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Responses to Third World Development Questions

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How does one improve living conditions in the low-income countries of the world?

Economic Development Defined

The simple answer is through economic development, but that certainly is easier said than done. Economists usually measure economic development in terms of gains in per capita income. However, we must be careful; unless gains in per capita income are broad-based, including the poor, those most in need could be left out of so-called progress. Therefore, we must target gains in per capita income to include the lowest income sectors of society.

Importance of Agriculture

Where does a less-developed country begin the development process? Agriculture is the largest sector of the economy, so it is logical to begin with it. The World Bank reports that agriculture employs 70 percent of the labor force of low-income economies. On the other hand, economic development involves transforming an economy from rural to urban, from largely agricultural to expanding service and manufacturing sectors. Concentrating on these growth sectors also seems logical.

Theory and experience have shown a balance between agricultural and other sectors is needed to achieve development. At one time, development economists thought that excess labor in agriculture could be used for industrial development without affecting agricultural output. The argument for agricultural development rests on the contention that the marginal value of agricultural labor is greater than zero. One cannot remove labor from agriculture and maintain production unless productivity of remaining agricultural labor is increased. That the value of agricultural labor is greater than zero was demonstrated by Nobel Prize winning agricultural economist Theodore Schulz in his book Transforming Traditional Agriculture. He examined rice production in India after the flu epidemic of 1918-19. The loss of agricultural labor was associated with reduced rice acreage and production.

Agriculture contributes more than labor to overall development. Kuznets summarizes the contribution of agriculture to economic development as follows:

1. Product
   a) source of food for nonagricultural sector
   b) raw material used in manufacturing

2. Market - demand for products of domestic industry (ag inputs, marketing and processing services)

3. Factor contribution
   a) capital for investment in economy including infrastructure (public and private)
   b) labor for nonagricultural jobs

4. Foreign exchange (development often constrained by lack of it)
   a) agricultural exports
   b) import substitution (produce own food)

Empirical evidence strongly supports the contention that improved agricultural productivity is essential to overall economic development. The following table compares agricultural production growth and gross domestic product growth among countries where agriculture's share of GDP was above 20 percent.

TABLE 1. GROWTH OF AGRICULTURE AND GDP IN 1970S

Agricultural Growth	Gross Domestic Product Growth		
	Above 3%	3-5%	Below 3%
Above 3%	17	5	3
1-3%	4	10	3
Below 1%	2	1	11

SOURCE: World Development Report, 1982, New York, Oxford University Press

Investment in Agriculture

Assuming you are convinced of the importance of agricultural development to economic growth, how do we bring it about?

Economic development in essence is the process of capital accumulation. Labor and natural resources become more productive when combined with manmade resources (capital) to provide such items as tools and fertilizer. The human resource also becomes more productive when investments are made to improve skills and literacy. Therefore, agricultural development requires the investment in both human and physical capital in the sector.

Capital can come from two sources. One is to forego present consumption and use the savings to invest in one's own farm or other business. The other is through borrowing the savings of others. The agricultural sector of a country needs to provide its own savings, because in the early stages of development other economic sectors are not large enough to provide savings. Also, a growing industrial sector usually requires more capital than it can generate internally.

Borrowing capital from the developed world is an alternative that can increase the rate of capital accumulation but carries with it considerable risk, as the current Third World debt crisis has demonstrated. The crisis was triggered by a rise in interest rates which made many investments unprofitable and resulted in repayment default. High default rates lead to suspension of new loans and demands for repayment of principal on existing loans. This forced disinvestment is now occurring in many Third World countries.

Domestic savings can come either from the government or the private sector. Governments can force savings by investing in long-term projects like roads and school buildings and by collecting taxes currently to pay for them. In practice, Third World governments have a poor record in collecting taxes to cover expenditures. Private savings are the preferred source since individual decision makers are much more likely to invest their savings to give a positive return.

Government's most important responsibility is to provide stable economic and social conditions. Particularly important is a reasonably stable currency so private savings will be invested internally rather than seeking safe haven in Swiss bank accounts. However, some important investments, as explained later, are best made by government.

Priority Areas

Then what are the priority areas for investment in the agriculture of a less-developed country? Similar to the total economy, a balance among competing priorities must be struck. The priority categories are the following:

1. Research to develop technology adapted to the conditions in the country.

2. Education in literacy and use of agricultural technology.

3. Infrastructure, including a transportation system, communication, and electricity.

4. Farm improvements, including irrigation systems, livestock, storage facilities, machinery, and modern production inputs.

5. Marketing, processing, and input supply system.

The first three categories should be largely the responsibility of government because it is difficult for private firms to capture the economic benefits. In economics, we call this the lack of exclusivity. The last two categories are best left to the private sector. The poor experiences of the Soviet Union and China with government heavily involved in agricultural production and marketing are reason enough for this assertion. However, for the private sector to invest enough for development, government not only must allow the market system to function but also must provide certain services to the market. Examples of these services are enforcing of commercial contracts, grades and standards, and market reporting. In countries where the ownership and control of land resources are extremely concentrated, land reform may be necessary to achieve broad participation in economic development. This leaves three investment areas that are largely the government's responsibility.

Research and development. One key to improved agricultural productivity is improved technology. Profit opportunities from technical change motivates investment by farmers and related sectors. Unlike industrial processes, agricultural technology often cannot be transferred directly from developed countries to the developing world. Biological processes are environmentally dependent. Most developed countries are in the temperate zone while most developing countries are in the tropics, amplifying the problem of technology transfers. Although the regional Agricultural Research Centers do much, individual countries also must invest in applied agricultural research.

Agricultural research needs to be guided by the relative scarcity of factors of production (land, labor, capital). Most developing countries with ample labor relative to capital and land should follow the Japanese model of relying primarily on biological technology to improve land productivity. The U.S. model of mechanical technology designed to save labor is usually not suitable in the early stages of development (Hayami and Ruttan, p. 264-187).

Education or human capital. Investing in farm people is a major source of economic growth in agriculture (Schulz, p. 175-206). The acquired capabilities of farm people are of primary importance in modernizing agriculture. The key to production growth is in farmers' ability to acquire and effectively use new

technology. In addition, education facilitates the transfer of labor to nonagricultural sectors and is associated with reduced birth rates.

Research has shown that the highest returns come from investment in elementary education (Schulz, p. 201). Estimates of rate-of-return to schooling are much higher for elementary than for secondary schooling or for high school education, although the rate for the latter also exceeds the rate for conventional investments (Schulz, p. 205).

Infrastructure. Aspects of a country's physical and institutional infrastructure that affect farmers include transportation, communication, electricity, roads and storage facilities. Often systems to deliver water for irrigation require a governmental role (Wennergren et al., p. 7). Also, land distribution and leasing arrangements often require government intervention. Essential parts of the infrastructure and institutions are lacking in many developing countries. For example, without adequate roads and efficient forms of transportation, products cannot move profitably to market.

Population Control

Will measures to increase production simply result in population increases with no improvement in living standards? Success breeds its own fulfillment. Economic and social gains result in a lowered birth rate and slowed population growth. However, the high rates of population growth occurring in most Third World countries exacerbate the process of economic and social progress. Large families mean a high percentage of children in the population who do not contribute to production and make gains in per capita income difficult. In addition, population demands in many countries are beginning to exceed the sustainable yield of the resource base (Brown p. 22). China, in the late 1970s, faced the prospect of its population exceeding the carrying capacity of its resources. The prospect of reduced living standards led Chinese leaders to embark on their unprecedented one-child family program. Although not a panacea for improved living standards, efforts in family planning are a critical adjunct to the development priorities previously outlined.

Summary

Improving the well-being of people in the developing countries of the world requires broad-based economic development. The agricultural sector is essential to a successful development process. Investing in agricultural technology and human capital are critical components. With these factors in place and a

market allowed to operate, experience has shown that the private sector will expand production, and income will increase. Other important conditions are investing in necessary infrastructure, some dispersion of land ownership, and slowing of population growth.

References

Brown, Lester R. 1987. "The People Yet to Come: Avoiding the Demographic Trap," Development International, Washington, DC.

Hayami, Yuyiro and Vernon W. Ruttan. 1985. Agricultural Development: An International Perspective. Baltimore and London: John Hopkins University Press.

Kuznets, S. 1964. "Economic Growth and the Contribution of Agriculture," in Eiber, C.K., and L.W. Witt, eds. Agriculture on Economic Development, New York: McGraw-Hill Publishing.

Schulz, Theodore, W. 1964. Transforming Traditional Agriculture. New Haven and London: Yale University Press.

Wennergren, Boyd E., Donald L. Plucknett, Nigil J.H. Smith, William Furlong, and Joan Jaski. 1986. Solving World Hunger: The U.S. Stake. Seven Locks Press, John Cobin, Md.

World Development Report, World Bank. 1982 and 1988. New York: Oxford University Press.

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