the form of direct public interventions? Smith and Haddad (1999) used data from 63 countries in five regions, covering 88 percent of the developing world's population over the period from 1970-95, to analyse the determinants of child malnutrition, as measured by the percentage of underweight children under five. One of their principal findings is that growth in per capita national income contributed to half the reduction in child malnutrition over this period.

However, Alderman *et al.* (2001) show that the WFS target is unlikely to be met without robust income growth, and not through income growth alone. They assert that “a combination of growth and specific nutrition programs will be needed”.

It is reasonable to say that while income growth has a substantial impact on undernutrition, taken alone it will not take care of the problem. The reasons for this are as follows. Nutritional status is the outcome of food intakes as well as health inputs. Therefore the solution to undernutrition is increased intakes of calories and micronutrients or better health and sanitation, safe drinking-water, etc. or both. Private income growth is not guaranteed to improve nutrition for several reasons. First, household income growth does not necessarily lead to increased calorie intakes. Second, some inputs into nutrition are public goods. Better health requires public investments. Third, since private investments in nutrition have a long-term payoff, private capital markets are unlikely to finance this investment if collateral cannot be provided. Fourth, parents are likely to underinvest in nutrition of girls, particularly in those countries in Asia where sons are more highly valued.

Although income growth, certainly at low levels of per capita income, will lead to growth in calorie consumption, the magnitude of this effect is unclear. A vast number of studies have attempted to measure the elasticity of demand for calories,<sup>8</sup> i.e. the percentage increase in calorie consumption associated with a 1 percent increase in income. In a seminal study, Reutlinger and Selowsky (1976) came up with estimates of the income elasticity of demand for calories that ranged from 0.15 to 0.30 for households at the calorie requirement level. Subsequent studies produced elasticity estimates ranging from 1.2 to as low as 0.01.

There are at least two reasons why this range is so large. One is the degree of aggregation. Some degree of aggregation is unavoidable in any household survey. For example, all cereals may be aggregated into one food group. If incomes rise, consumers are likely to substitute within the broad group to foods with a lower or higher calorie content than the average for the group. But the income elasticity of demand for calories is calculated under the assumption that there is no substitution

within the food group. Hence it may be biased upwards or downwards depending on the foods to which consumers switch and the degree of aggregation. Another reason is the use of different functional forms and econometric estimation methods.

Some of the early calorie elasticity estimates tended to be on the high side – elasticities of 0.5 were not uncommon. With better recognition of the problems involved in estimating these elasticities, and improvements in survey techniques and econometric estimation techniques, elasticity estimates have generally decreased in size. In recent years, with the important exception of Subramanian and Deaton (1996) who obtained an estimate of about 0.45, most researchers have obtained low to very low elasticities, in the range of 0.01 to 0.15.

Behrman and Deolalikar (1989) provide an explanation for the finding that these elasticities are low. Their hypothesis is that there is a strong demand for more variety in foodstuffs and that this demand manifests itself even at relatively low income levels. This hypothesis was tested on the data set used for the University of Pennsylvania International Comparison Programme (ICP) project, which had data on prices, quantities and purchasing power parity incomes from 34 countries for 1975 and 60 countries for 1980. Nine food groups were covered, i.e. the degree of aggregation was quite high. As food budgets increased from very low levels, there was a very pronounced increase in the demand for food variety (Behrman and Deolalikar, 1989, p. 671). An important implication of this finding is that since the elasticity of substitution is higher among poor households, any increase in food prices will cause the poor to curtail their food consumption more dramatically than the rich. Hence food consumption by the poor will respond strongly to food subsidies that are sharply targeted on them.

## 8.5 Agricultural and rural non-farm growth

Pro-poor income growth is thus a necessary but often insufficient condition to reduce hunger within a reasonable timespan. Without direct

<sup>8</sup> See Bouis (1994) and Strauss and Thomas (1995) for details.

public measures to alleviate the most pressing and transient problems, income growth will only gradually solve the problem of hunger. But to finance direct public measures, income growth is needed. The question then becomes, under what circumstances is income growth pro-poor? This section attempts to answer the question.

A consensus has now emerged that the structure of growth matters for its impact on poverty and on human development generally. The 1996 UNDP *Human Development Report* shows clearly that economic growth, as measured by growth in per capita GDP, is associated with better human development. The relationship is quite strong: countries that achieved higher per capita GDP growth rates over the period from 1960 to 1992 also generally achieved higher values of the HDI, restricted to those components that do not rise automatically with income.

The report also shows that for the same growth rate, some countries managed to improve the HDI more than others. For example, why did Egypt not succeed in increasing its HDI strongly despite enjoying fast growth in per capita GDP? Why did other countries with the same per capita GDP growth rate, such as Lesotho, Indonesia and Malaysia, do much better at improving their HDI performance?

The answer lies in the fact that economic growth, reduction in poverty and inequality reduction are all outcomes of the same deeper processes (Srinivasan, 2000, makes this point forcefully). If these are such as to increase the returns to the assets possessed by the poor then economic growth and poverty reduction will be seen to go together. On the other hand if the process favours assets possessed by the wealthy then they will not. Hence the sectoral composition of growth is important; it matters greatly for poverty and hunger alleviation, in which sector overall economic growth originates.

This section argues that economic growth originating in agriculture, when coupled with growth in RNF incomes, is likely to be strongly poverty reducing, provided that it does not occur against a backdrop of extreme inequality in asset ownership, especially of land. Timmer (1997) found that in countries with highly skewed income distribution, growth reaches the poor with difficulty, whether it originates from increases in agricultural or non-

agricultural productivity. According to some estimates, high-inequality countries would need twice as much growth as low-inequality countries to achieve the same reduction in poverty levels (Hammer, Healey and Naschold, 2000).

Why does economic growth originating in the agricultural sector matter for poverty reduction? The majority of the world's poor still live in rural areas and depend crucially on agriculture for their livelihoods. Hence an increase in agricultural productivity should raise incomes in agriculture. This alone will not necessarily help the poor. The next step is to ask where the extra income is spent. There is some evidence that in many countries this income increment is largely spent on goods such as the services of merchants, artisans, mechanics, etc. and on simple agricultural and household goods. The defining characteristic of most of these goods and services is that they are effectively non-tradable. Furthermore, these commodities generally require low inputs of capital and skills to supply and are ideally suited to the capabilities of the rural poor. But because they are effectively non-tradable, their growth is constrained by the growth of demand in the local rural market, which is stagnant. Hence, if this barrier could be removed, these commodities could grow and help the poor escape poverty. That is precisely what the extra income from agricultural growth does: it creates demand for these locally non-tradable goods, provided this extra income is not hoarded or spent outside but is spent locally, which is more likely in a society of smallholders than in one of large landlords. If all goes well, a virtuous cycle could be created, with agricultural and RNF income growing and helping each other to grow. Four important pieces of evidence are needed to validate this hypothesis. First, incremental budget shares of non-tradables out of agricultural income have to be large; second, income from non-tradables should be important for the poor; third, poverty reduction should follow agricultural growth with a lag; and finally, high initial inequality will short-circuit this process.

The argument presented above will now be discussed in more detail. The majority of the world's poor still live in rural areas and depend crucially on agriculture for their livelihoods (IFAD, 2001). It seems probable then that raising the profitability of agriculture will be helpful to the poor. This involves taking steps to increase agricultural

productivity per hectare, or encouraging a switch to higher-valued crops.

The initial impact of increased profitability in farming is to raise the incomes of those who own land. This in itself may help reduce poverty if the poor also own some land and participate in the productivity increase, but obviously not if the very poor do not generally own land. But there may also be an increase in demand for labour because agriculture itself, and the construction of the infrastructure needed to support agricultural development, are both very labour intensive. Those who were earlier unemployed may thereby find work while those already employed may find themselves working more hours. Either way their incomes go up. However, for poverty reduction, it is not the initial rise in incomes that matters. What does matter is what incomes are spent on.

It is well known that, as incomes rise, the proportion spent on staples declines, while the proportion spent on superior foods such as superior grains, vegetables, fruit, milk, meat, etc. increases. These commodities are effectively non-tradable and more likely to be purchased locally, because they are bulky or perishable. At the same time the proportion of income spent on the services of merchants, artisans, mechanics, etc. is likely

to go up. This is partly because agricultural growth creates a demand for agricultural implements, but also because rural consumers start to demand goods such as bicycles, which need repairs, or start to eat outside the home so creating a demand for food stalls. Services are by definition also non-tradable. Finally, there is a third category of effectively non-tradable goods comprising simple agricultural inputs such as hoes, rakes, spades and so forth, which may be bought and sold locally, but which do not have much of a market outside rural areas.

The combined effect of these patterns of rural spending can be large. Using household consumption data from 1980s surveys in Burkina Faso, the Niger, Senegal and Zambia (with additional data from Zimbabwe), Delgado, Hopkins and Kelly (1998) show that the share of additional income spent on non-tradables ranges from 32 percent in Senegal to 67 percent in Burkina Faso and Zambia. This spending had multiplier effects that were also calculated. The combined impact on household incomes turns out to be surprisingly large. For example, in Burkina Faso, a US\$1 increase in income from farm tradables led to an increase of US\$1.88 in income from non-tradables, while in Zambia a US\$1 increase led to an increase of US\$1.57 in income from non-tradables.

**Table 8.4 Non-farm shares in total rural income and employment**

Regions and subregions	Non-farm income share		Non-farm employment share		Average <sup>2</sup> per capita GNP 1995 (US\$)
	Mean <sup>1</sup> (%)	Coefficient of variation	Mean <sup>1</sup> (%)	Coefficient of variation	
Sub-Saharan Africa	42	0.45	...	...	726
Eastern/southern Africa	45	0.47	...	...	932
West Africa	36	0.36	...	...	313
Asia	32	0.33	44	0.32	1 847
East Asia	35	0.19	44	0.29	2 889
South Asia	29	0.52	43	0.40	388
Latin America	40	0.20	25	0.33	2 499

<sup>1</sup> Mean refers to the mean over the case studies considered for each region and subregion.

<sup>2</sup> Average per capita GNP is calculated as the simple average over the countries covered by the case studies and is based on estimates from the World Bank, World Development Report 1997.

Note: The income shares represent the share of non-farm income in total income of households that are mainly farm households (and the rural landless). The employment shares represent the share of households in the rural population (both in rural areas and small rural towns) with non-farm activity as the primary occupation.

Source: Special chapter on rural non-farm activities in FAO (1998d).

**Table 8.5 Income sources in rural India by expenditure quintile, 1994**

	Per capita consumption expenditure quintile					
	All	Bottom	2nd	3rd	4th	Top
	(%)					
Total farm income	55	38	38	45	50	65
Total off-farm income	43	60	59	53	46	33
Wages	14	43	36	25	14	4
Agricultural wages	8	28	21	13	8	2
Non-agricultural wages	6	16	15	10	6	2
Self-employment	12	11	17	16	15	8
Regular employment	17	4	7	12	19	21
Other income	3	2	2	3	3	3

Source: Lanjouw and Shariff (2001).

Note: Subtotals do not necessarily add up to totals because of rounding.

The next step is to show that income from non-tradables looms large in the incomes of the poor. Since livestock can easily be raised at little cost on smallholdings, small animals such as sheep and goats are often kept by the poor, and livestock income is generally of more importance to them<sup>9</sup> (see Adams and He, 1995, for an example). Services such as running a food stall or setting up a simple repair shop do not require much in the way of either skills or capital. Neither does the manufacture of simple agricultural implements. Hence it is precisely in the provision of these goods and services that the poor can find gainful employment and thus raise their incomes. The labour required to supply these goods and services does not have to be withdrawn from some other activity, since there is often a great deal of unemployment, disguised or open in the rural areas of developing countries. Tables 8.4 to 8.6 provide evidence as to the importance of RNF incomes to the poor.

From Table 8.4 it is clear that the mean share of non-farm income in household income is nowhere less than about 30 percent and is as high as 45 percent in eastern/southern Africa. Shares in employment are equally high, ranging from 25 percent in Latin America to almost 45 percent in parts of Asia. Table 8.5 provides evidence that in one large poor country, India, the share of income from non-farm sources is highest, at 60 percent, for households in the bottom expenditure quintile.

It declines as income increases, down to only 33 percent for the richest quintile. A broadly similar trend holds in Mexico, as Table 8.6 shows, although households are classified by the amount of land farmed, rather than expenditure as in the case of India. To sum up, non-farm income is important to all rural households, but is particularly important to poor rural households.

Hence, for the poor, the RNF sector offers a relatively easy escape route from poverty. But anyone who thinks of supplying these goods and services runs into a demand bottleneck. Because they are effectively non-tradable in most circumstances, they can only be sold locally. There is not much local demand for them in a stagnant rural economy and, until the economy is created, there is no point in expanding output. But if agricultural productivity and hence the incomes of those who own land can be increased – and if they spend this extra income on goods and services provided by the RNF sector – then the bottleneck to the RNF sector's expansion can be cleared and it can grow and provide important benefits for the poor. Even landless agricultural labourers and others not directly employed in this sector benefit since their power to bargain for higher wages goes up if alternative sources of employment are available.

A critical implication is that the impact on poverty occurs with a lag. Growth in agricultural income will not initially reduce poverty and may

<sup>9</sup> Another consideration is that livestock are often kept on marginal or degraded land that would otherwise not contribute to income.

**Table 8.6 Sources of income in the Mexican *ejido* sector by farm size, 1997**

	Farm size in rainfed equivalent hectares					
	All	<2	2-5	5-10	10-18	>=18
Number of households	928	131	244	239	179	135
<b>Shares in total income</b>	(%)					
Total farm income	45.1	22.9	28.1	41.8	50.3	62.0
Total off-farm income	54.9	77.1	71.9	58.2	48.7	38.0
Wages	25.6	40.3	36.9	30.4	18.2	11.1
Agricultural wages	6.7	10.0	8.5	4.2	5.7	2.2
Non-agricultural wages	18.9	30.3	28.4	26.2	12.5	8.9
Self-employment	8.4	17.1	14.2	4.6	12.1	6.8
Remittances	6.5	2.6	5.4	8.9	6.0	6.0
Other income	14.4	17.1	15.3	14.3	13.3	14.1

Source: de Janvry and Sadoulet (2000).

not at first have any impact even on the wages of unskilled agricultural labour. It is only later, after incomes have been generated in the RNF sector, that poverty should begin to decline. Once it does, however, it should decline very quickly.

Good econometric evidence of a positive relationship between agricultural growth and poverty alleviation is available from India, which has had a long period of sustained agricultural growth starting from the early 1970s. The most detailed study is by Datt and Ravallion (1998), who relate differences in poverty reduction to differences in agricultural growth rates for different Indian states. Since macroeconomic, trade, sectoral and social policies apply to the whole of India and so are all held fixed, the “pure” effect of agricultural growth on poverty reduction can be isolated.

The main point of the Datt and Ravallion (1998) paper is the following. From the early 1970s, when growth in agricultural yields in India became strong, poverty as measured by the squared poverty gap index began to decline. The squared poverty gap index does not merely count the number of people whose incomes are below the poverty line. It also measures how far below the poverty line their incomes are, and gives progressively higher weights to incomes the further they are below the poverty line. Not only did the number of people in poverty decline, as measured

by the headcount index, but poverty also became less severe, i.e. the consumption of the poorest of the poor also increased. The claim that agricultural yield growth bypassed the poorest cannot be supported on the basis of this finding.

What were the channels through which agricultural growth helped the poor? An important finding is that rural wages increased, but with a lag: “Higher average farm-yields benefited poor people both directly and via higher real wages ... The benefits to the poor from agricultural growth were not confined to those near the poverty line” (Datt and Ravallion, 1998).

The fact that wages do respond to agricultural growth but with a lag is a critical piece of evidence, showing that time is required for the RNF sector to grow after the initial impetus from growth in agriculture. When the RNF grows, the demand for labour goes up. Agricultural workers find that their bargaining power has gone up and they can start demanding higher wages. Therefore agricultural growth should cause wages to go up, but with a lag.

Thus far the discussion has concentrated on how the process works if everything goes well. Under what conditions would the process not benefit the poor?

Agricultural growth puts money initially into the hands of those who own land. Its impact on poverty depends on whether this income is spent on goods

and services that are supplied locally, or on imports. The poor will not benefit if it is not spent locally, on goods and services provided by the RNF sector. But this is what may happen when there are marked inequalities in landownership and the initial increase in agricultural income is concentrated in a few hands. Wealthy landowners may have metropolitan tastes and the wealth to indulge them, and will be unlikely to patronize local suppliers. There may be gains to the poor arising out of extra agricultural employment and possibly lower food prices, but the add-on effect on local employment and industry arising out of expenditure by farmers on locally made products will be lacking.

Bautista's (1995) case study in the Philippines illuminates these issues. He points out that over the period 1965-80, crop production in the Philippines grew at a rate of 5.2 percent p.a. and livestock at a rate of 6.4 percent, among the highest growth rates in Asia. The growth of crop production was evenly shared between rice and non-traditional export crops. These high growth rates were at least partly a result of a sevenfold increase in real government expenditure on agriculture, the bulk of which was devoted to irrigation that took half of all agricultural investment by 1980. This was at the cost of investments in rural roads whose share dropped to barely 2 percent of agricultural expenditure. At the same time, human development was exceptionally good in the Philippines, with rates of literacy, infant mortality and life expectancy all either better or comparable with its neighbours in Southeast Asia. Despite all this, there was no significant reduction in poverty.

The primary reason was that the income gains from agricultural growth were highly concentrated. First, where rice farmers were concerned, only those who had access to irrigation could benefit. Despite all the investment in irrigation, only 18 percent of arable land was irrigated by 1980. Second, subsidies on credit and fertilizers were pocketed by large farmers who also enjoyed better access to infrastructure. Large farmers also enjoyed implicit subsidies – through low tariffs, an overvalued exchange rate and a low interest rate – on imported farm machinery that displaced landless agricultural labourers. The consequences were clear: “Income gains were concentrated in the already more affluent segment of the rural population. As a result, rural consumption favored

capital-intensive products and imported goods rather than labor-intensive, locally produced goods ... Accordingly the rate of labor absorption in both agriculture and industry was very low, and given the rapid expansion of the labor force, it prevented real wage rates from moving upward. As a result ... the incidence of poverty increased over the period” (Bautista, 1995, p. 144).

A similar situation can arise in countries where governments place legal and administrative hurdles in the path of smallholders who wish to grow commercial crops. The cultivation of these crops is then in the hands of wealthy farmers who are likely to spend any increments in their income on imported goods while spending little on locally produced goods. Allowing small farmers to share in the profits from commercial crop cultivation would have increased the likelihood of these profits being spent locally, thus creating income-earning opportunities for others. But if this is not the government's policy, the result is that the agriculture sector registers growth but this growth has little or no impact on poverty.

Thus, agricultural growth provides opportunities for the poor to increase their incomes. Whether the poor can seize these opportunities depends on their education and health, on their access to credit and savings services, and on whether they are excluded by social custom or government fiat from income-earning activities (such as women shut out from credit markets). Measures to increase the capital available to the poor (human, financial, physical, natural and social) are therefore likely to pay big dividends in terms of their ability to lift themselves out of poverty.

To conclude, the key point is that growth in agricultural incomes, by creating demand for the output of the RNF non-tradable sector, makes it possible for that sector to grow. Since the capital and skill requirements of the sector are well suited to the capabilities of the poor, its rapid growth can help eliminate poverty. Thus agricultural growth ultimately reduces poverty and does so with a lag. But this benign process cannot work if there are marked initial inequalities in the agricultural sector since these act to prevent agricultural incomes from being spent locally and therefore do not create the multipliers needed.