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Economic Policy for Agriculture: A Guide for FAO Professionals

By

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Background and Terms of Reference

FAO technical support to member countries in the areas of policy and planning has taken on a new dimension since the late 1980s. The inclusion of agriculture in international trade negotiations (Uruguay Round) has made the sector increasingly sensitive to trade-related issues. Simultaneously agriculture is increasingly linked with the other sectors of the economy and moving away from subsistence production to production for markets. Trade liberalisation initiatives imply future demand and supply shifts and dynamic adjustments in markets that will have far-reaching and unpredictable effects on food trade. The risks inherent in and uncertainties associated with trade-oriented supply stabilisation is a serious food security issue that must be addressed by appropriate policies.

Given population growth, pressure on agricultural land, increasing demands on limited water resources from urban sectors, intensified cropping, and widespread land degradation, *sustainable* agricultural resource management is critical to food security. Sustainability and environmental issues are increasing in importance, placing new pressures on policy formation. In light of these trade-related changes, this report provides guidance to FAO professionals on the manner to contribute to policy design. In all countries, the objective of agricultural policy should be to foster the best use of agricultural resources, with the over-riding goal of improving food security. Agricultural policies themselves are always implemented within a macroeconomic framework. Consistency between sectoral policies and macroeconomic policies is key to long term food security.

I. The Purpose of this Report

The purpose of this report is

1. to provide FAO professionals with the basic analytical principles of economic policy making for agriculture;
2. it does not seek to convert non-economists into economists, but rather to provide technical experts with a familiarity of the discourse of economic policy, so they can apply their technical skills more effectively; and
3. it particularly targets those involved in technical field work, whose specialised knowledge is repeatedly evaluated within an economic context of costs and benefits.

Over the last four decades, the consensus among economists and policy makers about the appropriate policy for agricultural development has changed considerably. Until the mid-1970s the overwhelming majority view was that agricultural *markets*¹ in both developed and developing countries had inherent characteristics which required a range of government interventions, to maintain price and income stability, and to protect producers, especially smallholders, against bankruptcy. During the next twenty years this consensus disappeared, to be replaced by another, that agricultural markets were generally efficient, and that ‘policy failures’ resulting from interventions were more economically costly than ‘market failures’. By the late 1990s, the latter consensus weakened, as part of the more general disenchantment with the so-called Washington consensus (see Stiglitz 1998), in favour of a more interventionist perspective. The non-economist might find these shifts in consensus among economists puzzling, especially since they cannot be adequately explained by the accumulation of either empirical or theoretical knowledge.

There are no simple and unambiguous policy prescriptions for the agricultural sector which the economics profession can provide. In place of this, the discipline offers various methodologies and analytical tools to guide policy makers, when they are faced with problems that require a response from the public sector. The purpose of this ‘guide’ is to present the range of policy questions that FAO professionals will encounter in the field, and to do so in a rigorous, non-technical manner, so that one need not be an economist to appreciate the complexities of formulating economic policy. To accomplish this task, the guide first explains the general, abstract framework (‘theory’) which is applied to concrete problems, from which policy generalisations are derived. The presentation of this framework begins with what is called the *normative*² non-intervention model, which is based upon the tenet that all markets operate *efficiently*. In the non-intervention model, public sector interventions in markets create *distortions* and should be minimised. Few economists who specialise in development issue would except the extreme form of this model; many would not accept its general approach. The reasons for the scepticism are discussed to explain the broad theoretical basis for public sector interventions in markets.

¹ Many common-place words assume particular and specific definition in economic discourse, and ‘market’ is one of these. Such terms will be ‘flagged’ by use of italics when first used, indicating that their definition will be presented subsequently.

² Mainstream economics uses the word ‘normative’ to refer to any line of analysis that results in policy prescriptions.

Explanatory Box:

A market is not a simple thing

The word 'market' is oft-used in economics, frequently with considerable ambiguity. There are senses in which the term might be used. The different meanings reflect several usages: *a concrete usage*, which treats markets as entities which are socially constructed; *a theoretical usage* that typically abstracts from the social context of markets; and, *a political usage*, which endorses a particular form of organisation for society.

1. A 'market' can refer to a concrete place, where at specific times under formal and often strict rules, buying and selling occurs. In this sense the London Stock Exchange or the collection of money changers in the Kano (Nigeria) old city are markets.
2. A 'market' can refer to a more abstract and broader institution through which information is transmitted, in the form of 'market signals' .
3. A 'market' may involve a complete abstraction from concrete trading places, which is personified with as representing a collective will. Something of this sort is meant when one reads that 'financial markets will not tolerate high fiscal deficits'.
4. As an adjective, 'market' can refer to a system of regulation, or even a form of organisation for society as a whole. It is this sense in which one uses the term 'market forces' and 'reliance on markets', as opposed to social regulation through governments.

The potential for confusion can be demonstrated by taking an example. There is a political economy position which rejects direct government action for poverty reduction as ineffective, and proposes instead that poverty would be reduced by public action to make markets operate more efficiently. Thus, 'a more appropriate role for the government would be to reduce information...costs' (Gaiha 1993, p. 64).

How does a government reduce information costs in markets? To the extent that improving information flows refers to concrete markets (#1), the task is a relatively simple one of communications system, standardisation of weights and measures, improving market stalls, etc. But, improving the efficiency of markets means considerably more than these concrete activities, for it refers to the efficiency of market signals (#2). Among other things, facilitating efficient market signals requires enforcing competition, and ensuring that private costs cover social costs (e.g., pollution costs). Market signals will serve their function of regulating the allocation of resources if producers are ruled by market forces (#3). For this to be the case, there must be a free market in land (which in many sub-Saharan countries there is not), labour must be mobile (ethnic and other social distinctions may limit this), and the market-facilitating institutional framework established and clear. Particularly the latter is unlikely to be the case in low-income countries. This discussion suggests that improving the efficiency of markets is, in effect, the process of development itself.

The agriculture sector has a number of important characteristics that, for purposes of prescribing economic policy, set it apart from other sectors of the economy. No serious understanding of policy issues or policy debates is possible without first treating these characteristics. These characteristics, familiar to FAO professionals, can be organised under the following headings: 1) agriculture involves a range of economic activities in addition to cultivation (grazing, forestry, and fishing); 2) the development of agriculture interacts in important and particular ways with the development of other sectors, and of the economy as a whole; 3) more than other economic sectors, agricultural production, commerce and income are governed by risk and uncertainty; 4) forms of use rights (*tenure*) to agricultural land and water are considerably more varied than in other sectors; 5) central to long-term agricultural development is *sustainability*, particularly environmental sustainability; and 6) because of the foregoing characteristics, agricultural markets (especially land and labour markets) have unique institutional features.

With an understanding of the nature of economic argument and the relevant characteristics of agriculture, one can consider economic policies that affect the

sector. *Macroeconomic policies* set the framework for stability in which agricultural producers operate, and are part of the determinant of the economy's growth performance. All governments tax, in order to provide for a range of public goods and other public sector activities. A central issue in long term development, as well as short-term policy, is the extent to which agriculture can and should be taxed. Taxation of agriculture is one of many instruments by which governments implicitly or explicitly intervene in the operation of agricultural markets. The various instruments of intervention are presented and discussed in detail. Access to land (and to waters for fishing) is the basis of agricultural production. In many developing countries, especially the sub-Saharan countries, rights of access are in a state of flux and cannot be taken as parameters when determining policy. Indeed, *land tenure*, in the broadest sense, is a major preoccupation of governments and donor agencies (especially the World Bank). This is a major area of agricultural policy that FAO professionals must consider in their work in the field.

After a discussion of analytical issues in Sections 2-4, the presentation turns to the new trading regulations set by the Agreement on Agriculture (AonA) of the Uruguay Round (UR), and implemented through the World Trade Organisation (WTO). It is important to clarify the impact of the AonA, which in practice sets relatively few limits to policies which developing countries would be motivated to continue or initiate. This limited impact is in part the result of exceptions and exemptions permitted, and, more importantly, due to the special status of the Least Developed Countries (LtDCs).³

This guide cannot provide definitive answers for many policy issues, but it can indicate areas of consensus and disagreement. While economic policy has a technical-economic component, few aspects can be determined by this component alone. Successful policy combines economic theory, the contributions of the other social sciences (including history), and scientific and technical expertise on agricultural production, and does so in a pragmatic matter. Thus, this guide is meant not merely to inform, but also to facilitate the involvement of technical experts (e.g., agronomists and nutrition experts) to participate in policy determination. The FAO has a constituency of member governments, which are ultimately responsible for formulating and implementing policy. This guide does not dictate policy, but presents the issues such that FAO professionals can contribute to a dialogue with the governments they serve in a technical capacity. To facilitate this, an extensive bibliography is provided, along with relevant footnotes supplying the more important commentaries upon which this synthesis is based.

³ The initials LtDC will be used to avoid confusion with the more common acronym, LDC, which is used for 'less developed countries' (though 'LDC' will not be employed in this report, precisely to avoid confusion).

II. The analytical basis for economic policy towards agriculture

This section does the following:

1. it explains that an *economic distortion* is a concept based upon a specific theoretical framework;
2. it presents the theoretical basis for this concept;
3. using that theoretical framework, it explains the ambiguities inherent in the concept; and
4. it explains that the WTO definition of distortion is practical and pragmatic, rather than theoretical; and
5. it concludes with a general statement of the external constraints on domestic agricultural policy.

Central in discussions of agricultural policy is the concept of *economic distortion*. One finds the term used in virtually all policy documents, especially in the reports of the multilateral agencies. One finds it used in the documents of the Uruguay Round and the WTO, which make reference to *trade distorting* measures or actions, almost always by governments. To appreciate the implications of this concept, it is necessary to begin at first principles. Any entity, be it a person, a market, or an idea, can undergo a change without suffering from a distortion. The word 'distortion' implies a standard or normal condition, shape, or nature, such that derivation from that norm is judged to be distorted. A mirror provides a useful example. A mirror, which enlarges or reduces an image, but keeps all proportions the same changes the image but does not distort it. A mirror which alters the proportions of an image (such as one finds in side-shows of carnivals that make people look fatter or thinner than life) is distortionary. Similarly in economics, to talk of a market distortion (as opposed to a mere difference or change), one must specify the normal by which the distortionary effect is judged.

This norm is called Pareto Optimality. The formal definition of Pareto Optimality is:

Pareto Optimality refers to an economic system as a whole (not to individual markets). *A system is Pareto Optimal, if no economic agent's (person's) welfare can increase without someone else's welfare decreasing.*

In other words, any allocation of inputs and distribution of outputs except the prevailing one would leave at least one agent worse off.

With this definition of the norm for economic systems, one can provide an unambiguous definition of an economic distortion.

A distortion results when something blocks an economic system from achieving Pareto Optimality. In this analytical framework economic distortions have two origins:

1. Private sector distortions (also called 'market failure')
2. Public sector distortions (*not* to be confused with 'government failures')

This definition of distortions derives from establishing the validity of the Pareto Optimality. The necessary condition for Pareto Optimality is *perfect competition*. An economic system is perfectly competitive if:

1. there are a large number of buyers and sellers of every product, none of whom can, by their individual actions, affect the market price;⁴
2. all producers operate on short run variable cost curves which are U-shaped, implying a unique level of output at which average total cost is a minimum;⁵
3. all producers face long run average cost curves which are also U-shaped. Implying for each firm a unique level of output in the long run at which average total cost is minimised;⁶
4. all producers and consumers possess (or can obtain with minimal cost) full information about market conditions;⁷
5. there are no costs or benefits of production or consumption which are not captured in market prices (i.e., no external economies or diseconomies in production or consumption); and
6. there exists a mechanism to bring the system as a whole from disequilibrium to general equilibrium.⁸

These assumptions allow for a full employment general equilibrium in the economic system, in which social cost and social benefit are equal to private cost and private benefit, and, at the margin, equal to each other (achieved through the adjustment of relative prices). Full employment of all available resources is a necessary condition for a Pareto Optimum. Were some resources idle, this would violate the definition that the optimum ensures that no one's welfare could be increased without someone else's being reduced. In the optimal state, all producers and consumers are constrained in their decisions only by relative prices and their resource endowments. In other words, consumption is not constrained by income,⁹ and production is not constrained by expectations of demand.¹⁰

There is a further, technical condition for the Pareto Optimality to conform to its definition (no one can be made better off without someone else becoming worse

⁴ Since producers are small, they can sell their entire output at the prevailing market price. An attempt by one producer to sell at a higher price will result in the loss of the firm's entire market share. It is in no producer's interest to sell below the prevailing price. In this circumstance, producers are described as 'price-takers'. This assumption is dependent upon numbers 2 and 3, below.

⁵ This assumption allows for a *short-run* competitive solution. If there were no least cost point consistent with many producers, the result would be that a few firms would expand as costs fall, and come to dominate the market.

⁶ This assumption allows for a long-run competitive equilibrium. If when plant size increased, unit costs fell over the relevant range of output demanded, in the long run, a few producers would expand and eliminate the others.

⁷ This assumption eliminates the possibility of what is called 'false trading': exchanges at non-equilibrium prices. If such trades occur (when demand and supply are not equal), the market may not achieve the Pareto Optimal price set (see Weeks 1994). The old version of this assumption is called 'perfect expectations', and the more recent version 'rational expectations'. Theoretically they are equivalent (see Weeks 1989, chap. 9).

⁸ This is an extremely strong assumption. The modern explanation of how general equilibrium is achieved was by Arrow and Debreu (1954) and Debreu (1959). Commenting on this, Hahn (a leading neoclassical theorist) wrote: 'The main conclusion [about general equilibrium market clearing] is rather pessimistic: we have no good reason to suppose that there are forces which lead the economy to equilibrium. By that I mean we have no good theory' (Hahn 1984, p. 13).

⁹ Given an agent's resource endowments, the decision on how much income to earn is made simultaneously with the decision on consumption. The income decision is the assessment of the trade-off between work and leisure, in light of relative prices.

¹⁰ If producers are 'price-takers', they assume that they can sell an infinite amount at the prevailing price, which the level of output determined by the equation of marginal revenue (price, for a price-taker) and margin cost.

off): the full employment general equilibrium set of market prices must be unique. That is, there should be one and only one set of full employment, general equilibrium prices. The reason for this restriction should be obvious. Were there more than one full employment general equilibrium set of prices, in general, it would be the case that some agents would be better off with one set of prices than with another, but all sets would be equivalent when judged by economic criteria. The conditions are quite restrictive under which the full employment general equilibrium set of prices is unique.

The foregoing theoretical presentation produces the following strong policy position.

IF AND ONLY IF

1. an economic system is perfectly competitive (assumptions 1-5);
2. the perfectly competitive system produces a full employment general equilibrium set of prices (assumption 6); and
3. this set of prices is unique;

THEN

4. social welfare is maximised;
5. any action, institution, or policy which prevents achievement of the full employment general equilibrium price set reduces social welfare, and can be described as distortion, in that it distorts the economic system from achieving its maximum social efficiency.

Distortions, or *market failures*,¹¹ can arise from private, as well as public actions. Imperfect competition in one sector, monopoly in the extreme case, distorts not only the market in which competition is imperfect, but the entire economic system. Consider a closed economy with two products, fertiliser and maize.¹² Assume that fertiliser is produced in ten identical plants, each with different owners, and the market is perfectly competitive. For maize, there are a large number of labour-hiring farmers, and this market, too, is perfectly competitive. If there were an ownership change, such that one firm owned all ten fertiliser plants, the market for fertiliser would be monopolised. The price of fertiliser would rise, and output and resource use in the sector would fall, creating unemployed labour. If labour markets were competitive, real wages would fall, lowering the marginal (and average) costs in both sectors. This would increase employment in both fertiliser and maize.¹³ The new equilibrium would have the following characteristics:

¹¹ It is tempting, but theoretically unsound, to use the term 'government failure' as the public sector equivalent of a 'market failure'. For example, Makandya writes:

Policy failure...is defined as a government intervention that distorts a well-functioning market, exacerbates an existing failure, or fails to establish the foundations for the market to function efficiently. (Makandya 1994, p. 215)

This definition is consistent only if one abandons a Pareto approach to efficiency (which Makandya does in definition of 'market failure'). A market failure in the strict theoretical sense refers to a failure to achieve the Pareto Optimal solution. Thus, it has a clear and theoretically based definition. Since a may be impossible for a government intervention to achieve Pareto Optimality, its success or failure has no clear theoretical criteria to assess it. It would be less confusing and more accurate to refer to 'market failures' and 'government mistakes', with latter judged pragmatically.

¹² A closed economy is assumed to keep the example simple. The same argument could be extend to the case in which both products were traded, one imported, the other exported.

¹³ For fertiliser, employment would be less than under perfect competition, but more than under monopoly before real wages fell.

1. the price of fertiliser would be higher than under perfect competition (the Pareto Optimum), and output lower;
2. the price of maize would be lower, and output higher; and
3. real wages would be lower in both sectors, and profits higher in the fertiliser sector.

To correct this distorted equilibrium the government could impose a price ceiling on fertiliser, setting it at what would prevail under perfect competition. This represents an intervention that corrects a market distortion. Removal of the price ceiling, perhaps motivated by a policy to ‘liberalise’ the fertiliser market, would reduce social welfare. This example provides a general conclusion.

A private sector distortion, such as monopoly, reduces welfare; removing government interventions that in part or whole correct this distortion also reduces social welfare.

Actual economies suffer from many private sector distortions, especially in agriculture. Thus, in actual economies one finds a complex and interactive collection of private distortions, government interventions which in part correct those distortions, government interventions that target distortions but fail to correct them, and government interventions not obviously related to any private distortion, real or imagined. From a Pareto Optimum framework, eliminating government interventions that correct private distortions is welfare-reducing; eliminating government interventions that do not correct market distortions *may be* welfare-raising. The qualified verb, ‘may be’, is necessary because of the Principle of the Second Best. This principle, derivative from the Pareto Optimum, states that if there are many distortions in an economy, removing some, but not all, will not necessarily raise social welfare.¹⁴

This excursion into the theory of welfare economics demonstrates the highly theoretical nature of the concept, economic distortion. The seriousness with which economists have viewed the Pareto framework has waxed and waned. If either because of theoretical objections or practical considerations, one believes that there is no Pareto Optimum, then the term ‘distortion’ assumes an ambiguous meaning. For example, there is no doubt that tariffs ‘distort’ the level and composition of imports, compared to what would be the outcome without the tariffs. But if private importers have market power, then trade would be ‘distorted’ in the absence of tariffs. It might be argued in this case that whether or not one accepts the Pareto framework, and regardless of private monopoly power, removing (or lowering) tariffs would reduce the price of imported commodities, and consumers would thereby gain. However, this is not a valid inference to draw. In the absence of a norm, there is no objective basis for judging that a lower price for one or many commodities is welfare-increasing. For example, cheaper fertiliser imports will benefit some (e.g., farmers), but harm others (e.g., domestic producers of fertiliser). It is the Pareto framework, in

¹⁴ More formally, the principle says that in the absence of being able to attain all the conditions necessary for a Pareto Optimum, the (‘best outcome’), the second-best position *is not* one in which the remaining conditions conform to Pareto rules. In our example of fertiliser and maize, if maize output remained at its Pareto level, there would be unemployed resources. This might (or might not) be worse than a distorted level of maize output, lower real wages, and full employment. The principle of the second best was developed by R. G. Lipsey and K. Lancaster in the 1956.

its strong version with a unique social optimum, that allows judgements about such trade-offs between interest groups.

The theoretical discussion produces the following conclusions, which are generally accepted as valid.

A policy intervention in a market by a government can be considered to *distort* that market (as opposed to merely affecting a change), if

1. one first establishes a unique market outcome which is characterised by full employment and a socially optimal allocation of resources (Pareto Optimality);

If

2. the restrictive assumptions upon which the Optimum outcome is based are not accepted as theoretically valid, or judged to be empirically refuted, then *the concept of distortion becomes ambiguous.*

This conclusion does not imply that the concept of distortion is invalid, but rather that it requires an operational definition that is not dependent upon the very restrictive Pareto framework.¹⁵ As will be shown below, in the Uruguay Round agreements, the term ‘trade distorting’ is used. This is defined (and applied in the AonA) as a government policy which either *reduces* trade, or acts directly on specific commodities to increase the competitiveness of domestic producers. Emphasis in the UR agreements is placed on measures judged to reduce trade, because important interventions that are judged to increase trade are *not* restricted by the UR. For example, the agreements are largely neutral with regard to consumer subsidies, while prescribing producer subsidies. In a Pareto framework the two types of subsidies would be judged equally distorting and detrimental to social welfare.

The UR agreements accept consumer subsidies because they are judged to potentially increase trade, by increasing consumption above what would be the case in the absence of the subsidy (i.e., they are Pareto distorting). Thus, the UR framework uses a practical and pragmatic definition of distortion, based on the goal of increasing world trade. This goal may or may not increase social welfare, economic growth, and productive efficiency; these are controversial questions, to which economics provides no consensual judgement. In effect, those governments that chose to join the WTO explicitly endorse the essentially political goal of increasing world trade, and, thus, accept the implied definition of ‘trade distorting’.

There can be no theoretical objection to the WTO definition of distortion, since it is not a definition based upon welfare theory. The term ‘distortion’ is also used in the context of structural adjustment programmes; in this case, the definition is clearly drawn from the Pareto framework. Therefore, it is not surprising that structural adjustment programmes use ‘distortion’ to cover a much broader range of government interventions. For example, consumer subsidies, about which the WTO

¹⁵ In a report for the FAO, Smith and Thomson concluded:

...[T]he Pareto-efficiency model cannot be used as a standard for comparison [in policy decisions]... This in turn means that efficiency can no longer be assessed in terms of pricing, or marginal social cost equalling marginal social benefit. Second, if this rather abstract framework can no longer be used...much more emphasis must be placed on the particular institutional context in which the question of liberalization is being examined’(Smith & Thomson 1991, pp. 108-109).

is neutral, are viewed negatively in adjustment programmes, as much for their 'consumption distorting' effect as for their budgetary implications. As shown above, the theoretical basis for this broad definition of distortion is weak.

Overall, the discussion of this section provides the following conclusions.

When formulating agricultural policy, governments of developing countries are potentially constrained by two external influences:

1. if the political decision is made to join the WTO, a range of policies defined by the WTO as trade reducing ('distorting') are prohibited, constrained, or required to be reduced over time; and
2. if the political decision is made to seek loans that are policy-conditional, most if not all government interventions in markets will be critically reviewed by the lender (implicitly or explicitly in the framework of Pareto Optimality).

III. Characteristics of agriculture relevant to economic policy

1. Agriculture is not only crops

Much discussion of agricultural policy tends to focus upon crops, with only occasional reference to fishing,¹⁶ forestry, and livestock, or these are treated as separate problems only marginally related to agriculture. With the growing emphasis on environmentally sustainable development, this crop-dominated approach has changed. It is important analytically to be explicit about the links among the four. Policies which might positively affect one could, as a result of that positive effect, had a negative impact on another. The potential, and often realised, conflict between the expansion of commercial grazing and sound management of forestry resources is an obvious example. Logging which is a prelude to conversion of forests to grazing creates irreversible environmental changes. These changes may imply long-run costs to society that do not enter into the profit-loss calculations of private agents.

Simultaneous consideration of the four aspects of agriculture is central to the rational, long-run management of water resources. The difficulty arise in identifying a set of policy instruments that produce the incentives for maintaining water tables, minimising water pollution, and sustaining the long-term climate balance. A major practical problem is that most of the economists that write on agriculture know little beyond the crop sector. The general conclusions reached, about efficiency of markets, are all too often implicitly based on the model of an annual (not even a perennial) production cycle. This is particularly the case in discussions of price incentives, whose effect on behaviour is to induce producers to switch from less profitable to more profitable commodities. For a choice between maize and millet, this may be a relatively simple calculation (though less simple than it seems, see Section 3.4). If the alternatives include crops, grazing, and forestry products, the calculation is considerably more complicated, even if the technical aspects of production in each field are known to the chooser. Further, the currently prevailing

¹⁶ This report does not explicitly treat policies for the fisheries sector, because of the rather technical issues involved. A good survey is found in FAO 1998b, Chapter IV.

prices will not provide sufficient information for calculations of relative returns when some alternatives involve reproduction times in decades.

Thus, much of what is written about economic policy for agriculture should be viewed as 'partial equilibrium' analysis, in that it considers costs and benefits over a relatively short time period. For example, devaluation, by fostering exports, may have a positive effect on the crop sector in both the short and long run; it may have a positive effect on the livestock sector in the short run, but a negative effect in the long run (by encouraging over-grazing); it may have a neutral effect on forestry in the short run (if the infrastructure for exploitation is lacking), and a negative effect in the long run (due to over-exploitation); and a negative effect on fishing in the short run (over-exploitation), which proves disastrous in the long run. None of these negative effects are necessary, but they are made more likely by a narrow view of agriculture as a sector dominated by an annual production cycle.

Even for the crop sector there are important characteristics that make agriculture different from other sectors with regard to producer response to markets. Smith has identified three of the most important:

1. spatial dispersion, implying high transport costs and high cost of acquiring information on markets;
2. land immobility and climatic variations that make production conditions vary seasonally, and implies the need for non-farm income for most small holders; and
3. production is inherently risky, and more so than non-agricultural activities.

The discussion of policies should be read with these characteristics in mind, for they directly impact upon producer responses to markets.

2. Agriculture and development

It is obvious that agriculture plays a key role in development. It serves as a source of income for a substantial portion of the population in developing countries; as a supplier of food, raw materials, and foreign exchange to a country as a whole; and as the source of labour supply for expanding industry. In addition, many authors, particularly in the 1950s and 1960s, stressed agriculture as a source of saving that could be transferred to non-agricultural sectors to foster their growth and, thus, industrialisation. Empirical evidence indicates a 'clear and positive relation between agricultural and non-agricultural growth' for the 1960s and 1970s, but the relationship breaks down for the 1980s (Stern 1996, p. 73). Why this empirical shift occurred is a source of some controversy, and requires a brief excursion to analyse the growth process in developing countries.

The process of economic development involves in the long run a fundamental structural change, in which agriculture declines in relative, then absolute importance. This decline has in all developed countries been associated with a dramatic increase in productivity in the sector, whether measured per worker or per unit of land. This combination suggests that in the long run there is a complementary relationship between the growth of industry and the growth of agriculture. The objective of long-term agricultural policy is to maximise this complementarity. There has been a tendency to forget this basic, historical relationship in the last two decades.

Especially in critiques of import substitution policies in Latin America, there has been an implicit, if not explicit, suggestion that industry expands at the cost of agriculture. In a perverse way, this became a self-fulfilling diagnosis. During the 1980s, when most economies in Latin America and Africa suffered from low growth, industrial sectors declined, constrained by low domestic demand and, in some case, trade liberalisation which undermined domestic manufacturing. In this context, agriculture not uncommonly grew faster than manufacturing,¹⁷ because the rate of growth of the latter fell to near zero.

Whether development policy should stress agricultural growth or structural change towards industry is an issue much debated in the growth literature. In part the disagreement is over whether it is necessary for developing countries to pass through a period when economic policy purposefully shifts the terms of trade against agriculture, in order to foster industry. A strong case against this was put forward in a multi-volume empirical study, funded by the World Bank of agricultural taxation in a selected group of developing countries (Schiff and Valdés 1992). On the other hand, there remains a strong strand in the theoretical literature in support of taxing agriculture to accelerate growth (Sah and Stiglitz 1984, 1987).¹⁸ This issue is treated below, under agricultural taxation.

3. Resource Use: Mobility and Flexibility

Market deregulation, and trade liberalisation in general, have the intention of enhancing the ability of producers and consumers to adjust to changes in the market conditions. The argument is that when market conditions change, these changes are communicated to economic agents through changes in relative prices. Consumers and producers then respond by altering their behaviour to minimise the loss or maximise the gain from the altered prices. In the case of consumers, this involves substituting relatively cheaper commodities for more expensive ones; for producers, it involves shifting from the production of less profitable commodities to more profitable ones. The extent to which losses can be minimised or gains maximised depends on the actual degree of substitution in consumption and production.

This abstract argument requires elaboration in the concrete for it to be relevant to policy, especially when considering agricultural production. The flexibility in production, upon which deregulation policy is based, is epitomised by the corporate form of property ownership in non-agricultural sectors. In this case, there is a high

¹⁷ In the 1970s across all Latin American Caribbean countries, the agricultural sector grew at 3.4 percent per annum, and the manufacturing sector at 5.8 percent. In the 1980s both rates fell, agriculture to 2.1 percent per annum, and manufacturing to .4 percent. Through the first half of the 1990s both have grown at about two percent (IDB 1994, Table B-3; 1998, Table B-3).

¹⁸ One of the most influential models is that of Sah and Stiglitz (who later became chief economist of the World Bank). Their model implies that shifting resources from agriculture to non-agriculture is necessary for structural transformation. Sarris points out the obvious implication of the model:

In other words, [Sah-Stiglitz imply that] the overall direction of the policies that have been followed by many developing countries in the past has been correct. This...would imply that the crises that have afflicted most of the developing countries in the last [p. 10] fifteen years must be attributed to factors other than the fundamental underlying principle of turning the terms of trade against agriculture... This...raises the issue whether the recommendation of all structural adjustment programs that explicit and implicit taxation of agriculture should be lessened is correct. (Sarris 1994, p. 11)

degree of separation between the ownership and financial function of the enterprise, on the one hand, and the production role, on the other. When relative prices change, the ownership unit can shed its production unit and replace it with another. The expertise required to produce the new, more profitable product can be purchased on the market; indeed, an entire plant, with the appropriate employees can be purchased. This, the mobility of capital in the concrete, has historically been easier in the non-agricultural sector, due to the particular property relations associated with occupation of land.

The conditions in developing countries, where a majority of agricultural producers are owner-occupiers and whose resource holdings are relatively small, are different. Each crop or variety of livestock has its special characteristics. Even superficially similar crops or animals, such as maize and sorghum, require different cultivation times, suffer from different diseases, and perform best with different mixes of chemical or organic fertilisers. To successfully shift from one crop to another (e.g., in response to relative price changes), the owner-occupier must have the technical knowledge of the crop's characteristics. Smallholders will not, in general, have the financial resources to hire-in expertise; indeed, given their scale of production, it might not be rational to do so. In the developed countries, this problem was solved through publicly-funded agricultural extension services, whose activities facilitated a quite extraordinary degree of flexibility in production even for small-scale agriculturalists. The flexibility was further facilitated because this technical assistance was supplemented with a range of services that reduced the risk of shifting to different varieties: research on and dissemination of remedies for plant and animal diseases, price stabilisation measures, and sometimes crop insurance. These agricultural services were delivered in a broader supportive context (e.g., technically sophisticated weather forecasting and social safety-nets).

The situation in developing countries is quite different. First, a substantial proportion of the small holder's produce may not be marketed. This can be the result of a conscious, risk minimising strategy of emphasising feeding the family first, high transport costs, low competitiveness, or a combination of these. Thus, in many developing countries, successful outcomes of deregulation require that small holders be induced from non-marketed to marketed production. This shift can involve substantial risks, if, for example, it is associated with borrowing to purchase inputs.

Second, agricultural extension does not play the facilitating role in developing countries that it does in developed ones. Extension services are typically narrow in their coverage (especially to small holders), of variable quality, and limited in the range of varieties for which they have technical expertise. Thus, the ability of the small holder in developing countries to shift between crops is severely limited compared to the situation in developed countries. No recourse to 'peasant resistance to change', or even 'risk aversion' is required to expect that resource flexibility in developing countries is likely to vary from moderate to quite low. Poor transport, storage, and marketing facilities create further constraints on flexibility in resource use; the shift to a more profitable commercial variety is successful only if the produce reaches markets in a timely manner.

The constraints to resource flexibility do not imply that deregulation would have no impact, or that its impact would be negative. Rather, they imply that unlike

in developed countries, or unlike with large scale producers in developing countries, the small holder in developing countries may require a change in the broader context to take advantage of the potential gains from market flexibility. It is the required changes in information services, marketing, etc., that lead to the strong conclusion that market liberalisation by itself is unlikely to generate substantial gains for small holders in developing countries.¹⁹ Thus, one can identify an important policy generalisation.

For developing countries, market deregulation policies require:

1. an evaluation which disaggregates with respect to categories of agriculturalists (especially with regard to scale of operation); and
2. consideration of non-price constraints, such as access to information, prior to policy implementation.

These issues are ones in which the FAO has unique expertise.

4. Land tenure and rights of access

In the area of land rights, debate has tended to focus on land redistribution, but the policy issues and options are much broader than this. Access to land and the associated concept of ‘property rights’ are extremely complex, and it is dangerous to make generalisations, due to the great variety of institutional arrangements that link people to land. During the 1960s and 1970s, broad generalisations tended to be applied to the major regions of the underdeveloped world. Latin America was characterised as being afflicted with an extremely unequal distribution of land, such that the vast majority of agriculturalists were either landless or land-poor, though land might not have been scarce in an absolute sense.²⁰ In this region, land distribution was required to reduce rural poverty and provide food security. Asia, on the other hand, was viewed as ‘overpopulated’, with heavy pressure on the land, with Java the extreme example. In this case, land redistribution would reduce the problem,²¹ but a fundamental change in production techniques was required (e.g., the ‘green revolution’). The expert consensus on most of Africa south of the Sahara was that the countries were land-abundant, with shortages of labour during critical periods. Institutional constraints (e.g., concentration of ownership of land) were not viewed as decisive.²²

¹⁹ ‘...[M]uch more emphasis must be placed on the particular institutional context in which the question of liberalization is being examined’ (Smith & Thomson 1991, p. 110).

²⁰ This view was epitomised by White, who wrote that in El Salvador, land was scarce only for the poor (White 1973, p. 123).

²¹ Many Asian countries introduced land redistribution, in several cases as the result of armed conflicts.

²² Platteau summarises the prevailing view in the 1950s and 1960s as follows:

[O]nly Asia and Latin America were the focus of attention of land reformers... [T]hese two continents were considered to be in need of radical transformations of their agrarian structures on the grounds of both equity and deficiency considerations... [I]n Asia land reform simply meant “the transfer of ownership from the landowner to the cultivator of the existing smallholding,” in Latin America the cure consisted of redistributing the land from latifundian owners to landless workers and small-scale cultivators... In both regions, such reshuffling of land rights was to have no adverse effects on production...

Only a few [African] countries – such as Egypt...Ethiopia..., and South Africa and Zimbabwe... were deemed to deserve a significant transformation of their agrarian structure. For the rest, Africa, especially sub-Saharan Africa, was regarded as a “special case”...on

Now, at the end of the century, these generalisations require major revision. While land ownership remains highly concentrated in Latin America, the perceived lack of success of several land reforms (e.g., Perú and Bolivia) reduced enthusiasm for the policy. Further, urban migration and the modernisation of agriculture have fundamentally transformed the countryside. For the region as a whole, less than twenty-five percent of the labour force will be in agriculture in 2000. A substantial portion of this remaining labour force is in temporary or permanent wage employment, with own-farm activities accounting for a small share of income earned. As a result, in several countries land redistribution is considerably less relevant to food security than in the past.²³ In Asia, the combination of land redistribution, a spectacularly successful development of new varieties (especially rice), and rapid economic growth has moved the redistribution issue out of the centre of the policy debate.²⁴ Perhaps the greatest conceptual change has been for the sub-Saharan countries. As a result of rural population growth and the land-extensive cultivation practices, land in most countries can no longer be considered abundant. As developed in more detail below, expanding cultivation in the sub-Saharan has brought into doubt the long-term (and perhaps medium-term) viability of prevailing land-extensive cultivation practices.

We use the term ‘land access’ to refer to the institutional arrangements by which people acquire the right to cultivate land. The rules of land access have two broad policy impacts. First, there is the direct effect, in which land access provides the asset by which people generate their livelihoods. Second, rules of land access are perhaps the single most important determinant of the impact of government policies and market forces on the agricultural sector. For example, price policies, which are stressed in the economic literature, will have different consequences depending upon the stability, predictability and enforceability of rules of access to land. When rules of access are clear and enforceable in law, government policies and market incentives can be expected to have predictable outcomes, though the degree of response by agriculturalists will vary according to concrete conditions. In many countries in which FAO professionals work, these rules will be clear, and rights of access can be treated as parameters within which policy can be implemented. It may be that distribution is grossly unequal, but given the inequality, rules of access will be stable (indeed, that stability may be a cause of severe social ills).

While in general FAO field staff will find that rules of access to land are not pressing policy issues in the countries in which they work, there are two important exceptions: conflict-affected countries and the sub-Saharan region. It is unfortunately the case that many of FAO’s member states have been afflicted with armed conflicts in the 1980s and 1990s. The majority of these are in Africa, but the problem is not limited to that continent. Armed conflicts not infrequently arise over claims to land. As a result, the conflict can turn ownership rights into question. An extreme example of this is Nicaragua, where after the end of the so-called contra war, much of

account of its abundant land endowments and the flexibility of its communal land tenure institutions. (Platteau 1992, pp. 4-5)

²³ This is obviously the case for Argentina, Uruguay and Venezuela, which have quite small agricultural labour forces.

²⁴ ...[S]ignificant progress in agricultural technologies not only helped to redirect attention toward the growth potential of the agricultural sector, but it also caused a shift of emphasis from policies mainly motivated by equity considerations...to policies motivated by efficiency considerations and concerned with technological innovations and their broad diffusion.’ (*Ibid.*)

the country's agricultural land was contested by three different sets of claimants: the pre-revolution owners (i.e., pre-1979), those who had received land titles under the Sandinista agrarian reform, and new claimants who through extra-legal occupation of land challenged the legitimacy of both the fore-mentioned. There are cases in which conflict is not directly over land and the conflict itself is not associated with land redistribution, yet the disruption of war results in multiple land claims. This can be the consequence of families or communities migrating to escape conflict, and returning to discover that other families or groups have established de facto control over what was formerly their land. Relatively little research has been done on this problem, though it represents a major problem in some countries (especially, the Balkans, Central Africa). In post-conflict situations rules of access to land are not, in general, clear, predictable, and enforceable.

While this uncertainty is a problem, it also presents an opportunity, especially in Africa where conflicts are many, to redesign rules of access consistent with the demographic and economic trends which have been emerging over the last decade. For example, after the end of the armed conflict in Mozambique, the government introduced a new land law which sought to clarify the different tenure regimes; in particular, it sought to clarify the status of so-called traditional rights to land.

Outside of the sub-Saharan region, the clarification of post-conflict land rights typically involves identifying owners within an established property regime.; or, in the case of the former Socialist countries (conflict-affected or not), it has consisted of applying a relatively established regime of private property taken from Western European examples.²⁵ The situation in the sub-Saharan region is quite different, and awareness of the policy issues involved is important to FAO work. In most sub-Saharan countries, private land rights in the Western European tradition are not legally recognised.²⁶ Table 1 provides a very general summary of land tenure systems in the sub-Sahara for twenty-six countries. In order to avoid an excessively detailed discussion, the presentation will limit itself to issues relevant to the debate over appropriate rules of access to facilitate agricultural development and food security. The discussion will also limit itself to cultivation and settled grazing.²⁷

²⁵ While all European private property rules are based on the principle of exclusivity (the owner has sole right of usage), they are not the same. To take two extreme examples, in France exclusivity includes the prohibition of trespass; in contrast, Swedish land rules grant exclusive productive use to the owner, but there is no offence, civil or criminal, of trespass.

²⁶ Platteau has an excellent survey of tenure systems in the sub-Saharan region. Our presentation adheres to his general conclusion that 'Sub-Saharan Africa is a special case [of rules of access] precisely because traditional land tenure systems...do not allow private land rights to be fully recognised still predominate...' (Platteau 1992, p. 83).

²⁷ Thus, we exclude the following issues: 1) fishing rights, 2) access to forest resources, and 3) nomadic peoples. Each of these involves important policy issues. However, it is beyond the scope of this report to treat the specific access issues associated with each of these.

Table 1:
Summary of Land Access Rules in the sub-Saharan, 1980s & 1990s

Land Policy	Countries
Allow individual acquisition of land	Cote d'Ivoire (no restrictions on power of title-holder), Kenya, Malawi (with restrictions)
Various types of tenure recognised	Chad, Madagascar, Mali and the Sudan (individual title and nationalisation of non-titled lands); Botswana, Ghana, Lesotho, Liberia, Mali, Sierra Leone, Rwanda, Swaziland, Uganda and Zimbabwe (individual title, indigenous systems and public lands); Senegal, Cameroon and Togo (individual, group, indigenous systems and public lands)
Title vested in the state	Ethiopia, Mauritania, Nigeria, United Republic of Tanzania, Zaire and Zambia

Source: Platteau, 1992, pp. 138-139

If a farm household has security of tenure, it is more likely to innovate, invest, and improve the land it cultivates or uses for grazing. Within this non-controversial generalisation lurks a highly contentious debate over appropriate property regimes, with the controversy focussed on the sub-Saharan region. The issue of debate is, which property regime provides security of tenure, and is this the same for all social and institutional situations? A quite fervently held position is that sub-Saharan agriculture has performed poorly over an extended period in great part as a consequence of its communal property regimes. The obvious solution to the problem is the privatisation of land throughout the region (see Feder & Noronha 1987). Sharply opposed to this is the view that privatisation of land in the region would result in social and economic disaster.

To appreciate the policy debate, one must clarify the term 'security' in this context. There are three aspects of security with regard to land which are relevant to property regimes: 1) enforceability of title, 2) extent of alienability, and 3) permanence of tenure. If an agricultural household possesses an enforceable title to land, then it has secure access to land for the life and terms of that title. It may be the case that the title bestows a limited alienability. Alienability, in turn, potentially undermines permanence of tenure. The extreme libertarian property regime proposed by some involves a legally enforceable title to land and unrestricted right to transfer land and all its potential uses through a market sale. The theoretical argument for such a system is that it is supposed to allocate land efficiently, by establishing a market-clearing price. For simplicity, this system will be called 'private property in land'. Ideology aside, the private property regime has the practical advantage (stressed by the World Bank, for example), that land can serve as collateral for obtaining credit. By definition, land can serve this function only if the occupant of land can be dispossessed of it through a formal legal process. In the absence of a right to seize land in payment of debts, the loan-providing institution must base its lending on some message of income flow. Lending on the basis of income flow is the rule in business lending in developed countries. It is rare in commercial agricultural lending in developing countries, due to the extreme difficulties of measuring potential income flows. Private property relations by-pass this problem by allowing for foreclosure on debts.

The practical advantage of the private property regime is also its problem, for the vendibility aspect, which is the *sine qua non* of private property, is, by definition,

the vehicle for complete loss of land security. Thus, the practical question arises whether in each concrete circumstance private property is the ownership framework in which smallholders will be best motivated to invest and improve land.²⁸ Many experts argue that this is not the case in the sub-Saharan countries.²⁹ This conclusion is reached because, 1) the systems of communal land holding and distribution in the region is the basis for the sustainability of communities and the organisation of labour, which is frequently the binding constraint on agricultural production; and 2) in the absence of safety-nets, private property would facilitate landlessness and poverty more than commercialisation. None-the-less, those that advocate private property for the region are correct in their assessment that prevailing communal tenure systems, based upon land-extensive cultivation, are probably not sustainable. Thus, change will come in some form, and it is preferable that this be formalised and orderly. With this point in mind, a study for the FAO gave the following recommendations for tenure reform in the sub-Saharan region.

To facilitate sustainability of land access and foster adjustment to increased commercialisation, land policy in the sub-Saharan countries would be based on the following guidelines:

1. formalisation of land rights through issuance of titles in those areas where competition for land is intense;
2. the creation of private property and associated land markets is not advisable, for it would increase inequality, given the imperfect credit and capital markets, and foster social and political imbalances; therefore,
3. official registration of land rights should not be limited to issuing titles to individuals, but also include titles for groups, communities, other forms of voluntary associations (perhaps based on traditional links such as kinship). (Platteau 1992)

²⁸ In a study for the FAO of rural informal credit markets, Sarris stresses the importance of understanding the dynamics of private land markets:

For agriculture...the periodic 'distress sales of assets' by small agricultural households could be a mechanism through which their poverty is perpetuated. Understanding this process might help design more effective growth and macro policies. (Sarris 1996, p. 103)

²⁹ Platteau (1992, p. 127) summarises the problem as follows:

...[I]t is evident...that all those who argue in favour of the granting of legal land titles to landholders on the grounds that it will facilitate their access to credit imply that land must be made a transferable...asset. It is precisely the possibility of foreclosing on the land mortgaged...that drives credit-givers to grant larger amounts of credit at cheaper terms. Yet, it is precisely this aspect of the mechanism of easing credit that is the most debatable since it opens a huge avenue leading to landlessness and land concentration.

IV. Policy Areas

This section reviews the major policy areas that affect agriculture. This discussion provides the background for the subsequent consideration of policy opportunities and constraints associated with the WTO and structural adjustment programmes. While policy areas can be treated generally, it should be kept in mind that the various developing regions (and countries) has special problems which affect design, selection and implementation. These are briefly listed in Table 2, which while not exhaustive, indicates issues of major importance.

Table 2:

Special Issues of Agricultural Policy, by Region

<u>Region</u>	<u>Special issues & problems</u>
North Africa & the Middle East	Water management, high food import levels, armed conflict, lack of rural employment opportunities, low proportion of arable land, pastoral grazing
The sub-Sahara	Land tenure, shift to land intensive technologies, high degree of subsistence production, land degradation, armed conflict
South Asia	Landlessness, population pressure
East & Southeast Asia	Population pressure, transitional economies
Latin America	Concentrated land distribution, landlessness

1. Macroeconomic policies

Macroeconomic policies can be broadly defined as policies which use instruments that impact upon the economy as whole, seeking outcomes which refer to aggregate economic performance.

Anti-inflation measures. Recent research, notably a World Bank working paper, suggests that for inflation rates between zero and forty percent, there appears to be no correlation with growth rates. For rates above forty percent the relationship is negative; at rates near zero, reducing inflation also reduces growth (Bruno & Easterly 1995).³⁰ Thus, most governments find themselves with inflation rates which are problem neutral with regard to growth. Some argue that inflation has a negative effect on the agricultural sector, but there is no consensus on this issue. The outcome is influenced by the institutional framework and the rate of inflation itself. Very high rates of inflation tend to be associated with a range of maladies, and is detrimental to

³⁰ Stiglitz, chief economist of the World Bank, summarises research findings on inflation as follows:

The evidence has shown only that high inflation is costly. Bruno and Easterly found that when countries cross the threshold of 40 per cent annual inflation, they fall into a high-inflation/low growth trap. Below that level...there is little evidence that inflation is costly. Barro and Fischer...fail to find any evidence that low levels of inflation are costly....Akerlof, Dickens and Perry [find] that low levels of inflation may even improve economic performance relative to what it would have been with zero inflation.

...In my view, the conclusion to be drawn...is that controlling high inflation [i.e., above 40 percent per annum] should be a fundamental policy priority, but that pushing low inflation even lower is not likely to significantly improve the functioning of markets. (Stiglitz 1998, p. 8)

all sectors. For moderate rates of inflation the situation is considerably more complicated.³¹ If farmers are net debtors (which is usually the case), their debts decline in real terms as a result of inflation. If, at the same time, crop prices are determined in free markets, and inflation is relative price neutral, then the real debt burden will fall, even if real interest rates are constant. However, the net effect of moderate inflation is more complicated than this, and no *a priori* judgement can be made.

To assess the effect of inflation on the agricultural sector, one should distinguish between

1. high rates of inflation, which are detrimental to all sectors; and
2. moderate inflation, whose impact on agriculture depends (among other things) on institutional arrangements, the input mix in production, sectoral output composition, tradability of output, and the extent of indexing in agriculture and other sectors.

The impact of inflation on agriculture is also dependent on the government's policy messages in response to inflation.

In the 1990s there has been a strong political commitment to low inflation, at the country level and in the international financial institutions. Reducing inflation can be achieved through monetary instruments, fiscal instruments, or the exchange rate.

In principle there are two monetary instruments for affecting the price level. Acting directly to reduce the money supply reduces the growth of the money value of output. If wages and prices are flexible, reducing the money supply should have no effect on output, and merely lower the price level (or slow its rate of increase). In the more realistic case wages and prices do not adjust instantaneously, so output declines. Thus, almost all economists (and policy makers) consider a restricting money growth to have a real output cost. In most developing countries it is not possible to act directly on the money supply. This is achieved by use of so-called open market operations, in which the government sells its bonds to the private sector, thus taking money out of circulation. Only the more advanced developing countries have bond markets sufficiently sophisticated and broadly based to use this instrument effectively. As an alternative, the government (or an independent Central Bank) can raise interest rates. By making credit more expensive, this reduces the demand for money. It also discourages investment. Raising interest rates invariably has an output cost.

Fiscal deficits are commonly viewed as inflationary, but this need not be the case. If a fiscal deficit is financed by the sale of government bonds (debt) to the private sector, the effect on the money supply (and, thus, on inflation) is in principle

³¹ Boussard suggests that 'it is likely that any successful measure against inflation can be considered as highly beneficial for smallholders' (Boussard 1992, p. 54). He bases this generalisation on two effects: that control of inflation results in lower real interest rates, and has a positive effect on rural saving. Empirical evidence on the first point is ambiguous. The period during which inflation is being reduced is typically characterised by higher real interest rates, for they are one of the instruments for restricting money growth. Once inflation is lowered, real interest rates have tended to fall in *developed* countries, but frequently remained higher in developing countries. For the latter set of countries this may be due to the combination of capital account liberalisation and persistence of inflationary exceptions. With regard to saving, the impact is also mixed. The outcome is affected by the portion of saving (and investment) which is monetised.

neutral.³² If the deficit is financed by the government borrowing money from the public sector (most commonly from the Central Bank), the money supply increases, creating inflation pressure (if output does not respond completely to absorb the increased monetary demand). Since bond markets are narrow in most developing countries, deficits are typically financed by borrowing from the public sector. It is this process which is inaccurately called ‘printing money’. When deficits are financed by borrowing from the public sector, deficit reduction reduces the growth of the money supply, and, thus, potential inflationary pressures.

Exchange rate appreciation directly reduces inflationary pressures because it lowers the domestic currency cost of imported commodities (if the relevant markets are competitive), and exchange rate depreciation is potentially inflationary. Few countries employ the exchange rate as a primary instrument of inflation control, because of the undesirable side-effects (e.g., reducing export competitiveness).

Finally, it should be noted that in countries receiving relatively large official development assistance or private foreign investment, inflationary pressures may be almost beyond the control of the government (see *sterilisation*, below).

Fiscal deficit. While fiscal deficits may not be inflationary (this depends on how they are financed), they can create other problems. If the deficit is such that public sector debt accumulates faster than the economy grows, then debt service payments will rise as a portion of public expenditure. This will tend to put pressure on expenditures in other areas. To avoid this, a ‘golden rule’ is proposed, in which deficits are always no larger than government investment expenditure; i.e., the government, like the private sector, should borrow to invest, not to consume.

Exchange rate. Developing country governments use four types of exchange rate regimes. A few countries maintain *fixed exchange rates*. Most of these countries are small, with their exchange rates tied to that of a large neighbour. For example, Botswana pegs the *pula* to the South African *rand*. The largest group of countries with fixed exchange rates are the members of the CFA franc zone, with national currencies pegged to the French franc. Closely akin to the fixed exchange rate is the *currency board*. This regime establishes a strict relationship between the supply of the domestic currency and Central Bank holdings of foreign exchange. In principle, a government could operate a currency board system without a fixed exchange rate. In practice, currency boards almost always operate with a pegged exchange rate (e.g., in Argentina pegged to the US dollar). The drawback of a currency board is its potentially destabilising effect. If the exchange rate is fixed, then the domestic money supply rises and falls with inflows and outflow of foreign exchange. Fluctuations in foreign exchange holdings can be ‘smoothed’ through international borrow, though this can create its own problems. At the other end of the spectrum is the *freely floating exchange rate*. In principle this involves a completely non-interventionist regime, in which the government leaves the exchange rate to be determined by private trading. There are few examples of this free market ideal. Low-income countries that have implemented with freely floating rates have not infrequently had disastrous experiences. There are several reasons for this. Perhaps important, the foreign exchange market for small countries can be quite narrow and

³² Some argue that there is an investment-depressing effect through ‘crowding out’. Increased public demand for money raises interest rates, which reduces investment. There is very little empirical work on crowding out in developing countries.

easily manipulated by either foreign or domestic traders. As a practical matter, many low-income countries receive official capital flows relatively large compared to the private sector portion of the balance of payments. Since official capital flows are not market-determined, neither can the exchange rate be, except superficially. Most governments implement some variant of a managed exchange rate. This can take the transparent form of announcing a range in which the exchange rate will be maintained (through Central Bank foreign exchange transactions), periodic *ah hoc* interventions in foreign exchange markets to prevent unwanted devaluations or appreciations, or publicly announced adjustments at specified dates (sometimes called a ‘crawling peg’).

Because most countries intervene in the determination of exchange rates, this policy instrument is particularly important to the agricultural sector. The interventions will affect competitiveness, and the relative return to tradable and non-tradable commodities. Since most agricultural products are exported or are potentially substitutes for imports, devaluation is considered to be beneficial to the sector. There is some scepticism on this point. Smith argues that in the sub-Saharan countries there are reasons to doubt that the full extent of a devaluation would be passed on to agricultural producers (Smith 1991, p. 12). There are five reasons for this:

1. smallholders may have weak bargaining positions vis-à-vis merchants and middlemen;
2. a substantial component of marketing costs, especially transport, are import-using, and their prices may increase with devaluation;
3. the inflationary effects of the devaluation may increase the non-tradable cost of marketing services;
4. as mentioned elsewhere, the aggregate supply response of most households may be small due to land and labour constraints; and
5. many incentive goods of the rural sector may be imported, and their prices will rise with devaluation.

Along similar lines, Van Wijnbergen (1986) has argued that devaluation might be have a negative effect on aggregate supply in some circumstances, and, in any case, will vary by crop because of varying imported input content. For the economy as a whole, there is no consensus among economists as to whether the net effect of a devaluation is expansionary or contractionary (Agénor and Monteil 1996, Chapter 7). As with most economic policy issues, appropriate exchange rate policy cannot be determined purely in the abstract. The level of development of an economy, the structure of its trade, and the efficiency of its markets all affect outcomes. Further, excessive use of the devaluation instrument, if it results in real devaluations, has the danger of being merchantilist in both its outcome and motivation.

If one measures exchange rates in terms of purchasing power parity (PPP),³³ a real devaluation makes imports more expensive in the domestic market and exports cheaper on the world market; i.e., *the devaluation improves competitiveness*. This, the traditional approach to devaluation, is now considered theoretically suspect. The current mainstream approach is view the exchange rate as the price of tradable

³³ Purchasing power parity is commonly approximated by dividing the nominal exchange rate by the domestic rate of inflation, and multiplying it by some measure of ‘world’ inflation (frequently the US wholesale price index is used). By this measure, an increase indicates a real devaluation.

commodities relatively to non-tradable commodities.³⁴ In this analysis, a devaluation increases the rate of return to tradables, inducing a shift of resources away from non-tradables. This does not in itself make a country's products more competitive in international trade.

Government expenditure. With regard to macro policy (as opposed to sectoral impact), the effect of government expenditure is on the level of output and possible inflationary pressures (see *anti-inflation measures* and *fiscal deficit*, above).

Taxation. See agricultural taxation, below.

Interest rate. Economists' views on the role of interest rates has changed substantially over the last thirty years. From the end of the Second world War until the mid-1970s, there was a virtual consensus that fiscal policy had the function of smoothing out the business cycle, and interest rates were set to foster long-term growth. Within this context, long run real interest rates were to conform to a 'golden rule': they should equal the long run, sustainable increase in per capita income. This implied, for developing countries, real interest rates should fall within the two to five percent range in most cases. Since the mid-1970s the roles of fiscal and monetary policy have switched, so that interest rates are used for short-term stabilisation. However, the 'golden rule' remains relevant. If real interest rates exceed the per caput rate of growth, this implies a redistribution of income to rentiers. Since in most countries those who receive interest payments have incomes above the national average, such a redistribution would be regressive. For the government, high real interest rates would redistribute expenditure from investment and social expenditure, on the one hand, to debt service, on the other (see *fiscal deficit*, above).

Sterilisation of foreign exchange flows. If a government allows free or near-free convertibility of its currency, then inflows of foreign exchange can quickly become part of the domestic money supply. In many developing countries this can cause a substantial (and perhaps unanticipated) monetary expansion, as the government must create domestic money to satisfy increased demand. This can be particularly important in countries receiving relatively high levels of official development assistance (and there are several such cases in the sub-Saharan region). To avoid inflationary pressures, the government must attempt to *sterilise* foreign exchange inflows. If capital markets are sufficiently developed, this is done by the government (Central Bank) selling bonds in an amount equal to the foreign exchange it wishes to prevent from increasing the domestic money supply. If bond markets are not sufficiently developed to accommodate these 'open market' operations (see *anti-inflation measures*, above), there is little a government can do, short of capital controls, to prevent the inflationary pressures associated with relatively large foreign exchange inflows.

³⁴ By this definition, the real exchange rate is measured by an index of the *domestic* price of tradables (usually agriculture, mining and manufacturing) divided by an index of non-tradables (construction, transport, and commerce). An increase in the index indicates a real devaluation. This theoretical approach invokes the assumption of the Law of One Price. The Law states that if markets are efficient, a commodity sells for the same price in every market, excluding transport and insurance costs. If one assumes the Law to hold, a devaluation cannot improve competitiveness (e.g., every country's coffee sells at the same price, regardless of national exchange rates).

Macroeconomic policies can have important affects on the environmental sustainability of agriculture. This are treated separately, in Section IV.5.

2. Taxation of agriculture

In this section we consider taxation as such, excluding other potential instruments of resource flows between agriculture and other sectors, for example, the exchange rate (which are treated separately). There is a substantial literature on taxation of agriculture in developing countries, whose main thrust is that the sector has tended to suffer from an excessive burden. Based upon theoretical arguments and empirical evidence form a wide range of countries, the studies typically conclude that in most developing countries 1) there has been a net transfer of resources from agriculture to non-agricultural sectors (see previous section); 2) the excessive taxation has had a detrimental effect on agricultural performance; and 3) reducing the taxation of agriculture would improve performance substantially.

These empirical studies must be placed in analytical context. The role of the state tends to increase in the process of development, because, as Sarris has observed, ‘the growing complexity in a developing economy necessitates the increased provision of public goods, such as infrastructure, defence, education, etc.’ (Sarris 1994, p. 1). For low-income countries, the only practical source of taxation is the agricultural sector, due to the structure of the economy. In developed countries, the overwhelming proportion of tax revenue is collected through medium and large scale businesses, as personal income taxes withheld at the source, profits taxes, or taxes on sales (with value added taxes, VAT, being most important in the European Union). Income taxes on the self-employed and taxes on small businesses play a relatively unimportant role. These activities are relatively small, and the cost of collection relatively high. In low income countries, the corporate business sector is small, and the capacity to tax correspondingly low.³⁵ In this structural situation, there will be a tendency for governments to derive their revenue from international trade, through taxes on imports and exports. While such taxes may have undesirable effects on production and consumption incentives (see below), governments have little alternative.

Since in low income countries exports tend to come overwhelmingly from agriculture, the share of the sector’s income which is taxed tends to be greater than for the economy a whole. Further, if a country is to modernise through some form of industrialisation, it will be inevitable that the expenditure to agriculture in the form of social services, production services (e.g., agricultural extension services), and investment, will be less than the revenue collected from the sector. In the context, we can conclude that the debate should not be over whether or not this imbalance should occur, but the desirable extent of it. Several justifications have been given for taxing agriculture disproportionately to the expenditure it receives (Sarris 1994, pp. 8-9).

³⁵ An exception to this rule is low income countries which have a substantial natural resource sector exploited by private corporations (e.g., Sierra Leone and Liberia in the 1970s).

1. if aggregate supply in agriculture is relatively price inelastic (as is almost certainly the case),³⁶ taxation will tend to have a correspondingly low impact on depressing output; and
2. if the chief beneficiaries of higher agricultural prices are wealthy landowners, then taxation (which could fall predominantly on these producers) has positive equity effects; and
3. as a practical matter, agricultural taxes in low income countries will tend to fall on export products, not domestic food products, which contributes to relatively low urban food prices.

As an alternative to export taxes, some authors have proposed taxes on land. While in principle land taxes are more economically efficient than taxes on output, in practice they are beyond the administrative capacity of governments in low-income countries. To implement a land tax, a government requires: 1) an up-to-date registry of ownership, area, and location for each landholder; and 2) a current valuation of each land holding. Even in developed countries these are expensive and time-consuming to achieve. In low-income countries they are impossible in practice.³⁷ In many developing countries (especially in the sub-Saharan region), there is not complete titling of land, which is the prior condition to a registry of ownership. Second, were there a complete and accurate registration of ownership, land evaluation requires extensive land markets (Norton 1987, p. 61). If land is not generally bought and sold, governments have no practical basis for assigning the land values upon which taxation would be based. Evaluation can be avoided through a lump-sum tax on land (equal absolute tax on all holdings regardless of size or quality. Such a tax would still require a land registry. Even were such a registry in existence, lump sum taxes suffer from two near-fatal problems. First, they are grossly inequitable, being the purest form of regressive taxation. Second, in order not to over-burden the poorest farmers to the point of driving them from production, lump sum taxes need be set so low that they generate very little revenue.

The structural limits to taxation in developing countries leads Sarris to provide what can be considered the practical conclusion to reach about taxation of agriculture:

...[T]axing exportable or other tradeable cash crops has had a long and successful history as a fiscal instrument in many countries.... It is not coincidence that export taxation has been quite crucial as a source of revenue at early stages of development...[T]rade taxes (export and (import) account for the bulk of fiscal revenue in the poorest developing countries. (Sarris 1994, p. 15)

Though disproportionate taxation of agriculture (in practice, export agriculture) is unavoidable, it remains the case that excessive levels have a negative effect on current output and long-term agricultural growth. The practical problem for governments is to determine, in each case, what level of taxation is 'excessive.' This

³⁶ Short run supply curves by definition hold technology and land area constant. With a constant technology and fixed land, the total supply response to price changes should be low. This is in practice what empirical research shows (Chhibber 1989; FAO 1987, pp. 2-3; and Smith 1991, p. 12). This is consistent with the short run supply response of individual crops to changes in relative crop prices being quite high. The latter is achieved by the transfer of land, labour and equipment from one crop to another.

³⁷ 'The difficulties and costs of establishing effective property rights...are likely to be pronounced... because of incomplete commercialisation and modernisation' (Smith & Thomson 1991, p. 108).

involves explicit evaluation of trade-offs between objectives, and between gains and losses. For example, it is well-documented in the development literature that public sector investment in education yields a high return in terms of overall economic growth and the potential to diversify the economy in response to changing world market conditions. The gains from the transfer of resources from agriculture to growth-enhancing public goods can be justified on this basis. This is all the more the case if the private return to education and other social services (e.g., health care) is exceeded by the social return.³⁸

The review of the issues associated with agricultural taxation in developing countries permits only the broadest of generalisations.

1. all forms of taxation tend to discourage production, since in theory they reduce the relative return to work, thus inducing greater leisure;
2. as a practical matter, developing countries, especially low income countries, may have no major revenue source other than export agriculture; and
3. the degree to which agriculture is taxed cannot be determined from a consideration of its impact on agriculture alone, but must be assessed in terms of economy-wide and inter-sectoral trade-offs in the growth process.

3. Agricultural Credit

After price policy, the most contentious policy area is credit, focussing on the conditions under which it should be provided and the appropriate institutions for its delivery. It is beyond the scope of this guide to cover all issues. The focus is on credit terms and the issue of credit subsidies.

Any policy discussion of rural credit should be bring with recognition of the particular character of the commodity, credit, which is being bought and sold. Consumer theory analyses exchange in terms of income and substitution effects. When the price of a commodity changes, rises, for example, there is an income effect which is the real income loss to the buyer of the higher price for this particular commodity. If the quantity purchased remained the same, there would be a real income loss in terms of the need to purchase less of all other commodities taken together. The income effect is partially mitigated by the substitution effect: the buyer reduces purchases of the commodity whose price has risen, and substitutes for it purchases of a (now) cheaper commodity which can sure the same purchase. The larger is the substitution effect (the more price elastic the demand for the commodity), the less is the real income loss.

The key characteristic of credit is that it has no substitute as such, for it is the commodity (money) which is used to purchase others (e.g., agricultural inputs). Since

³⁸ Sarris generalises this point to public investment as a whole:

It is almost an axiom of [structural adjustment programmes] that private savings and hence investment will be more efficient [than public investment] from a growth perspective. However, much private saving in developing countries goes for consumption smoothing and not for productive investment...Given risks, economies of scale, etc., it is not at all clear that in a developing country context private investment will be more efficient than public...'(Sarris 1994, p. 114).

no other commodity can sure this purpose, when interest rates rise, farmers must either draw down on saving, reduce input use, or seek another source of credit. In other words, the price (interest rate) elasticity of credit for the small holder is likely to be low, implying a relatively large real income effect of interest changes. A second characteristic, specific to agricultural credit, is that rural credit markets tend to be inefficient, due to market power and information asymmetries between borrowers and lenders. This frequently results in fragmented credit markets, with interest rates and repayment conditions varying across them. Further, when the degree of commercialisation of communities is low, credit is part of patron-client relationships.³⁹ While attaching oneself to a patron may provide a type of security for a smallholder, it limits his or her choice in the credit market.

A second aspect of credit as a commodity is that its price (the interest rate) tends to vary inversely with the amount: large borrowers typically pay lower rates than small borrowers. While this is not uncommon for many commodities due to monopsony power, with credit it can occur in a competitive market. Particularly in developing countries, the unit cost of lending and collecting increases as the size of loan falls. For very small loans, relevant to smallholders, the unit costs of lending can be extremely high.

The debate over whether credit should be subsidised should be placed in the context of the differential cost of lending by size of loan. If non-subsidised credit to farmers means full recovery of cost plus the normal profit margin for each size category of loan, then smallholders must be charged more than larger farmers. If producers are price-responsive, this will imply that for a given technology, smallholders will use fewer modern inputs, producer lower yields, and have lower returns per unit of on-farm labour. In light of this, it should be noted that the AonA permits special credit programmes targeted to poor households.

4. Price Policy in General

In most developing countries, the thrust of agricultural price policy over the last fifteen years has been towards reduction of government interventions. The hope is that this deregulation would increase prices to farmers, and thus stimulate greater output in the short run and investment in the medium term. As such deregulation does not increase prices; rather, it's affect is to facilitate the transmission of price changes to the farmgate. When domestic market deregulation is combined with trade liberalisation (see *trade liberalisation*, below), international prices tend to dominate domestic markets (with the degree partly dependent on the size of the country). Price decreases are transmitted as well as price increases.

In this context, one can distinguish between the initial impact of deregulation and the long-term consequence. If institutional arrangements prior to deregulation were such as to hold agricultural prices below international levels, then, other things equal, deregulation will provoke an increase. This is a once-and-for all increase, after

³⁹ Gaiha comments, 'Capital markets [in rural areas] are...far from perfect. The fundamental reasons are the high risk of default and weak enforcement mechanisms' (Gaihi 193, p. 63). Credit through patron-client relationships, seeks to resolve these problems, at considerable cost to the smallholder.

which price levels depend upon the trend in world markets. This issue is treated further, below.

Were average farm incomes the only consideration for price policy, the issue would be relatively simple. Full deregulation would imply that these incomes would be determined by international prices. The FAO concern with price policy involves more complex issues, since central to its brief is food security. In order to evaluate price policy for the goal of food security, one must disaggregate the farm sector, and take an economy-wide perspective. FAO estimates suggest that the number of seriously undernourished people in the developing world was about 500 million in the mid-1980s (FAO 1987, p. 3), and not much lower in the mid-1990s (FAO 1998). A substantial portion of this number consists of households that are net food buyers, in rural as well as urban areas (FAO 1998). In the absence of compensating policies, increases in food prices make net food buyers worse off. Thus, price policy for food security must be nuanced, in order to pursue the goals of improved incentives for producers and enhancing the welfare of food deficit households.

The debate over appropriate price policy has focussed on two issues: 1) whether increased market prices are transmitted to the farm gate, and, if so, 2) whether price increases are sufficient to bring forth a significant supply response. Both issues can only be resolved empirically. Assume that all commodity marketing is privatised and deregulated. The transmission of prices to the farm gate will depend on the degree of market control by merchants. This control can be affected through spot prices, or via systems in which poor farmers pledge their crops in advance of harvest. Supply response will depend on the circumstances in each country, region, and community, including: transport facilities and transport costs; access to land and other inputs; availability of credit.

5. Trade liberalisation

The impact of trade liberalisation on agriculture depends on the particular marketing institutions in a country, the exchange rate regime, and the behaviour of world prices after liberalisation. In order to organise the discussion, we assume that a government simultaneously undertakes the following policy changes:

1. quotas are converted to tariffs, the resulting tariff structure is narrowed, and the overall level of tariffs lowered; this gives imports greater access to the domestic market (eliminating quotas) and lowers their prices (lower tariffs); these changes would be associated with the UR and adjustment programmes;
2. price controls are eliminated; this will tend to affect export crops, since price controls in domestic markets were unlikely to have been enforceable (adjustment conditionality); and
3. a floating exchange rate regime is introduced (adjustment conditionality).

Table 3 summarises the probable outcomes from this combination of policies. The table incorporates simplifying assumptions: 1) access to credit is unaffected by the policy changes; 2) changes in world prices become changes in domestic market prices, and these are transmitted to the farmgate; 3) profit margins are determined by output prices and inputs prices (no change in cost of non-traded inputs); and 4) farm

households respond to increases (decreases) in profit margins by increasing (decreasing) output. On these assumptions, the output response of farmers is determined by the following chain of price changes: the impact of liberalisation on output and input prices, the movement in the exchange rate, the effect (if any) of domestic price decontrol, the subsequent movement in world prices of outputs and inputs.

The most favourable scenario for agricultural producers is when trade liberalisation reduces input prices, the exchange rate depreciates, and world prices rise. However, there are other scenarios, and no *a priori* conclusion is possible.

Some generalisations about the outcome of trade liberalisation are possible (on the *ceterius paribus* assumption):

1. if not accompanied by a real devaluation, the impact of trade liberalisation will tend to be stronger on the import side; if farmers produce tradables, this could increase competition and lower farmgate prices;
2. if accompanied by a real devaluation, crops that do not use imported inputs will become profitable relatively to ones that do; and
3. critical to all outcomes are the direct and indirect effects of trade liberalisation and devaluation on non-traded costs, such as transport, wages, and marketing services.

During the 1990s most developing countries altered their policies toward liberalising trade; this should continue for the foreseeable future. Trade liberalisation is not an all-or-nothing policy. It is quite consistent with WTO rules to pursue it at a pace consistent with national priorities and circumstances. Its implementation requires careful planning, with consideration of short-term as well as long term impact, in order to balance policy goals. Norton summarises the complexities as follows:

...[T]rade liberalization may favor a more efficient allocation of resources in the long run, but in the short run it may aggravate the balance of payments situation... In the economy-wide context, [there are] a number of major tradeoffs of this kind, including devaluation vs. reduction in inflation, credit contraction vs. output expansion, and tariff reductions vs. reductions in the trade deficit. (Norton 1987, p. 11)

Table 3: Possible Outcomes of Trade Liberalisation for Agricultural Output

	<u>Exchange rate response</u>	<u>Domestic Markets</u>	<u>World Prices</u>	<u>Input prices</u>	<u>Probable Outcome</u>
Trade Liberalisation	Exchange rate depreciates	De-control of prices	World price rises	Input prices fall	Output rises
				Input prices rise	Ambiguous
			World price falls	Input prices fall	Ambiguous
				Input prices rise	Ambiguous*
		Prices not previously controlled	World price rises	Input prices fall	Output rises
				Input prices rise	Ambiguous
			World price falls	Input prices fall	Ambiguous
	Exchange rate stable	De-control of prices	World price rises	Input prices rise	Ambiguous*
				Input prices fall	Output rises
			World price falls	Input prices rise	Ambiguous
				Input prices fall	Output falls
		Prices not previously controlled	World price rises	Input prices fall	Output rises
				Input prices rise	Ambiguous
			World price falls	Input prices fall	Ambiguous
			Input prices rise	Output falls	

Notes:

* It is possible that the depreciation would overcome the fall in world prices and increase in input prices (thus, increasing output), but this is not the probable outcome.

6. Economic policies for the environment

Economic policy for agriculture must focus not only on production, poverty and food security, but on the effect of pursuing these policies on the environment. Increasingly, the term ‘sustainable development’ is used in place of ‘economic development’. Superficially, it would appear that economics has the tools to analyse sustainability, environmental issues, since environmental sustainability has its costs and benefits. However, in practice economics is not well-equipped for this task, since its tools confine it to consideration of costs and benefits which have a monetary cost. While in principle all benefits and costs can be converted to monetary units, in many cases doing so excludes many of the issues which are most important to analyse. This is especially the case when the environmental changes under consideration have potentially catastrophic effects (such as long run climate change or species extinction) that render the standard *ceteris paribus* assumption inappropriate. Economics is useful for formulating environmental policy, but should make modest claims for the insights it provides.

The purpose of this section is not to consider environmental policy in the sense of how governments should achieve sustainable development. Nor does it consider the environmental impact of pesticides, irrigation, and other aspects of production techniques. Rather, it considers the environmental impact of typical economic measures whose purpose is to enhance agricultural production and foster food security. Within this limited brief, we bring with a brief review of the sectors of agriculture and the pressing environmental issues associated with them. For the *crop sector*, the main issues are over-exploitation of land, expansion onto margin land, impact of irrigation and water conservation in general, and the effect of fertilisers and other chemical inputs.⁴⁰ The possibility of endemic over-exploitation of land in the sub-Saharan countries is considered a serious possibility (Platteau 1992). This region has traditionally used land-extensive production techniques, but population growth threatens to make this unsustainable due to land scarcity.⁴¹ Land scarcity, in turn, provokes use of marginal lands. The task of economic policies is to enhance incentives for sustainable use of such land, rather fostering a short term profit horizon for producers.

A much more complicated sector for economic and social policy is *forestry*, because of the many competing demands on forest resources. Forests serve many functions and groups, whose interests are not necessarily compatible:

- a. forests are the homelands of many indigenous peoples, for whom hunting and gathering may be important for their livelihoods; typically, these people have relatively little influence on economic or social policy;

⁴⁰ In the last two years the virtues and vices of genetically modified products have become an issue of intense political debate in both developed and underdeveloped countries, as well as a source of conflict in trade negotiations. In February 1999, the United Nations convened a conference in Colombia to establish an international protocol on GM commodities. This issue is beyond the scope of this report.

⁴¹ Land scarcity is a relative concept. Two countries could have the same rural population density, and land could be scarce in one country and abundant in the other. Abundance or scarcity depends, among other things, on land quality and the techniques used to till the land. Land is becoming scarce in the sub-Saharan region in relation to the techniques that continue to be employed by most rural households.

- b. forests are the habitat for a range of species, which would be threatened by commercial exploitation of these woodlands;
- c. forests supply a many inputs which are of central importance to both developing and developed countries; a major restriction on forest exploitation would have costly effects;
- d. forests play a central role in the natural regulation of climates, by prevention of soil erosion, water retention, maintenance of micro-climates, and, on a global scale, conversion of carbon dioxide into oxygen (countering the 'green house' effect).

It is beyond the method of economics to provide the weights to apply to the various aspects of forests, though *to an extent and imperfectly* economics can offer quantitative measures of alternative outcomes. Some overall guide to weights is provided currently by an apparent weight of opinion that commercial exploitation of forests has been pursued excessively compared to longer term considerations.⁴²

Table 3 gives a guide to probable impacts of economic policy on environmental variables and outcomes, which policy makers would review along with the strictly economic outcomes that various policies are intended. We bring with fiscal, monetary, and exchange rate policies, which are short run in that their impact is intended to be realised immediately. For *fiscal policy*, *government expenditure* is an instrument which can be used for both macroeconomic goals and environmental improvement, with minimal conflict. Expenditure can be switched from environmentally damaging programmes to ones that conserve resources and reduce pollution. Investing in facilitates that capture rainwater, rather than wells (which might reduce water tables) is an example. At the macroeconomic level, increases in the general level of taxation would tend to lower demand and, thus, resource use, though this is unlikely to ever be the prime motivation for tax increases. This instrument and subsidies are more appropriately considered under pricing policy, though each has an effect on aggregate demand.

At the macroeconomic level, *monetary policies* affect the supply and demand for credit, through the interest rate or other mechanisms. As with the demand-reducing effect of reduction in government expenditure, more tightly rationed credit (via the interest rate or quantity rationed) would be expected to reduce the demand and use of farm inputs and discourage the acquisition of machinery. The direct impact might be favourable to the environment, though in a perverse manner. All demand contract reduces aggregate resource use, but at the cost of lower standards of living. Higher interest rates combined with fiscal or exchange rate policies that compensate for demand reduction might be considered favourable to the environment, by discouraging use of chemical fertilisers, pesticides and other environment-damaging inputs. Reduced use of machinery might also, in some contexts be judged as environmentally favourable. However, one cannot generalise. If credit and,

⁴² In an FAO study, Markandya writes

On the basis of approximate data, the world was losing about 12.4 million hectares a year of tropical forests in the 1980s. This was from a stock of 1.16 billion hectares. Concern has been expressed because of the range of services that forests perform, many of which are not replaceable...It is well established that the purposes for which forests are cleared are mainly agricultural colonisation...and unsustainable commercial logging.' (Markandya 1994, pp. 17-18)

therefore, modern inputs, become more expensive, farmers may switch to more land-extensive techniques which could prove more damaging to the environment than chemical inputs. The use of machinery, for clearing land, for example, may be less environmentally damaging than traditional techniques such as burning off ground cover. The net outcome for the environment depends upon the nature of soils, prevailing techniques, and the broader environmental context.

It is also difficult to generalise about the impact of exchange rate policy on the environment. On the import side, a real devaluation will, *ceterius paribus*, increase the cost of imported inputs. As with credit tightening, this may or may not have a favourable environmental effect. In the 1990s, devaluation has in many countries been combined with trade liberalisation. Since the latter would tend to reduce the cost of imported inputs, the net effect on input use must be reviewed in each case. On the export side, a real devaluation tends to foster production for the external market, either through increased competitiveness or by raising the relative return to tradables (see discussion of exchange rates, above). There is controversy over whether increased agricultural exports have a positive, neutral or negative effect on the environment. For crops, devaluation is unlikely to substantially increase aggregate production. Rather, its affect is to induce a switch between crops. If this is the case, the environmental impact will depend on the specific crops involved; e.g., their use of chemical inputs. One frequently suggested negative impact of increased exports is the possibility that the expansion of exports will result in localised concentration of production, which might enhance the emergence and spread of crop diseases. There is relatively little empirical work on this issue.

The situation is different for the forestry sector. Much, if not most, of the exploitable forest area in the developing world has not been purpose-grown for commercial use. As a result, devaluation, and other export incentives, might, in the absence of strict government regulations, result in unsustainable commercial exploitation of forests.⁴³ A similar argument can be made for ocean and free-water fishing, though not for fish framing. For livestock, the environmental impact of an export-inducing devaluation is ambiguous, though a bit more problematical than for crops. If a devaluation provokes a shift from crops to livestock, as a result of a revealed comparative advantage, the environment may suffer, especially if the shift is not reversible in the short run. On the other hand, the shift to grazing may be associated with reduction of crops that heavy users of polluting chemicals (the shift from cotton to livestock in Central America in the 1980s might be example).

For medium and long term impact, governments has four categories of policies: trade, pricing, institutional, and investment. The direct on *trade policy* in recent years in developing countries has been towards liberalisation (see sections on the WTO and structural adjustment). The conversion of quantitative controls into tariffs and tariff reduction tends to increase imports, which may partly be off-set by real devaluations. Reductions in tariffs and in export taxes tend to have different effects across commodities, depending on the initial structure of quotas, tariffs and taxes. Before liberalisation, governments typically have a differential tariff and

⁴³ Markandya cites evidence to support this view:

[Recent studies] show a significant relationship between the rate of industrial logging and the debt service ratio, the real rate of devaluation and the export price of agricultural crops... [T]he evidence cannot be ignored as indicative of a possible relationship... (Markandya 1994, p. 173)

export tax structure; a common conditionality of adjustment programmes is that these differences be narrowed. The result is that the trade regime becomes more 'neutral' with regard to incentives by commodity. No generalisation can be made about the environmental impact, though there is growing concern in the policy literature that trade liberalisation without purposeful regulations may not serve the goal of environmental sustainability.⁴⁴

Pricing policy involves three instruments: prices themselves, which may be regulated; subsidies, usually on inputs; and taxes on internal trade. The removal or adjustment of these can have environmental effects through their impact on incentives, without environmental outcomes depending on the initial policy position and the response of different crops.

Institutional reforms play a key role in environmental management. Land policies, discussed in Section 3.5, can be used to foster long-term, sustainable resource management. Particularly important in this area are policies which provide access to forests, fishing, and grazing. As discussed above with regard to interest rates, the rural financial sector is the vehicle for access to modern inputs. Research and extension services can be focused on environmental sustainability, though both are typically weak in developing countries. If a general point can be made, it is that fostering sustainable development is considerably more complicated than reforming provision of these services into the private sector. Environmental considerations, perhaps above all others, require a pragmatic and imaginative approach to the roles of the public and private sectors (Smith and Thomson 1991, pp. 110ff).

Perhaps of all medium and long-term policy instruments, public investment offers the most possibilities to fostering sustainable development. Further, few if any investment policies would conflict with WTO rules. The more important external constraint is structural adjustment programmes, which place emphasis on deficit reduction. In poor countries, where public services are under-funded, public investment tends to be especially vulnerable to expenditure reduction pressures. There are many types of investment whose social return is higher than the private return, in general and with respect to the environment, which is one of the criteria for the public sector taking the initiative. These include construction of water-catchment systems, storage to reduce post-harvest losses, and pest and disease control.

⁴⁴ In a study for the FAO, Young and Burton conclude:

The interaction between international trade and resource degradation is particularly important, since the pattern of trade has implications for resource use and environmental policy affects comparative advantage... [T]he precise linkages are often difficult to establish... [p. 89] [W]here externalities exist the market-determined trade pattern is not socially optimum, [and] trade liberalization cannot be relied upon to improve environmental quality, especially in the developing countries, and non-tariff barriers on trade may not protect the resource base as intended... (Young & Burton 1992, p. 90)

Table 3:
Economic Policies and their Environmental Impacts
Policy Levels

				<u>Environmental impacts</u>	
Economic Policy	Macro/ Short Term	Fiscal	Govt Exp	Drought relief/food aid/agric extension Public infrastructure/environmental management	
			Taxes	Reduces demand for resources	
			Subsidies	Input effect: machinery, fertilisers/water, etc.	
		Monetary	Credit	Reduced credit for inputs & investments	
			Interest Rate	Reduces investment & resource management	
			Exchange rate	Devaluation	Import effect: increases prices of imported inputs Output effect: increased export crops (depends on crop characteristics)
		Import/Export taxes		Removal of protection – same effect as devaluation but on selected crops	
		Medium & Long Term	Trade	Trade controls	Same effect as trade taxes, technological lock-in
				Pricing policy	Price Controls
	Subsidies				Reduced use of pesticides, etc.
	Investment Policy		Taxes	Indirect impact via reduced resource demand	
			Institutional reforms	Land	Encourages on farm investment and long-term sustainable resource management
				Financial	Improved credit mobilisation may benefit farmers
			Research & extension	Research & extension	Improved extension services for resource management
				Training	Human investments in agric extension, wildlife & resource management
			Valuation	Project evaluation to include environmental costs & benefits Industrial pollution abatement technologies, adapted agricultural technologies	
	Technology	May increase access to natural resources & encourage their exploitation, support infrastructure for Producers, enabling greater price responsiveness			

Table adapted from Markandya (1994, p. 176).

V. External Constraints on Agricultural Policy

1. The WTO and the Agreement on Agriculture

Over the last twenty years, increasing numbers of governments of developing countries have made the political decision to enter into agreements which constrain their policy choices, in general and with respect to the agricultural sector. The most important of these are joining the World Trade Organisation and signing onto structural adjustment programmes. This section deals with the implications of the former for agricultural policy. Table 4 lists the eight negotiating 'rounds' organised within the General Agreement on Tariffs and Trade,⁴⁵ the main purpose of which was to convert all national trade regulations into tariff equivalents ('tariffication'), and, having done so, to bring down the average level of tariffs among consenting members. Until the 'Dillon Round' of the early 1960s, the GATT was almost exclusively an organisation of developed countries, and did not include a substantial number of developing countries until the 'Tokyo Round' in the 1970s. Not until the Uruguay Round did GATT negotiations include agricultural commodities in a serious manner. This exclusion was based on the view that food security issues and the livelihoods of rural communities should not be left to market forces.⁴⁶ Prior to the UR, agricultural commodities were exempted from important GATT rules such as the ban quantitative import restrictions ('quotas'). Indeed, subsidies to agricultural commodities were explicitly permitted, reflecting their wide-spread use in developed countries. The introduction of agriculture into the UR was justified by some for the reason that agricultural trade protection by developed countries especially harmed the developing countries. It cannot be rejected that a significant motivation was the goal of some developed countries to foster their agricultural exports.

Table 4:
GATT negotiating rounds:

Round	Date	Countries
Geneva	1947	23
Annecy	1949	33
Torquay	1950	34
Geneva	1956	22
Dillon	1960-61	45
Kennedy	1962-67	48
Tokyo	1973-79	99
Uruguay	1986-93	118

FAO 1998a, p. 5

Out of the UR Round came a series of agreements, including the Agreement on Agriculture. Despite the assertion that developing countries would gain from freer trade in agricultural commodities, it was explicitly recognised that some or many

⁴⁵ The GATT was created after the *de facto* collapse of the International Trade Organisation (proposed along with the IMF and the World Bank after World War II), which became non-operational when the United States of America declined to ratify it.

⁴⁶ 'The...consensus...[of GATT negotiating countries until the UR] was that agriculture was a unique sector of the economy, that, for reasons of national food security, could not be treated like other sectors...' (FAO 1998a, p. 5).

countries might suffer losses. In light of this, the agreement included was supplemented by a document with the rather long-winded name, the Decision on Measures Concerning the Possible Negative Effects of the Reform Programme on Least-Developed and Net Food-Importing Countries. As explained above, the purpose of the AonA was not to foster efficiency in the strict economic sense (Pareto Optimality), but to increase trade in agricultural commodities.

Prior to considering the details of the AonA, it is useful to summarise the consensus view on the likely impact of the UR on world agriculture. First, and perhaps most important, it is anticipated that world trade in agricultural commodities will not dramatically increase. The accepted prediction is that this trade will increase by about fifteen billion US dollars (constant prices) over the ten years following the agreement.⁴⁷ Notwithstanding this small increase, it is anticipated that total agricultural production will decline slightly compared to the 1980s, primarily due to the income inelasticity of demand for food as a whole. Per caput declines are expected in dairy products, grains, beef, and coffee, and increase for vegetable oils, tea, bananas, cocoa, and rubber (FAO 1998a, p. 78). An FAO document confirms speculation elsewhere (ODI 1995) that 'on balance, the Agreement [on Agriculture] will lead to a small reduction in consumption growth in low income, food deficit countries' (FAO 198a, p. 78). This prediction is prompted by anticipated increases in prices of basic grains resulting from reduction of subsidies in developed countries. If realised, it would imply an increase in malnutrition in the low-income food deficit countries. It is this possibility that in part prompted the 'Negative Effects' Decision, that is discussed below.

In the sub-Saharan region twenty-eight of the fifty countries are defined as 'least developed', and no less than forty-three are low-income food deficit. Several influences associated with the AonA will negatively affect these countries: 1) increases in the prices of temperate food commodities; and 2) preferences from developed countries which will be cancelled by the AonA (most associated with the Lome Conventions). When these are added to the small increase in exports facilitated by the UR, the net effect on the regional balance of payments is projected to be minus 200 million US dollars.⁴⁸ These projects are relevant to food security, which is treated in a separate sub-section.

The basic structure of the AonA is as follows. The agreement as such sets out general rules which ban, limit, or require a progressive reduction in most (but not all) forms of producer subsidies and restrictions on commodity trade, but does not specify requirements by country. These are found in the Country Schedules, a statement by each member country, commodity by commodity, of commitments on each AonA rule (tariffs and non-tariff barriers, domestic support, and export subsidies). For each issue, there is an explanation of how and when the provisions will be achieved. The period of time during which the country commitments will be carried out involves the *verification process*. The Schedules were required to be submitted (with exceptions, see below) by December 1993, with verification over by April 1994. During this period

⁴⁷ Two good sources for the consensus view are FAO 1998a, pp. 78ff; and ODI 1995. On national production trends, see Alexandratos 1997.

⁴⁸ The estimate is that without the UR, the trade deficit would increase from the present one billion US dollars, to 1.5 billion. With the UR, the deficit increases by a further thirteen percent to 1.7 billion (FAO 1998a, p. 80).

member countries could inspect and negotiate amendments to each others' proposed Schedules. After the latter date, the Schedules became legally binding. The Least Developed Countries (see Annex 2 for list) were given an additional year for submission and verification. For developed countries, implementation of the Schedules would be within six years from 1995. Those countries defined as 'developing' were granted a ten year implementation period (i.e., to 2005).

The policy changes required under the UR (as detailed in the Country Schedules) fall into three general categories: 'market access', domestic support, and export subsidies. Market access is the term used for conversion of non-trade trade measures to tariffs, and consequent reduction of tariff rates. Domestic support refers to payments to producers which are related to levels of production. The AonA required the country schedules to include an item called the Aggregate Measure of Support, whose level would be lowered over the compliance period. This item is of limited importance to developing countries, since only the more advanced provided any substantial domestic support to producers (see Table 5, for an incomplete list, of middle-income countries). Very few low income countries have or have had such measures in place. In any case, there are notable exceptions to the requirement that the AMS be progressively lowered. Direct support payments are exempted if:

1. for developed countries, exempted are the compensatory payments and land set-aside programme of the European Union; and the deficiency payments of the US government (see Annex 1 for definitions);
2. potentially affecting developing countries, payments to producers based on fixed area and yields, or for livestock on a fixed number of head; and
3. on a commodity basis, support which is less than ten percent (developing countries) or five percent (developed countries) of the total value of production is exempted.

The exemptions are of questionable importance to developing countries, since they usually lack the administrative capacity or institutional framework for support payments. Perhaps even more important, support payments represent a transfer from other sectors of the economy to agriculture. In practical terms, this is only possible if the population to be supported is relatively small; i.e., it is beyond the resources of a predominantly agricultural country. Export subsidies are of importance in a number of developing countries. Using 1986-1990 as a base, developing countries must reduce expenditure on export subsidies by twenty-four percent by 2004, and reduce the volume of subsidised exports by fourteen percent.⁴⁹ These requirements apply to a specific list of commodities which includes virtually very agricultural product of any importance in international trade.⁵⁰

Table 5:
Developing Countries with Commitments in Respect of UR Access Quotas,
Export Subsidies and Domestic Support Reductions

⁴⁹ For developed countries, the percentages are 36 and 21, respectively, to be achieved by 2000.

⁵⁰ The list includes: wheat and flour, coarse grains, rice, oilseeds, vegetable oils, sugar, butter, powdered skim milk, cheese, meat from the common farm animals, live animals, eggs, wine, fruit, vegetables, tobacco, and cotton.

<u>Region</u>	<u>Country</u>	<u>Tariffs & Quotas</u>	<u>Export Subsidies</u>	<u>Domestic Support</u>
Africa	Morocco	X		
	Tunisia	X		X
Asia	China	X	X	
	Indonesia	X	X	
	Korea, Rep of	X		X
	Malaysia	X		
	Philippines	X		
	Thailand	X		X
Latin America & Caribbean	Barbados	X		
	Brazil		X	X
	Colombia	X	X	X
	Costa Rica	X		X
	El Salvador	X		
	Guatemala	X		X
	Mexico	X	X	
	Nicaragua	X		
	Uruguay		X	
Venezuela	X	X	X	

FAO 1998a, p. 69

Above, some of the exemptions to the rules of the AonA were detailed. All the important exemptions and special rules for developing countries are brought together, with the purposes of assessing the extent of policy options. The special arrangements for developing countries fall into two categories, extension of deadlines, for submission of information and compliance (including exemption of LtDCs from the AMS reporting), and the 'Negative Effects' Decision, which has yet to be acted upon (see Table 6). Until the commitments under the latter are made concrete, the AonA can be considered an arrangement largely designed for the developed countries. Indeed, the main purpose of the AonA was, *de facto*, to reduce the perceived trade-inhibiting effects of developed country agricultural policy. As such, the AonA may foster agricultural exports of developing countries (see discussion below), but the majority of the trade expansion should be among developed countries. The current trade disagreements between the EU and the United States suggest this to be the case.

Perhaps the most important explicit exemption relevant to food security are the arrangements for food aid. The main change under the AonA is to prohibit general sales of food aid at below market prices. Since such sales have been long-criticised by experts as having a negative incentive effect on production, developing country governments might treat the prohibition as making a necessity of a virtue. In general, all food provision for the poor is formally permitted under the AonA, though there remain serious practical problems. Providing food to the poor requires that they be identified; i.e., it involves targeting. In many developing countries identification at the household level (which targeting requires) is extremely difficult due to lack of information and the means to achieve it. This is particularly the case for nomadic populations, urban shanty town dwellers, and remote rural communities. For the same reason that income taxes are not practical in low-income countries, identifying the poor is similarly impractical. The food security advantage of general sales of food

below market prices is that this tends to drive down market prices. For all their negative side effects, lower prices raised the purchasing power of food deficit households. While below market sales can be considered inefficient on some grounds (the non-poor gain as well as the poor), it is not clear what the practical alternative would be if the poor cannot be effectively targeted.

One possible alternative is the regional assistance allowed under the AonA, if the poor are concentrated in certain geographical areas. This does not, of course, deal with the problem of the poor who are reside along with the rich. It is obvious that urban areas have great differences in income levels; empirical evidence shows that rural communities, even in the sub-Saharan, are typically characterised by an unequal distribution of income. With the greater emphasis on market forces in recent years, it has been suggested that poverty is largely the result of market imperfections. The implication of this approach is that governments can pursue poverty alleviation through improving the functioning of markets (Gaiha 1993). While this may be part of the problem of poverty, the geographic and frequently ethnic concentration of poverty suggests more fundamental causes, which require more purposeful government action.

Finally the AonA exemptions include food aid for natural disasters, but the Agreement is silent on disasters arising from civil conflict. It would appear that the latter generate considerably more hunger and malnutrition than the former, and tend to be more protracted in their impact. Recent research suggests that in the context of conflict, general provision of food is preferable to targeting (Cramer & Weeks 1998). This is because provision of food is part of a broader process of social reconciliation. Targeting may revive or aggravate perceptions of exclusion and favouritism that contributed to armed conflict. An important future refinement on the AonA might be to make explicit provisions for conflict-affected countries.

FAO technical work increasingly focuses on aiding governments to provide food security for their populations, especially for vulnerable groups. The implications of the AonA for food security is considered after a review of structural adjustment programmes.

Table 6:
Special Rules for Developing Countries and Relevant General Exemptions
Under the Agreement on Agriculture

Special Arrangement Type:	Details:
1. Country Schedules	Least Developed Countries given additional year to submit (deadline now passed)
2. Compliance period	Developing countries given ten years (to 2004), developed countries six
3. Aggregate Measure of Support	Least developed countries not required to submit these (largely irrelevant, since these countries have few relevant programmes) Also, all countries exempted for commodity by commodity support that falls below a specified portion of crop's marketed value
4. Food security issues	Commodity stockpiling allowed for all countries if they correspond to predetermined targets & are related solely to food security

	Government food purchases allowed if at market prices Sales can be below market prices to rural and urban poor Food aid allowed by direct provision, subject to clear criteria based on nutrition
5. Direct payments to rural households	Allowed if not linked to type of commodity or level of production Natural disaster relief allowed Payments under environmental programmes allowed Regional assistance programmes allowed
6. The ‘ Negative Effects’ Decision [not made concrete]	Agreement to establish mechanisms to ensure that AonA rules do not adversely affect LtDCs and food-deficit countries with regard to food security, by 1) reviewing the adequacy of food aid; 2) ensure that foodstuffs provided to these countries increasingly on a concessionary basis; and 3) consider requests for technical & financial assistance to these countries to foster agricultural growth. To date, no concrete steps have been taken to implement these commitments.

2. Structural Adjustment Programmes

Strictly speaking, the IMF lends for stabilisation, and the World Bank for structural adjustment. The formal difference between the two is that the former is said to address short-run demand side problems, and the latter medium and long term structural supply problems. This distinction is frequently encapsulated by saying that stabilisation involves aggregate demand management and structural adjustment aggregate supply enhancement. In practice, the two tend to go together, and the distinction is frequently blurred. No strict distinction is possible in practice, because many policies affect both aggregate demand and aggregate supply (e.g., taxation). This discussion will treat structural policies as specified by the international financial agencies, be they in programmes of the IMF, World Bank, or other multi- and bilateral agencies.

Table 7 provides a summary of the major policy areas addressed by structural adjustment conditionality. The overall thrust of conditionality is reducing the role of the state in the economy. Policy conditionality for the agricultural sector is very much in this spirit. It reflects the conviction that agricultural markets perform efficiently relatively to government interventions, and is based upon a Pareto Optimality definition of efficiency. Particularly in Africa, adjustment programmes have resulted in dramatic changes in agricultural policy, as Table 8 shows.

While, obviously, the designers of these programmes consider that their effect is to enhance growth prospects in general, and to favour the agricultural sector, they have come under considerable criticism. Particularly controversial is the frequent assertion that the policies would tend to favour the poor (see Demery & Squire 1996, 1997; and a critique in Weeks 1997). In a study for the FAO, Boussard concludes,

Another characteristic of [structural adjustment programmes] is that they are painful...[I]n the short term, changing the rules of the economic game makes the risk of economic agents revise their expectations and strategies, thus

introducing the risk of error and failure. Apart from expressing scepticism about their final success...this is probably the most serious objection that can be made about structural policies.

...

There are other causes for concern...[I]n spite of their long-term beneficial effects, structural policies may at least temporarily impose severe losses to certain people. Such a possibility must be taken seriously, especially if these people are the poorest. In this case, it would probably be necessary to provide some form of compensation...Together with the poor and the landless rural workers, smallholders may be permanent or temporary losers in the structural policy game. (Boussard 1992, p. 2)

Elsewhere in this report the major policy areas of structural adjustment are treated in detail, thus need not be repeated here. What is relevant in this section is to note that even should a government accept the full range of deregulation conditionalities, there remain major areas of policy intervention to foster agriculture. First, governments will continue to provide non-marketable facilities such as roads, extension services and police to enhance productivity. However, budgetary conditionalities of adjustment programmes can restrict the scope for such activities. Second, there are a range of institutional changes that are typically absent from adjustment programmes, but not precluded by them: land tenure reform and modernisation, fostering co-operatives for marketing of outputs and inputs, and comity credit organisations. Third, the provision of social services can service as important vehicle for reducing inequality and raising productivity of poor farm households.

While adjustment programmes require a contraction of the state in some areas, there is scope for expansion in others. This said, constructing a purposeful policy for agricultural growth is a challenge in the context of adjustment programmes. This is particularly the case if a government judges that market forces, even supported by 'safety-nets', are unlikely to foster food security to the extent desired.

Table 7: Aspects of Structural Adjustment Programmes

Policy area	Policy goal	Instrument or mechanism
1. Exchange rate	Correct imbalance in external account, generate more efficient allocation of resources through comparative advantage	Until recently, a free-floating exchange rate preferred; mixed outcomes from this policy leave 'best practice' in flux
2. Trade policies	Same as above	Tariffication, drastic reduction in variation across tariff lines, tariff reduction, elimination of export subsidies, reduction in export taxes (similar to WTO requirements, but usually more stringent)
3. Fiscal policy	Deficit reduction to reduce inflation or 'crowding out'	In practice, expenditure reduction tends to be preferred to tax increases, strong emphasis on elimination of consumer subsidies
4. Public expenditure	Expenditure reallocation in favour of social sectors and facilitating expansion of tradable commodities	Frequently there is conditionality for privatising public services
5. Public enterprises	Increase efficiency through commercialisation	Privatisation, independence from political influence, or closure
6. Financial sector	Development of financial sector, increased allocative efficiency	Elimination of interest rate subsidies, independent central bank, privatisation or closure of development banks
7. Industrial policy	Increase allocative efficiency	Elimination of trade protection, subsidies, directed credit, privatisation
8. Energy policy	Foster efficiency energy use	Reform pricing to cover full costs,
9. Agricultural policy	Increase allocative efficiency	Abolish any marketing boards, eliminate input subsidies, eliminate credit subsidies, abolish any price controls, privatise agricultural services (marketing, transport, etc.)

Table 8: Changes in Agricultural Policies in Africa in the 1980s

Country	Summary of reforms
Central African Republic	Liberalised marketing of domestic food crops, simplified licensing procedures for traders, abolished support prices, repealed statutes licensing merchants, reduced role of price stabilisation board to quality control & enforcing compliance with Int'l Coffee Agreement, guaranteed marketing margins for coffee eliminated
Côte d'Ivoire	Ended subsidised sales of cotton to domestic mills, phased out fertiliser subsidies, liberalised fertiliser imports, agric public enterprises granted autonomy
Egypt	Deregulated all food & export crop marketing (except cotton, rice & sugar)
The Gambia	Removed restrictions on internal trade in rice, removed subsidies on imported rice
Ghana	Privatised functions of parastatals
Guinea	Decontrolled internal prices (except rice and petroleum), closed or privatised most large commercial public enterprises
Kenya	Deregulated meat & dairy sector, divested parastatal enterprises in these sectors, Cereals & Produce Board changed to be buyer of last resort (rather than monopoly purchaser), grower co-operatives proposed to market maize & wheat
Madagascar	Reduced or eliminated a range of consumer subsidies, reduced marketing & price controls, abolished or restructured state enterprises, private sector food marketing legalised, state intervention in food marketing reduced to setting ceiling & floor prices
Malawi	Liberalised agric trading (except cotton & tobacco), partial elimination of fertilisers
Mali	Official prices changed to floor & ceiling prices, private sector allowed to trade in coarse grains & imported rice, domestic paddy market liberalised & public sector intervention in urban rice markets ended, official prices for coarse grains ended, grain stocks used only for food security [rice imports banned in 1987]
Morocco	Privatisation of most parastatals
Mozambique	Liberalised fruit, vegetable & small livestock markets, private agents allowed to trade in food crops
Niger	Number of products governed by official prices reduced, subsidies on agric implements abolished & reduced on inputs, public role in cereal marketing reduced to strategic stock holding, privatisation of parastatals
Nigeria	Abolished marketing boards (cocoa, cotton, groundnuts, palm oil, rubber, grain, roots & tubers)
Senegal	Liquidated parastatal for groundnuts and cereals, maize, sorghum & millet marketing liberalised, reduced subsidies to Regional Development Authorities, fertiliser trade liberalised & subsidies reduced, seed input supply liberalised, imported inputs liberalised
Somalia	Abolished parastatals on maize, sorghum, imported foods, agric prices liberalised, input subsidies ended, autonomy to parastatals, food aid sold at public auction to private traders
Tanzania	Removed maize meal & agric input subsidies, raised official producer prices (became floor prices), decontrolled prices on all products but 12 essential commodities, liberalised domestic transport charges
Togo	Privatisation of some parastatals
Uganda	Liberalised cotton marketing, free movement of foodstuffs, liberalised tea & sugar marketing, liberalised export of food crops
Zaire	Eliminated ceilings on producer prices, farmgate prices decontrolled, taxes on interregional trade eliminated, abolished parastatal trading in cotton, maize, sugar, livestock, edible oils, coffee, cocoa, rubber
Zambia	Increased official producer prices, wheat prices deregulated, maize trade liberalised

Source: Thompson 1991, pp. 22-26; Smith & Thomson 1991, pp. 87-108

3. Agricultural Policy & Food Security in light of the WTO And Structural Adjustment

There are several policy areas relevant to agriculture which are covered by both the UR and structural adjustment programmes. In almost all cases, structural adjustment conditionalities are stricter than UR rules. This results because the latter have the more limited goal of fostering trade, while the former seek to establish a consistent, deregulated policy framework across all sectors and aspects of an economy. As explained earlier in this guide, the criteria for UR rules is trade itself, while structural adjustment programmes are based analytically on the theoretically problematical Pareto framework.

Let us assume that a government of a developing country wishes to foster food security, and is not confident that market forces would realise this outcome (see Mosley 1994). Were the government to enter the WTO, it would find that it was permitted a range of policy interventions. The most important limitation would be that it would have to convert quotas to tariffs, and could not set these tariffs above proving levels. This commitment would still leave considerable scope for protecting domestic producers of basic foodstuffs. The limitations on support to producers would be, for most developing countries, and virtually all low-income countries, not-binding on policy. Few of these countries have applied support measures to any degree. The government might foster innovation by smallholders though the supply of inputs at below world market prices. This would not conflict with UR rules if implemented as a poverty strategy, or as part of an environmental programme. Infrastructure provision, extension services, and even marketing subsidies could be implemented without conflicting with WTO rules. In summary, while a government takes on a long-run obligation to liberalise trade when it joins the WTO, this obligation leaves scope for considerable policy options in agriculture. Further, if the Negative Effects Decision is operationalised, both food aid and technical assistance might increase to low-income and food-deficit countries.

Adjustment programmes are much more restrictive. The *World Development Report of 1998* placed a new (for the World Bank) emphasis on the positive role of the public sector. However, this new emphasis does not seem to have had a strong influence on the design of subsequent adjustment programmes. Adjustment programmes do allow for targeting of the poor. In principle this could be used to stimulate the smallholder sector through a variety of programmes that deliver credit and inputs. In practice, distinguishing poor rural families from non-poor rural families, the necessary condition for targeting, is extremely difficult in a low-income country (see Annex 1, *targeting*).

Table 9:
Policy Options under the UR (Agreement on Agriculture)
And Structural Adjustment Programmes

<u>Policy</u>	<u>Consistent with UR</u>	<u>Consistent with SAPs</u>	<u>Comments</u>
1. Output price supports	No Limited by AMS commitments; though Exempt if less than 10% of value of production	No Viewed as fostering allocative inefficiency & implying high budget cost	Policy should distinguish between support and stabilisation (the latter may be acceptable)
2. Support	No/Yes	No	Can serve as a mechanism

via traded inputs	Exempt under certain conditions; otherwise part of AMS& limited; Input subsidies to poor farmers are exempt	Viewed as fostering allocative inefficiency & implying high budget cost; might accept if targeted on poverty criteria	to reduce rural poverty
3. Support via non-traded inputs [credit policies most important]	Yes As above, Input subsidies to poor farmers are exempt	Unclear Might accept if poverty targeted	Scope for poverty-directed programmes
4. Trade policy instruments	No However, export taxes not contrary to UR, and Transport & marketing subsidies on exports exempt	No Only limited use of tariffs is acceptable; opposed to export taxes	UR allows considerable scope for active development policies for agriculture
5. Direct income payments	Yes No restriction if not linked to production levels or crops	Mixed Not opposed in principle, but like to object to budget cost	May not be feasible in most low-income countries
6. Food security	Yes Consumer subsidies do not affect compliance; Stockholding not contrary to compliance	No Opposed to consumer subsidies in principle (distortionary) and in practice (budget cost)	UR allows considerable scope for food security interventions
7. Marketing interventions	Mixed Marketing subsidies which affect all commodities are excluded;	No SAPs negative on all subsidies	Export promotion can be pursued through interventions that affect all agricultural commodities
7. Public investment	Yes Explicitly exempted	Yes However, might be affected by deficit reduction	Could be key element in agricultural development policy

Source: Adapted from FAO, 1998a, pp. 94-104

Annex 1: Summary of Agriculture-specific Policies

The following list includes the most widely used national commodity intervention measures relevant to price policy in developing market economies (reproduced from FAO 1987, pp. 38-43).

1. *Guaranteed floor price, government procurement and distribution, no monopoly.* This widely used system enables government to exercise a broad influence over price structure. Its success depends on good judgement of the level of price support, adequate funds for purchase, storage capacity and effective management. It is not generally suitable for perishables. The policy is usually backed by some regulation of imports or exports of the commodity and of substitutes.
2. *Fixed price, government procurement and sales, monopoly.* Fairly widely used, this method implies no role for private marketing channels unless as agents for the parastatal. It is usually backed by some regulation of exports and imports of the commodity and of substitutes. As this policy demands a high level of administrative capacity for effective operation and is often inflexible and costly, experience with it in developing countries is adverse, on balance.
3. *Official mandatory producer prices, without back-up arrangements other than price checks.* This is a generally weak policy instrument, but may be temporarily effective if well monitored.
4. *Deficiency payments.* A 'transparent' form of meeting any shortfall of market prices or returns from a guaranteed target, this approach does not interfere with the functioning of market prices. Budgetary cost is an open-ended commitment. It can be administratively demanding, and has been used more in developed than in developing countries.
5. *Supply management.* More developed countries use this method to limit production by controlling land inputs. Its effectiveness in practice is usually only over short- to medium-term. It may have limited application in large developing countries for controlling grain movements between surplus and deficit regions and for helping to implement quota restrictions under international commodity agreements.
6. *Buffer stocks.* Under international or unilateral producer ownership, this scheme is fairly popular to reduce price variation by inverse linking of stocks with market price changes. Though intuitively appealing, the system has many disadvantages and operational problems, especially because of mistaken market export forecasts. Recent research emphasises the possibility that total explicit and implicit costs may outweigh benefits, both overall and to producers, but unambiguous national buffer stocks are a necessary component of government-backed guaranteed minimum price schemes.
7. *Buffer funds.* An inter-temporal shifting of part of market proceeds from favourable to depressed periods has been fairly widely used for stabilisation purposes for export products. Sometimes income accumulated in buoyant price periods gets diverted to other uses (e.g. general government revenue, development expenditures or for cross-stabilisation of consumer food prices), thus undermining the capacity of the buffer fund to support prices in a market downturn. Individual producer participation is technically possible but administratively demanding.
8. *Export duties, taxes and commodity levies.* These instruments are widely used in developing countries. They lower domestic prices, and will benefit a country if it is a large exporter with influence over market price. Variable taxes and levies can improve domestic price stability. Agriculture is usually adversely affected because resources move out of the sector and price incentives to producers are lessened.

9. *Export subsidies.* This regrettable trading practice is prevalent in policies of some developed rather than developing countries. The subsidies may help to establish new external markets or to defend or widen existing ones. Apart from their legitimate use as temporary payments in stabilisation schemes, export subsidies destroy the comparative advantage basis of international trade and so impose global costs.

10. *Parastatal export monopoly with administered producer prices.* This is the most common mechanism for agricultural exporting in developing countries. It is operationally useful and can improve producer price stability. Experience indicates the danger of administered prices diverging too much from those implied by supply/demand, or from world price trends, if there is no automatic link. There may be adverse effects on agriculture as noted for export taxes and commodity levies,

11. *Quantitative export restrictions.* Main use in developing countries as a quick-acting measure to ensure adequacy of supplies for domestic market. Economic results similar to export tax. Useful as emergency measure but otherwise carries danger of encouraging foreign importers to seek alternative source of supply.

12. *Automatic stabilising link of domestic to export prices.* A seemingly effective "moving average" linking of domestic producer prices with international price trends but as far as is known not yet employed in developing countries. Transparency of results may not always be politically appealing.

13. *Import duties, taxes or variable levies.* Duties are a traditional, widely used and effective way of raising domestic prices of imports without blocking international price influences. Variable levies give whatever degree of protection is desired by insulating domestic prices from world fluctuations. They therefore exacerbate international price instability. Developing countries may use them to insulate domestic prices from the effects of imports subsidised at their source, but such a use carries the danger of introducing long-term price distortions.

14. *Import subsidies.* (See also consumer subsidies and food aid.) Subsidies are usually employed in conjunction with direct imports by government which are sold below cost. By adding to domestic supplies, subsidised imports can lower or stabilise domestic prices. They are most useful as a temporary measure in the face of a severe rise in international price. Otherwise, they constitute a production disincentive to the agricultural sector.

15. *Parastatal import monopoly with administered domestic sales prices.* This mechanism, widely used in developing countries, is usually operated in conjunction with domestic schemes to implement commodity price targets by restricting or programming competing imports. It is effective, although experience indicates a danger of introducing substantial price distortions in either direction.

16. *Quantitative import restrictions and quotas.* This quick-acting and powerful mechanism is widely used in developing countries to ensure that domestic price targets or guaranteed levels are not reduced by competition from cheaper import supplies. As the rate of protection varies inversely with the level of world prices, there is the danger of encouraging misallocation of production resources. Windfall gains are likely for those with rights to quota imports.

17. *Direct food aid from abroad.* This form of resource transfer is widely received by developing countries. If its distribution creates additional demand, or if the supplies are used to counter emergencies, the results are wholly beneficial. It can otherwise moderate or prevent food price increases and hence act as a production disincentive. It saves foreign exchange. It may also encourage dependence on foods not produced domestically. The use of food aid to strengthen national price policy is now being investigated.

18. *Administered exchange rates.* This is an element of price policy in virtually all developing countries, and likely to be of dominating importance where agricultural trade is large relative to production. It can have a beneficial, stabilising influence on domestic prices, but carries the serious danger of overvaluation, with the consequent artificial lowering of domestic prices for agricultural imports and exports. Such prices can lead to profound and adverse structural implications for the agricultural sector.

19. *Fixed or controlled consumer prices and price ceilings.* Consumer prices set by official decree are fairly common in developing countries, chiefly for staples such as rice, wheat flour or bread, sugar and milk. Policy is generally intended to check price rises; the prices are therefore ceiling prices. A subsidy is frequently involved, carrying the danger of excessive fiscal burdens. Enforcement tends to be difficult, and if successful it may represent a producer price disincentive. Ceilings may discourage seasonal stockholding and so worsen shortages of supplies in the pre-harvest period.

20. *Consumer food subsidies.* Consumer subsidies are widely used in developing countries, generally to provide cheaper urban food. Budgetary costs can easily become excessive, while the subsidies are difficult to withdraw or to reduce substantially. Targeted subsidies ensure that benefits go to the designated groups for whom lower-priced food is essential, while containing fiscal costs.

21. *Rationing.* Widely used mechanism at times of shortage, rationing can also prevent or moderate price rises and ensure more equitable access to limited supplies.

22. *Input price measures.* Many Governments intervene not only in commodity pricing but also in the pricing of production inputs. They may subsidise or directly control prices of farm inputs, such as fertiliser, or provide credit to finance the purchase of such inputs. Other interventions include reduced duties or the application of a favourable exchange rate on imported inputs or their components, transport subsidies and crop insurance at less than full actuarial cost. Such input subsidies are an integral part of agricultural price policy in many countries.

23. *Land access policies.* See sub-section on land tenure and rights of access (III.5).

24. *Credit policy.*

Annex 2: The Least Developed Countries

As described in the text, the Least Developed Countries are given dispensation from virtually all the requirements of AonA. The dispensation is based on the judgement that this group of countries lacks some or all of the prerequisites to take advantage of the trade-expanding measures fostered by the Uruguay Round. These include:

1. on a bureaucratic level, the governments may lack the expertise to have delivered the Country Schedules required of other UR participants;
2. the economies of the LtDCs, because of their extreme underdevelopment, lack the flexibility to take advantage of, or minimise the cost of, changes in world economic conditions; and
3. the economic performance of the LtDCs has been poor compared to other developing countries.

In its 1993-1994 report on the LtDC, UNCTAD highlighted the last point:

...[F]or the [Least Developed Countries] as a whole per capita income has declined each year since the adoption [by the UN General Assembly] of the Programme of Action for the Least Developed Countries for the 1990s. This decline increasingly translates into poorer caloric intakes, increased mortality and morbidity, lower school enrolment, deeper immiserization of the weakest member of societies, and other signs of acute social distress.⁵¹ (UNCTAD 1994), p. I)

These countries are of special importance to the FAO, for several reasons. First, these countries, more than any other group, lack the trained people to provide technical support to agriculture. Therefore, these countries would or should tend to be the most intensely served by FAO technical assistance. Second, because of their dispensation from most WTO rules, the governments of these countries face a wide range of policy options. As with technical expertise, the governments may lack the economic expertise to evaluate, formulate, and implement policies effectively. Third, the agricultural performance of the LtDCs has been significantly worse than for other groups of developing countries. For these reasons, their agricultural performance and policy options are treated in this annex.

Table 2.2 gives the annual per capita food production for each LtDC over twenty-seven years, 1970-1996. The numbers present a quite dismal, if not shocking, picture. During the 1970s, of the forty-one countries for which there are data, per capita production was lower at the end of the decade in twenty-six case (sixty-three percent). In the 1980s, the percentage of countries with declining food output per head fell slightly, to sixty percent, then rose in the 1990s to seventy-nine percent (twenty-nine out of forty-one). As disappointing as these numbers are, the conclusion is more negative still when one takes the twenty-seven years as a whole. Over this period, almost three decades, only eight countries showed significantly positive trends in food output per head (nineteen percent of the countries with data), and twenty-eight had significant negative trends (two-thirds). In other words, slightly more than eighty percent of the LtDCs have suffered from either declining or stagnant food production for a generation. Thus, reviving the growth of food production in the LtDCs is an urgent priority.

⁵¹ One indicator of 'social distress' is that at least fifteen of the forty-seven countries suffered from internal wars or severe civil unrest in the 1990s.

For these countries, reviving growth will involve considerably more than establishing a benign policy framework. More than other countries, the LtDCs tend to suffer from inadequate transport networks and marketing systems (ODI 1995, p. 4). Particularly important for the FAO, the agricultural techniques in these countries require technical improvement. Many of the countries are passing through a phase in which land-extensive cultivation is under strain from population growth. As a result, ‘traditional’ techniques, which may have been appropriate in the past, can no longer be sustained.

Table 2.1: A List of Least Developed Countries (47)

Afghanistan	Guinea	Niger
Bangladesh	Guinea-Bissau	Rwanda
Benin	Haiti	Samoa
Bhutan	Kiribati	Sao Tome & Principe
Botswana	Laos	Sierra Leone
Burkina Faso	Lesotho	Solomon Islands
Burundi	Liberia	Somalia
Cambodia	Madagascar	Sudan
Cape Verde	Malawi	Togo
Central African Republic	Maldives	Tuvalu
Chad	Mali	Uganda
Comoros	Mauritania	Tanzania
Djibouti	Mozambique	Vanuatu
Equatorial Guinea	Myanmar	Yemen
Ethiopia	Nepal	Zaire
Gambia	Zambia	

Table 2.2: Per Capita Food Production in Least Developed countries, 1970-1996

	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1979</u> 1970
Afghanistan	na	na	na	na	na	na	na	na	na	na	na
Bangladesh	113	103	98	105	99	107	101	105	106	103	91
Benin	90	87	86	89	81	77	88	85	93	93	104
Bhutan	95	96	97	97	98	99	99	99	100	100	106
Botswana	172	182	173	158	156	147	159	146	113	141	82
Burkina Faso	93	88	81	72	79	87	77	76	82	84	90
Burundi	117	119	108	121	109	120	121	121	111	108	93
Cambodia	156	123	97	71	58	68	64	62	59	47	30
Cape Verde	61	53	52	50	48	49	55	53	59	61	100
Cen Af Rp	91	92	93	95	102	104	100	101	96	100	110
Chad	133	128	119	108	108	112	113	113	117	117	87
Comoros	na	na	na	na	na	na	na	na	na	na	na
Djibouti	79	77	76	71	72	68	71	65	64	81	103
Eq Guinea	260	197	132	151	162	148	127	132	134	132	51
Ethiopia	144	134	132	130	121	122	118	114	120	128	89
Gambia, The	229	238	204	234	212	199	191	141	176	105	46
Guinea	128	131	125	127	126	126	128	127	122	122	95
Guinea-Bissau	105	92	98	94	91	98	105	84	83	83	80
Haiti	126	128	129	129	130	130	132	126	131	131	104
Kiribati	133	150	112	144	172	103	133	132	150	135	101
Lao PDR	90	82	79	80	80	76	63	65	70	80	89
Lesotho	132	132	111	126	151	124	102	129	123	117	88
Liberia	na	na	na	na	na	na	na	na	na	na	na
Madagascar	125	119	120	117	127	120	121	108	118	109	87
Malawi	118	138	139	140	136	126	131	137	135	129	109
Maldives	115	116	108	110	109	120	111	116	108	102	89
Mali	107	102	87	78	87	98	99	98	100	98	92
Mauritania	134	128	119	101	95	95	102	107	110	109	81
Mozambique	155	160	161	166	158	142	132	126	119	117	76
Myanmar	92	92	85	89	88	91	90	91	98	97	105
Nepal	91	89	84	90	90	91	88	85	85	80	89
Niger	152	153	150	97	114	102	122	138	142	143	94
Rwanda	117	116	110	110	104	115	118	119	116	121	103
Samoa	87	103	97	93	99	95	93	99	91	106	122
Sao Tome&Pr	231	242	228	233	215	174	166	167	166	182	79
Sierra Leone	115	113	112	110	112	116	115	115	117	104	91
Solomon Is	136	135	127	126	124	124	124	123	124	136	100
Somalia	na	na	na	na	na	na	na	na	na	na	na
Sudan	122	122	123	121	132	134	126	135	132	127	104
Tanzania	101	99	96	97	94	104	106	110	109	112	110
Togo	125	127	116	115	110	111	104	98	103	108	86
Uganda	135	130	129	122	128	136	128	122	123	91	68
Yemen, Rep.	88	106	99	105	104	121	112	111	105	109	124
Zambia	106	115	132	114	117	136	152	138	122	100	95
Zimbabwe	114	144	161	125	146	131	142	139	134	108	95
									Increase:		15
									Decrease:		26
									No data:		4

Table 2.2: Per Capita Food Production in LtDC, 1970-1996 (continued)

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1989</u> 1980
Afghanistan	na	na	na	na	na	na	na	na	na	na	na
Bangladesh	101	98	100	99	97	99	97	94	94	100	97
Benin	85	81	79	77	95	94	96	83	97	98	105
Bhutan	103	108	107	107	114	108	108	116	100	100	100
Botswana	103	128	129	114	123	115	108	93	97	96	68
Burkina Faso	76	83	81	81	80	98	107	97	108	101	120
Burundi	105	107	103	99	94	104	107	106	106	95	88
Cambodia	81	77	92	95	72	89	95	86	105	106	226
Cape Verde	73	50	70	39	58	65	75	118	126	109	180
Cen Af Rp	102	102	103	102	93	92	102	100	103	103	103
Chad	119	110	109	109	87	104	95	93	102	99	85
Comoros	110	96	99	102	96	97	100	102	102	101	92
Djibouti	98	90	85	93	96	106	108	105	104	120	147
Eq Guinea	143	150	123	115	114	105	103	111	109	101	76
Ethiopia	122	117	124	114	100	100	114	100	100	100	78
Gambia, The	103	147	179	136	131	109	127	128	111	126	120
Guinea	127	125	123	115	117	109	102	98	90	95	78
Guinea-Bissau	80	86	93	84	96	95	98	98	94	100	121
Haiti	127	125	123	125	124	123	119	115	109	106	81
Kiribati	121	148	135	109	155	117	96	96	145	112	83
Lao PDR	91	97	94	94	104	105	106	95	84	103	128
Lesotho	115	118	115	109	110	103	98	100	112	109	93
Liberia	na	na	na	na	na	na	na	na	na	na	na
Madagascar	112	108	106	110	110	108	107	103	101	101	93
Malawi	123	127	129	116	116	111	113	109	109	101	78
Maldives	110	108	109	113	113	111	109	103	101	96	94
Mali	99	109	111	106	94	87	98	92	99	103	104
Mauritania	112	113	107	99	93	98	96	96	97	100	92
Mozambique	117	115	108	101	98	97	99	97	97	99	85
Myanmar	109	116	121	120	122	123	121	115	110	101	104
Nepal	85	87	79	94	92	90	85	93	98	101	125
Niger	143	134	128	121	85	91	99	85	112	99	69
Rwanda	118	124	127	123	109	126	111	108	99	105	87
Samoa	109	104	121	111	107	116	119	114	112	115	108
Sao Tome&Pr	146	150	145	142	122	125	127	120	122	108	59
Sierra Leone	105	104	109	101	104	98	107	102	102	103	98
Solomon Is	132	139	132	128	144	145	137	104	104	103	75
Somalia	na	na	na	na	na	na	na	na	na	na	na
Sudan	132	142	121	117	103	120	116	104	119	98	77
Tanzania	102	103	104	106	105	107	106	102	99	104	93
Togo	103	101	96	89	97	98	98	95	98	102	94
Uganda	85	93	96	102	94	94	90	91	94	100	109
Yemen, Rep.	109	105	102	90	94	95	107	102	115	116	107
Zambia	102	100	92	93	88	97	98	95	116	113	112
Zimbabwe	106	127	112	86	91	122	113	91	116	104	96
									Increase:	17	
									Decrease:	25	
									No data:	3	

Table 2.2: Per Capita Food Production in LtDC, 1970-1996 (continued)

	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1996</u> 1990	Trend 1970- <u>1996</u>	<u>Signif</u>
Afghanistan	na	na	na	na	na	na	na	na	na	na
Bangladesh	100	100	100	98	93	96	96	96	-0.4	.01
Benin	99	103	102	102	103	113	111	112	1.0	.01
Bhutan	102	99	96	94	95	93	90	89	0.0	nsgn
Botswana	100	104	97	94	78	91	98	98	-2.7	.01
Burkina Faso	92	107	109	111	107	104	105	114	1.3	.01
Burundi	103	102	102	98	80	85	83	81	-1.2	.01
Cambodia	99	95	93	94	88	107	106	107	0.9	nsgn
Cape Verde	100	91	80	129	88	113	120	120	3.6	.01
Cen Af Rp	100	98	101	101	102	98	98	99	0.2	.10
Chad	91	110	108	91	107	106	96	106	-0.9	.01
Comoros	99	100	96	99	97	99	96	97	-0.3	nsgn*
Djibouti	107	75	77	68	70	70	69	64	0.5	nsgn
Eq Guinea	101	98	95	94	85	77	84	83	-3.1	.01
Ethiopia	102	99	99	na	na	na	na	na	-1.5	.01
Gambia, The	84	91	67	77	78	74	58	68	-4.8	.01
Guinea	100	105	109	108	108	110	111	111	-1.0	.01
Guinea-Bissau	103	97	100	100	103	102	96	93	0.3	.10
Haiti	99	95	92	88	87	80	81	82	-1.8	.10
Kiribati	85	103	107	97	96	95	97	114	-1.6	.01
Lao PDR	106	92	104	95	108	97	96	91	1.3	.01
Lesotho	111	80	80	90	106	84	105	94	-1.5	.01
Liberia	na	na	na	na	na	na	na	na	na	na
Madagascar	100	99	97	98	92	91	89	89	-1.2	.01
Malawi	97	102	74	103	81	91	94	96	-1.9	.01
Maldives	104	100	100	100	99	98	95	91	-0.6	.01
Mali	99	99	95	98	102	100	96	97	0.2	nsgn
Mauritania	101	99	91	85	86	87	91	91	-1.1	.01
Mozambique	106	95	77	84	78	84	96	91	-2.7	.01
Myanmar	101	98	106	116	119	127	136	135	1.3	.01
Nepal	102	98	91	99	93	98	95	94	0.5	.01
Niger	89	112	110	103	104	100	101	114	-1.4	.01
Rwanda	101	94	88	76	74	79	79	79	-1.5	.01
Samoa	101	85	83	90	89	89	88	87	-0.1	nsgn
Sao Tome&Pr	97	95	113	111	105	107	104	107	-3.5	.01
Sierra Leone	100	98	88	86	89	81	83	84	-1.2	.01
Solomon Is	97	100	101	96	91	91	88	91	-1.5	.01
Somalia	na	na	na	na	na	na	na	na	na	na
Sudan	93	108	119	107	116	107	115	124	-0.8	.01
Tanzania	100	97	89	88	85	86	82	82	-0.6	.01
Togo	103	95	95	109	87	103	110	107	-0.7	.01
Uganda	101	99	97	99	96	95	85	84	-1.5	.01
Yemen, Rep.	104	83	93	95	92	92	87	84	-0.5	.05
Zambia	94	94	78	107	87	76	89	95	-1.5	.01
Zimbabwe	104	93	61	81	89	65	91	87	-2.4	.01

[1990s] increase:	12	Number	Negative:	28
decrease:	29	of countries	Positive:	8
no data:	4	with trends	Non significant:	6
		(1970-1996):	no data:	3

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