

/NATIONAL POLICY APPROACHES TO REDUCE FOOD INSECURITY
IN DEVELOPING MARKET ECONOMIES/

by

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Chapter 1

INTRODUCTION

He spoke of very simple things - that it is right for a gull to fly, that freedom is the very nature of his being, that whatever stands against that freedom must be set aside, be it ritual or superstition or limitation in any form. - Jonathan Livingston Seagull¹

What is Food Security?

"Food security" is an obscure and malleable term. The scholars of food security each employ distinct definitions to the words "food security." The thread which coarsely weaves the research together is "consumption level."

But whose consumption level are we concerned with -- the world, a nation, a region, a household, an individual? Valdes focuses his analysis on the consumption level of the country or a region within the country. "Food security may be defined as the ability of food deficit countries, or regions within those countries to meet target consumption levels on a year-to-year basis."² Bigman, however, sharpens Valdes' analysis to include the consumption level of each individual within the country or world. "Food security represents the ability of a country or the world at large to supply the food needs of all its people at all times, now and in the future."³

Reutlinger distinguishes the two approaches by separating the food problem into the "overt" and the "silent" food problem. He describes the overt food problem as encompassing inadequate total food supplies and the silent food problem as encompassing chronic malnutrition. The dilemma of the overt food problem is whether the global food supplies will stay abreast of total food demand, and whether developing countries

can meet their growing total demand needs through increasing production and the importation of food. The dilemma of the silent food problem is increasing the persistent deficient consumptive levels of the chronically malnourished individual, given inadequate or adequate total food supplies.⁴

Valdes's and Bigman's approaches differ not only in their national vs. individual approaches to the food security issue. The targeted food consumption levels are based on separate criteria. Valdes chooses a consumption level target based on previous consumption levels in his attempt to reduce short term variability of the total food consumption level. Bigman, however, chooses an individual consumption level target based on nutritional requirements.

And finally, the scholars' approaches differ in their time dimensions. Valdes approaches consumptive level variability solely "on a year-to-year basis."⁵ Bigman extends Valdes's short term variability to embrace the long term consumptive trend. To fulfill the food needs of a country's people "at all times, now and in the future," is certainly a long term commitment.⁶

To sum, the pioneers in the study of food security employ distinctly different definitions to "food security." The targeted population, consumptive level, and time dimension varies purposively throughout the literature. Valdes and Bigman accentuate the differences by formulating polarized definitions. These differences allow varying orders and magnitudes of hunger given "food security" attainment.

Although Valdes's definition of food security may be analytically more workable, cavernous gaps allow hunger to manifest itself in his conceptual framework. First, targeted total food supplies will not insure adequate consumption levels of each individual. Second, target consumption

levels may not be sufficient to meet nutritionally adequate consumptive levels. And third, a reduction of short term consumptive level variability does not address the decreasing long term consumption trend below levels of nutritional adequacy.

The Role of Economics in the Food Security Issue

Lionel Robbins in An Essay on the Nature and Significance of Economic Science states, "Economics, we have seen, is concerned with that aspect of behavior which arises from the scarcity of means to achieve given ends."⁷ The given end in the food security issue is the achievement of a targeted consumption level. This is an ethical decision of what ought to be. "...economics is entirely neutral between ends; that, in so far as the achievement of any end is dependent on scarce means, it is germane to the preoccupations of the economist."⁸

If we define means as resources, the "space ship" earth has the means to eliminate food insecurity even as defined by Bigman. The 1970s was a decade of periodic world market grain shortages and devastating droughts. Reutlinger and Alderman's study of thirty-six developing countries show 61% or 808 million people with calorie intakes below FAO/WHO requirements in 1973. The researchers also determined that the situation had not changed drastically throughout the decade. In 1980, "65% of the population in the forty countries reviewed, or approximately 700 million people, consume less than the recommended amount of calories recommended by the FAO;"⁹ But Murdock observes that the world had the means to eliminate the widespread calorie intake deficiencies. "...in the 1970s world food grain production was great enough to provide the average person in the world with more food grain than is consumed by the average Japanese, and the Japanese are well-nourished population."¹⁰ The crisis persists,

however, because the individual does not have the means to attain an adequate diet. The means of the individual are insufficient because of an unfavorable economic environment created largely by the national government's and the world community's inability and unwillingness to act effectively. Murdock illustrates the world's inefficient use of means to achieve food security.

The extra food needed to provide adequate diets for the malnourished of the world is not even very large in relative terms. The deficit in calories is equivalent to about 37 million tons of grain. This was one-fiftieth of world grain production and is less than 10 percent of the amount of grain fed to livestock in the rich countries.¹¹

The role of the economist is to analyze the current food insecurity situation, determine the root causes, formulate policy approaches to alleviate the problems, and reanalyze the situation under the new policy setting. Given a nation's limited means the economist attempts to develop an economic setting whereby the means are used most efficiently to attain a "given end" — food security.

An Operational Definition of Food Security

I must define the "given end" to clarify my intent and thus distinguish the appropriate policy approaches with which we will concern ourselves. I have chosen Bigman's concept of food security to be the "given end": "Food security represents the ability of a country or the world at large to supply the food needs of all its people at all times, now and in the future."¹² "Food needs" are determined by nutritional requirements. Some regard this individual food security as an international right, "the right of every man, woman and child to sleep each night free from hunger."¹³

But a concentration on the adequacy of the food consumption of all individuals necessitates examination of the policies to achieve adequate available total food supplies. So economists such as Valdes who concern themselves with national food security contribute greatly towards the goal of individual food security. In the words of Shlomo Reutlinger, "solving the 'overt' food problem is not sufficient (unfortunately!) nor necessary (fortunately!) to reduce malnutrition in any reasonable period of time."¹⁴

The Market Economy

Having selected a concrete definition of food security, we must also distinguish within which economic system we will discuss national policy approaches to reduce food insecurity. Every economic system is confronted with three basic economic choices: what to produce, how, and for whom. In a tradition-directed economic system, traditional patterns, established by prior generations, determine what to produce, how, and for whom. In a market-directed economic system, the market, commanded by the interplay of supply and demand, determines what to produce, how, and for whom. And finally, in a command-directed or centrally planned economic system, an individual or a limited group determines what to produce, how, and for whom. Most societies are directed by all three forces: tradition, the market, and a centralized group of people. But one form will predominate and be more influential in determining what to produce, how, and for whom.¹⁵

I have restricted the scope of this report to policy approaches to reduce food insecurity in developing market-dominated economies. This restriction is not based on the hypothesis that market-directed

economies are more successful than tradition- or command-directed economies in reducing food insecurity. Time and literature restrictions prohibited me from also extensively exploring policy approaches to reduce food insecurity in a command-directed economy.

Sources of Individual Food Insecurity in a Developing

Market Economy

Three components in a developing market economy must be present for an individual dependent on a market economy to achieve a nutritionally adequate diet: adequate total food supplies, an extensive and efficient market system, and an adequate real income. If any of these components are deficient, individuals will experience periods of hunger.

In addition, a deficiency in any one of the three components creates a deficiency in the other two. To illustrate, a drought which reduces total food crop supply reduces real rural incomes by reducing production earnings for the farmer and real urban incomes by increasing food prices. The efficiency and extensiveness of the market system diminishes as the transfer of goods decreases which creates an underutilization of existing market structure and allows monopolistic forces to enter. These market inefficiencies decrease the earnings potential of the rural food producer and increases the price of food for the urban consumer. Total food crop supply continues to decrease. A deficiency in any of the three components will have a damaging spiraling effect on all three components.

Deficiencies currently exist in all three components in developing market economies. Determining the most detrimental and easily solvable deficiency must be a continual battle for the economist. And oftentimes many deficiencies must be solved at once or in a certain order if any food security improvements are to be attained.

Victims of Food Insecurity in a
Developing Market Economy

Having developed an operational definition of food security, limited the study to market dominated economies, and briefly categorized deficiencies which create food insecure situations, we must determine which population groups are most victimized when deficiencies do arise. By isolating the victims the economist may focus his research and the policy makers will have a more appropriate base of knowledge upon which to make and direct policy decisions.

To reiterate, deficiencies in total food supplies or the marketing system or individual real incomes will result in a hunger situation. Deficiencies in these major components may reduce effective demand for staple foods among the subsistence persons. Effective demand for staple foods necessitates the availability of staple foods and an adequate real income.

And effective demand for staple foods is predominantly limited by inadequate real incomes. Real income fluctuates as production or prices fluctuate. These fluctuations severely affect food consumption. John Mellor writes, "On the basis of international comparisons, we can expect income elasticities for all food to be about .8 when per capita incomes are \$100, to drop to about .5 at income, of \$500, and to drop close to zero by the time incomes reach \$7,000."¹⁶ So individuals with low incomes are dangerously susceptible to drops in calorie intake levels below nutritional standards as their real incomes fluctuate.

The targeted population for food security policy should be the poor. Deficiencies in total food supplies, the marketing system, and individual real incomes will reduce effective demand for the poor by limiting the

availability of food and most commonly reduced their purchasing power. The wealthy population, on the otherhand, will have the purchasing power to buy adequate supplies at even high food prices.

National and International Policy Approaches

Should the international community become involved in the food security policy approaches of a sovereign nation? Frankly, we are partly responsible for the food security or insecurity which prevails in the developing countries today.

National food policies in developing countries are increasingly influenced by global events and international policies beyond the control of individual governments. During the 1960s and 1970s developing countries stepped up their imports of food substantially, and thus their food supply policies have become more dependent on imports.¹⁷

The international community may be a catalyst for the promotion of national food security through direct long term assistance in domestic food production, distribution, and storage, the creation of a favorable world grain market, and short term emergency aid.

The international community has fumbled in its attempt to be a catalyst for developing country's attainment of food security. Prior to the recent presses' recent exposure to widespread drought in sub-Saharan Africa, Siamwalla and Valdes reflect:

World food security has ceased to be a major concern for the press and for the general public. Yet the underlying causes of food crisis have not disappeared. Though developing countries have themselves made some important strides in dealing with food insecurity, only limited progress has been made on the international scene to help them in these efforts.¹⁸

Focus of the Paper

The content of this paper is limited to a discussion of national policy approaches to reduce individual food insecurity in developing market economies. The policy approaches are discussed in the following three chapters titled, consecutively, "Maintaining Adequate Total Food Supplies for the Nation", "Improving the Performance of the Market System", and "Increasing and Stabilizing the Real Incomes of Subsistence Persons".

All proposed and practiced policies may fall under one or more of these categorical headings. Given the copious stacks of literature on this subject, I will attempt to briefly and concisely discuss those policies proposed and practiced which are the most powerful and often debated so as to provide an informative overview for the reader.

Endnotes to Chapter 1

¹Richard Bach, Jonathon Livingston Seagull, (New York: The Macmillan Company, 1970), p. 83.

²Alberto Valdes, Food Security for Developing Countries, (Boulder: Westview Press, 1981), p. 1.

³David Bigman, Coping with Hunger: Toward a System of Food Security and Price Stabilization, (Cambridge: Ballinger Publishing Company, 1982), p. 13.

⁴Shlomo Reutlinger, "Malnutrition: A Poverty or a Food Problem?" World Development 5 (Unknown 1977): 715-724.

⁵Valdes, Food Security for Developing Countries, p. 1.

⁶Bigman, Coping with Hunger, p. 13.

⁷Lionel Robbins, An Essay on the Nature and Significance of Economic Science, (New York: Macmillan and Company, 1962), p. 24.

⁸Ibid.

⁹Shlomo Reutlinger and Harold Alderman, "The Prevalence of Calorie-Deficient Diets in Developing Countries," World Development 8 (May/June 1980): 406,407.

¹⁰William Murdoch, The Poverty of Nations, (Baltimore and London: The John Hopkins University Press, 1980), p. 98.

¹¹Ibid.

¹²Bigman, Coping with Hunger, p. 13.

¹³Barbara Huddleston, "World Food Security and Alternatives to a New International Wheat Agreement," New International Realities 6 (March 1982): 9.

¹⁴Reutlinger, "Malnutrition: A Poverty or a Food Problem?" p. 716.

¹⁵Robert Henry Haveman and Kenyor A. Knopf, The Market System (New York: John Wiley & Sons, Inc., 1970), pp. 8-11.

¹⁶John Mellor, The Economics of Agricultural Development, (Ithaca: Cornell University Press, 1966), p. 59.

¹⁷Barbara Huddleston et al., International Finance for Food Security, (Baltimore: John Hopkins University Press, 1984), p. 3.

¹⁸Ammar Siamwalla and Alberto Valdes, Food Security in Developing Countries, (Washington D.C.: International Food Policy Research Institute, 1980), p. 258.

Chapter 2

MAINTAINING ADEQUATE TOTAL FOOD SUPPLIES FOR THE NATION

Three major domestically-controlled entities may contribute towards maintaining an adequate total food supply: domestic food production, stocks, and commercial imports. The appropriate policy basket in maintaining an adequate total food supply will depend upon each situation as does the larger appropriate national food security policy basket. "In short, the multidimensionality of the food problem requires that the strategies of food security also be multidimensional. Complete food security will exist only when every aspect of the food problem has been resolved."¹

Increasing Domestic Staple Food Production

Introduction

Most developing countries have the potential to feed themselves. But past trends and future projections indicate a widening gap between domestic production and demand. And because developing countries import a small percentage of total domestic consumption, policy efforts to reduce the structural constraints which discourage domestic production are essential for reducing food insecurity.

William W. Murdoch emphasizes throughout The Poverty of Nations that developing countries have the potential to feed themselves. "Buringh and his co-workers, in their exhaustive analysis, estimated the full development of all available and irrigable land and the full use of modern technology would produce a maximum of almost forty times the present annual crop production."² But past trends and future projections indicate a widening gap between domestic food grain production and demand. "Staple

food deficits in DME (developing market economy) countries have more than doubled between 1961 and 1976."³ During the 1960s and 1970s the increase in population and per capita incomes created a growing demand for food, but domestic agricultural production lagged behind. Bigman points to Africa where "agriculture has gradually deteriorated and food production has increasingly lagged behind population growth. Since 1970 locally grown food supplies on a per capita basis have declined by more than 10 percent, a trend likely to continue."⁴

Future projection by distinguished international economic development institutions are pessimistic. "The projections of IFPRI (the International Food Policy Research Institute) (1977), the World Bank (1976), and the Asian Development Bank (1978) all estimate a substantial widening in the gap between foodgrain production and demand in the decade ahead."⁵ The International Food Policy Research Institute predicted a production shortfall of staple food crops in the developing market economies of between 120 and 145 million metric tons by 1990.⁶

And because developing countries import a small percentage of total domestic consumption, correlations between staple food production and consumption are very high. In 1978, 90% and 100% of the food consumed in non-communist and communist developing countries, respectively, was produced domestically.⁷ Table 1 in the Appendix shows that half of the correlation coefficients between total staple food production and staple food consumption for twenty-four developing countries between 1961 and 1976 was greater than .90. These figures underscore the need to increase domestic production to reduce malnourishing levels of consumption.

So what are the constraints? Existing structures in LDCs stifle the growth potential of domestic staple food production.

...it is clear that the food problem could be handily solved for the foreseeable future by structural changes alone. Note also that the solution would in general require no extra available land, a matter of considerable importance where the use of marginal farmlands leads to environmental degradation.⁸

Most developing countries have the potential to feed themselves. But past trends and future projections indicate a widening gap between domestic production and demand. And because developing countries import a small percentage of total domestic consumption, policy efforts to reduce the structural constraints which discourage domestic production are essential for reducing food insecurity.

The Potential for Increasing Domestic Staple Food Production

Two possibilities exist for producing more food in the developing countries. These are land expansion and increasing yields on currently cultivated land. Although the latter is emphasized more vigorously in the economic literature, both must be examined to make a point. Namely that we produce a small percentage of the earth's potential.

Land Expansion

Several studies have estimated the total potential cultivable land on the earth. The land currently being cultivated is 1.4 billion hectares. But Mesaronic and Pestel, Norse, and Buring estimate 2.4, 3.1 and 3.4 billion acres, respectively, to be the earth's potential cultivable land.⁹

And these land reserves are located predominantly in the developing countries. "Whereas the total cultivable land in the rich countries can be increased by between 50 and 100 percent, in the developing countries it can be increased threefold and is potentially twice the total in the developed countries."¹⁰

Increasing Yields

Although the potential is great for cultivable land expansion, developing countries are relying more heavily on increasing yields. "In the 1950s, more than half of the increased production was created by cultivating more land. Since the 1960s the balance has shifted somewhat, and increasing yields have accounted for 60 percent of the increased production."¹¹ Murdoch predicts the trend to continue because of the lower costs involved in increasing yields vs. land expansion. Oram also concludes, "in the next decade low-income countries must rely primarily on raising yields and cropping intensities on land already under cultivation."¹²

When comparing yields between developed and developing countries one witnesses the potential for increasing yield in developing countries. Table 2 below displays average yields around 1975 in developing and developed countries. The average yields for wheat, rice, corn, and sorghum are roughly three times as great in the developed countries.

This potential is verified by crop yields on labor and capital intensive experimental plots in developing countries. In fact, in India the experimental plots have yielded as much as seven times as much produce per hectare than the Indian farmer's crop land.¹³

TABLE 1

AVERAGE YIELDS IN RICH AND POOR COUNTRIES AND
RECORD YIELDS, AROUND 1975

Crop	Developing Countries	Developed Countries	World Record
Wheat	1.3	3.25 (Western Europe)	14.5
Rice	1.8	5.5	14.4
Corn	1.3	5.4 (U.S.A.)	21.2
Sorghum	0.9	3.0	21.5

Source: National Research Council, Resources for Agriculture, p. 97 and Wortman and Cummings, To Feed This World, p. 147, Cited by William Murdoch, The Poverty of Nations (Baltimore and London; The John Hopkins University Press, 1980): 117, Table 5-9.

Note: Yields are in metric tons per hectare per crop.

As in most farming systems, the missing elements of the Indian peasant's farming system are the capital investments and technological methods utilized on the experimental plot. The major capital investments utilized to increase yields are water control, fertilizer, crop protection, seed improvement and energy. Appropriate technologies and the modern complementary inputs increase the value of the marginal product of the input, thereby increasing input usage to the point where the marginal value product of the input is equal to the price of the input. The increasing marginal value product of the input and the increasing utilization of the input results in increased yields.

Water is the most yield-promoting and limiting input for developing countries. Peter Oram in a study of 36 low income, food deficit countries calculated that "Investment in water resource development could generate about 43 percent of the additional food needed to meet demand at a high level of income in 1990."¹⁴ Whether the ecosystem could compensate for such high levels of ground water depletion is debatable.

Fertilizer also contributes greatly to yields, but the application

levels in developing countries is extremely low. "Excluding China, in 1970 the average cultivated hectare in the developing countries received less than one-seventh of the amount of fertilizer added to a hectare in the capitalist developed countries."¹⁵ Yet, "the average yield response of cereals to fertilizer for both irrigated and rainfed lands is in the neighborhood of 10 kilograms of grain per kilogram of fertilizer."¹⁶

Crop protection greatly reduces crop losses at a comparatively low cost. "One authority assessed global losses in 1965 at about \$75 billion at current prices, compared to world production of insecticides, pesticides, and herbicides valued at about \$1 billion in 1966."¹⁷

Oram stresses the potential effectiveness and current inadequacies of seed improvement systems in developing countries.

This is probably the most effective, cheapest, and easiest single method of increasing yields. Yet few countries are providing disease-free seed of improved varieties to farmers in anywhere near the quantities needed. Widespread need and relatively low cost suggest priority for seed development.¹⁸

Energy may greatly increase production as labor becomes scarce during critical cropping periods and as industrialization and urbanization increases the opportunity cost of farm labor. Yet energy consumption for food production in LDCs is extremely low. "Food production in the LDCs accounts for only about one-half of one percent of the total (world energy consumption)."¹⁹

In conclusion, modern inputs and technologies increase the marginal value product of an input, thereby resulting in an increased optimal input usage. The complementarities among the modern inputs allows for increased utilization of the optimum where marginal value product is equal to the price of the input. The result is increased output per

unit of land. The forces which are limiting the production potential of the producer in developing countries must be reduced. An examination of these structural constraints will be discussed in succeeding sections.

Increasing Yields: Increasing Yield Variability?

Before we explore policies to reduce the structural constraints and thereby increase yields, we must address a very important food security question. Will the increased yields created by the increased usage of modern technologies and inputs be accompanied by increased yield variability?

Studies have shown that these modern inputs increase yield variability which increases individual food insecurity given the strong correlation between domestic production and consumption. Hazell's study of the Instability in Indian Foodgrain Production reveals increasing yields between 1954/55 - 1964/65 and 1967/68 - 1977/78 accompanied by increased production instability. During this period average yields increased by 44 percent as a consequence of improved seed varieties and modern input utilization.²⁰

Hazell suggests that the new technologies are more sensitive to weather and disease, input price changes, and curtailments in supply of inputs. These sensitivities create yield variability. Hazell concludes that production instability and rapid agricultural growth are destined to be partners. "The primary conclusion from this study is that aggregate production instability is an inevitable consequence of rapid agricultural growth, and that there is little that can effectively be done about it."²¹

Other researchers have reached different conclusions. Valdes finds that although the absolute variability may tend to increase as production

increases, the "relative variability may in some cases remain unchanged or even decline."²² And Mehra even points to the stabilizing effect of modern technologies.

Whether modern technology introduces stability depends on strengthening and spreading the elements that stabilize yield and on developing the ability of new technology to not only push up peaks in good weather but also to smooth the troughs when weather is bad. To the extent that this is successful, the severity of conflict between growth and stability will be reduced.²³

In summary, modern technologies and modern inputs will create production instability if inappropriately utilized. But careful planning and painstaking implementation will reduce the yield variability. Thus, given a real potential for increasing yields and a realization of the possibility of accompanying yield variability if schemes are poorly planned or implemented, we proceed with policy approaches to increase yields.

Reducing the Structural Constraints

Implementation of modern technologies and their modern inputs in staple food production is impeded by many structural constraints. If these structural constraints are reduced, the goal of increased staple food production through intensification of both traditional and modern inputs and technologies may be reaped. I have categorized the policy approaches to reduce the structural constraints into infrastructure development, redistribution of the means of production, and reducing price disincentives.

Infrastructure Development

An adequate infrastructure will increase the production potential of the farmer. Transportation, communication, research, extension, storage, credit, energy, and education systems become increasingly important as

an economy transits from a subsistence to a market economy and from traditional, low capital inputs to modern, high capital inputs; changes which increase agricultural production.

Yet the agricultural sector receives a modest portion of total public investment. "In twenty-two LDCs for which data were available, agriculture received an average of only 20 percent of the total investment made during the period 1950 to 1965, yet it contributed about half of the gross national product.²⁴

Michael Lipton would attribute this disproportionate share of investment to "urban bias." In Why Poor People Stay Poor Lipton states:

In LDCs today, far more than in now-rich countries yesterday, it is urban interests that are the more concentrated, articulate, and powerful. It is these interests that bias resource allocations away from efficiency, and (I shall argue) equity as well, in the direction of pushing more resources towards the cities.²⁵

The reality of nonexistent or inefficient, malfunctioning infrastructures in many LDCs predestines low levels of output in a traditional peasant farming system. Reliable infrastructure will encourage the peasant farmer to increase his surplus through input intensification, traditional or modern, and thereby increase the total domestic staple food production of the country.

Redistribution of the Means of Production

The concentration of the means of production into the hands of a few destroys the efficiency of a capitalistic system and thereby undermines the staple food production potential. Land ownership is a luminous example. Smaller farmers make better use of their land by farming it more intensively. "The yield per unit of land decreases as farm size increases and total food production is suppressed because of this relationship."²⁶ The basis

for this phenomenon is visible in the relationship between the factors of production. A farmer must bring together land, labor, and capital to produce output. The smaller farmer applies more labor per unit of capital and land and more carefully manages these inputs than the large plantation owner.

Table 3 below illustrates the potential production increase from land redistribution.

TABLE 2
INCREASES IN AGRICULTURAL PRODUCTION
THAT WOULD ARISE FROM LAND REDISTRIBUTION

Country	Calculated Increase (%)	Year Data Collected
Brazil	25	1962-63
Brazil (N.E.)	79.5	1973
Columbia	28	1960
India	19	1970-71
Pakistan	10	1960
Phillippines	23	1960
Malaysia	28	1972-73

Source: R. Albert Berry and William R. Cline, Agrarian Structure and Productivity in Developing Countries (Baltimore: Johns Hopkins University Press, 1979), p. 132.

Developing countries have passed land reform laws with little effect "...in spite of decades, if not centuries of land reform activities, land ownership remains extremely skewed, concentration of land ownership is almost universally increasing, the mass of landless is growing rapidly, and the extent of rural poverty and malnutrition has reached horrendous proportions."²⁷

Alain De Janvry depicts present agrarian structural transformation as being "more dependent upon the forces of capitalist development and, in particular, on the industrialization of commercial agriculture and

the proletarianization of peasants than upon the application of land-reform policies."²⁸ Some trust the medium- and large-scale capitalist farms who are integrated with international business to solve the current food deficit problems. But Alain De Janvry has little faith in the current institutional changes.

Peasants' demands for better living conditions are either neglected and left to the uncertainties of domestic and international migration or severely repressed. Yet, it is abundantly clear that the crisis of food production and rural poverty are, if anything, worsening under the current development model. Thus, even if land reform is dead as a policy issue, it remains a key ingredient of any meaningful political program of economic development, be it of liberal, populist, or radical slant.²⁹

Clearly, concentration of the means of production is a great economic problem whose implementation is limited by powerful political forces. Food security is impaired not only through reducing staple food production, but by impairing the workings of extensive rural markets and slashing the income potentials of rural, subsistence persons.

Reducing Price Disincentives

Price disincentives greatly stifle domestic staple food expansion for the subsistence farmer in developing countries.

Half the people of the world depend upon a subsistence type of agriculture, and 40% of the cultivated land of the world is in the hands of subsistence farmers. Government regulations and political constraints frequently establish price and control profits. There is little incentive to produce beyond what is needed for immediate survival.³⁰

The two major governmental actions which create major disincentives are cheap food policies for urban dwellers and cash crop price incentives. Cheap food policies for the urban population are practiced to keep inflation down, keep industrial wages down, and gain urban political support.

The mechanics of a cheap food policy involve either a consumer price ceiling below market equilibrium, government purchases and later resale of staple food, or government subsidies on the importation of food. All of these measures lower the price producers receive for their goods which reduces total staple food supplies.³¹

Cash crop price incentives shift land use from food crops to cash crops. Africa exemplifies this phenomenon. In the late 1960s export crops increased four percent annually whereas food crops increased only two percent annually. In Mali, corn production fell by more than a third between 1969 and 1971 whereas export crops reached record highs.³² Cash crops price incentives are often larger than nominal prices indicate. The costs of cash crop production is greatly reduced by government investment into infrastructure and services specifically for the cash crop sector.

Conclusion

The developing countries have a largely untapped potential to increase domestic staple food production along with yield variability minimizing strategies. The structural constraints which the peasant farmer encounters can be reduced. But staple food production infrastructure development, redistribution of the means of production, and a reduction of price disincentives are not always in the best interests of the political leaders. The political support of a leader comes usually not from the peasant but from the urban populace and elites. But until these constraints are reduced, adequate domestic staple food production potential will not be attained.

Maintaining Adequate Stock Levels

Introduction

Stock policies may also be an essential entity in realizing an adequate national total food supply in developing countries. The seasonality of cereal grain production and the yield variability, which has increased nominally in recent years, necessitates a storage system and/or easy access to foreign markets. In closed systems the storage system is heavily relied upon to decrease consumption variability.

Have stocks reduced consumption variability? Timothy Josling in his analysis of the global closed economy discovered that "consumption series for both specific and aggregate food groups tend to be more stable than those of production, - implying that stocks do vary in a stabilizing way."³³ On a national level, Siamwalla and Valdes have found that "historically, for most LDCs stock level changes have not been sufficient to reduce consumption variability."³⁴

Before discussing the various stock policy approaches to reduce food insecurity, we must distinguish the possible major components of a domestic food reserve. The literature differs in its breakdown of the components of a domestic grain reserve. Uma Lele separates the reserve into "(1) the official 'natural food reserve,' (2) stocks held by the official food marketing organization for its routine purchase and sale activities, and (3) stocks held by the private sector, predominantly farmers."³⁵ The private, farmer-held stocks usually dominate public, government-held stocks. Other authors distinguish between working stocks and buffer stocks. Working stocks are stored for gradual use over the growing cycle, whereas buffer stocks are used in succeeding growing cycles. The policy approach(es) chosen depend upon the source of ownership, public

or private, and the time dimension, working or buffer.

A search through the stock policy approaches must also include a knowledge of tropical storage conditions.

High temperatures and humidities exist over extended periods of time making the potential for deterioration due to insects, molds, and rodents extremely high. With the best of facilities, storage of grain under tropical conditions is a difficult task.³⁶

A person from the temperate zones must contemplate this situation to understand the limited extent of grain storage in many developing countries.

And finally, the reader should be familiar with the economic literature of the profitability, efficiency, and welfare gains of stocks in developing countries to further understand the limitations of grain storage in many developing countries. Reutlinger, Eaton, and Bigman in "Should Developing Countries Carry Grain Reserves?" find buffer stocks, in most cases, to "be both an unprofitable private investment and an inefficient use of public funds."³⁷ The authors illustrate their argument by stating, "the dearth of requests to international lending organizations for reserves lead us to suspect a priori that they may not be justified on traditional cost-benefit grounds."³⁸ Reutlinger and Bigman report that welfare gains from buffer stocks are negative in all cases. But they add that the welfare loss is unavoidable in a closed economy where trade is not an alternative.³⁹

On what basis then do some developing countries hold stocks? Reutlinger, Eaton, and Bigman expound on the stabilizing effects: "The strongest rationale for a reserve may rest, therefore, on its effect on a government's financial ability to secure minimally adequate consumption of grain for the entire production at all times and its incremental stabilizing effects for prices, supplies, and the balance of trade, which are not priced

by the market."⁴⁰

Policy Approaches to Maintain Adequate Stock Levels

Having briefly discussed the components of and the physical and economic limitations of grain reserves in many developing countries, we shall discuss various policy approaches to increase and/or maintain total stocks. The appropriateness of each policy depends upon the many physical, economic, social, and political constraints of each situation. The scope of this paper allows only a brief description of major policy approaches and an occasional historical or present-day illustration.

Policy approaches to increase and maintain privately held stocks include governmental exhortations and, indirectly, price policies. Regarding political exhortation, "one of Mao Tse-Tung's most celebrated instructions to the Chinese people was to store grain as a bulwark against war and natural calamities."⁴¹ Price policies will encourage private accumulations when highly volatile price swings make it economical for a farmer to store grain. "Seasonal constant support prices tend to discourage private development of storage facilities by not allowing a profit incentive for commercial storage, especially at the extremely high inventory costs."⁴² Public stocks which stabilize price will consequently displace private stocks in those areas accessible to the national grain market.

Policy approaches to increase and maintain publicly held stocks include public purchase of grain on the open market, procurement pricing, levies or taxes, loan arrangements, and monopoly procurement. Public purchase of grain in the open market includes both domestic and foreign markets. Bigman states "the most effective and least complicated method of procurement is by purchase in the open market."⁴³ For food deficit countries such as Indonesia, stocks are built up only by purchasing in

the world grain market.⁴⁴

Procurement pricing is used extensively by government grain reserve agencies to increase and maintain stocks. In India, a procurement price for wheat, paddy rice, and other cereals is announced on the eve of the marketing season. If the market price falls below the announced price, the government will purchase grains until the market price rises above the procurement price level. In India this procurement price is often equal to the costs of production.

The procurement price level in the Philippines has resulted in excessive stock accumulation due to high rates of production growth, a lack of bad weather, and a limited capacity to export. "The Philippine level of stocks in the last ten years is particularly striking, rising from about 0.5 million tons in 1970 to about 1 million tons now - the same as that of Indonesia, whose production level is thrice that of the Philippines."⁴⁵

A levy or tax on the producer or middleman is difficult to administer but sometimes effective. Producers may be required to sell a percentage of their yield at the procurement price. Or as in India, millers are required to sell a portion of their processed rice to the government at the procurement price.⁴⁶

A loan policy of procurement allows the producer to maintain temporary ownership of the grain. In Mexico, grain loan policies are such that the producer receives a loan for 100 percent of the minimum price which is repayable over a maximum period. The owner may sell the grain if the market price rises during the period of the loan and then repay the loan plus interest and storage costs. This system encourages the producer to produce surplus whereby he is not forced to sell the grain at a low

price immediately after harvest.⁴⁷

Monopoly procurement is utilized extensively in socialist systems where the government is the sole buyer and seller of grains. This system came into effect in China towards the end of 1953.⁴⁸ Extensive governmental control is a necessary precondition to practice monopoly procurement. And China's near elimination of hunger may be an indication of its potential.

The effectiveness of the public stock policies discussed depend immensely on the degree of governmental control. Countries with widespread and strong governmental control, such as India and China, utilize many of these policies extensively. Most developing countries, however, have little central governmental control. Private stockholding then plays a larger role in maintaining an adequate, available total food supply. And central government policy will have little influence on the stockholding practices of market isolated, traditional farmers.

Conclusion

Stocks, both public and private, have a great potential to reduce supply variability. Although public stocks are often not a profitable venture, especially in the tropics, they may secure adequate food supplies in a more closed economy.

Commercial Import Strategies

Introduction

When a nation's domestic staple food entities, staple food production and stocks, are insufficient to maintain an adequate total food supply, commercial imports may fill the gap. Studies prove conclusively that trade is more effective and economical than stocks in achieving total

food supply stability. David Bigman and Shlomo Reutlinger in a model of an open economy conclude, "Trade policies are likely to have a greater impact on the stability of a country's food grain supply than any reasonable size buffer stock."⁴⁹ "Contrary to a rather widely held belief, self reliance, or the avoidance of trade, is the worst enemy of stability."⁵⁰

But many leaders in developing countries fear that trade in agricultural food products depresses domestic production and increases the country's vulnerability to supply disruptions.

In the developing countries free trade in agricultural food products is highly unpopular, and considerable efforts are made by the governments in these countries to isolate their economies from the world market and achieve self-sufficiency. Free trade is often accused of depressing agricultural production in importing countries, thus increasing their dependence on the exporting countries and exposing the importers to a higher risk of shortages in supply.⁵¹

Given the perceptions of the economists and the politicians, what has been the historical trend of cereal imports? "Between 1961-63 and 1981, world imports of cereals increased threefold, from about 81 million metric tons per year to an estimated 232 million tons."⁵²

And grain imports have increased more in the developing countries than the developed countries. Morrison in "Cereal Imports by Developing Countries" states, "Cereal imports of the developing countries have grown... from about 5 million tons in 1950 to over 100 million tons by 1980."⁵³ On a per capita basis, "cereal imports of developing countries rose from 16.1 Kg in 1970 to 31.5 Kg in 1980."⁵⁴

And of the developing countries, import growth has occurred predominantly in the middle and high income developing nations. Barbara Huddleston's study of the cereal import trends of 65 middle and high income countries and 34 low income countries between 1961-63 and 1981 found: "Between

1961-63 and 1981 the volume imported by this group of 65 countries increased from 21 to 88 million tons, while the volume imported by the 34 low income countries fluctuated around 10 million metric tons."⁵⁵

The World Bank in the World Development Report figured the annual rate of increase in cereal net imports of low and middle income countries from 1960/63 - 1977/79. The growth of the import volume is clearly dominated by the middle income countries.

Table 3. Increase in cereals net imports of low and middle income countries, 1960/63-1977/79.

Country or country group	Annual average net imports (million tonnes)		Increase (million tonnes)	Annual rate of increase (%)
	1960/63	1977/79		
Low income	5.6	8.7	+3.1	2.7
Middle income	12.7	44.7	+32.0	7.9
China	4.0	8.7	+4.7	4.8
Total	22.3	62.1	+39.8	6.7

Source: World Bank, World Development Report, 1980, p. 23.

What proportion of total domestic grain consumption is imported among developing countries? The literature subscribes to a figure of around 10% in recent years. But even this figure differs considerably among low and middle income countries.

Net cereal imports as a proportion of apparent utilization in middle income countries rose from 13% in 1961-63 to 23% in 1977-79. For low income countries, the proportion remained constant at about 4%.⁵⁶

Given these historical trends experienced by developing countries, how successful have commercial imports been in compensating domestic supply shortfalls. Regression analysis by Alexander Sarris of wheat

imports of some major food importing countries on domestic production "indicate that imports have variance considerably smaller than that of production."⁵⁷

Table 4. Coefficient of regressions of net wheat imports (1,000 m.t.).

Country	Constant	Border c.i.f. price	Domestic production of wheat	Trend	Food aid imports
		(dollars per m.t.)	1,000 m.t.		(1,000 m.t.)
Brazil	-67.86	28.23	-0.49 ^a	64.88 ^a	-0.11
Mexico	1,094.40	-8.75	-0.76 ^a	44.02 ^a	-0.04
Egypt	647.42	1.30	-0.69	141.64 ^a	0.06
India	2,147.60	-12.24	-0.24 ^a	239.10 ^a	0.69 ^a
Pakistan	405.70	0.20	-0.26 ^a	89.86 ^a	0.50 ^a

^aSignificance at the 5 percent level

Source: Alexander H. Sarris, "Grain Imports and Food Security in an Unstable International Market," Journal of Development Economics 7 (December 1980): 491, Table 1.

Alberto Valdes and Panos Konandreas analyzed national aggregate data for selected developing countries. They conclude "that production instability varies considerably among countries and that imports and stocks have generally not been used very effectively to stabilize food consumption."⁵⁸

Although cereal imports are not closing the gap, they are increasing at a greater rate than cereal production. "Whereas per capita cereals production in the developing countries grew from 192 Kg in 1970 to only 209 Kg in 1980, cereal imports per capita during the same period approximately doubled from 16 Kg to 32 Kg."⁵⁹

One must ask what is the limiting factor which prevents especially low income developing countries from importing adequate volumes of cereals?

Correlation of imports with other explanatory variables have yielded interesting results. The research witnesses to higher levels of economic development with higher levels of cereal imports. Morrison found that "Long-term, structural factors appear to explain better the cereal imports of developing countries than short-term, temporary factors. Level of economic development is the most significant long-term explanatory variable."⁶⁰ And Wagstaff detected in his cross sectional analysis of 66 developing countries a "positive correlation between changes in cereal imports per head and the growth rate of GDP per head."⁶¹ And Barbara Huddleston correlated import dependence with changes in six variables and ascertained that the largest amount of variation in import dependence "could be explained by per capita staple production and the next largest by per capita GNP."⁶² These explanatory variables (excluding per capita staple production) are indicators of the level of economic development. But these findings do not direct us to a limiting factor solvable through short run policy directives.

The foreign exchange constraint is posed by politicians and economists as a limitation to cereals importation. But researchers uncover conflicting results. The International Food Policy Research Institute in a July 1977 publication states:

In the base period, 1969-70/1971-72, about 10 percent of the grain consumption in developing countries was from imports. The proportion of imports in the food supply was closely related to income level and ability to earn foreign exchange for imported grains.⁶³

Morris, however, found a lack of statistical significance for the effects of availability of foreign exchange on cereal imports.⁶⁴

To sum, international trade in cereals is an effective and economical

strategy to stabilize total food supplies. World import of cereals have increased threefold in the last two decades. And this increase has occurred predominantly in the middle and high income developing countries. The low income developing countries, however, have not greatly increased their cereal imports within the last two decades. Correlation analysis has revealed that the level of economic development explains grain import levels. Because the level of economic development is not changeable in the short run through policy efforts, we must search for a short run modifiable variable which explains grain import levels. Foreign exchange levels have been posed as an explanatory variable. A closer examination of the foreign exchange constraint will lead us to possible solutions.

The Foreign Exchange Constraint

Averaged over time, the foreign exchange reserves or export earnings are not a constraint to cereal imports for most developing countries.

On average, both the ratio of the total cost of cereal imports to export earnings were less than 5 percent for more than two-thirds of the countries for which data on export earnings were available, showing that the average cost of cereal imports generally did not strain the balance of payments. But for some countries these ratios are high.⁶⁵

(See Appendix, Table 2)

But the ratio of total cost of cereal imports to export earnings periodically becomes intolerable for some low income developing countries (see Appendix, Table 2). "...in some years the extra cost of cereal imports represented from 50 to 80 percent of the year's foreign exchange reserves. In 1975 it even reached more than 100 percent for Tanzania, Sri Lanka, and Haiti."⁶⁶

Is this extreme variability in the import bill caused by import

price or import volume variability? Valdes and Konandreas found that from the period 1961 to 1976 only one-quarter of the variability of the import bill was explained by import price variability.⁶⁷ Most of the import bill variability is then caused by import volume variability.

High import bills are a great financial burden for low income developing countries who have limited foreign exchange reserves with a high opportunity cost. This constraint may prevent a country from attaining adequate total food supplies in years of foreign exchange scarcities.

Strategies to Reduce the Foreign Exchange Constraint

Developing countries have great potential to improve their buying position in the international grains market. Although they cannot control the unexpected behavior of the superpowers and the corresponding price fluctuations, they can, individually, reduce their role as spot buyers and increase their role as exporters.

Reducing Spot Purchases

Most developing countries are spot buyers in the international grains market which creates economic inefficiencies and a higher import bill. By developing a statistical and crop information system to predict import requirements more timely and accurately, a nation may plan further in advance for imports. Gilmore and Huddleston surmise, "At a minimum, most LDCs have come to accept the need to plan major purchases one year in advance to obtain negotiating flexibility and avoid inefficient, unpredictable deliveries."⁶⁸

Domestic buffer stock facilities will also facilitate planned purchases by buffering short-run domestic production variability. An information

and buffer stock system will complement one another.

In addition, commercial sophistication on the part of the state trading ministry will allow the country to take advantage of optimal buying periods. With these skills the crop information system and stock facilities will be used more effectively.

All three policy efforts will reduce the variability and accompanying inefficiencies of spot purchases. By reducing the import bill variability the country will not be as constrained and the development plans will not be interrupted.

Export Expansion

Export expansion will provide the foreign currency necessary for cereals importation. Each country must follow its own unique strategy to expand export trade. But some general trends are worthy of note.

Export expansion has contributed to the economic growth of many developing countries. "...significant correlations have been found between the growth of exports and the growth of national income among the under-developed countries by cross-sectional studies; by time-series studies; or by a combination of both methods."⁶⁹ And import substitution is associated with lower rates of growth.

Export bias has affected export growth. "The unfavorable treatment of primary exports has contributed to the decline in the shares of Argentina, Brazil, Chile, and Pakistan and, to a lesser extent, the Phillipines in the world market for their major export commodities and has retarded the development of new exports."⁷⁰ Bela Balassa found that those countries which discouraged the export of manufactured goods still experience poor performance. "In countries with a substantial bias against the export

of manufactured goods, these commodities continue to account for less than 3 percent of manufactured output and account for at most 10 percent of total export."⁷¹

Although foreign exchange has not proven to be an important constraint on the average, a periodic shortage arises. Therefore, export expansion may decrease the foreign exchange constraint and contribute to economic growth and development which has been shown to be closely correlated with grain import levels.

Conclusion

For many developing countries cereal imports are an essential entity in the national food security strategy. But for the low income developing countries, scarcities of foreign exchange caused by periodic poor harvests or low levels of export earnings prevent adequate cereal imports. The world community may facilitate a transfer of credit or other measures to ease the unexpected high import bills. But the individual nation, itself, has the potential to reduce the periodic foreign exchange constraints by reducing spot purchases and expanding export trade.

Summary of Chapter 2

The three domestically controlled entities, domestic food production, stocks, and commercial imports, have a bona fide potential to increase and maintain the total food supply of a nation. All three require investments, planning, and qualified personnel, to reach their potentials. The scarcities of funds and human capital are oftentimes the limiting factor. But each country must decide in which entity or entities the scarce funds may be used to achieve the greatest return: an adequate total food supply.

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Chapter 3

IMPROVING THE PERFORMANCE OF THE FOOD MARKETING SYSTEM

Introduction

An adequate total supply of food grains will not guarantee individual food security in a developing market economy. The food marketing system must be functioning in order to distribute the food grains from the producer, stocks, or ship to the consumer.

Webster's Third New International Dictionary defines marketing as "an aggregate of functions involved in transferring title and in moving goods from producer to consumer including among others buying, selling, storing, transporting, standardizing, financing, risk bearing, and supplying market information."¹ Marketing involves many activities incorporating many firms participating in several separate markets which when amalgamated, result in the transfer of a good from the producer, to the consumer. The marketing system is relied upon to transfer goods from the producer to the consumer in a market economy. Therefore, policy approaches to improve the performance of this system is necessary in an attempt to reduce food insecurity in developing market economies.

Stages of Development of the Marketing System

The marketing system and the market economy develop together. "In all countries and through all phases of economic development the pace of advance is quickened as marketing activity increases."² And in each stage of development of the market system particular problems must be solved for further economic development to proceed.

Kriesberg and Steele in "Improving Marketing Systems in Developing

Countries" identify three stages of market development in developing countries. Kriesberg and Steele characterize the first stage of market development, "countries with traditional subsistence agriculture -- population largely rural," as having low levels of personal incomes, a dualistic agriculture consisting of export crops and subsistence crops, low levels of marketing, and a predominantly rural population. Kriesberg and Steele characterize the second stage of market development, "countries with transitional, production-oriented agriculture -- urban population often as large as rural," as having an uneven growth of incomes, growth in commercial agricultural production, increasing levels of market activity, and an increasingly urban population. Kriesberg and Steele characterize the third stage of market development, "countries with market-oriented agriculture -- urban population dominant," as having a more even growth of incomes, the dominance of commercialized agriculture, still higher levels of market activity, and an urban dominated population.³

"At each stage of market development characteristic marketing activity prevails, and certain kinds of problems are likely to emerge as the system seeks to repond to changing production or consumption factors or to different forces in the environment."⁴ In the first stage, the traditional subsistence economy accomodates easily to the slow changes in the production system. The distance between the consumer and producer is short, transactions are made directly, and the variety of goods marketed is limited. Overall, the demand for marketing services is not great.⁵

The marketing problems increase as an economy enters the second stage market development, the transitional agricultural economy. The growing commercialized agricultural sector and increasing urban population demand an expanded market system. "As people migrate from rural areas

to the cities and these urban centers increase in size, more and more of the urban consumer's food expenditures must go for marketing services, including transportation, storage, processing, packaging, and product grading."⁶ Inadequate policies, services, and infrastructure create marketing bottlenecks.

And the bottlenecks increase as a market system advances from the second to the third stage of market development. The urban population is becoming even larger and a more evenly distributed growth of income transpires. Regarding the food market systems, the high income elasticity of the demand for food for low income persons creates rapidly rising demands on the food marketing system.

To sum, as an economy develops, personal incomes increase, agriculture becomes more commercialized, and the population shifts to the urban centers. These changes necessitate drastic changes in the market system. And these changes do not just happen. L. Orlo Sorenson in Maize Marketing in Zaire comments:

National marketing systems do not develop spontaneously as need for marketing services occur. Positive action is necessary to provide rules to govern marketing procedures, develop uniform contracts, provide infrastructure and, in many cases, provide marketing services. Therefore, governmental action must facilitate necessary changes and solve particular problems as an economy and the market system develop together.⁷

The Attitude of Leaders in Developing Market Economies Towards Market Development

The general attitude towards marketing in developing countries is negative. "As such, it is generally understood that marketing is at most a necessary evil and the ideal system is that which reduces intermediaries to a minimum."⁸

Governmental activity in the agricultural sector has focused primarily on increasing production. Only until recently have government officials begun to seriously consider market development.

Although food production and distribution are important complements, most of the less developed country government officials place substantial importance on food production. Very little attention has been devoted so far to the dynamics of food distribution and the role of government in this process.⁹

J. C. Abbott's 1968 study of thirteen national development plans illustrates the neglect market development has received. None of the thirteen development plans assigned a major role to the marketing of agricultural products. And in only three of the plans did the percent of expected investment in agriculture exceed six percent.¹⁰

The Performance of the Food Marketing System

Joe S. Bain in Industrial Organization defines market performance as a measurement of the contribution of the marketing activity of enterprises to the general welfare of society.

Market performance, referring to the strategic end results of market adjustments engaged in by sellers and buyers, is the crucial indicator and measure of how well the market activity of enterprises contributes to the enhancement of general material welfare.¹¹

Bain adds that the measurement of market performance for each industry varies. ". . . each industry is potentially, in some degree, a special or unique case requiring a 'tailor-made' appraisal of a sort not fully applicable to other industries.¹²

So what measurement should we utilize to calculate market performance in the domestic food grain market of developing countries? We must first ask how the market activity of food grain enterprises could improve the

general welfare of society. The food grain enterprises could improve the general welfare of society, a sufficient calorie intake in this case, by marketing food grains at a less variable and lower price to a larger segment of the population. This requires a more price and technically efficient marketing system.

Pricing efficiency measures the responsiveness of prices to consumer direction.

If markets are operating efficiently, prices of a given food will be related over space, time, and among forms. Prices should only differ between geographic areas of a country by transportation costs from one point to another.¹³

A price efficient market system, therefore, is a dynamic, instantaneous director whereby grain in regions of surplus flows freely to regions of scarcity. Price differentials between markets will stay within a band determined by the costs of transportation between markets.

The second measurement of market performance, technical efficiency, is a measure of the cost of marketing a particular good. A market system is technically efficient if it is marketing goods at the lowest possible cost.

So a price and technically efficient market system will market goods throughout the market region with price differentials only accounted for by transportation costs and goods priced with the least marketing costs. The result will be less variable and lower food grain market prices in the marketing region. Price and technical efficiency of the food marketing system are indeed measurements of "how well the market activity of enterprises contributes to the enhancement of general material welfare."¹⁴ The impacts of a more price and technically efficient market system of food insecurity are discussed below.

The Contribution of Improvements of the Performance of the Market System to Food Security

Improvements in the performance of the food market system may potentially reduce food insecurity through five major impacts: increase the total supply of food, promote economic development, penetrate the increasing urban demand, increase real incomes, and integrate isolated rural regions into a regional market. A short discourse on the five major impacts of market improvements and their contribution to food security follows.

First, horizontal and vertical market integration (price and technical efficiency) and increased market stability in the production regions (price efficiency) will encourage farmers to produce more. Market stability rather than higher prices is a great incentive to risk averse peasants. A more integrated market system will also move surpluses to deficit areas. The more speedy distribution will reduce spoilage which is widespread in the developing countries. The result will be an increased total supply of food.

Second, as mentioned previously, market performance improvements will facilitate economic development. Economic development entails increased personal incomes, thereby increasing the individual's ability to attain an adequate diet.

Third, food market integration into the urban areas will reduce the price of foods for urban dwellers, thereby reducing food insecurity. This improvement is especially critical as the urban populations are swelling.

In 1960, 20 percent of the total population of developing countries lived in urban areas. By 1970, this proportion had increased to 30 percent and it will probably reach 40 percent by the year 2000. . . . In many cities food demand will double in 10 years. This calls for a doubling of marketing capacity in the same period, a challenge never faced in advanced countries.¹⁵

Fourth, market performance improvements reduce marketing costs (technical efficiency) which may entail increased real incomes for producers and consumers. Producers will receive a higher price for their product and consumers will purchase the product at a lower price. This will especially improve food security for low income persons.

And finally, market development between isolated rural localities will reduce food supply shortages which result from natural disasters.

In areas of dense population living at subsistence levels the seasonal failure of a basic crop can bring widespread famine and suffering. Meanwhile, other parts of the same country may be holding supplies more than adequate for their needs.¹⁶

To sum, market performance improvements may increase the total food supply, promote economic development, meet increasing urban demands, increase real incomes for the poor, and integrate isolated rural food markets. All of these impacts will reduce levels of food insecurity.

Summary

Having selected the market system as the mechanism of transfer to develop and improve, discussed the stages of development of the market system, capsuled the attitude of leaders in developing countries towards market development, defined the performance of the market system, and pointed out the contribution of market performance improvement to food security, we are prepared to discuss policy approaches to stimulate market development and efficiency.

Policy Approaches to Stimulate Market
Development and Efficiency

Introduction

Governmental efforts to stimulate market development and efficiency are often ineffective. First, most government budgets for market development are miniscule. Second, the administrative capacity is often lacking. Third, the administrative capacity which does exist is often poorly coordinated. "The peripheral importance often attributed to food marketing policies has meant that responsibility has been delegated to small sub-departments of these bodies, which have only marginal influence and limited resources, and limited opportunity for interdepartmental contact and coordination."¹⁷ Fourth, market improvement requires solving problems which are closely interrelated. This interdependence requires that many problems be solved simultaneously if an improvement is to be attained.¹⁸

Given these obstacles, what approach should a nation follow to stimulate market development and efficiency? To make the biggest impact with a given budget, the responsible governmental body should make full use of available, local marketing skills and decide upon a minimum package of support services and infrastructure to improve the current market system.

Harrison in Improving Food Marketing Systems in Developing Countries identifies three levels in the market system where market development must occur: firm level, distribution channel level, and food production system level.¹⁹ The firm level refers to the farmer, trader, and any other firm participating in the marketing chain from producer to consumer. The distribution channel level focuses on the interrelationships between all firms in the marketing chain. And finally, the food production system

level "refers to the highest level of aggregation with which we are concerned, the interrelationships between all institutions involved in market-related activity."²⁰

The stimulation of market development and efficiency is a necessary weapon in the battle for food security. But the forces operating in developing countries stifle the most well-planned efforts. Improvements are attainable, however, if a nation understands the present problems and effectively channels scarce funds to correct the deficiencies. An overview of policy approaches on the three levels of the market system follows.

Policy Approaches to Stimulate Market Development and Efficiency at the Firm Level

Direct improvements in the market system may be initiated at the firm level. The policy approaches, in general terms, include education, technical assistance, and credit services.

John Mellor deliberates on the critical role of education in the development process. "Nearly all elements of the development complex are based on improvements in the labor force which are in turn the product of education."²¹ Technical, economic, and marketing education are important at all curriculum levels to promote market development and efficiency at the firm level.

Narrowing the discussion to marketing education, the trend of most developing countries has been university level education in marketing. "Since the main marketing activities are carried out by small and medium-scale entrepreneurs in developing countries, much more emphasis should be given to their development."²²

Mittendorf in "Facilitating Services for Agricultural and Food Marketing

Services in Developing Countries" regards the lack of understanding of marketing problems and their solutions to be the greatest obstacle to marketing improvement. He recommends strengthening training programs at all levels of skill.

Technical assistance at the firm level may also greatly promote market development and efficiency. Harrison distinguishes technical assistance as being a nonformal educational situation. Technical assistance in economic analysis, financing, and implementation of innovation will increase the flexibility and economic viability of a firm, thereby increasing market development and efficiency.

Most oftentimes the trading firms have initiated marketing innovations, but they are unable to provide the needed technical services required for their full implementation.

...technical assistance on marketing improvement is also required for the trading sector as it is for agricultural producers. In particular, the need is marked among the large number of medium-sized enterprises which have shown initiative in improving techniques but are unable to organize a technical assistance service by themselves.²³

Education and technical services alone are usually not sufficient for a firm to adopt innovations which will increase market development and efficiency. Harold Riley comments on the lack of credit for the subsistence retailer and wholesaler in the Cauca Valley Region of Columbia:

Small retailers and small wholesalers are limited in their ability to make major changes in their operations. Many live close to the level of subsistence. They cannot command significant amounts of credit nor can they afford to risk large losses.²⁴

But credit services must also include technical advice and general guidance to the debtors. Most often these service are not provided.

And where they are provided they are often ineffective. "Loan supervision is often ineffective because the supervision knows little about the practical problems of farming, has little incentive to provide useful technical assistance, or has few if any profitable new production techniques to extend to the borrowing farmer."²⁵

The high risks and low returns of extending credit to the small firm discourages credit extension. The rates on formal loans rarely cover their true cost.

Total borrowing costs, especially for borrowers of small amounts, may be two or three times as much as the nominal interest rates. These costs include waiting in line, transportation costs, bribes, legal and title fees, paperwork expenses, and time lost from work to deal with these demands.²⁶

Consequently, formal loans to small firms are provided by the state at a loss.

In conclusion, the potential to promote market development and efficiency at the firm level has hardly been tapped. Education, technical assistance, and credit services require a political will, trained personnel, and adequate financing. Oftentimes the political will is lacking and any available personnel or funds are utilized in other areas.

Policy Approaches to Stimulate Market Development and Efficiency at the Distribution Channel Level

As stated previously, the distribution channel level focuses on the interrelationships between all firms in the marketing chain. Improved integration and/or coordination of the distribution channel will reduce food insecurity by increasing the total supply of food, promoting economic development, penetrating the increasing urban demand, increasing real incomes, and integrating isolated rural regions into a regional market.

Integration and/or coordination at the distribution channel may be facilitated by government action in two major areas: infrastructural development and technical assistance to identify and implement channel coordinating innovations.

Infrastructural development has been the predominant policy of many developing countries seeking marketing system improvements. "The innovations of recent years have usually been of a concrete, tangible nature, such as the construction of feeder roads, market places, storage facilities, chainstores, supermarkets, or slaughter houses."²⁷

Past infrastructural development policy has focused on external rather than internal markets. During the colonial era extensive transport systems were developed for external trade while neglecting interterritorial trade and communication. And even today, marketing infrastructure is often developed for the export market while neglecting the traditional goods market.

The government may facilitate distribution channel integration and/or coordination through improvements in transportation, storage, processing, and commercial facilities. Transportation improvements increase the size of the market for the producer, lengthens the marketing chain, integrates the local markets in isolated regions, assures more constant delivery, etc. The absence of transportation infrastructure in the rural areas is often a food security problem. "Although private traders function in rural areas in almost all countries, lack of an integrated national transport system frequently prevents them from moving grain stored on farms in one region to another of a marketing year."²⁸

Grain storage improvements also facilitate channel integration and/or coordination both directly and indirectly. As the economy and marketing

system develop, larger quantities are handled in the marketing channel. Consequently, the "break of bulk" points, or locations where the grain is transferred from one carrier to another, become more significant and larger storage facilities are needed. Also, price stabilization which may indirectly promote channel integration by assuring steady flows of grain requires adequate storage facilities.

Processing facilities also contribute greatly to market channel integration. They create new markets and extend the marketing channels by transforming the product into a form which the consumer demands.

And finally, improved commercial facilities also promote market channel integration. Congestion in the market place is a persistent bottleneck in many developing countries. Mittendorf and Abbott in "Providing the Urban Poor: the New Challenge in Food Marketing Systems," report, "Most cities with more than half a million inhabitants have obsolete wholesale markets, often built many decades ago and quite unable to handle the larger throughput of present times."²⁹

To sum, infrastructural development has great potential to promote market channel integration. Policies have been directed toward the export market, but a focus on internal food markets is cardinal to integrating all of a country's people into a stable, efficient food market.

Infrastructural deficiencies may not be the only factor which limits market channel integration.

"...development planners have attempted to improve the external support system and consumer environment in order to facilitate the growth of coordinated channel linkages. Such efforts are necessary but not totally sufficient to promote this process. What is needed is to identify those coordinated linkages that can be realistically developed from within the existing core of channel participants."³⁰

Poorly coordinated market linkages results in poorly integrated market system. Policy approaches to identify and promote viable marketing channel linkages is a worthwhile effort. Closer linkages of retail and wholesale enterprises is especially beneficial to the consumer. "The linking of a retail chain in Recife with a rice mill in the San Francisco Valley area of Brazil led to a 15 percent reduction in the price of rice in Recife."³¹

In conclusion, the government has an important role to play in integrating the many individual firms in the food market chain. The two major efforts discussed, infrastructural development and the identification and promotion of viable marketing channel linkages, will stimulate market development and efficiency. The stimulation will increase the total supply of food, promote economic development, penetrate the increasing urban demand, directly increase the incomes of the rural and urban poor, and integrate isolated rural regions into a regional market; thereby reducing food insecurity.

Policy Approaches to Stimulate Market Development and Efficiency at the Food Production-Distribution System Level

The food production-distribution system level, as defined by Harrison, "refers to the highest level of aggregation with which we are concerned, the interrelationships of all institutions involved in market-related activity."³² In the previous two sections we have discussed policy approaches on the firm and distribution channel levels to promote market development and efficiency. The institutions we addressed were the firm and the distribution channels. The food production-distribution must also incorporate the governmental institutions of laws and regulations, and government policies and programs. Because these institutions may potentially interact closely with the firm and the distribution channel.

Policy approaches in the total food production-distribution system level to promote market development and efficiency include, in broad terms, information services, regulatory services, and periodic public intervention in the economic system.³³ Again, these are services which would be extremely difficult for the private firms to finance and manage themselves and although these services require centralized decision making, their aim is to promote decentralized decision making.

An essential ingredient for an individual to make an economic decision is information. Uncertainty from inadequate or non-existent information creates inefficiencies and waste. The decision makers in the market chain from producer to consumer and the governmental marketing departments must have easy access to current market information if the market system will operate efficiently and develop. J. C. Abbott remarks, "Public provision of widely needed data is efficient because it narrows the range over which farmers, traders and consumers must find information themselves."³⁴ And it also provides a basis for effective, efficient policy-making decisions regarding price levels, stock policies, trade, etc. Policy decisions, like private economic decisions, based on inaccurate data results in inefficiencies.

But accompanying information services to the small firm must be extension services. "A few surveys conducted have shown that much more attention must be given to the dissemination and interpretation of market information to small farmers, if they can benefit from such a service."³⁵

Another essential ingredient for an individual to make an economic decision is standardization of weights, measures, and quality of traded goods. Without standardization an information system becomes impossible. "Lack of standard weights, measures, and grades inhibits the flow of

meaningful information, forcing traders to personally inspect each lot."³⁶ The efficiency of the marketing chain is greatly reduced without standardization as inspection time increases for all market system participants.

The standardization of weights, measures, and grades in developing countries has often neglected the small farmer for whom food security benefits are most important. "Standard grades, classes, and quality control have been initiated in some countries, but very little has been done to promote their application, in particular for small farmers who often have no incentives for grading."³⁷

Market intervention may also sometimes be necessary to promote market development and efficiency. Regulations to discourage monopolistic forces from taking over is especially critical as the market system grows and develops.

Price controls are utilized to promote supply and demand stability, thereby maintaining adequate supplies of food to the consumer and more efficiently utilizing the food marketing system by maintaining a "regular, expanding volume of supplies flowing smoothly through the marketing system."³⁸ In East Africa, "the drought-resistant crops have essentially no market. Without government intervention, excess production of those crops in good years would be valueless and thus the incentive to produce them would be reduced."³⁹

But low and inflexible price controls may decrease market development and efficiency by depressing production. The necessity of an adequate information service becomes apparent in setting incentive promoting and yet market efficient prices.

To sum, market development at the food production-distribution system level involves a consideration of all institutions involved in the market system. Improving information services, regulatory services, and market

intervention services will be a catalyst towards harnessing the competitive, market development forces of the firm in the market system.

Summary of Chapter 3

Improvements in the performance of the food marketing system can greatly reduce food insecurity. The food supplies of a country will be distributed more extensively and efficiently, the total supply of food will increase, and real incomes will increase. We have again overlapped into chapters two and four.

But very little progress has been made in improving the performance of the food marketing system through policy approaches. The political will is often absent in a governmental framework with few funds, little expertise, and poor coordination. And the interdependencies in the market system require that many problems be solved simultaneously. And those problems must be viewed from three levels: firm, distribution channel, and food production-distribution system. The obstacles are, indeed, overwhelming.

Success is possible in many developing countries, if the government recognizes the value of market development, organizes itself more effectively, makes full use of available marketing firms and channels, and limits its activity to solving marketing bottlenecks and creating an environment conducive to free market growth by providing necessary infrastructure and services. The free market is a powerful force if government can only stimulate its continual development.

Endnotes to Chapter 3

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Chapter 4

INCREASING AND STABILIZING THE REAL INCOMES
OF SUBSISTENCE PERSONS

Introduction

Given adequate total food supplies and an effective, efficient market system, food insecurity may still prevail. Inadequate and fluctuating real incomes prevent the poor from attaining and maintaining an adequate diet. India is an example of this phenomenon. Since the "mid-1970s the country has been entirely self sufficient and has not only supplied all its needs but has also built large stocks and even exported some food grain."¹ Yet while India is boasting of its self sufficiency and exportation of food grains to Africa, 25 percent or more of the population consumes less than the minimum daily calorie requirement.

The problem is not absolute shortage in food, but poverty. The undernourished will eat more only if they have the money to afford it, and their present income is not enough to buy the food they need.²

What Is Real Income?

To examine and propose policy approaches to increase and stabilize real incomes, we must define "real income." Irving Fisher in "Income and Capital" states, "Real wages, and indeed real income in general, consist of those final physical events in the outer world which give us our inner enjoyment."³ For a subsistence person the most immediate inner enjoyment would include a full stomach and healthy body. To obtain the "final physical event" of food in a market economy, one must have money to purchase food.

Money income, or ". . .all money received and readily available

and intended to be used for spending. . . , " may include wages, interest, rent, and profit.⁴ Samuelson expounds that ". . . wages are the return to labor; interest is the return to capital; rent is the return to land . . . " and profit is the return to risk bearing, monopoly power, or surplus value.⁵ Because the subsistence person has little or no capital, land, risk-bearing freedom, monopoly power, or command over surplus value, money income for the subsistence person is restricted primarily to wages. "The poor who possess some tangible assets, however meager, are a small fraction of the 750 million persons in absolute poverty."⁶

The Evidence

The relationship between real income and calorie intake level is difficult to measure on an individual level based on aggregated national data because the real income measurements do not account for the income distribution of the country and the average calorie intake level does not take into account the distribution of calorie intake levels. Nevertheless, we work with the data available.

Howard Wagstaff regressed changes in food energy supplies per head on four independent variables: changes in domestic food production, growth in GNP, export earnings, and cereal imports (all on a per capita basis) for 66 developing countries. Data was collected from the Food and Agricultural Organization and the World Bank's Development Reports. Changes in GNP per head was found to have the strongest relationship with changes in food energy supplies per head. "Taking single variables, there was a greater tendency for changes in food energy supplies to be associated with changes in GNP per head ($R^2 = 0.34$) than with changes in food production, exports, or cereal imports per head ($R^2 = 0.21$, 0.24 and 0.18 respectively)."⁷ Changes in GNP per head appears to be a greater

limitation to an adequate diet than does changes in the level of domestic food production, exports, or cereal imports per head. Carl Eicher writes of Sub-Saharan Africa where twenty of the thirty-three poorest countries of the world are located: "The hunger and malnutrition problem is caused by poverty: even in areas where per capita food production is not declining, the poor do not have the income or resources to cope with hunger and malnutrition."⁸

The Attitude of Policy Makers and Political Leaders in Developing Countries Towards Increasing the Real Income of the Poor

Policy makers and political leaders in developing countries have stressed a supply approach to the food insecurity problem. Maintaining adequate total food supplies, especially through increasing production and stocks, has been a preoccupation for many developing countries. While increasing real incomes for the poor has received little attention in many developing countries. "Current 'progressive' advice, largely from outsiders to the developing countries, stresses the need to get food to those with too low a level of effective demand, while policy makers and political leaders in the developing countries continue to stress the supply side."⁹

Policy Approaches to Increase the Real Incomes of Subsistence Persons

Policy approaches to increase the real incomes of subsistence farmers may be grouped into three categories: economic growth, redistribution, and employment creation. Any single policy may eventually achieve all three objectives. Conversely, any single policy may achieve one objective and impair the other two objectives. For example, economic growth through

concentrated, excessive capitalization may concentrate wealth into the hands of a few and decrease employment for the unskilled. Land redistribution may lead to a stagnation in agricultural production and therefore reduce economic growth and employment. And finally, temporary employment creation through public works schemes may be used by the wealthy landowners for personal land reclamation, thereby increasing the spread of capital accumulation between the large landowner and the peasant and impairing economic growth. The optimum combination is the achievement of all three objectives which will enable the subsistence person to attain a larger piece of a larger pie.

Economic Growth

Economic Growth and Development

If we define economic growth as an "increase in a country's production or income per capita"¹⁰ and development as "the expansion of an individual's entitlements,"¹¹ are they the same processes? The view during the 1950s and 1970s was that economic growth was development. "The prevailing view was that rapid growth would naturally lead to improved conditions for everyone."¹² "...in order to solve social problems, such as unemployment, and achieve respectable status as modern nations, poor countries needed 'development,' which could be measured by GNP. In fact, economic growth was development."¹³

Has economic growth increased the entitlements of the subsistence person?

The proportion of the population that finds itself either by passed by rural development (economic growth) or without a job in town defies quantification. . . World Bank officials speak of the "lower 40%," and even if this figure is a very rough estimate, it is still a fair one. Somewhere between a quarter and half of the population is probably being excluded from the forward march of development (economic growth).¹⁴

The Engines of Growth

What forces promote economic growth?

Every school has offered its own candidate for driver of the engine of growth. The physiocrats, agriculture; the Mercantilists, an export surplus; the classicists, the free market; the Marxists, capital; the neoclassicists, entrepreneurship; the Fabians, government; the Stalinists, industrialization; and the Chicago school, schooling.¹⁵

Researchers have searched for the engines of growth with econometric techniques. These income projection models have performed poorly. "The reason is because success is determined not by the increase in physical factors of production, but by a set of intangibles-political security, the quality of the infrastructure, the reliability of skilled workers and contractors, the opening up of new market opportunities, and so on."¹⁶

Arthur Lewis in "The State of Development Theory" states that the search for the engine of growth must be foredoomed.

Growth occurs wherever there is a gap between capability and opportunity. Capability covers skills (domestic and foreign), government, savings, and technology. Opportunity can be of any kind, including markets, rainfall, access to licenses, infrastructure. The engine may be at home or abroad, an innovation, a good site for a transportation center, or much else.¹⁷

Given the many growth theories, what pattern have the developing countries followed? Edwards, in Employment in Developing Nations, characterises past economic growth patterns:

It has been urban in character, to the neglect of rural areas; modern sector oriented, at the cost of the traditional sector; frequently industrial in context at the expense of agricultural development; usually large scale and capital intensive in nature, instead of small scale and employment creating; and the benefits have tended to accrue to foreign investors and a growing indigenous upper class whose views are influential in the making of policy decisions.¹⁸

Given this general pattern of an urban, modern sector, industrial, capital

intensive, elitist dominated growth pattern, how has the income distribution and poverty level been affected?

Economic Growth and the Income Distribution

Studies prove conclusively that the relationship between economic growth and the equity of income distribution is asymmetrically U-shaped, "with more egalitarian income distributions being characteristic of both extreme economic underdevelopment and high levels of economic development."¹⁹ Nafziger observes that "cross-sectional and time-series data support the hypothesis that inequality follows an inverted U-shaped curve as per capita income increases."²⁰ As an extremely underdeveloped country achieves higher rates of industrialization, agricultural productivity, and generally higher rates of economic growth, the income distribution shifts in favor of the higher income groups and against the low-income groups. Adelman found that as economic growth blossoms in a "subsistence agrarian economy through the expansion of a narrow modern sector, inequality in the distribution of income typically increases greatly, the income share of the poorest 60 percent declines significantly, as does that of the middle 20 percent, and the income share of the top 5 percent increases strikingly."²⁰

Table 5 below illustrates the U-shaped relationship between economic growth and income inequality or the Kuznets effect. The World Bank (1974) collected the data from 66 countries. The low and high per capita income countries have lower income shares of the highest 20 percent income sector and higher income shares of the lowest 40 percent income sector than does the countries with per capita incomes between these income levels. Income inequality often increases as a low income country becomes a middle income country. The income inequality decreases as a middle income country

becomes a high income country. Thus, the inverted U-shaped relationship between economic growth and income inequality is evident.

Table 5. As Income Rises, Income Inequality Increases, then Decreases

Income Level	Number of Countries	Income Share (in %) of	
		Highest Income 20%	Lowest Income 40%
\$100 or less	8	46.1	16.4
\$101-\$200	5	57.9	13.4
\$201-\$300	13	67.9	11.1
\$301-\$500	8	57.6	11.6
\$501-\$1,000	12 (15)	54.0(50.6)	13.5(15.3)
Above \$1,000	15 (17)	46.6(44.9)	14.8(16.1)

*Only the data in parentheses include the socialist countries.

Source: Everett E. Hagen, The Economics of Development (Homewood, Illinois: Richard D. Irwin, Inc., 1980), p. 57.

Economic Growth and Absolute Poverty

Although the relative income of the poor decreases as a very low per capita income country experiences economic growth, does the absolute level of income, or real income, decrease for the poor? Gary S. Fields reviews studies which utilized data from various national and international agencies and concludes, "the evidence shows that in most (but not all) countries absolute income for the poorest groups has improved, and consequently absolute poverty has diminished with economic growth."²¹

First, we expose the cross-sectional evidence. Ahluwalia revealed that the absolute incomes of the poor rise monotonically with GNP. Ahluwalia developed regression equations whereby the dependent variables, income shares of the poorest 20%, 40%, and 60% were regressed against the independent variable, the logarithm of per capita GNP. "Thus the notion that the absolute incomes of the poor decline in the early stages of economic

development is disproven by Ahluwalia's evidence."²²

Second, we expose the intertemporable evidence. Gary Fields brought together data on as many less developed countries as he could find.

Did economic growth reduce poverty for the countries studied?

In nine countries' experiences, growth led to demonstrable improvements in the economic position of the poor (Bangladesh, Brazil, Costa Rica, Pakistan, Puerto Rico, Singapore, Taiwan, Thailand, and Mexico), and in one country non growth did not (India). On the other hand, three countries' experiences ran contrary to the prediction of the trickle-down theory: Argentina and the Phillipines, because they grew substantially but do not appear to have alleviated poverty during the years in question; and Sri Lanka, which grew slowly yet did substantially lessen poverty.²³

Although economic growth has reduced the absolute level of poverty for many developing countries, there are exceptions. Some countries have reduced poverty with very little economic growth. And other countries which have grown rapidly have not reduced poverty. Structural characteristics distinguish the successes from the failures. The question we must raise is what development strategies and policy packages more effectively increase the real income of the subsistence person? Development strategies to increase the real income of the subsistence person includes economic growth, redistribution of income generating entities, and employment creation. We conclude that economic growth alone may not necessarily raise the real income of the subsistence person.

Redistribution

A discussion of redistribution in developing countries typically confines itself to land reform or nationalization of business enterprise. But many income-generating entities in the economy are concentrated in the hands of a few: land, physical capital, human capital, technology, and credit services. A discussion of each of these concentrated, income-

generating entities follows.

Land

The concentration of land is one of the most overt indicators of the concentration of wealth in developing countries. Latin America is the highest concentrated region where "1.3 percent of the landowners hold 71.6 percent of the land under cultivation."²⁴ And despite the decades of land reform activities, "Land ownership remains extremely skewed, concentration of land ownership is almost universally increasing, the mass of landless is growing rapidly, and the extent of rural poverty and malnutrition has reached horrendous proportions."²⁵

What has been the income effect of land redistribution on the poor? Because a large percentage of a small farmer's real income is his farm production, a study of the effects of land redistribution on crop yields may provide an answer. Nafziger in The Economics of Developing Countries summarizes the results of recent research:

...recent research indicates that land redistribution to the poor usually increases LDC agricultural output, at least after a period of adjustment, for two reasons: (1) a small farmer who receives security of ownership is more likely to undertake improvements; and (2) small farmers often use more labor per acre - labor that otherwise might not have been utilized.²⁶

Although land reform may increase productivity given an adequate economic, political, and social structure and services, land reform oftentimes bypasses the landless laborers. Land is oftentimes redistributed to a relatively limited class of small farmers who gain at the expense of the former landlords. However, the demand for landless labor oftentimes drops as family labor is employed more intensively on the small plots. So land reform planners must be careful not to exclude the landless laborer who is particularly vulnerable to food insecurity.

Land reform may greatly increase the real incomes of the rural poor. The success of a land reform depends on many administrative, political, economic, and social factors. But the potential is, indeed, evident.

Physical Capital

Physical capital, "produced goods that can be used as factor inputs for further production," is also highly concentrated in the developing countries.²⁷ Virtually all low-income and many middle-income developing countries are dual economies consisting of the capital-intensive enclave "of modern manufacturing and processing operations, mineral extraction, and plantation agriculture" and the capital-scarce, traditional, peasant, agricultural sector, producing primarily for family or village subsistence."²⁸

The formation of physical capital is necessary to increase the productivity and income of a subsistence person. An increase in the ". . . productivity and income per worker must depend on the formation of physical capital, increase in the capability of labor, and innovation. Capital formation is a necessary member of the trio."²⁹ Yet the amount of capital available in developing countries is limited and concentrated in the modern sector.

So how can a government redistribute the factor-market distorted, modern, developed country forms of capital to the subsistence person whose labor is near a point of zero marginal productivity? The government cannot, directly or immediately as in land reform, redistribute physical capital between the two sectors of a dual economy.

What is needed to increase the marginal productivity of labor for the subsistence person is not a transfer of modern, developed country forms of capital to the peasant plot, but a redistribution or a nation's investment into capital forms appropriate in a labor intensive technology

which will most effectively increase the marginal productivity of the subsistence person. "The burden in these circumstances falls on the physical, biological and chemical technologies available for combining small amounts of complementary resources with large amounts of labor in ways which are productive in the physical, economic and cultural circumstances of the country."³⁰

A redistribution of investment into appropriate capital forms will be facilitated by a reduction in the current factor-market distortions favoring excessively capital intensive production systems in the modern sector and governmental encouragement of capital investment in the labor intensive production system. Factor market distortions created by government policy include subsidies to capital investors, duty free importation of developed country capital, low interest rates on loan capital, tax holidays for capital investors, and minimum wage legislation.

A reduction of these factor market distortions will probably not be sufficient. The government must actively encourage the flow of capital investment into labor intensive capital forms through research and development, price incentives, education, and extension.

A redistribution of investment from the excessively capital intensive, production systems to the labor intensive production systems will increase the productivity and consequently real incomes of the subsistence person.

Human Capital

Human capital is also a potentially powerful income-generating factor of production (in addition to land and physical capital) which is concentrated in the hands of a few. Theodore W. Schultz in Investing in People treats human capital as "attributes of acquired population quality, which are valuable and can be augmented by appropriate investment."³¹ He sites

deficiencies of human capital as the critical factor in being poor, "while land per se is not the critical factor in being poor, the human agent is: investing in improving population quality can significantly enhance the economic prospects and welfare of poor people."³²

But investment in improving population quality or human capital is concentrated in developing countries. Schultz sites child care, home and work experience, schooling, and health as the principle activities that contribute to the acquisition of human capital. To illustrate the concentration of these activities among certain groups of people in the population, we report on the concentration of schooling activity in developing countries.

In Kenya, the relative primary school enrollment varies by as much as a factor of nine between provinces. In Columbia, the number of students who successfully complete their primary education is, relatively, ten times larger in urban schools than in rural schools, mainly because few of the latter provide complete courses. Despite improvements in female enrollments during the 1960's, only 38% of the students in primary school and 28% of those in secondary schools are girls in the poorest countries.³³

Governments of developing countries may greatly increase the real income of subsistence persons by redistributing activities, schooling and health services, which will develop the individual's human capital. These activities are readily available to the wealthy, while the rural and urban poor are often deprived of these essential human capital forming activities. As Alfred Marshall once stated, "Knowledge is the most powerful engine of production; it enables us to subdue nature and satisfy our wants."³⁴

Technology

Nafziger defines technologies as "skills, knowledge, and procedures for producing goods and services."³⁵ Research and development efforts on this planet have been predominantly devoted to capital intensive technologies. "The current balance of research and development shows that by far the greater innovative effort (about 98% of all expenditure) is being devoted to advanced country technology."³⁶

And yet a large proportion of the planet's population is employed in the labor intensive traditional sector. "In many developing countries very large proportions of the population are employed in the traditional or informal sector, both rural and urban, and are likely to continue in that sector - in some countries as much as 90%."³⁷ These people have few resources and cannot afford to purchase scarce capital. "What is needed is low cost technology, using the resources of modern science and technology to improve the production possibilities of the sector."³⁸

The concentration of research and development efforts in modern sector technologies is one example of the technological neglect the traditional sector accepts. An improvement in the development and delivery of appropriate technologies for the traditional sector may increase the real income of the subsistence person.

Credit Services

Credit is essential in a progressive (modernizing) agriculture. Credit facilitates the adoption of new technologies which will potentially increase the productivity or incomes of the rural poor. Yet, financial institutions in developing countries favor the larger farmer.

In Pakistan, almost 60% of the farmers received 3% of the institutional credit. In Bangladesh, few farmers hold more than three acres; yet the larger farmers received more than 80%

of the loans from the Agricultural Development Bank and the cooperative banking system. In the Phillipines, 27% of the larger farmers working 61% of the land received 98% of the institutional credit. In Thailand, persons receiving institutional credit held an average of 60% more land than the average farmer.³⁹

Loans to the smaller farmer are riskier and more costly per dollar loaned. "A handful of recent studies show that the lender's costs of making loans to medium- and small-sized farmers is 20 percent or more of the value of the loans extended, even in moderately well-run programs."⁴⁰

Although informal money lenders are viewed with contempt by many outsiders, Nehman (1973) showed:

...that for the rural poor, informal loans may be no more costly than formal loans when total transaction costs for the new and small borrower are carefully calculated. In some cases the informal lender is also able to provide more flexible and more desirable financial services than do formal lenders.⁴¹

So the capacities of the informal credit sector should not be neglected. But a more intense utilization and expansion of existing financial institutions to service the small farmer would contribute to an increase in the real income of the subsistence person.

Summary

The concentration of income-generating entities among a small percentage of the population is evident in developing countries. Efforts to redistribute these entities to the subsistence persons whom have been neglected by the growth process will contribute to an increase in the real incomes of the poor.

Concentration is oftentimes both a political and an economic phenomenon. "The latitude for policy change can increase if political power, like income, spreads out and eventually trickles down to the very poor and disenfranchised."⁴²

In most settings, the best strategy will be one that is highly mixed and integrated with policies aimed at nondistributive goals. . . A wide variety of approaches must be pursued simultaneously for the total effect to be meaningful.⁴³

Employment Creation

In addition to economic growth and the redistribution of real income generating entities, employment creation may also potentially increase the real incomes of the subsistence person. Again, we separate employment creation from both economic growth and redistribution because these real income determinants may not be positively correlated. The growth of an economy through factor market distorted capital intensive technologies will reduce employment. And a more equal distribution of, for example, human capital will not necessarily increase employment if the jobs are not available.

And employment creation will not solve the entire poverty problem. Edgar O. Edwards in Employment in Developing Nations states, "we urge only that the provision of more work and the wider sharing of the work that is available would make an important and positive contribution to the alleviation of poverty."⁴⁴

We proceed with employment creation policy approaches in the major sectors of the developing economy: industry in the modern sector, services, rural industry and non-farm activities, construction and public works, and agriculture. The policies are designed to increase efficient utilization of the factor of production in surplus: labor.

Industry in the Modern Sector

The industrial policy in developing countries promotes capital intensive industrial production. Factor-market distortions favoring capital intensification create a situation where the price of capital is lower than

its opportunity cost. These distortions are created by subsidies to capital investors, duty free importation of capital, low interest rates on loan capital, tax holidays for capital investors, and minimum wage legislation.

Policy approaches to reduce the factor-market distortions will increase labor's participation in the production process. The consequential increase in production efficiency will increase the foreign trade competitiveness of domestic industries. The World Development Report, 1979 reports,

Subsidized interest rates, allowances for accelerated depreciation, tax holidays, overvalued exchange rates, and facilities for duty-free imports of capital have enhanced the profitability of capital-intensive investments and often encouraged enterprises to economize on labor rather than on capital.⁴⁵

Services

Employment in the services sector is growing rapidly in developing countries.

In Latin America between 1950 and 1970 the volume of employment in the services sector increased at an annual (compound) rate of 4.0 percent compared with a rate of 1.4 percent in agriculture and 2.7 percent in industry. During the same period the proportion of the labor force which was occupied in the services sector grew from 25.0 to 33.3 percent.⁴⁶

The service sector is very dynamic in its ability to absorb labor.

Surveys have been made which indicate that, for instance in Buenos Aires, more than half the newcomers obtained work within fifteen days; in six cities in Brazil 85 percent were absorbed within three months of arrival. Most of these immigrants were unskilled workers, the proportions being 52 percent in Argentina, 61 percent in Chile, and between one and two thirds (according to city), in Brazil. The great bulk of the employment which they obtained was in the services sector.⁴⁷

Therefore, government action in the services sector to create employment is not necessary in most cases.

Rural Industry and Nonfarm Activities

The proportion of the rural labor force engaged in nonfarm activities is significant. Chuta and Liedholm report in "Rural Small-Scale Industry: Empirical Evidence and Policy Issues."

In the vast majority of the eighteen developing countries where relatively recent data on the subject are available, one-fifth or more of the rural labor force is primarily engaged in nonfarm activities. . . . Data on secondary employment are not generally available for most countries. The limited evidence indicates that 10-20 percent of the rural male labor force undertakes nonfarm work as a secondary occupation.⁴⁸

Given the current rates of rural-urban migration, the seasonality of agricultural production, and the growing number of landless laborers, the potential of rural industry and nonfarm activities to increase the rate of rural employment is great. Government can facilitate the growth of this sector by reducing price distortions, which will benefit labor intensive rural industries; by providing credit, technical, management, and marketing assistance to help initiate firm development; and by providing adequate physical infrastructure to promote rural industry and nonfarm sector development. The choice of government action will depend on the current constraint facing the rural enterprise.

Construction and Public Works

Work projects are a very direct approach to increase the real income of the subsistence person. Human labor may be mobilized to develop roads, viaducts, irrigation canals, buildings, etc., which are essential for the economic development of a country. The Tunisian Work Schemes Campaign against Underdevelopment between 1961 and 1963 provided work for 250,000 to 300,000 persons compared with a total male population for the whole country of 828,000 in the age group twenty to fifty-nine years.⁴⁹ Public works projects through the use of little capital may develop essential

national infrastructure and employ a large portion of the very poor.

Agriculture

The agricultural sector is the greatest source of employment creation. Radha Sinha in Food and Poverty states, "rural industries and public works can greatly supplement employment opportunities in the villages, but in the last resort it is farming which has to bear the main burden of an increasing population and labour force."⁵⁰ Turnham conjects, "agriculture employs most people and a prosperous agriculture would probably check the flow of people to the cities."⁵¹ To facilitate increased employment in the agricultural sector, the low marginal productivity of labor must be increased through appropriate forms of capital and technology, increased input such as land, and a restructuring of land tenure.

Mouley and Costa focus on three policy approaches to increase employment in the agricultural sector: more output from existing farms, land settlement, and agrarian reform. Studies have proven that the modern genetic and agronomic technologies increase labor hours per hectare. After reviewing the data from a number of countries, Brown concluded that the new varieties of the various grain crops require 10-60 percent more labour per hectare than the traditional ones."⁵²

Land settlement may also increase employment in the agricultural sector. Efforts in this direction, however, have been modest because of the high costs involved in land settlement. "Taking the long view, the pluses may well outweigh the minuses in very many cases, but governments are constrained in practice by the financial resources currently at their disposal and it is this which has almost everywhere kept the settlement programs relatively modest in scope."⁵³

Agrarian reform may also potentially increase the number of farmers employed.

Reviewing as a whole the experience to date which developing countries have had with agrarian reform programmes, both those involving the creation of new farms and those concerned with improvements in the tenure system, they can certainly achieve an important increment in agricultural output and employment (after some dislocation) provided that the schemes be carefully prepared and that an adequate supporting organisation, social as well as economic, is made available for the people affected."⁵⁴

Crop intensification, through modern techniques and inputs, and land reform have the potential to create employment at a lower cost than land settlement. Because most persons in the developing countries are engaged in agriculture, and because the potential for increasing the marginal productivity of labor in the agricultural sector is evident, the government should focus policy approaches on this sector.

Summary

We have discussed five sectors in which government policy may create employment. The most effective policy approach in the modern industrial sector would be to reduce the current factor-market distortions. Although government policy may create employment in the services sector, employment in this sector is increasing rapidly without government intervention. Government potential to promote employment in the rural, nonfarm sector through indirect and direct assistance is much larger than what has been realized. The mobilization of persons to build a nation's infrastructure is a direct method of employing the very poor. And policy efforts in agriculture will provide the greatest source of employment creation in developing countries dominated by agriculture.

Summary of Policy Approaches to Increase the Real Incomes of Subsistence Persons

We have discussed three broad policy approaches to increase the real incomes of subsistence persons: economic growth, redistribution, and employment creation. We concluded that economic growth alone may not necessarily raise the real income of the subsistence person. We discovered that many subsistence persons are neglected in the growth process because real income generating entities are highly concentrated among a small percentage of the population in developing countries. Redistributive policies are necessary to spread the benefits of growth. We finally discussed government policy approaches to create employment in the various sectors of the economy.

The conclusion of this policy overview is that the most successful strategy to increase the real income of the subsistence person is one that incorporates all three approaches. A poor man will more likely experience an increase in real income if the economy is growing, income generating entities are redistributed to him, and the opportunities for employment increase. So the government should direct its efforts to all three approaches to insure the greatest increase in real income for the subsistence person.

Policy Approaches to Stabilize the Real Income of Subsistence Persons

Attaining an adequate real income through real income increasing policy efforts may enable a subsistence person to attain an adequate average level of food consumption, but the variability of real income for the subsistence person may create situations where the individual's real income temporarily declines to levels insufficient to maintain an

adequate level of consumption. Policy efforts to stabilize the real income of the subsistence individual at an adequate level will promote a more stable and healthy level of food consumption.

What factors cultivate real income stabilization? Because the subsistence person spends a large proportion of his or her income on food grains, and because most of the poor are rural and directly or indirectly dependent on agricultural food grain production, food grain price stabilization will certainly stabilize real incomes. And because a major source of income for the subsistence person is labor, employment stabilization will obviously stabilize real income. And finally, mechanisms which transfer real income from past or future income will stabilize present real income fluctuations. So we proceed with an excogitation of policy approaches to stabilize real income through food grain price stabilization, employment stabilization, and intertemporal real income transfers.

Food Grain Price Stabilization

Change in relative food prices is, in the short run, one of the most important determinants of change in relative and absolute real income of low-income people. They spend a high proportion of their income on food and depend directly or indirectly on agriculture for a high proportion of their employment and income.⁵⁵

The major policy efforts to stabilize food grain prices are trade policies, buffer stock operations, internal food price subsidies, and internal food price support policies. While trade and buffer stock policies may stabilize food grain prices for the entire population, the subsidy and support policies are often targeted towards particular groups.

Trade policies may stabilize food grain prices by maintaining a constant total supply of food grains. Shlomo Reutlinger and David Bigman in "Feasibility, Effectiveness, and Costs of Food Security Alternatives in Developing Countries" developed a model of an open economy engaged

in trade with the rest of the world. Their conclusion on the stabilizing effect of international trade is:

Contrary to a rather widely held belief, self-reliance, or the avoidance of trade, is the worst enemy of stability. Without trade, instability in domestic production leads to a high degree of instability in food grain prices that in turn translates into high probabilities that the consumption of the low-income population will fall below minimally adequate levels and that farmer's income will be put into jeopardy.⁵⁶

The major trade policies a country may follow are free trade or a stabilization trade policy which isolates the domestic market from the international market. From the model, Reutlinger and Bigman estimate that free trade will reduce the probability that grain prices will be 20 percent of the median price from 23.6 percent to 11.8 percent when no other price policy is active. And a closed economy which adopts a stabilizing trade policy will reduce the probability of an extreme shortfall in the quantity of food grain available to low income consumers from 30 percent to 4 percent.⁵⁷

Buffer stocks may also stabilize food grain prices. Bigman and Reutlinger conclude from the model, however, "Trade policies are likely to have a greater impact on the stability of a country's food grain supply than any reasonable size buffer stock."⁵⁸ Nevertheless, a closed economy may have no alternative.

Food price subsidies stabilize food grain prices for selected low income sectors. Bigman and Reutlinger estimated that "the effect of the price subsidy program is to reduce the probability of an extreme shortfall in the quantity available for low-income consumers from 30.4 percent to 6.2 percent in the closed economy and from 27.1 percent to almost zero in the open economy."⁵⁹ A consumer subsidy strategy requires a heavy reliance on imports for many developing countries. Table 6 below

depicts the large budgetary cost of a food price subsidy commitment.

Table 6

Budgetary Costs of Food Subsidies
(As Percentage of Total Government Expenditure)

Country	1972	1974
Burma	--*	8
Egypt	4	22
Indonesia	--*	13
Korea	4	14
Pakistan	1	13

*Dashes indicate expenditure of less than 1 percent
Source: David Bigman, Coping with Hunger,
(Cambridge: Ballinger Pub. Co., 1982) p. 194.

A support price is a monetary compensation to producers when the market price falls below a set floor price. Although Bigman and Reutlinger did not comment directly on the stabilizing effects of support prices, it is evident that a stable price above the market price will stabilize the real income of producers.

In conclusion, a government may utilize a number of combinations of interventions to stabilize the price of food grains for consumers and producers. And some of the interventions are complementary. For example, "when the government is implementing subsidy and support price programs, buffer stocks yield large savings in government expenditures for these programs that far outweigh the cost of operating the buffer stock."⁶⁰ But each stabilizing intervention destabilizes another entity in the economy, particularly foreign exchange earnings and the government budget.

We must, however, realize that the evidence presented is based on a model. The conditions in developing countries often do not permit an extensive stabilization of food grain prices because of inadequate

information and fragmented grain markets.

Although official agricultural prices are known, actual prices faced by the majority of rural producers and consumers are not known. Not only do they seem to differ from official prices but they vary from one rural area to another. These discrepancies are caused by the fragmentation of grain markets, the varying conditions that influence them, and differing levels of prices of other goods and services that influence food pricing.⁶¹

Employment Stabilization

Throughout the paper we have characterized the poor as having little or no assets and located predominantly in the rural area. These folks must rely on labor for most, if not all, of their real income earnings. Employment stabilization will undoubtedly promote a more stable real income.

Three major policy approaches to stabilize employment in the rural area are public works projects, the promotion of employment stabilizing cropping technologies, and the promotion of rural nonfarm activities. These policy approaches have been discussed previously in a different context. A brief discussion of the employment stabilizing effect of these approaches follow.

Public works projects have a great potential to employ the rural work force during the off-season. "In India the Third Five-Year Plan envisaged employment in public works programmes at 100,000 in the first year rising to 2,500,000 in the final year of the Plan, on the basis of 100 days work per year during the dead season in agriculture."⁶² The plan did not reach the goal because, like so many public works projects, of insufficient planning and staff. But public works projects may potentially stabilize real incomes for large numbers of the labor force.

Employment stabilizing cropping technologies could be developed and implemented in developing countries. ". . . all the evidence indicates

a requirement of additional man hours per hectare where the new techniques are practised, and also seasonally a more even spread of labour input through the year."⁶³ ". . . in the Philippines the Rural Reconstruction Movement operating in 118 districts was able through the introduction of new crops and new cultivation practices to reduce the number of days' unemployment per district from 4,434 to 3,056."⁶⁴

Rural industry and nonfarm activities have a great potential to absorb labor during the off season.

In Egypt and Malaysia, for example, many small farm households devote 30 percent to 40 percent of their labor to off farm activities. The inherent dynamism of rural nonfarm enterprise can be enhanced by public assistance in the form of improved infrastructure, rural electrification and the extension of credit facilities.⁶⁵

The government of a developing country may be a force which stimulates the transfer of a traditional economy, where the demand for labor fluctuates with the production demands of the crop, to a more dynamic economy, where the demands for labor is more constant throughout the year. Public works projects, the promotion of employment stabilizing cropping technologies, and the promotion of rural nonfarm activities may foster employment stabilization.

Intertemporal Real Income Transfers

Another policy approach to smooth out the real income fluctuations which occur throughout the year are by transferring real income earnings from the past and from the future. Real incomes transfers from the past includes savings and from the future includes credit.

Although low income consumers have a low propensity to save, studies have proven that they are responsive to secure and high-yielding savings opportunities. "The preliminary results from a pilot savings mobilization

project in Peru, which involves substantial increases in the interest rates paid on deposits, strongly suggests that people in rural areas will substantially increase their savings deposits if given secure liquidity, and high returns."⁶⁶

Credit services to the low income person is often provided by an informal lender because the costs of formal lending is greater than the return. "A handful of recent studies show that the lender's costs of making loans to medium- and small-sized farmers is 20 percent or more of the value of the loans extended, even in moderately well-run programs."⁶⁷ But subsidized credit services to the poor may be less costly for the government than other forms of real income transfer.

In conclusion, improvements in the savings and credit services to the low income person will facilitate intertemporal real income transfers. The ability to transfer real incomes from the past and the future may fill the gap when real income drops below subsistence levels.

Summary of Policy Approaches to Stabilize the Real Incomes of Subsistence Persons

The national government of developing countries may pursue many different combinations of policy approaches to stabilize the real incomes of subsistence persons. The objective is to prevent an individual from experiencing periodic real income fluctuations which prohibit adequate levels of food consumption.

In reality, these policies are very difficult to execute in developing countries. Food grain price stabilization policies both for all consumers and especially for targeted groups requires extensive governmental powers. Employment stabilization policy approaches can only provide a spark for an economy to grow and develop into a more dynamic, employment stabilizing system. A larger commitment would be administratively and financially impossible. And intertemporal real income transfer policies comprise providing financial services to subsistence persons at a loss.

But because food price fluctuations and employment interruptions have a detrimental impact on the food consumption level of the subsistence family, a food security concerned nation must pursue policy approaches to stabilize real income fluctuations. The limitations are great and the results are not immediate, but for that sector of the poor who yearly, monthly, or weekly oscillate below the consumptive level of nutritional adequacy, the food security rewards are significant.

Summary of Chapter 4

Policy successes in maintaining adequate total food supplies and improving the performance of the market system are not necessarily food security policy successes. The literature indicates that change in per capita income is the most highly correlated variable with change in per

capita calorie consumption. An inadequate income destines an inadequate diet even with a surplus total food supply an efficient, effective market system.

Yet the policy makers and political leaders in developing countries stress the supply approach. Increasing and stabilizing the real income of the subsistence person is not a political, economic, or social priority.

Because the hungry include those whose real incomes dictate a chronic state of hunger and those whose fluctuating real incomes dictate periodic states of hunger, policy approaches must focus on increasing and stabilizing the real income of subsistence persons.

Policy approaches to increase the real income of subsistence persons may be categorized into economic growth, redistribution, and employment creation. Although any of the policy approaches may facilitate the attainment of the other(s). Economic growth, something that all countries strive for yet nobody agrees on the recipe, has improved the absolute incomes for the poorest groups in most cases in the last decade. Yet exceptions are conspicuous and the aggregated analysis glosses over the millions who are abandoned in the economic growth process.

The extreme concentration of income generating entities among a small percentage of the population in the developing countries allows for income increasing potentials through redistribution to the subsistence person. Not only the physical factors of production, land and capital, but also the non-physical income generating entities, human capital, technology, and credit services are highly concentrated in developing countries. Concentration of income generating entities is not only an economic phenomenon, but deeply rooted in the political structure of a nation, so economic policy approaches to redistribute necessitate a political commitment.

Because a major or sole source of a subsistence person's income is labor, policy approaches to increase employment for this sector is essential. The modern industrial sector is infested with factor market distortions which favor capital intensive technologies. The services sector is, without government intervention, absorbing a large portion of the poor and unemployed. The rural industry and nonfarm sector deserves priority as a significant employer of rural labor. Construction and public works directly but temporarily employs subsistence persons. And the agricultural sector is the stimulant in most developing countries to employment in all other sectors. The agricultural sector is also the largest potential employer of labor in developing countries if the marginal productivity of labor can be increased through appropriate capital and technology.

Policy approaches to stabilize real income above a minimal food consumption level is a priority for those whose real incomes fluctuate around levels of minimal food consumption. Food grain price stabilization, employment stabilization, and intertemporal real income transfers are the most effective approaches because a subsistence person has a high income elasticity in the demand for food, a major portion of his/her income is labor, and income transfers from the past and future will smooth out real income fluctuations.

I have by no means exhausted the practical and possible policy approaches to increase and stabilize the real incomes of subsistence persons. The choice of the set of policy approaches to pursue must be based on many factors characteristic of each individual nation. And often these factors are not economic, but political. Economic science is often forced to work in the shadows of the robust powers of politics.

Endnotes for Chapter 4

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¹⁹Adelman and Robinson, Income Distribution Policy in Developing Countries: A Case Study of Korea, p. 27.

²⁰Ibid., p. 29.

²¹Gary S. Fields, Poverty, Inequality, and Development (Cambridge University Press, 1980), p. 162.

²²Ibid., pp. 164-166.

²³Ibid., pp. 170, 174.

²⁴Nafziger, The Economics of Developing Countries, p. 103.

²⁵Janvry, "The Role of Land Reform in Economic Development: Policies and Politics," in Agricultural Development in the Third World, p. 263.

²⁶Nafziger, The Economics of Developing Countries, p. 104.

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³¹Theodore W. Schultz, Investing in People (Berkeley: University of California Press, 1981), p. 21.

³²Ibid., p. 7.

³³The World Bank, The Assault on World Poverty (Baltimore: The John Hopkins University Press, 1975), p. 281.

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- ⁴²Charles R. Frank and Richard C. Webb, Income Distribution and Growth in the Less-Developed Countries (Washington D.C.: Brookings Institution, 1977), p. 15.
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- ⁴⁵The World Bank, The World Development Report, 1979 (New York: Oxford University Press, 1979), p. 51.
- ⁴⁶J. Mouly and E. Costa, Employment Policies in Developing Countries (London: George Allen and Unwin LTD, 1974), p. 76.
- ⁴⁷Ibid.
- ⁴⁸Enyinna Chuta and Carl Liedholm, "Rural Small Scale Industry: Empirical Evidence and Policy Issues," in Agricultural Development in the Third World, eds. Carl Eicher and John Staatz (Baltimore: The John Hopkins University Press, 1984), pp. 297, 298.
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- ⁵³Ibid., p. 151.
- ⁵⁴Ibid., p. 159.
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- ⁵⁶Shlomo Reutlinger and David Bigman, "Feasibility, Effectiveness, and Costs of Food Security Alternatives in Developing Countries," in Food Security for Developing Countries, ed. Alberto Valdes (Boulder: Westview Press, 1981), p. 193.
- ⁵⁷Ibid., p. 194.
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⁶⁰Ibid., p. 201.

⁶¹Lele and Cundler, "Food Security in Developing Countries: National Issues," in Agricultural Development in the Third World, p. 216.

⁶²Mouly and Costa, Employment Policies in Developing Countries, p. 110.

⁶³Ibid., p. 141.

⁶⁴Ibid.

⁶⁵The World Bank, World Development Report, 1979, p. 49.

⁶⁶Adams and Graham, "A Critique of Traditional Agricultural Credit Projects and Policies," in Agricultural Development in the Third World, p. 319.

⁶⁷Ibid., p. 315.

CONCLUSION

Knowledge without action is not knowledge
-Wang Yang-Ming, Neo-Confucian philosopher

No grandiose national policy strategy for reducing food insecurity in developing countries has been formulated as a result of this review of the literature. Yet, some critical conclusions have blossomed from this work.

First, the term food security is defined differently by the prominent researchers in the field. The differences are national vs. individual food security, trend vs. adequate consumption levels, and short term vs. long term food security.

Second, if one utilize David Bigman's definition of food security, "Food security represents the ability of a country or the world at large to supply the food needs of all its people at all times, now and in the future," then three necessary conditions must exist for food security in a market economy: an adequate total food supply, an efficient and effective market system, and adequate real incomes for consumers. This simple conceptual supply-demand framework incorporates and categorizes all national policy approaches to reduce food insecurity.

Third, pertaining to an adequate available total food supply, developing countries have pursued this approach much more intensely than improving the performance of the market system or increasing and stabilizing the real income of subsistence persons. And of the policy approaches to maintain an adequate total food supply for the nation, increasing domestic staple food production and maintaining adequate stock levels have been promoted and practiced by the developing countries while commercial import strategies have been promoted by the foreign economist. But given the

extremely low levels of the marginal productivity of labor in agriculture in the developing countries, policy approaches to increase the productivities of the people is a necessary starting point before improving the performance of the market system and increasing real incomes.

Regarding increasing domestic food production, the developing countries are relying more heavily on increasing yields than land expansion. Studies have proven that modern inputs and technology may significantly increase yields without increasing yield variability.

Regarding maintaining adequate stock levels, in most cases buffer stocks are unprofitable and an inefficient use of public funds. Some studies have proven that the welfare gains of buffer stocks are always negative. But in a closed economy the welfare loss may be unavoidable.

Regarding commercial import strategies, studies prove conclusively that trade is more effective and economical than stocks in achieving total food supply stability. Some researchers consider the avoidance of trade to be the greatest impediment to a stable food grain supply.

While the developing countries as a whole have been greatly increasing their cereal import levels over the last two decades, the low income developing countries have not.

Although over time the foreign exchange earnings have not been found to constrain importation of food grains, periodically a high import bill and/or low foreign exchange earnings constrain the low income importing country.

Fourth, pertaining to improving the performance of the food marketing system, the general attitude of the leaders in developing countries towards this approach is negative. The government has concentrated its effects on increasing food production and developing stocks. Yet, the potential

of improvement in the performance of the food marketing system to reduce food insecurity is evident.

Fifth, pertaining to increasing and stabilizing the real incomes of subsistence person, policy makers and politicians have neglected this approach as well, yet the researchers have indicated real income is more highly correlated with consumptive levels than domestic food supplies, which have received the greater attention.

Policy approaches to increase the real incomes of subsistence persons have been separated into economic growth, redistribution, and employment creation. While economic growth leads to a more unequal distribution of income at low levels of economic development, the evidence shows that absolute poverty declines. Because the data is aggregated, the results do not reveal the many poor folks who are left behind during the economic growth process.

Redistribution of income generating entities from a small percentage of the population to the subsistence persons is an approach to include those who are left behind. Most income-generating entities are highly concentrated among a small segment of the population in developing countries. The concentration is often rooted in the political structure.

Employment creation in the various sectors is another approach to increase the real incomes of subsistence persons. Each sector requires a different employment creating approach.

Policy approaches to stabilize the real incomes of subsistence persons include food price stabilization, employment stabilization, and intertemporal real income transfers. The objective is to prevent an individual from experiencing periodic real income fluctuations which prohibit adequate levels of food consumption.

Sixth, many policy approaches have been discussed throughout the paper. Which do we chose? From the food security economist's perspective, each situation requires a different policy basket. Oftentimes one policy is not sufficient, but many together may achieve the desired result. Deficiencies in those necessary components for a food secure situation must be searched for. If that model is working properly, whereby an adequate total food grain supply exists, the market system is functioning efficiently, and each individual has an adequate real income, food security is manifest.

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APPENDIX

TABLE 1

CORRELATION BETWEEN CEREAL AND TOTAL STAPLE FOOD PRODUCTION AND
BETWEEN STAPLE FOOD PRODUCTION AND CONSUMPTION, 1961 TO 1976

Region and country	Correlation coefficient between cereal production and total staple food production ^a	Correlation coefficient between total staple food production and staple food consumption ^a	Correlation coefficient between export earnings and the food import bill ^b
Asia			
Bangladesh	0.99	0.90	0.32
India	0.99	0.89	0.55
Indonesia	0.94	0.92	0.23
Korea, Republic o	0.96	0.20	0.21
Philippines	0.99	0.97	0.32
Sri Landa	0.91	0.56	0.57
North Africa/Middle East			
Algeria	1.00	0.78	0.76
Egypt	0.96	0.29	0.49
Jordan	1.00	0.63	0.63
Libya	1.00	0.62	0.31
Morocco	0.96	0.98	0.32
Syria	1.00	0.92	0.13
Sub-Saharan Africa			
Ghana	0.93	0.98	0.38
Nigeria	0.92	0.99	-0.27
Senegal	0.81	0.99	-0.08
Tanzania	0.09	0.98	-0.65
Upper Volta	0.99	0.95	0.31
Zaire	-0.21	0.96	-0.15
Latin America			
Brazil	0.60	0.92	0.59
Chile	0.99	0.54	0.60
Colombia	0.85	0.51	-0.11
Guatemala	0.99	0.51	0.40
Mexico	1.00	0.53	0.15
Peru	0.97	0.37	-0.23

a. Staple food is defined as cereals, pulses, roots and tubers and groundnuts.

b. Export earnings include goods and services.

Source: Alberto Valdes and Panox Konandreas, "Assessing Food Insecurity Based on National Aggregates in Developing Countries," in Alberto Valdes, ed., Food Security for Developing Countries (Boulder, Col.: Westview Press, 1981).

TABLE 2

RATIO OF FOOD IMPORTS TO TOTAL EXPORT REVENUE (1965-76 EXCEPT AS NOTED)

	Mean (1)	Maximum (2)
	----- (Percent) -----	
Asia		
Bangladesh ^a	88.4	119.4
India ^b	22.4	44.5
Indonesia	9.5	19.9
Korea, Rep. of	13.5	21.4
Philippines	4.9	9.1
Sri Lanka	27.2	49.2
North Africa/Middle East		
Algeria ^c	6.0	9.3
Egypt ^d	14.0	27.0
Jordan ^d	10.6	15.4
Libya ^d	1.4	2.3
Morocco	7.0	13.4
Syria ^d	5.7	18.4
Sub-Saharan Africa		
Ghana ^d	3.7	5.4
Nigeria ^d	1.9	2.5
Senegal ^b	12.2	17.8
Tanzania ^d	5.5	22.2
Upper Volta ^e	7.4	13.0
Zaire ^b	3.1	6.9
Latin America		
Brazil	3.9	8.5
Chile	5.3	13.9
Colombia	2.8	4.9
Guatemala	2.4	3.3
Mexico	0.4	9.3
Peru	6.6	10.5

^aTime period of analysis 1973-76.^bTime period of analysis 1965-75.^cTime period of analysis 1966-76.^dTime period of analysis 1967-76.^eTime period of analysis 1968-75.

Source: Alberto Valdes and Panos Konandreas, "Assessing Food Insecurity based on National Aggregates in Developing Countries," in Alberto Valdes, ed., Food Security For Developing Countries (Boulder, Colorado: Westview Press, 1981): 32, Table 2.3.

NATIONAL POLICY APPROACHES TO REDUCE FOOD INSECURITY
IN DEVELOPING MARKET ECONOMIES

by

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AN ABSTRACT OF A MASTER'S REPORT
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ABSTRACT

This study reviews the literature on national policy approaches to reduce food insecurity in developing market economies. Food insecurity is defined, essentially, as any situation where inadequate consumption levels are manifest.

The conceptual model referred to throughout this literature review is a simple supply-demand framework. The author asserts that food insecurity, or hunger, develops whenever a deficiency in the major components of the supply-demand model exists.

The major components referred to are an adequate total food supply, an effective and efficient market system, and adequate individual real incomes. Policy approaches to correct deficiencies in each of the three components is discussed. And where possible, empirical evidence is revealed to measure the effects of the deficiency or impact of the corrective policy.

Policy approaches to maintain an adequate total food supply for the nation include increasing domestic staple food production, maintaining adequate food grain stock levels, and importing commercial grains. The potential to increase domestic staple food production through yield increasing modern technologies has hardly been reached. Structural constraints in developing countries often stifle the production potentials of the farmer.

Stocks are another important policy approach to maintain an adequate total food supply. Although this approach is supported widely by many leaders in developing countries, public stocks are often not a profitable venture especially in the tropics. But stocks are effective in reducing consumptive variability and sometimes the only alternative in a closed economy.

Commercial imports have proven to be a greater stabilizing force than stocks in a more open economy. But many leaders in the developing countries disfavor a heavy reliance on international trade because they do not wish to depress domestic agricultural production or increase their dependence on the exporting countries.

Policy approaches to improve the performance of the marketing system have not been strongly supported by leaders in the developing world. But by directing policy efforts to different levels of the food marketing system, improvements in the performance of the food marketing system are possible. And these improvements greatly promote food security in developing countries.

Policy approaches to increase and stabilize the real incomes of subsistence persons is necessary even when total food grain supplies are adequate and the market system is performing well. Chronic or periodic real income deficiencies entail inadequate food consumption levels. Economic growth, redistribution of income-generating entities to the subsistence person, and employment creation may all separately or together increase the real incomes of the subsistence person. And food grain price stabilization, employment stabilization, and intertemporal real income transfers may promote a more stable income for the food insecure persons. But this real income must be stable at a level adequate to maintain a healthy intake of food.

No grandiose national policy strategy has been developed as a result of this study. Each food insecure situation requires a different set of policy approaches which will most effectively and efficiently remove or correct the particular limitation to food security.