

**Agricultural development, growth and equity:  
40 years of experience**

Helen Hughes

**Sir John Crawford Memorial Lecture**

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## **Sir John Crawford Memorial Lecturers**

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**The Sir John Crawford Memorial Lecture has been sponsored by the Australian government since 1985 in honor of the distinguished Australian civil servant, educator and agriculturalist who was one of the founders of the Consultative Group on International Agricultural Research (CGIAR). Crawford (1910-84) was also the first chairman of the CGIAR's Technical Advisory Committee.**

# **Agricultural development, growth and equity: 40 years of experience**

Helen Hughes

John Crawford's role in development was that of a middleman so despised in much of the writing about agricultural development. He marshalled information to persuade politicians to put in place policies that would raise agricultural productivity. John Crawford understood the theory of development. He knew how difficult it was to introduce new policies and how to implement them effectively. He had more experience of poverty than most of us. On his way to school he had carried his boots over his shoulder so that they would last for his brothers and sisters. But he did not permit his emotions to override his judgment. Consequently, his work on Indian agricultural policy alone enabled him to make a greater contribution to raising the living standards of poor people than most development leaders make in a lifetime. In his last years, while aware that many people in developing countries were still very poor, he saw that most were markedly better fed, clothed, sheltered and educated than they had been in the 1930s when he first focused on living standard issues. John Crawford had seen how effective national development policies could be. He believed that most countries could develop much faster if their political leaders chose national policies that pursued development for the mass of the population, instead of serving narrow sectional interests.

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I shall argue that theory—the understanding of the development process—is a critical input into national policy-making. If economic theory is not understood, demagoguery can take over. Many governments are able to pursue narrow sectional interests by adopting a mask of rhetoric that blames bogeymen and the international economy for developing countries' ills. But all countries face the same international economic environment. Some prosper. Some stagnate. Only domestic policy reform can remove the real obstacles to agricultural development.

### **Agricultural development: definition and brief overview**

In countries with large agricultural sectors, overall development is clearly dependent on agricultural development. Developing countries have not been able to achieve high and sustained economic growth without substantial increases in agricultural productivity. Agricultural development may result from increasing food and raw material supplies for the domestic market (self-sufficiency), from export growth (with or without imports) or from a combination of these. Provided production is efficient by international standards, and provided that it is environmentally efficient, the pattern of production is irrelevant. Following comparative advantage is a source of growth, while self-sufficiency regardless of cost effectiveness is a high-cost recipe which only very rich countries can afford.

Agricultural development only takes place when increased productivity and output are reflected in rising real incomes (subsistence and cash) and hence in rising rural standards of living. The countryside's economic activities deepen. Off-farm employment increases. Building materials, furniture and domestic utensils are produced for the local market. Some food is processed to increase its storage life. Some manufacturing expands to reach regional and national consumers. Country markets, stores and businesses evolve. Commercial financial institutions compete for farmers' business. Families acquire sewing machines; later, they buy their clothes in shops. Carts replace people's backs, and trucks

replace carts to move goods to markets. Buses run. Schools are built. Health clinics become established.

Improvements in living standards are not only material. Greater income security is often the prime benefit of agricultural development for rural families. Income distribution may not improve greatly (it may even worsen), but poverty is reduced by the creation of new employment opportunities and by poor people's access to public goods, notably education. Social horizons expand as villages acquire radios and televisions. There are surpluses for traditional festivals and visits to town. Improved basic education, skill formation and access to secondary education broaden opportunities for rural youth. Education enables those who stay behind in agricultural and non-agricultural rural activities, as well as those who move to urban areas, to participate in the application of new, more productive technologies. Rural incomes and national productivity rise further.

While improvements in standards of living affect all, children and women benefit most. Rising standards of living, together with measures to eradicate diseases such as malaria and cholera, have an almost immediate impact on infant and child mortality, thus giving parents a choice in determining family size. When women are spared the burden of constant child bearing (as they already are in most East Asian countries), their health improves. So does their capacity to work in and out of the home. They can earn cash income and pay greater attention to nurturing the family with commensurate effects on the health and skills of future generations. The enrollment of girls in school affects agricultural productivity directly, particularly in the many countries where women are the mainstay of agriculture as, for example, in sub-Saharan Africa and Melanesia. The education of girls and employment opportunities outside the home are principal determinants of population planning.

Agricultural development thus reaches far beyond the dry statistics of agricultural yields, relative commodity prices, farm size and income, the availability of water, flood control, or the weight of sheep and cattle. But the dry statistics cannot be neglected. They are the basis of analyses necessary for

agricultural development through increasing productivity. Where productivity has not been the primary objective of agricultural development, output and incomes have stagnated and even slid back in terms of per capita output. Living standards have remained low and even declined. Rural development without rising productivity has been a miserable failure.

Trade-offs between relieving today's poverty and achieving tomorrow's prosperity were not evaluated in the 1970s despite earlier "rural development" experience. India had learnt in the 1950s that community development did not give sufficient focus to agricultural growth and hence to agricultural development. It now seems that the great Chinese experiment of providing nearly a billion people with "basic human needs" meant very low and stagnant living standards for the masses. China's GNP growth figures for the 1960s and 1970s are almost certainly exaggerated. Rural incomes and living standards only began to rise with profit-oriented farming in the late-1970s. But progress is still halting because China has been mired in structural and organizational weaknesses. It will take a generation's unremitting political and economic effort to overcome the price distortions and sectoral imbalances created by the policies that were hailed as having achieved "rural development." The vested interests in support of low-productivity structures remain strongly entrenched in the countryside.

The greatest achievements in agricultural development have undoubtedly taken place in Northeast and Southeast Asian countries that place their emphasis on growth. With some exceptions (Burma, Kampuchea, Lao PDR, the Philippines, and Vietnam) rural standards of living have risen dramatically since the late 1940s. Formerly significant grain importers such as Indonesia have achieved self-sufficiency cost-effectively. Village life has changed beyond expectation. Substantial migration from rural areas to towns and cities has provided new openings, because agricultural development has been part of rapid overall growth.

4 The largest concentration of the world's poor people is in the sweep of land from South to East Asia that makes up

Bangladesh, China, India, and Pakistan. Of the world's 5 billion people, 45 percent live in these countries (Table 1). Until the end of World War II, extreme poverty held the predominantly rural population in thrall. The majority (more than 80 percent) of people in this Asian belt still live in rural areas, but since the 1970s, improving economic management, investment and new technology have transformed agricultural productivity and rural living standards. Agricultural output has expanded more rapidly than population growth. Policies put in place in the 1970s and 1980s have given the most populous countries an agricultural base that could enable them to become modestly prosperous middle-income countries within the next generation—if they were to put in place a vigorous program of economy-wide policy reform.

**Table 1. Population, GNP per capita and share of global GNP by region, 1986.**

Region <sup>1</sup>	Population (Mil- lion)	(Per- cent)	GNP per capita (US\$)	Share of world GNP <sup>a</sup> (Percent)
Sub-Saharan Africa	440	9	400	1
Latin America	405	8	1,600	4
South Asia and China	2,155	45	300	4
Southeast, Northeast Asia and Pacific	413	9	800	2
Mediterranean and Middle East	336	7	1,800	9
Industrial countries:				
Centrally planned	461	9	..	8 <sup>b</sup>
Market-oriented	646	13	14,000	72
World Total	4,856	100	..	100

<sup>a</sup>These percentages are substantially distorted by the use of official rather than purchasing-power-parity exchange rates. The share of developing countries would rise to some 30 per cent of total output, the centrally planned industrial countries' share would remain unchanged, and the market-oriented countries' share would fall to some 60 per cent of world output if purchasing power parity was used to calculate income shares.

<sup>b</sup>GDP for centrally planned economies has been estimated from various sources. Source: World Bank, *World Development Report 1988*, Oxford University Press, New York.

<sup>1</sup>See Annex 1 for regional description by country.



Agricultural development has a long history in Mediterranean and Middle Eastern countries. The past 40 years have built on historical skills. Urbanization has been rapid, soaking up surplus labor from the countryside. Standards of living have risen correspondingly in most countries (though not in Egypt and war-torn Afghanistan, Iran, Iraq and Lebanon).

In Latin America, the *dependencia* interpretation of development problems has enabled a dual pattern of agricultural development to persist: Unproductive peasant and *latifundia* agriculture continues to exist side-by-side with internationally competitive commercial crops. Differences in living standards among and within regions remain correspondingly high. Urban concentration (historically high in Argentina, Brazil and Chile, for example), has been a major escape route from rural poverty, but urbanization is not associated with the high rates of economic growth that leading Northeast and Southeast Asian countries have achieved.

The African countries south of the Sahara encompass less than 10 percent of the world's population. Starting from low levels, agricultural productivity has stagnated and even declined in most of these countries in the 1970s and 1980s. Relatively rich endowments of agricultural land are being diminished by overutilization with poor technology to meet the needs of rapidly growing populations. Inappropriate policies, in extreme cases reflecting wars and political chaos, are impoverishing a potentially rich region.

The growth of value added in agriculture has remained relatively slow, and it has not varied greatly among regions (Table 2). However, the pace of growth has been highest in the market-oriented countries. South Asia and China have only made progress in the last 15 years. In Africa south of the Sahara, agricultural growth has declined during this time.

*Dependencia*- and equity-led strategies have only delivered the bitter taste of frustrated expectations. Northeast and Southeast Asian policies have demonstrated that growth-led development with proper attention to national employment creation and a productive emphasis on public goods is more

**Table 2. Average annual real growth of value added in agriculture, 1965-86 (percent).**

Region	Growth (percent)
Sub-Saharan Africa	2
Latin America and Caribbean	3
South Asia and China	3
East Asia and Pacific	4
Mediterranean and the Middle East	3
Industrial countries:	
Centrally planned	..
Market-oriented	4

**Source:** International Economic Data Bank, Australian National University, September 1988.

equity-oriented, even in the short-to-medium term, than strategies directly focused on poverty alleviation. It also resolves the balance-of-payments problems.

### **Policies for agricultural development**

Farmers are the central figures of agricultural development. Ignoring the role of the farming family as entrepreneurs, risk-takers, managers, innovators and workers leads to stagnation. But the role of government is equally central. Governments create the framework in which the agricultural sector operates: they are responsible for peace with neighboring countries and within the country; they must ensure the rule of law for rich and poor alike; either explicitly or by default, they design and implement the policies that determine how farming and other economic units act in an economy; and particularly at early levels of development, they are responsible for the construction and maintenance of social and physical infrastructure.

As theoretical understanding of development is key to the formulation of a country's policy framework, theory has to be constantly tested and developed within a country to be persuasive. Policy formulation is highly influenced by the quality of scholarship and public debate that convey the analyti-

cal understanding of the determinants of agricultural (and other) development into the public arena. The public debate influences politicians, public servants and lobbyists. If intellectual leaders do not understand why protection harms the economy, the protectionist lobby will be strong. If a free-trade intellectual environment is established, the demand for protection will fall and the supply of protection will be diminished so that protection will be much more costly to obtain than in a *dependencia* environment. Policy implementation is similarly affected by political economy. The rates of repayment of subsidized agricultural loans or the percentage of water charge payments are not determined by chance. They depend on the confidence people have in a government and their understanding of the purpose and use of the payments. There are many examples of changes in public attitudes following public education campaigns on the need to pay taxes (Spain), customs duties (Indonesia) or water charges (Malaysia).

Major ideological differences are reflected in differences in regional achievements. In most Northeast and Southeast Asian countries, considerable analytical sophistication has been combined with pragmatism. Extremes of economic ideology have been avoided. Countries with very different social and political structures and historical backgrounds (that is, with different "initial conditions") have been able to make substantial advances in agricultural development. On the other hand, governments committed to central planning and communal agriculture, albeit in the name of grass-roots development and equity, have stifled development, inflicting unnecessary hardship on their peoples. So have governments pursuing wealth for sectoral interests without regard to equity.

In all but a few countries it is no longer feasible to increase agricultural output by bringing new land into cultivation. At the margin, agricultural use of land is biting into forests and water sheds worldwide, creating major environmental problems. In some countries, agricultural land will have to be returned to forest for cost-effective environmental management. For agriculture to keep pace with population increases

until stable populations are reached, means raising agricultural output through productivity growth. This requires three conditions: appropriate economic policies, investment in physical and social infrastructure, particularly education, and new technology. Policies may affect agriculture in a sectoral context or they may be national economic policies that are not thought to affect agriculture primarily, if at all. The latter policies include fiscal, monetary, exchange rate, trade and manpower policies. Such policies have no less direct effects on agriculture for being designed without a great deal of reference to agricultural development.

The policy mix affecting agriculture grows over time, often with contrary and confused effects. Some sectoral policies (subsidies, import tariffs and quantitative import restrictions) protect agriculture, while others (export taxes and high transport costs) tax it. As countries develop, there is a tendency within the agricultural sector to move from export taxes to protective measures, that is, from a bias against agriculture to its protection. But sectoral policies usually have far less impact than national economy-wide policies. Research on the effects of economy-wide policies on agriculture has thus far largely been limited to the trade and exchange rate policies. The findings suggest that these policies alone have twice as important an impact on agriculture as sectoral policies: their effect is to create a bias against agriculture, even if sectoral policies seek to protect agriculture. When the effects of financial, fiscal, monetary and manpower policies and distortions in infrastructural investment are evaluated, the bias against agriculture is likely to be much greater than is now thought.

### **Sectoral policies**

The importance of theorems linking allocative efficiency to competitive market prices in agricultural development is increasingly becoming recognized, as government-induced price distortions undermine agricultural productivity in many developing countries. Price distortions are, of course, always introduced for the best possible reasons. Few govern-

ments are so cynical that they deliberately set out to undermine their agricultural sectors. Yet many do so.

Some governments seek to control prices to eliminate middlemen who are thought to raise prices unduly between the farmgate and the marketplace for their own profit. In practice, the middleman's removal usually reduces prices at the farmgate and increases them to the consumer. The elements of monopoly that are the true cause of some middlemen's "super profits" are not reduced, but exacerbated by the replacement of middlemen by public controls or publicly-owned marketing corporations. By ignoring quality issues, distorting price differentials among qualities and seasons, together with the ineptness and corruption they breed, public marketing organizations are important causes of agricultural stagnation.

Price ceilings, compulsory deliveries at low prices, and similar measures are used widely to assure supplies of cheap food for politically powerful urban groups. Agriculture is taxed for industrial development. Taxes on exports (except in optimum tariff situations) have similar effects on farm income, savings, investment and productivity. They account for substantial shares (up to 30 percent) in many countries. They are so high in some cases that they discourage peasants from harvesting their crops.

Reducing prices of farm outputs leads to subsidies for inputs to hold up farm incomes and ensure that farmers are prepared to take the risks necessary to produce crops. Farmers require cheap credit, cheap chemicals and cheap machines to be able to continue to subsidize urban groups with cheap food; one subsidy leads to another, distorting prices until even sophisticated analysis cannot determine the actual cost of goods and services at international prices at any point in the chain of transactions leading from farming to domestic and external consumption.

The influence of land tenure on agricultural development has received a great deal of attention. It is often used to draw attention away from an inappropriate policy framework. But provided that the farm family is adequately recompensed for

its labor, capital and other inputs, and provided that it has security of tenure, the form of tenure is unimportant. The agricultural “revolutions” of England and Japan took place in a tenancy environment. If rapacious, monopolistic landlords—whether they be private or state—are allowed by the government to take an undue share of the farmers’ output through crop-sharing, high rents, compulsory low delivery prices or high input costs, agricultural development will be stalled.

Some of the most rapidly developing countries have been able to stimulate agricultural development without land reform (Thailand and Indonesia). Land reform may be of great benefit in some circumstances (as in the post-World War II situation in Northeast Asia), but it may be ineffectual despite several attempts at reform (as in Mexico and the Philippines). In some countries at early stages of development (as in sub-Saharan Africa and the South Pacific), communal ownership of land tenure is a greater obstacle to agricultural development than tenancy arrangements. This very mixed experience suggests that agriculture can develop with various forms of land tenure if the rest of the policy framework is appropriate.

## **National policies**

Conventionally, agriculture is regarded as contributing to overall growth by shedding workers to supply labor for secondary and tertiary sectors, growing food supplies for urban workers, and providing raw materials for industry. Prosperous farmers broaden the market for goods and services. Specifically, manufacturing provides chemicals and machinery for agricultural producers, and services provide the linkages that bring goods to the market at home and abroad. Such “linkages” are largely tautological. The conundrum that faces policy analysts is that while most developing countries claim to want to foster agricultural development, their macroeconomic, trade, manpower and sectoral policies are inimical to agricultural progress.

Macroeconomic competence, depending very considerably on the outcome of the ideological debate, is a key component of the indirect policy framework that determines agricultural outcomes. Public expenditures must in broad terms be matched by public revenues to stabilize fiscal policies if monetary policies are to work toward keeping domestic prices stable. Monetary policies also have to be able to keep the rate of exchange stable without distorting the price of credit.

Repressed financial systems severely curtail the availability of credit in rural areas. If attempts are made to offset the lack of rural credit by special agricultural credit institutions, and particularly if credit is subsidized, the ensuing rationing will favor rich farmers. Farmers do not pay back loans in subsidized credit schemes. The system breaks down.

The test of the appropriateness of macroeconomic policies is the level of inflation. Several East Asian countries (Malaysia, Singapore and Thailand) have been able to keep their domestic inflation under international levels since the 1960s when inflation began to emerge as a problem in industrial countries. Most of the other countries in the region brought inflationary episodes under control quickly, once they embarked on a growth strategy. India and Pakistan were able to stimulate agricultural development in the 1970s and 1980s because their macroeconomic policies had achieved price stability. Economists may argue whether inflation of 1 or 2 percent is preferable to inflation of 3 to 5 percent, but there is now little disagreement about the damage that even medium levels of inflation inflict on development.

Farmers may at first be overjoyed as farm product prices rise, but the costs of inputs, transport and other charges tends to rise more rapidly. If governments resort to printing money to avoid the political pain of taxation, the lowest income groups, generally rural-dwellers, are the principal victims: in place of taxation according to income, the poorest are taxed most by inflation. Taxation through inflation may avoid confrontation with wealthy lobby groups, but it means that the rich, who are the main beneficiaries of public expen-

diture, are stealing from the poor. Agricultural development cannot take place in such an environment.

Macroeconomic measures are, unfortunately, the “sleepers” of economic policy. If price stability prevails, savings and investment are high and productivity and output are growing rapidly, macroeconomic policies are invisible. If prices balloon and savings and investment slow, it is generally too late for easy remedies. Stabilizing an inflationary economy is so costly that if it is undertaken ineptly, the political repercussions may create a backlash against the reformers. Revolution is often the outcome.

Most developing countries (except city economies) have used tariff and non-tariff barriers to subsidize manufacturing and selected service sectors. Some countries have made major efforts to reduce protection, but with only one or two exceptions (Chile and Taiwan), protection for manufacturing remains a major instrument of policy. Offsetting protection by export incentives is extremely inefficient; countries find it difficult to evaluate the cost of effective assistance even if they wish to do so.

Protection involves an overvaluation of the exchange rate. Overvaluation is often exacerbated by imprudent macroeconomic policies leading to inflation. Frequent devaluations make exports competitive for a time but raise the cost of imported inputs and thus disadvantage agricultural exports as well as stimulating further inflation. The exchange rate is rarely in equilibrium.

Slow industrial and service growth limits urban development and hence the urban demand for rural goods. Urban dwellers can only buy rural goods if they have jobs. Urban employment creation is thus a critical aspect of agricultural growth.

Subsidies to industry are not only direct. They may take the form of public ownership or licensing regulations that create monopolies with high prices that also create a bias against agriculture.



“Booming” sector effects also tend to create biases against agricultural development. Whether they result from natural resource development, or, in small countries, from high per capita aid inflows, “booming” sectors tend to draw resources to the “booming” sector (mining or, in the aid case, government). Agriculture is starved of resources. If the “booming” sector declines, the country’s economy cannot respond to the new demands made on it. Mineral-rich and highly-aided countries consequently have very weak agricultural sectors.

Some countries are recognizing the high costs of protection and “booming” sector effects, but instead of dealing with the cause of the problem, they are subsidizing agricultural production to ensure adequate domestic supplies of food and agricultural raw materials. The net effect of layer upon layer of subsidy is to introduce inefficiency throughout the economy. Poorly informed and hence arbitrary judgments of public servants replace markets. A ratchet effect leads to new subsidies as lobbyists and rent-seekers ask for new concessions. The operation of the economy is slowed by mountains of paper moving from in-tray to out-tray and yet another in-tray. Bureaucrats become rent-seekers as opportunities for promotion, material benefits and power become apparent. Overall, indirect policy effects often continue to negate subsidies.

Combined with the desire to override market trends by planning, the typical developing country has a vast bureaucratic superstructure that creates an environment inimical to growth and development. Farmers are bombarded by instructions and requests for information as the rules of the game constantly change. The only way to benefit farming families and agricultural development is to reduce substantially government intervention in the industrial and the service, as well as in the agricultural, sectors. To accelerate agricultural (and other) growth, the overall policy framework must be coherent. Specific policies for agriculture will then be largely unnecessary.

## **Infrastructure and technology**

Infrastructural facilities must be available at internationally competitive prices if farmers are to be able to meet competition at home and to export. To activate markets and make it possible for farmers to purchase goods at competitive prices, storage and transport facilities must be available. Schools and clinics in villages and country towns have to be built and staffed. Major investments must be planned and implemented if flood and drought control, essential to the use of new agricultural technologies, is to take place. Electricity is needed to stretch the day, keep tools sharp, pump water and provide light at night to maintain reading skills. Reducing the prices of infrastructural facilities below international prices (or even below high domestic costs) may create favorable subsidies in the short run, but acute bottlenecks will develop in the long run as roads, bridges and other facilities cannot be replicated and maintained. Appropriate design, cost-effective construction and high capital utilization play a role in determining the efficiency of infrastructure. With low incremental capital output ratios and high operating efficiency, countries need to save and invest much less than those that develop infrastructure wastefully.

Developing countries with major achievements in agricultural development have made sizeable investments in infrastructure for agricultural development. A commercial wholesaling, retailing and financial network backs the production, quality control and distribution process for domestic and foreign markets. Infrastructure stretches from farm to village, from village to township and district center, from district center to provincial capital and national metropolis. Without such facilities, agriculture cannot develop.

The bias of public goods against agriculture is most marked in the inadequacy of rural educational facilities. Population planning is strongly associated with income levels, but earlier and stronger tendencies to limit family size in urban areas are also attributable to better formal and informal education facilities for girls and to better access to employment outside the home in urban areas.

Schooling difficulties compounded by poorly trained teachers, inappropriate curricula and difficulty of access to secondary schools in rural areas are also frequently subjected to limited horizons. Not only educational systems, but so-called expert advisers, rule that country children should receive a different, more practical education than urban (middle-class) children. For a population that will have to be increasingly involved in sophisticated farming choices, non-farming rural employment or urban employment, such discrimination undermines potential income-earning opportunities.

The "green revolution" has illustrated dramatically what new technology can accomplish if combined with competitive market prices and high investment in effective infrastructure. The "green revolution" made Asian countries largely self-sufficient in grains. Major productivity increases have also taken place in crops such as cocoa, coffee and palm oil. All these developments are part of the technological advances that have transformed productivity in agriculture worldwide during the past 40 years, particularly in industrial countries. Some developing countries are catching up to developing countries in agricultural productivity, but many are barely holding their own. The "gap" between the productivity of poorer developing countries and that of industrial countries appears to be increasing. With the breakthroughs in biotechnology that are now taking place, changes in agricultural practices, associated processing, and other aspects of post-harvest technology are accelerating rapidly. It can be confidently predicted that there will be at least as much change during the next 40 years as there has been since World War II.

Few countries' policies give adequate recognition to the cumulative impact of appropriate pricing policy, investment in infrastructure and technological developments. The development and adaptation of new technology is capital-, particularly human capital-, intensive; that is, it requires mostly those resources in which developing countries are most disadvantaged. Commonsense, as well as economic theory, suggest that while it is necessary to push the development of

agricultural and related sciences to the point at which imaginative and creative adaptation is feasible in developing countries, lower-income countries should leave the high developmental costs of pure science to higher-income countries and focus on those adaptive technologies that will most rapidly increase their productivity.

The Consultative Group on International Agricultural Research (CGIAR) family of international agricultural centers provides external economies and economies of scale to the development of technology that developing countries could not afford individually. The development of techniques that measure the impact of research by crop and farm environment has made it possible to review the research program in terms of economic impact. It is clear that here too the trade-offs between an emphasis on growth and rising income and attempts to improve standards of living of poor rural people directly (for example, by raising protein levels of grain) are very considerable. Productivity gains are assured if existing technology is adapted. The research costs of improving living standards directly are much higher because they require new scientific breakthroughs.

It is well-established that investment in the development of agricultural technology—up to some point yet to be determined—has high returns. However, it has been acknowledged since the centers' infancy that their role is only as effective as their collaboration with centers of advanced scientific development in industrial countries, on the one hand, and research efforts in developing countries, on the other. In many areas, agricultural research must be in the public domain because the benefits are appropriated by thousands of farmers. In other areas such as rubber, cocoa and copra, however, growers' associations are now developing new technology. Some of the externalities are being internalized by the production group. In other cases, for example in the use of fertilizer and the development of new seeds, commercial firms are undertaking wide-ranging research. As research must be specific not only to a country and a region but even to a locality, it is costly. Tax-payers are clearly less willing to contribute to public research than in the past when private

firms were not active in agricultural research. In the highly competitive environment that is developing in biotechnology and other areas, farmers' interests are likely to be well served. The determination of research areas that should remain in the public domain has, therefore, become an important policy issue.

Inputs into research are determined at the country policy level, in resources devoted to the training and maintenance of scientists and the resources devoted to research institutions, field stations, and extension work. The balance between the international and national efforts must therefore be kept under review. International funds tend to stimulate but also to substitute for local funding in developing countries. International research centers, particularly in the new environment that encourages research by the private sector, are in some danger because, at the margin, some have become oases of technocratic luxury and scientific tourism. Recognition of the role of the private sector is likely to be essential to the continuation of a well-funded and cost-effective international effort that will underwrite rising agricultural productivity.

Sociopolitical inputs into agricultural development usually represent the most difficult policy aspects. Some countries have experimented successfully with rural organizations that have become embedded in national life. The pioneering rural development orientation of the Joint Commission on Rural Reconstruction in Taiwan, the New Community Movement in the Republic of Korea, the rural development drive in Thailand and successive *Inpres* programs in Indonesia are examples of government rural development programs that helped to accelerate the speed of agricultural development, to increase the benefits, and to spread them more equitably than might otherwise have been the case. These programs emphasized the organization of village "public goods," notably education. Agricultural extension was an important though separate component of these programs. All were backed by the reduction of price biases against farmers and by national investment in such infrastructural facilities as roads, railways, and ports. They were

undertaken in rapidly growing economies. Emigration from rural to urban areas followed employment opportunities.

### **World trade in agricultural products**

International trade in agricultural “commodities” has been a central issue in the development debate since the 1940s, but to little purpose. Trade in agricultural products has grown steadily, though not as rapidly as exports of other goods and services which have come to dominate world trade. Exports play a critical role in growth and development, in part, by overcoming balance-of-payments constraints, but mainly through the impact of trade on productive efficiency.

The volumes of agricultural trade are relatively stable, but prices of primary commodities fluctuate more than those of industrial goods and services. This much is well known and agreed. The factors that cause those fluctuations—vagaries of weather, low elasticity of supply (even for annual crops), long lead investment cycles (for tree crops), changes in the complementarity and substitutability of products, changes in tastes, changes in production technology, monopsonistic and monopolistic practices—are also well known, although analysts may differ about their relative importance. Price fluctuations lead to income fluctuations for farm families and income and balance-of-payments fluctuations for governments.

Price-support schemes were devised in the late 1940s and 1950s to reduce price fluctuations and, it was thought, to stabilize incomes. They have almost always failed in developing countries, not only because managements of such schemes have been unable to deal with the complexities of stabilization funds, but mainly because eliminating price fluctuations removes signals to farmers about the relative profitability of crops. It is usually impossible to distinguish short-term from long-term price changes. Price stabilization usually destabilizes incomes. The short-term effects of fluctuations in barter terms of trade, which have to be managed to avoid damage to macroeconomic stability, can be offset by balance-of-payments support. The International Monetary Fund has accordingly developed an efficacious form of bal-

ance-of-payments stabilization. As part of their national policy stance, Northeast and Southeast Asian countries have accordingly drawn on the IMF's stabilization facilities in good time to avoid balance-of-payments difficulties, rather than resorting to commercial bank borrowing. The development of futures markets has enabled traders to protect themselves against excessive risk from price fluctuations. However, diversification within agriculture and out of agriculture into industry and services is the ultimate defense against commodity price fluctuations.

Farmers increasingly rely on accurate price information as part of the environment for development. Telex machines tick in remote villages, not only in Northeast and Southeast Asia, but in other developing countries. Whatever truth there may have been in hypotheses that farmers were more interested in stabilizing than maximizing their incomes (the backward sloping supply curve) 40 years ago, it is now clear that from distant villages in China's hinterland to South Pacific micro-states, farmers understand how to increase their income if they have access to markets for inputs and outputs, capital, technology and labor. Attempts to eliminate price fluctuations undermine the basic framework essential to development.

A second characteristic of commodity prices relates to a long-term trend for primary products to decline in terms of purchasing power. There can be no doubt that prices of agricultural goods (like other goods and services) have steadily fallen, as technological change has increased productivity. A kilogram of rice, a ton of rubber, a liter of vegetable oil require less effort in earning power than 40, 100 or 200 years ago. In competitive conditions, everyone—farmers, intermediaries, and consumers—benefits. The principal objective of economic management and technological change is to reduce prices so that individuals can reduce the efforts they have to make to earn their living. Agricultural development has materially contributed to this objective.

Whether the prices of agricultural products have been falling faster than the prices of industrial goods and services is debatable. The high agricultural protection of the European

Community, the United States, Japan (and more recently, of rapidly developing economies such as the Republic of Korea and Taiwan) has distorted world markets so that the benefits of technological change since World War II have not been reflected in an appropriate fall in prices. Production has consequently been excessive from time to time, failing to take into account the developments that have made the world's most populous countries self-sufficient in grains. Evaluations of the impact of agricultural protectionism suggest that it is responsible for only a minor part of the long-term fall in agricultural prices. The main impact is to lower living standards in the protectionist countries. In industrial countries, because of wage rigidities, agricultural protection substantially lowers domestic employment creation.

Indexes that measure prices of industrial goods notoriously do not take into account changes in quality. Price indexes for services such as telecommunications, transport and shipping are not available, but partial data suggest that major price declines have taken place. The increase in capital service that goods such as tractors or pumps provide, are usually undervalued. Productivity in manufacturing and services has risen at least as fast as in agriculture, if not faster, suggesting that real prices have fallen faster in manufactured goods and services than in agriculture. In any case, barter terms of trade do not have a long-term meaning in economic analysis. Over the long term, growth is determined by the income terms of trade. Many countries deliberately reduce their prices as agricultural efficiency increases in order to be able to seize a larger share of the market; that is, they deliberately worsen their barter terms of trade.

Ultimately, experience indicates, the costs of price fluctuations and declining relative prices are more than offset by the benefits of rising export incomes to farmers and national economic management. But export pessimism is unfortunately a self-fulfilling prophecy: countries that failed to take advantage of export opportunities because they feared the alleged inequities of the "international economic order" have been poor performers in agricultural development. The highly ideological debate that keeps alive outdated concepts of the



1950s and 1960s bears a great deal of responsibility for the failure of many countries to take advantage of export opportunities that would have considerably accelerated their agricultural and overall development.

### **Relief and development assistance**

Development assistance for agricultural development accounts for about 40 per cent of multilateral development assistance, though only for about 20 per cent of bilateral development assistance. If investment in infrastructure with impact on agriculture is added, agriculture dominates assistance efforts. Non-governmental organizations tend to work in rural areas because they have a relief rather than development bias. Increasing attention by the media to poverty in developing countries is leading to short-term relief at the expense of long-term development. Successful development is a long and painful process. It does not make news. Only disasters make headlines. An understanding of the difficult and long-term nature of the development process is being eroded by donor lobbies seeking instant responses to their aid contributions. A cynical undercurrent of opinion fears competition in world markets for grains, fats and oils, fruit, vegetables and other agricultural products. Supporters of this view have joined with more sincere groups that genuinely want to assist the poor, but insist on doing so in a way that meets the donors' immediate needs rather than the long-term requirements of the recipients. The trade-offs for the donors are often diametrically opposed to those for the recipients. The development lobbies thus do not focus on programs that will lead to agricultural development, but on those largely composed of welfare measures that may push long-term development further into the future.

Experience of community development projects, generally referred to as rural development projects, unfortunately bears out the analytical conclusion that rural living standards can be materially affected in the medium-to-long run, and sometimes even in the short run, only by substantial increases in incomes that require fundamental reform of national economic policies, particularly in the macroeconomic and trade

areas, with investment in infrastructure and appropriate technology. Sectoral policies are likely to be, at best, generally redundant and, at worst, contradictory and counterproductive. Improvements in social organization can have positive impact on agricultural outcomes only if the other necessary inputs are present. Community development approaches did not raise output and incomes in India or in China. Changes in price incentives, however, had an almost instant impact on raising productivity, output, incomes, and standards of living in both countries. The major assistance effort that supported rural development in sub-Saharan Africa has had almost no impact. In some cases, rural development schemes led to falling incomes. Once the external impetus was gone, the new social organization collapsed.

Community development trades off welfare today against income tomorrow. Economics has little guidance to offer on the inter-generational allocation of resources, because standard of living “outputs” are only partly economic. Nor can a democratic process substitute for technocrats. Voters in developing or industrial countries cannot handle the abstractions involved in comparing today’s income in cash (or in the form of public goods) to incomes 30 years hence. The attitudes of grandparents and grandchildren toward investment versus income are not likely to be mutually consistent or consistent over time. However, it is not at all self-evident that poor peasants prefer immediate increases in living standards to high standards of living for their grandchildren.

The trade-offs between relief and growth cannot be argued in absolute terms. Extreme destitution—floods, famines or earthquakes—require prompt humanitarian responses. Some of these disasters are unavoidable, but some, like famines, are man-made. Famines, in particular, do not arise from food shortages as such, but from national economic (and political) policies that deny people incomes to buy food. Non-governmental organizations can bring relief to communities struck by disaster, but only if their main objective is relief, if their administrative costs do not escalate as they build up power structures, and if their operations remain small-scale. The comparative advantage of non-governmental relief orga-

nizations lies in the dedication and skills of their staffs. It has repeatedly been evident that once the scale of operations becomes large, non-governmental organizations' ability to intervene effectively declines sharply. Rapacious governments start taking an interest in the relief operations which generally succumb because they do not have the formal structures and defenses that large bilateral or multilateral institutions can use against undue influence by major donors or recipients. Large institutions, on the other hand, have a comparative disadvantage in handling labor-intensive, relief-oriented projects.

Relief in the form of commodity aid is likely to be particularly counterproductive on a large scale. Its origins lie in the surpluses of agricultural products created by protection. The aim of commodity aid is to maintain demand for farmers in protectionist countries at artificially high prices. Transferring such produce to developing countries has two effects: Firstly, the recipient country is freed from the necessity of improving policies so that agricultural productivity will rise. Secondly, farmers in the recipient countries are usually denied competitive market prices for their products. They indirectly subsidize farmers in the high-income countries.

However desirable an international relief system may be, it is neither politically nor practically feasible. Contributions to non-governmental relief for developing countries are limited in industrial countries, and so are the taxes that voters in high-income countries are willing to contribute to development assistance. In part, this is because voters in high-income countries understand the role that mismanagement and political ambition play in developing country destitution. A choice has to be made. Even if the entire funds available for relief and development assistance were directed to relief, the impact on the mass of poor farm families in developing countries would be negligible.

The principles informing development assistance are markedly different from those that determine relief measures. Development assistance often does not have much impact on average living standards in the short run. The objective is to assist developing countries at the margins of

investment, technological change, and institutional development. Cost-efficient development projects must be replicable by developing countries and they should have other demonstration effects. The effectiveness and impact of development projects is a measure of their contribution to long-run growth with equity, that is, to the incomes of future generations. For example, a consideration of the trade-offs involved in assistance for rural development in sub-Saharan Africa in the 1970s and 1980s suggests that if the entire official effort had been to support infrastructure and technological advance, the results would have been much more effective than rural development turned out to be. The poor rural families of sub-Saharan Africa have thus paid a high price for the self-indulgent clamor of donors that poverty be alleviated immediately.

Political pressures are clouding the objectives of development assistance by blurring the differences between relief and development and muddying the analysis that sustained, long-term development requires. Genuine concerns that development assistance should lead to growth with equity and that environmental concerns should be taken into account in the process are being swamped by emotional pleas for "grass-roots" action. Another attack against the raising of standards of living comes from romantics who argue that the developing countries do not need the crass materialism of industrial countries, but that some *alternative* pattern of development is preferable. That is, that people in developing countries do not need cars, trains or airplanes; the simple bicycle-based life will serve them better. Enough research has now been done to make it clear that this is not the attitude of the rural poor. The view of what a prosperous life means, is much the same throughout the world. More puzzlingly, idealistic development professionals, responding to conditions in poor rural areas, have not sharpened their analytical insights, but claim that traditional development strategies that focused on human and physical investment, productivity, and employment have failed. The experience of the 1970s and 1980s has exposed this "soft" view of development for the fallacy that it is. The policies that actually benefit the poor follow conventional development paths of investment, productivity, employment creation, and high export growth. In countries that have

focused on grass-roots issues, all but a small proportion of the population have remained poor. They are often poorer now than they were 10 years ago. Countries that have followed the *dependencia* philosophy are the countries that extended inappropriate macroeconomic policies by borrowing abroad and now have unmanageable debts. The "softening" of development analysis has softened the "dialogues" that international and bilateral institutions hold with developing countries. They are increasingly marked by weak compromises that encourage governments to continue on low-growth paths with a bias against agricultural productivity.

### **Options for the future**

The policy choices that have to be made for further agricultural development are becoming clearer. In the initial stages, new technologies were often employment-creating (through double-cropping, for example). There may be some further opportunities for employment creation in countries with limited agricultural technologies, notably in sub-Saharan Africa. But at later stages when machines replace people (whether technologies are land- or labor-saving), there is a growing need for chemical inputs and for mechanized processing. Whereas early productivity changes were often farm-size neutral, as production becomes more sophisticated, farm size has to expand to take advantage of technological change. Farming requires better-educated entrepreneurs. The farm sector sheds labor. Similar transformations are going on in non-farm employment in rural areas. Rising skills, higher standards of entrepreneurship, and large-scale business or farming units are required. The economies of agglomeration are lacking in rural areas, drawing business to townships, district towns, and industrial and service centers. Urbanization is an important part of the transformation of traditional economies.

To catch up with agricultural productivity in industrial countries, developing countries will have to accelerate their commitment to technological change. From an employment point of view, this will be possible only if non-agricultural and urban sectors increase their growth to rates reached by

leading developing countries. Policies that hold reserve armies of cheap, unskilled labor in the countryside will lead to stagnation and hardship that no amount of grass-roots support can relieve. Development assistance should be moving strongly toward investment in infrastructure. To stimulate agricultural development, infrastructure has to be complemented by technological development on an international, bilateral and particularly, on a national scale.

Agricultural development cannot be considered in isolation. It is more dependent on macroeconomic and other economy-wide policies than on specific intervention in the agricultural sector. Poverty in rural areas does not originate in the sector, but is the result of distorted signals throughout the economy. Where the signals are not distorted, agriculture has thrived and national income has been doubling every 10 years or so. There are no economic reasons why any developing country cannot achieve such results. The problems that have to be overcome are essentially ideological and political, not economic.

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## **Regional classification**

### **Sub-Saharan Africa**

Benin, Botswana, Burundi, Burkina Faso, Cameroon, Cape Verde Islands, Central African Republic, Chad, Comoros, Congo, Cote d'Ivoire, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, Somalia, Sudan, Swaziland, Togo, Uganda, Zaire, Zambia, Zimbabwe.

### **Latin America and Caribbean**

Argentina, Bahamas, Barbados, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Peru, Trinidad, Uruguay, Venezuela.

### **South Asia and China**

Afghanistan, Bangladesh, Bhutan, Burma, China (Peoples Republic of), India, Iran, Nepal, Pakistan, Sri Lanka.

### **Southeast and Northeast Asia and Pacific**

Brunei, Fiji, Hong Kong, Indonesia, Korea (Republic of), Malaysia, Papua New Guinea, Philippines, Singapore, Solomon Islands, Thailand, Tonga, Vanuatu, Western Samoa.

### **Mediterranean and Middle East**

Algeria, Cyprus, Egypt, Greece, Iraq, Italy, Jordan, Kuwait, Libya, Malta, Morocco, Oman, Portugal, Qatar, Saudi Arabia, Spain, Syria, Tunisia, Turkey, United Arab Emirates, Yemen (Arab Republic of), Yemen (People's Democratic Republic of).

### **Industrial countries**

#### **Centrally planned**

Bulgaria, Cuba, Czechoslovakia, German Democratic Republic, Korea Democratic Republic, Hungary, Poland, Romania, Soviet Union, Yugoslavia.

#### **Market-oriented**

Australia, Austria, Belgium, Canada, Denmark, Finland, France, Federal Republic of Germany, Iceland, Ireland, Japan, Netherlands, New Zealand, Norway, Sweden, United Kingdom, United States.