FOOD CONSUMPTION PATTERNS AND MALNUTRITION IN LATIN AMERICA: SOME ISSUES FOR COMMODITY PRIORITIES AND POLICY ANALYSIS

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Some major differences in food consumption patterns and nutritional status between Latin America and other regions of the developing world are related to underlying socio-economic characteristics that have significant implications for nutrition oriented technology design and policy planning for Latin America.

Latin America has a much higher gross domestic product per capita; a relatively more favorable availability of agricultural land per capita; and a much higher degree of urbanization than other regions in the developing world (Table 1). Associated with the relatively high incomes and a less parsimonious resource endowment are a comparatively good per capita availability of calories and protein, as well as a high proportion of proteins coming from animal products.

Aggregate per capita food supplies are thus significantly higher in Latin America than in Asia or Africa, and the quality of the diet is also somewhat better. This more favorable balance between population and food has made Latin America largely free from the specter of massive famine such as has plagued parts of Africa and Asia.

However, due to inequalities in the distribution of income, food and nutrients are also distributed unequally in the region, so that substantial groups of undernourished people persist in Latin America (see below for details). Problems of malnutrition in the region can generally be characterized by chronically sub-optimal diets in

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impoverished sections of society, and not as a result of famine inducing drastic aggregate short falls in food availability.

The high degree of urbanization in Latin America has a major influence on the incidence, causes, and potential solutions to nutritional problems. As discussed in more detail below, at a given income level, nutrition tends to be poorer in urban than rural Latin America, and with over two-thirds of the population urban, this makes urban malnutrition a significant component of the problem.

Furthermore, because so much of malnutrition is urban in Latin America, traditional concepts of improving nutrition by raising rural incomes through technical change in agriculture, may not provide a very effective policy lever in comparison to Asia or Africa.

Just as focus on ameliorating malnutrition through improved rural incomes may bypass a major part of the problem in Latin America, so also a narrow focus on one or a few commodities is unlikely to prove effective. The diet of Latin America is substantitally more diverse, for example, than in Asia or North Africa (Table 1). In East Asia, two fifths of calories, and nearly one-sixth of protein come from rice alone. In West Asia/North Africa, two-fifths of calories come from wheat alone. Hence, technical change that increased supplies and reduced the cost of just one commodity, could have a very substantial impact on malnutrition in these regions. In contrast, in Latin America no single commodity occupies a dominant position in the diet which is based on a variety of staples, the most important of which are: sugar, wheat, maize, rice and meat.

Having sketched some of the broad features of food consumption and nutritional status in Latin America in contrast to other regions, this

paper will review a few salient aspects of food and nutrition in Latin America. First, intra-regional variation in diets and the influence of urbanization of food consumption habits will be considered. Second the nature and extent of malnutrition in Latin America will be briefly reviewed. Third, the influence of some economic factors - incomes, growth, trade and the external debt - on food consumption and policy alternatives for ameliorating malnutrition will be treated. Finally, some tentative implications will be drawn for a nutrition oriented research agenda.

Some important qualifications must be borne in mind concerning the breadth of coverage of this paper. Consistent with most standard sources, emphasis is placed on calorie and protein intake as the principal indicators of nutritional status, even though the importance of other nutrients such as calcium, iron, and vitamins A and C are acknowledged. Neither the identification of malnourished members within nutritionally at risk households, nor specific policy interventions targeted at individuals will be treated. Rather the focus will be on a general review of some broad patterns of malnutrition in Latin America in order to draw inferences for the orientation of agricultural research and related policy.

Variation in Regional Diets

Attainment of improved nutrition in Latin America through increased food production is complicated by the substantial variation in diets in the region which makes a focus on one or two commodities alone unlikely to be effective in addressing problems of malnutrition throughout the

entire region. Sugar is an important calorie source in most countries, while maize is the leading source of calories in Mexico and Central America (Table 2). Rice provides a high proportion of calories in Brazil and many of the Caribbean basin countries (Colombia, Costa Rica, Cuba, Dominican Republic, Panama). Cassava is a major supplier of calories in Brazil and Paraguay. Potatoes are important nutritionally in some highland Andean countries. Wheat, though often imported, is a high ranking calorie source in most countries in the region. Except in Argentina and Uruguay, where it is quite important, beef makes a modest contribution to calories. Dairy products provide more calories than beef in most countries in the region, and milk consumption has been increasing rapidly in some countries, among which are Costa Rica, Cuba and Nicaragua.

There is also considerable diversity in the contribution of commodities to total protein intake among the countries of the region (Table 3). Maize is the leading source of protein in much of Central America as well as in Mexico, the Dominican Republic and Haiti. Wheat makes a high contribution to protein not only in the southern cone, but also in several other countries. Dairy products are the main protein source in Costa Rica, Ecuador and Belize, and are the second ranking supplier of protein in seven other countries. Beef is important in the southern cone and also is the leading protein source in Colombia and Panama. In several other countries beef is one of the top sources of protein. Beans are the greatest supplier of protein in Brazil, and are also important in Central America, the Caribbean and Mexico. Rice makes a major contribution to protein in Panama, Costa Rica, Cuba and the Dominican Republic.

Patterns of Food consumption, though, vary by income and by regions within countries as well as between countries. The complexity of these patterns are illustrated by data from Brzil (Tables 4-6). For the urban poor, rice is a leading expenditure item, being the biggest expenditure for the poorest 10%, 56% and 20% in Rio de Janeiro, Belo Horizonte and Curitiba respectively (IBGE). Beef is the top expenditure for the rest of the population in these cities. Wheat products are also a major expenditure item in urban Brazil.

In rural areas, there is a greater diversity in expenditure shares. Cassava meal is the leading expenditure for the poorest third of families in the northeast, pork fat is the biggest expenditure for the poorest quarter of families in Minas Gerais, and rice is the main expenditure for the poorest 60% of families in the South. In general, food budget shares for cereals, beans, and roots and tubers are higher among low income groups, dropping off as incomes rise. Expenditure shares for meats rise with incomes, but beef is usually one of the top ranking expenditures.

Urbanization also has had a profound effect both on food consumption habits and on nutritional status in Latin America. In many countries in the region quite distinct urban and rural diets can be identified. In El Salvador the rural diet is characterized by higher levels of consumption of maize, beans, roots and tubers, and sugar, while the urban diet involves greater consumption of meat, dairy products and rice (Flores and Bent). Similarly, in Brazil consumption of maize, beans, and cassava is greater in the rural areas, while beef, wheat and rice are more important in urban diets (Tables 7-8).

Colombia follows this pattern with higher consumption of maize and cassava in rural areas, and greater levels of beef and wheat in the cities (Table 9). In terms of expenditure shares, beef ranks first in urban settings both in the lowest and highest income quintile. In rural areas sugar is the leading expenditure for the lowest income quintile while beef takes the first position in the highest quintile. Dairy products follow beef in importance in the highest income stratum both in urban and rural regions. The general pattern of changes with rising incomes is similar for both rural and urban areas: expenditure for beef, dairy products, fruits and vegetables rises with increasing incomes while rice, cassava, sugar and potatoes drop in importance. Beans and fats present diverting patterns: in urban areas their participation drops with rising incomes while the contrary occurs in rural areas (Table 10).

In Panama bread, milk and beef stand out as urban food staples, while beans are a particular rural staple (Franklin, Shearer and Arcia). In general, therefore, rural diets can be characterized by the importance of indigenous food crops: maize, beans, cassava and potatoes. In urban diets rice, wheat and beef play a more prominent role in nutrition.

These rural-urban differences in diets are the result of a combination of factors. Rural diets still tend to be heavily influenced by the persistence of the pre-Colombian food staples. These staples remain important in the rural diet as much due to their high productivity characteristics in small farm production systems as because of preferences. Urban diets reflect a somewhat more complicated pattern. To some extent urban diets bear a resemblence to the pre-Colombian diet of the European conquerers and settlers who had a

strong preference for wheat and meat (Baudel), but the nutritional importance of wheat, for example, also owes much to the sometimes greater ease of access to, and lower price of imported wheat compared to domestically produced staples. Ease of preparation and storage of rice and wheat products give these commodities an edge over cassava and maize in the urban areas, while beef is easier to handle in an urban environment where storage is better and where there is a wider market.

Urban diets also tend to resemble more the diets of the high income strata. For example, in urban Brazil consumption of rural staples such as cassava flour, maize, and beans, is usually higher in low income urban families than high income urban families. Similarly, the diets of high income rural families tend to be similar to urban diets. In rural Honduras consumption of meat, wheat, and rice is vastly greater in the high income strata, while consumption of maize is lower and that of beans roughly equivalent (Flores). Thus to some degree average urban diets resemble wealthy diets be they urban or rural.

As dietary patterns shift with urbanization, nutrition appears to suffer. A study of rural-urban migrants in Brazil found a definite worsening in nutrition despite increased incomes among poor migrants to the cities (Ward and Sanders), and this finding is borne out in the analysis of larger scale Brazilian food consumption surveys (Grey).

In Colombia, a similar pattern can be observed with per capita nutrient availability tending to be lower in the urban sector (Table 11). This deterioration in nutrition with urbanization may be due to a number of interrelated factors. First, the cost of living is higher in urban areas due to expenditures on housing, transportation, and taxes

that rural residents need incurr to a much lower degree. Second, the propensity to spend on non-food consumer items such as clothes, recreation, education, and manufactures may be higher in urban areas due to greater availabiltiy (the temptation factor) and greater social pressure to maintain status through particular consumption patterns. Besides non-food items tending to crowd out food expenditures in the budgets of low income urban households, another important factor in poorer nutrition in the urban sector is the higher cost of food. In Brazil urban food prices are reportedly higher than rural food prices, so that real purchasing power is actually less (Grey).

Moreover, rural nutrition is somewhat enhanced by food production for home consumption. Rural households are often able to mobilize family labor with little or no income generating alternatives for the production of food, especially of the rural dietary staples (maize, beans, cassava etc.), but also of garden fruits and vegetables which contribute to diversity and balance in rural diets (Table 12). Production for home consumption also insulates low income rural families to some degree from the strains that their urban counterparts face when food prices rise rapidly; in Peru it has been shown that caloric intake in rural areas is positively correlated both with total income and with the per cent of subsistence food production in total food consumption. Among low income families, calorie intake decreases as the proportion of monetary to total income increases (Ferroni 1982). Thus, the currently available evidence suggest that problems of malnutrition are more prevalent in the urban than the rural sector, and that a greater proportion of the malnourished population is urban.

Extent of malnutrition in Latin America

While the data presented heretofore indicate that malnutrition is a greater problem in the urban than the rural sector, it is also useful to review the relative importance of calorie versus protein malnutrition in Latin America.

Although appraisal of malnutrition of comparisons of nutrient intakes with requirements is the most frequently used approach, it is necessarily an approximate description of the extend of the problem due to uncertainties over requirements (Poleman, Torun et al).

Certainly the aggregate nutrient availability data suggest that quite ample protein is available in the region, but that energy is the more limiting nutrient. This impression is supported by more disaggregated analysis. In the Peruvian Sierra, both in rural and urban areas, four times as many families face calorie deficits as protein deficits (Ferroni 1982). In this region consumption of current diets in amounts that meet calorie requirements automatically insures more than adequate protein intake. Likewise in Colombia, a far greater proportion of households are at risk from calorie than for protein deficiencies (Table 13). Rural Honduras shows a somewhat similar case, in that although there is a clear protein shortfall in the low income group, meeting 83% of its requirements, the calorie shortfall is even relatively more severe, both in the low and in the middle income groups, which obtain 67% and 78% respectively of requirements (Flores). Hence, in general the quality of diets in Latin America are sufficient so that if calorie requirements are met, protein shortfalls are unlikely to

occur. Calories, therefore, are the more critical limiting nutrient where malnutrition prevails in the region.

Furthermore, energy malnutrition is indeed a widespread and serious problem in Latin America, even though average per capita incomes and aggregate food availability make it appear a region considerably advantaged in comparison to Africa and Asia. In the Peruvian Sierra 38% of the rural and 36% of the urban population is estimated to incur a calorie deficit (Ferroni 1982).

In Brazil, 58.3% of children less than 17 years old are estimated to suffer caloric malnutrition (Grey). In Colombia, over one- quarter of households are at risk from inadequate energy intake. (Table 13). In rural Colombia the per cent of households in the low income quintile with low calorie consumption ranges from 50-70%, while in the urban sector it ranges from 70% to over 90%. These estimates overstate somewhat malnutrition because the intake data exclude alcohol and food eaten outside the house.

Using data on total calorie availability, income distribution and the statistical relation between income and calorie consumption, it has been estimated that as much as 36% of the total population of Latin America is below of recommended caloric levels, leading to a total malnourished population of 112 million in 1975 (Reutlinger and Selowsky p 30), though a smiliar study estimated a malnourished population of 46 million in 1972-75, or 15% of the total population (FAO 1977). In both studies the malnourished of Latin America are estimated to comprise 10% of the total malnourished population of the low income countries (excluding Asian centrally planned economies). Without doubt, then, malnutrition remains a grave problem for a large number of people in

Latin America, and Latin Americans form an significant part of the world malnourished.

The prevelance of inadequate levels of food consumption is reflected in a relatively strong demand for basic food staples. For example, estimated income elasticities of demand for cereals are quite high for low income strata both in Colombia and Brazil (Table 14). In Brazil demand for cereals is particularly powerful among the poor as they tend to shift out of cassava flour towards cereals as income rises. Cassava flour is an inferior good, even at fairly low incomes. Fresh cassava, however, does appear to be a normal good. The income elasticity of demand for pulses and beans presents a mixed picture, low in Panama and Brazil, moderate in Perú while Colombian data suggest that the demand for beans is fairly high in low income groups, but negative at upper income levels. Beans are, however, a heterogenous product with distinct grades of quality, as mirrored in price differentials. Disaggregation of bean types in Colombia shows that certain grades of beans are inferior goods, while others have a positive income elasticity of demand (Pachico, Londoño and Duque). The demand for beef and dairy products is quite strong, consistent with known consumer preferences highly favorable to meat consumption in Latin America (Rubinstein and Nores).

It is important to note that expenditure elasticities of demand for food are high even among the highest income strata, which moreover, typically accounts for about 40% of total food expenditures in urban Latin America (Pachico and Lynam). With equal proportional income growth across classes, the upper income quartile would account for between 35% and 45% of increased food demand with the upward pressure on

food prices being exerted by the well to do tending to cancel out the effect of higher money incomes among the poor (Pachico and Lynam). Unless income growth is biased towards the poor, they are likely to be squeezed between sluggish income growth and buoyantly rising food prices propelled by strong demand in the upper income groups. This could occur, for example, as the demand of high income groups for pork and poultry crowds out low income food consumers by bidding away grains from food to feed use (Mellor 1981). Energy crops may lead to a similar result (Brown). This emphasizes anew that the aggregate production capacity of Latin American agriculture can be a very poor indicator of nutritional status since income distribution is so highly inequal.

Lack of effective demand for food by the poor can become an even more troublesome problem when the agricultural sector is under heavy pressure to export. As is well known, Latin American foreign debt has reached a very high level, motivating many countries to vigorously promote exports while curtailing imports. To an important degree, therefore, poor Brazilian and Mexican consumers must bid agricultural resources away from the production of soybeans or specialty vegetables for lucrative high income export markets upon which debtor countries are increasingly dependent. This may have occurred, for example, in Brazil where the expansion of soybean production pushed beans to marginal lands, thereby leading to stagnant yields, low output growth, and rising bean prices (Sanders and Nicoleti). Of course, expanded export of agricultural products can generate direct employment which raises incomes in poor rural households, thereby contributing to improved nutrition (Pinstrup-Andersen 1983a). However, in Latin America where so much of malnutrition occurs in the urban sector, this income

effect may be easily overwhelmed by the impact of dearer food prices. Empirical appraisal of the quantitative effects on nutrition of these tendencies is clearly needed before drawing hard conclusions. Agricultural exports may also create employment indirectly by relaxing foreign exchange constraints that dampen industrial activity and employment.

Foreign exchange shortages also impose pressures to restrict imports, potentially extending to cheap cereals that have become such an important part of the urban diet. Coupled with decreased growth prospects due to the depressing effect of net capital outflows from many Latin American countries which in turn worsens employment prospects, the poor in Latin America may be facing an erosion of nutrition status.

The dynamics of consumer response to these forces remain unclear. In particular, it would be useful to know how reversible are current elasticity estimates. It may be reasonable to assume that cross section data reflect how consumers will adjust as incomes rise, but will consumers shift as readily out of preferred foods back to less desirable foods as real incomes erode ? The economics of degenerating systems have attracted less attention than the economics of growth, but these issues may be of some importance if Latin American economies continue to be depressed by debt and net capital outflows.

Agricultural Research and Malnutrition in Latin America

It has been suggested that agricultural research can usefully have an impact on nutrition through a variety of mechanisms: choice of commodity to be researched; choice of production system for which new

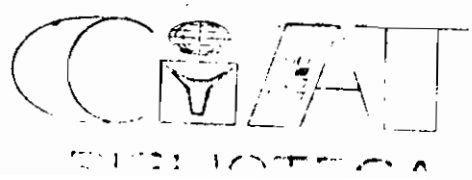
technology is being designed; changes in the characteristics of the commodity being researched (Pinstrup-Andersen 1983b). Establishment of commodity priorities with a nutritional perspective depends critically on the relative importance of the commodity in the diet of the malnourished and their reaction to changes in food prices. While methodology for analyzing consumer response to price changes has been developed (Pinstrup-Andersen et al), its application has so far been severely restricted by lack of price and cross price elasticities of demand, preferably stratified by income group. Fortunately recent methodological advances appear to have contributed to empirically practical approaches to this information need (Timmer and Alderman), and useful elasticity estimates have recently been generated for some countries (Sanint et al; Grey). Nevertheless, further analysis of food consumption patterns and consumer response to price changes are critical priorities on the research agenda.

This is especially needed so that setting of commodity priorities does not continue to be placed on indicators like total aggregate contribution to national availability of calories and protein. Such an approach bypasses known differences in diets by social strata, and is certain to place great emphasis on the diets of the well nourished who, after all, constitute a majority of consumers and exert the bulk of effective demand in Latin America. As should be clear from the preceeding discussion, total food consumption can be very heavily influenced by the consumption patterns of high income households, which have diets quite distinct from those of the poor. To be minimaly useful, therefore, establishment of nutritionally oriented commodity priorities for agricultural research must necessarily be based on a

disaggregation of national average diets to focus on the food patterns of the nutritionally at risk.

While commodity research priorities are unlikely to depend only on nutritional concerns, even the establishment of nutrition based priorities can not, of course, consider only food consumption, since the income and employment affects of new agricultural technology on malnourished families can also contribute to nutritional gains. In Latin America, where two-thirds of employment is non-agricultural, and where malnutrition appears to be relatively more important in the urban sector, this becomes a complex issue. Since a large part or even the majority of malnutrition in Latin America is urban, the nutritional impact of improved technology via its effect on rural incomes, is much less an effective policy lever than in Africa or Asia. Nevertheless, though a minority, the rural population is large absolutely, and remains a significant part of the nutrition problem. Consequently, besides reducing the price of major urban food staples a focus on improved technology for small farm systems continues to have a role in nutritionally oriented agricultural research in Latin America.

Achievement of this objective, though, is complicated by the current pattern of production, with small farm producers tending to dominate in the production of commodities with a relatively inelastic demand, eg. maize, cassava and beans while large farms dominate in the production of crops with a more elastic demand (eg. feed grains, oil seeds, beef) (Crouch and de January). Where demand is inelastic, producer gains from technical change are less. Thus, increasing small farmer incomes through technical change in Latin America is made difficult by the portfolio of crops which they tend to produce. The



objective of improving rural nutrition through the introduction of new technology that raises small farm incomes, could be achieved more effectively through generation of small farm technology for the production of goods that have a more elastic demand eg. dairy, fruits, vegetables.

The success of such on approach could depend critically on insuring small farm access to efficient marketing channels, a major concern where products are perishable, prices highly variable, and markets relatively thin. Frequently small farmer up take of new technology is as much determined by market factors as it is by the input-output relations of new technologies. As a result, it may be advisable for economics research to increase the attention paid to marketing issues relative to production, even in the context of commodity oriented technology research programs (Pachico, Janssen and Lynam).

Because so much of Latin American employment and malnutrition occurs outside the agricultural sector, the effect of technical change via reduced prices on urban employment and incomes may be of considerable importance. The role of wage goods in determing international competitivity and levels of employment has long been clear (Mellor 1976). High food prices raise the cost of labor which has a depressing effect on employment and international competitivity. Comparatively little is known about the employment effect of food prices in Latin America, and this is an area where further research could be useful. As with nutrition, though, attention to a single commodity may have very little effect in Latin America due to the diversity of the diet which make the budget shares of individual commodities fairly small. For example, in urban Brazil where rice is

the biggest item in the food budget among the poor, its share of total expenditures reaches a peak of about 6% (calculated from IBGE data). Hence, even quite major technical advances in a single commodity may, due to the variety in Latin American diets, have a relatively small effect on employment through its impact on wages. Clearly this issue deserves a more detailed empirical treatment.

Assessment of government policy towards wage goods is complicated both by the diversity of Latin American diets, and also by the peculiar features of major food staples. Wheat, for example, is a special case in that it is principally an imported good in many countries. Sugar faces alternative export markets and may be diverted to energy production. Beef is a major staple despite its relatively high price. Moreover, beef prices strongly influence the prices of poultry and pork, thereby making beef price policy an especially attractive instrument to control consumer prices. Beef price policy is further complicated by its role as an export good in several countries as well as by the strongly cyclical nature of supply. Thus, to appraise the nutritional impact of policies relevant to wage goods in Latin America, it is necessary to analyze a heterogeneus set of commodities, each with its own special circumstances.

SUMMARY AND CONCLUSIONS

Latin America is estimated to account for about 10% of the developing would's malnutrition. Even more so than elsewhere in the developing world, malnutrition in Latin America is very much the result of poverty rather than aggregate food production shortfalls. Furthermore, due to a high degree of urbanisation, strategies to relieve

malnutrition by means of improved rural incomes are relatively less effective, and the reduction of prices of urban food staples is relatively more important than in other regions of the developing world. This, however, can lead to attempts at keeping food prices artificially low, which in turn depresses domestic production, encourages imports, and increases the pressures to leave agriculture and migrate to cities, thereby tending to intensify mulnutrition rather than relieving the problem. Improving nutrition in Latin America is further complicated by the diversity of the diet in the region which implies that technical change in any single commodity will not have a broad impact across the region, and that, moreover, no single staple stands out as the wage good.

Several issues require further research. There is a clear need for the estimation of demand parameters: income, price, and cross price elasticities. To aid in targeting policy and technology toward the nutritionally at risk, these parameters are most useful if they are specific to income groups and regions. Particular attention should be placed in analyzing consumer behaviour in the face of decreasing real incomes, a situation that prevails for many of the poor in Latin America today. Assessment of the employment impact of new technology is obviously a high priority. Especially important here may be the role wage goods, such as rice and beef in lowering labor costs and creating non-farm employment. Also important is the analysis of the food consumption and purchase patterns and income sources of the rural nutritionally at risk population. These studies may need to be conducted by agricultural system eg. small holder systems (coffee, maize, cassava, beans, potatoes) versus large scale plantation systems (sugar cane, oil palm).

Due to the high degree of urbanization and the importance of purchased food even in rural areas, the marketing system is a critical component of people's access to foods. Improved marketing efficiency, especially through the understanding of price formation mechanisms, as well as the development of products which transform traditional rural staples into urban convenient forms (eg. cassava) may contribute to improved nutrition.

The potential contribution of research in these areas must be assessed in the light of the present political and economic scenario of Latin America. Rapid urbanization, drop in per-capita incomes and almost unmanageable foreign debts have led to profound questioning of existing policies. At the same time authoritarian regimes are being replaced by elected ones. New people are taking over and facing very difficult decisions. Relevant policy research results, if produced in time, therefore have a particularly high chance of influencing actual policy decisions.

Table 1. Selected Socio-Economic and Nutritional Indicators for Macro-regions of Low Income Countries.

	Africa	Far East	Near East	Latin America
Gross National Product ($/cap.)[a]	254	250	801	1838
Arable land (ha/cap.)[a]	0.40	0.23	0.41	0.45
Rural Population (%)[a]	67.3	61.8	52.0	34.3
Calories (daily/capita)[b]	2188	2021	2590	2538
Protein (gms/cap/day)[b]	54.6	48.4	72.4	64.9
Animal protein (% of total)[b]	19.6	15.1	19.9	40.7
Leading Calorie Source in diet[b]	Roots/tubers	Rice	Wheat	Sugar
% of total calories from leading source[b]	20.6	40.8	40.5	17.0

Source : FAO Production Yearbooks; World Bank 1983 Annual Report, FAO Food Balance Sheets

a 1980

b 1975-77

Table 2. Latin America: Per cent of Total Calories by Source, 1975-77

Country	SUGAR	WHEAT	MAIZE	RICE	CASSAVA	POTATOES	BEANS	BEEF	DAIRY	OILS
MEXICO	16.5	11.4	36.7	2.0	0	0.6	4.8	2.1	5.4	7.8
BRAZIL	18.4	11.9	8.2	15.5	8.0	0.8	6.4	4.6	5.3	7.6
BOLIVIA	13.6	18.2	11.9	7.4	4.6	9.3	0.9	4.4	1.7	7.8
COLOMBIA	23.8	5.6	11.7	13.1	5.1	3.8	1.3	5.9	5.2	7.7
ECUADOR	19.2	11.7	9.5	9.9	2.6	5.6	0.8	3.0	7.6	7.9
PERU	15.9	17.8	9.5	11.4	2.4	6.6	1.9	1.5	4.1	9.3
PARAGUAY	7.3	6.3	19.4	4.8	14.9	0.07	7.6	7.5	2.8	7.0
VENEZUELA	18.2	13.4	15.3	5.4	1.9	0.8	2.0	5.7	7.9	8.9
COSTA RICA	24.5	11.1	7.8	15.5	0.5	0.8	3.9	4.1	8.0	11.4
EL SALVADOR	14.9	6.5	36.8	3.1	0.4	0.6	4.1	1.3	4.8	8.6
GUATEMALA	16.2	8.1	47.7	1.6	0.1	0.3	4.9	1.6	3.6	6.8
HONDURAS	14.6	5.6	44.6	2.8	0.3	0.09	3.3	1.3	4.1	7.1
NICARAGUA	18.9	6.0	28.0	6.1	0.9	0.2	7.2	4.4	5.6	9.2
PANAMA	14.3	8.9	8.5	26.3	1.7	1.1	6.3	6.3	3.9	9.3
CUBA	20.0	20.1	0	18.3	1.9	0.9	0.8	3.5	7.7	8.9
DOM.REPUB.	15.8	9.0	2.7	19.5	3.4	0.2	3.5	1.9	5.0	11.3
HAITI	13.6	7.0	15.2	9.0	2.8	0.1	4.1	1.2	1.5	3.3
JAMAICA	19.1	22.0	3.2	7.7	0.9	0.3	0	2.5	4.2	11.0
ARGENTINA	11.8	27.0	1.3	1.3	0.4	2.9	0.3	16.8	7.2	11.4
CHILE	12.4	45.2	1.7	2.9	0	3.3	1.5	5.5	5.5	8.2
URUGUAY	13.6	26.8	3.1	2.8	0.06	2.1	0.3	17.9	10.2	9.3

SOURCE : FAO Food Balance Sheets

Table 3 Protein Sources in Latin American Diets. Per cent of Total Protein by Source, 1975-77

	BEANS	BEEF	PORK	CHICKEN	EGGS	WHEAT	RICE	MAIZE	DAIRY	FISH
Brazil	16.9	12.8	4.6	2.8	1.6	13.1	12.6	7.5	11.8	3.3
Mexico	10.0	7.3	3.3	1.9	2.7	12.6	1.5	37.8	12.6	2.0
TROPICAL SOUTH AMERICA										
Bolivia	0.4	12.1	3.7	0.5	1.3	20.4	5.6	12.0	3.8	0.7
Colombia	2.5	19.7	3.1	1.9	2.1	6.8	11.9	13.6	15.2	2.1
Ecuador	4.2	9.2	3.2	1.6	1.8	13.2	8.4	10.4	17.4	5.2
Paraguay	15.2	17.1	9.6	1.4	2.1	6.9	3.4	17.7	5.0	0.4
Peru	3.6	4.8	2.6	4.6	1.4	22.4	8.7	9.6	10.4	6.5
Venezuela	4.9	15.4	2.9	6.8	2.9	16.5	4.0	12.5	16.3	5.7
CENTRAL AMERICA										
Belice	9.5	12.9	5.0	2.9	2.0	14.6	9.8	7.1	24.1	2.0
Costa Rica	10.8	14.3	2.2	0.9	3.4	12.7	13.1	8.8	21.7	2.1
El Salvador	10.3	6.3	2.0	1.3	3.3	6.4	2.4	36.4	15.4	1.1
Guatemala	11.0	7.1	1.1	1.3	2.4	10.1	1.1	46.9	10.1	0.6
Honduras	8.9	6.8	1.4	1.9	2.9	6.0	2.3	47.0	12.2	0.6
Nicaragua	16.3	14.1	2.8	1.3	4.1	5.7	4.3	25.4	17.9	2.1
Panama	2.8	24.0	2.6	2.9	3.1	10.4	21.1	8.8	9.7	2.8
CARIBBEAN										
Cuba	1.9	9.9	2.8	3.7	3.4	21.7	14.0	0.0	17.7	7.7
Dominican Republic	8.4	7.2	2.6	4.6	2.3	10.9	8.4	18.8	3.7	1.2
Haiti	11.0	3.5	3.5	0.4	0.8	9.6	7.3	16.5	3.3	1.0
TEMPERATE SOUTH AMERICA										
Argentina	0.4	42.0	3.0	2.5	1.8	21.9	0.8	0.9	12.3	1.1
Chile	3.6	11.8	1.7	1.8	2.0	46.4	3.0	0.4	12.4	0.7
Uruguay	0.4	32.7	2.1	1.8	1.6	23.9	1.8	2.4	19.1	1.6

Source : FAO Food Balance Sheets

Table 4. Per Cent Food Expenditures by Income, Rio de Janeiro, 1974-75.

Annual Family Income ($US 1981)	0-389	389-778	778-1366	1366-1954	1954-2732	2732-3907	3907-5861	5861-11652	11652+
Rice	14.5	15.6	12.6	10.5	9.3	7.2	5.0	4.0	3.1
Maize	1.8	1.1	0.6	0.5	0.4	0.3	0.3	0.3	0.3
Wheat	11.9	10.7	10.0	9.5	8.8	7.5	6.9	6.1	5.7
Potatoes	1.9	2.2	2.1	2.1	2.1	2.1	2.0	2.1	2.0
Fresh Cassava	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2
Cassava Meal	1.0	1.0	0.6	0.4	0.3	0.2	0.2	0.2	0.1
Sugar	6.5	4.2	3.4	3.2	2.9	2.8	3.0	3.0	2.7
Beans	9.9	8.8	6.8	5.5	4.7	3.5	2.6	2.0	1.6
Beef	7.3	11.9	16.2	16.5	18.7	19.6	21.3	23.4	23.9
Poultry	2.1	4.0	5.0	5.9	4.8	4.9	4.2	4.7	5.5
Dairy	5.3	3.9	5.1	5.1	4.8	4.8	5.5	5.5	4.4

Source : IBGE data

Table 5. Per cent of Food Expenditures by Income, Rural Northeast Brazil, 1974-75.

Annual Family Income ($US 1981)	0-198	199 293	294 388	389 483	487 587	588 682	683 777	778 1952	1953
RICE	5.7	7.2	6.9	7.1	7.4	6.8	8.8	7.3	9.0
MAIZE	1.4	2.1	1.7	2.0	2.4	2.0	1.5	1.6	1.8
WHEAT	3.9	4.8	5.5	6.1	6.5	7.8	7.9	9.0	8.2
POTATOES	-	0.06	0.09	0.04	0.1	0.1	0.2	0.4	0.8
FRESH CASSAVA	-	0.1	0.09	0.07	0.09	0.05	0.07	0.08	0.07
CASSAVA MEAL	13.6	11.2	10.0	9.6	9.3	8.1	7.0	5.6	3.0
SUGAR	12.8	10.0	9.4	8.0	7.5	7.9	7.8	6.5	5.9
BEANS	11.1	9.9	10.3	9.0	10.2	8.9	6.4	6.4	4.3
BEEF	9.7	14.4	17.5	18.8	19.7	20.9	22.8	23.7	25.9
POULTRY	0.3	0.5	0.4	0.9	1.0	0.8	1.0	1.6	2.2
DAIRY	2.1	2.8	2.9	3.3	2.3	2.8	2.5	3.2	4.0

Source: IBGE data

Table 6. Per Cent of Food Expenditures by Income, Rural Minas Gerais and Espiritu Santo, Brazil, 1974-75.

Annual Family Income ($US 1981)	0-198	199-293	294-388	389-587	588-777	778-1365	1366-1952	1953-2730	2731+
RICE	13.5	17.6	18.1	18.4	20.6	19.7	17.1	12.1	12.3
MAIZE	2.6	2.6	2.4	2.3	1.8	1.8	1.4	1.1	0.6
WHEAT	7.2	7.5	8.3	8.7	8.4	9.7	8.7	11.6	10.3
POTATOES	0.9	1.0	1.1	1.3	1.7	1.4	2.2	2.2	2.0
FRESHCASSAVA	-	-	-	0.04	0.03	0.02	0.04	-	0.02
CASSAVA MEAL	2.4	3.0	2.9	2.5	2.0	1.6	0.9	0.6	1.1
SUGAR	14.9	14.0	14.5	12.8	11.6	11.0	10.6	8.6	9.3
BEANS	7.5	6.4	6.7	6.4	6.5	5.4	6.4	4.3	5.2
BEEF	1.7	4.0	3.5	5.4	5.4	7.5	11.6	14.2	12.8
POULTRY	0.1	0.1	0.5	0.6	1.3	1.0	1.0	1.3	0.8
DAIRY	0.5	0.8	1.0	1.2	1.9	1.7	1.6	1.2	1.9

Source : IBGE data

Table 7. Per Cent of calorie consumption by Product and Total Calorie Consumption for Rural and Urban Brazil, 1974-75.

	Total (cal/cap/day)	Beans[b]	Beef	Cassava	Dairy	Maize	Potatoes	Rice	Sugar	Wheat
Urban										
Recibe	1876	7.1	6.0	11.4	4.3	2.9	0.5	6.7	15.4	24.2
Belo Horizonte	2041	7.2	3.1	1.0	5.7	2.5	1.1	20.7	17.3	14.2
Rio de Janeiro	2128	8.4	5.4	2.1	5.7	1.5	1.5	19.7	13.8	15.0
Sao Paulo	2089	8.1	4.2	0.7	6.7	0.8	1.3	21.8	12.1	13.8
Rural										
Northeast	2016	15.3	2.6	29.2	3.2	7.4	a	12.8	9.8	3.1
Minas Gerais[c]	2352	12.8	0.8	6.6	3.7	10.7	0.4	21.5	16.3	5.2
Sao Paulo	2406	10.4	1.8	1.2	4.2	2.0	0.9	32.1	15.3	9.1
South	2548	10.0	1.7	4.6	5.5	7.3	1.6	17.8	12.3	15.8

a. Less than 0.1%
b. Adjusted downward to eliminate cowpeas
c. Include Espiritu Santo
Source : Insituto Brasilero de Geografia e Estatistica

Table 8. Per Cent of Protein Consumption by Product and Total Protein Consumption for Rural and Urban Brazil 1974-75.

	Total (gms/cap/day)	Beans[b]	Beef	Cassava	Dairy	Maize	Potatoes	Rice	Sugar	Wheat
Urban										
Recife	61.5	14.1	19.1	1.7	7.5	2.2	0.4	4.1	0.1	24.2
Belohorizonte	57.5	16.6	13.4	0.2	11.7	2.2	0.9	14.6	0.3	16.6
Rio de Janeiro	70.1	16.6	17.4	0.3	10.1	1.1	1.1	11.9	0.3	14.6
Sao Paulo	67.7	16.4	16.4	0.1	12.1	0.5	0.9	13.3	a	14.2
Rural										
Northest	62.4	33.7	8.3	4.4	5.2	6.3	0.7	8.9	0.1	2.9
Minas Gerais[c]	61.1	32.3	3.6	1.2	7.3	11.0	0.3	16.7	0.5	6.6
Sao Paulo	64.9	25.9	7.8	0.2	8.1	1.9	0.8	24.3	0.2	11.1
South[d]	74.3	22.5	5.8	0.8	9.2	6.7	1.4	12.2	0.2	17.7

a. Less than 0.1 %

b. Adjusted downward to eliminate cowpeas

c. Includes Espiritu Santo

d. Parana, Santa Catarina, Rio Grande de Sol.

Source : Instituto Brasilero de Geografia e Estadistica

Table 9. Rural/Urban food consumption by region, 1981 (Kg/adult equivalent/year)

	ATLANTIC		EASTERN		BOGOTA	CENTRAL[3]		PACIFIC[4]	AVERAGE	
	Rural	Urban	Rural	Urban	Urban	Rural	Urban	Rural	Urban	
RICE	65.07	58.50	26.00	30.13	33.51	31.15	32.00	43.66	49.22	39.58
MAIZE	7.30	10.45	26.30	9.00	9.45	46.39	29.93	20.16	11.90	19.76
BREAD	3.03	11.37	10.10	22.82	20.38	2.05	7.24	4.90	21.03	11.86
NOODLES	4.76	10.66	9.76	9.36	8.03	3.89	3.71	6.08	6.28	6.16
POTATOES	11.93	24.28	83.76	82.09	80.07	42.36	45.83	66.40	65.34	56.11
PLANTAINS	104.30	101.96	39.17	37.30	31.96	86.39	58.79	105.02	91.55	68.89
CASSAVA	72.62	42.26	39.00	23.50	7.17	35.41	12.50	17.29	8.28	25.47
BEANS	4.52	4.74	4.68	4.80	6.01	12.51	10.45	5.00	8.25	7.22
PEAS	0.80	1.32	8.18	7.65	9.50	1.98	3.82	1.65	4.46	4.66
BEEF[5]	29.99	46.02	23.04	34.90	32.90	30.60	31.92	16.19	31.94	31.72
PORK	1.48	1.68	0.16	0.43	0.77	1.19	2.57	0.62	2.25	1.38
POULTRY	1.42	2.95	0.98	1.43	3.19	1.10	2.24	0.93	4.58	2.25

1/ Includes the departments of: Córdoba, Sucre, Magdalena, Atlántico, Bolivar, Cesar an Guajira

2/ Includes the departments of: Norte de Santander, Santander del Sur, Cundinamarca and Meta

3/ Includes the departments of: Antioquia, Caldas, Huila, Tolima, Quindio and Risaralda

4/ Includes the departments of: Chocó, Nariño, Cauca and Valle del Cauca

5/ Includes all cuts of beef and offals

Source: Estimates based on the 1981 DRI-PAN nutrition survey of Colombia

Source: Sanint et al.

Table 10. Expenditure shares (percentage) of main food types by income quintile and area, Colombia, 1981.

Type of food	Urban			Rural		
	Lowest quintile	Highest quintile	Average	Lowest quintile	Highest quintile	Average
Beef	14.2	16.6	17.7	11.6	15.1	14.3
Dairy products	8.7	11.3	10.5	7.7	10.4	9.1
Rice	9.7	4.2	5.7	9.4	5.6	7.2
Beans	2.7	1.6	2.0	1.8	2.7	2.2
Cassava	2.0	1.0	1.4	4.8	2.7	3.7
Sugar	12.0	1.0	1.4	4.8	2.7	3.7
Vegetables	6.7	7.5	7.6	5.1	7.2	6.0
Fruits	3.4	10.5	7.5	3.3	6.3	4.8
Fats	6.9	5.5	6.1	5.3	6.0	5.6
Potatoes	6.5	3.2	4.3	8.8	4.7	6.7
TOTAL	72.8	68.2	70.8	70.0	70.2	70.0

Source: Sanint et al.

Table 11. Protein and Caloric consumption by Income Strata, Rural and Urban for Four Regions in Colombia 1981.

		Rural		Urban	
Region	Income Group	Proteins[a]	Calories[b]	Protein[a]	Calories[b]
Pacific	Low	39.1	2065	40.5	1951
	Low Middle	60.3	2869	58.3	2576
	Middle	77.5	3554	74.1	3021
	Upper Middle	84.1	3942	84.4	3371
	Upper	78.1	3483	94.3	3591
Central	Low	41.0	2071	37.3	1680
	Low Middle	64.6	3006	56.8	2330
	Middle	76.1	3385	69.9	2692
	Upper Middle	82.0	3647	83.4	3176
	Upper	82.6	3480	71.1	2633
Eastern	Low	46.7	2154	40.5	1723
	Low Middle	68.3	2907	56.9	2232
	Middle	82.3	3395	76.1	2796
	Upper Middle	87.8	3415	84.8	3047
	Upper	79.8	3298	88.1	3102
Atlantic	Low	40.7	1927	41.6	1836
	Low Middle	66.1	2777	59.4	2288
	Middle	80.9	3224	75.6	2841
	Upper Middle	86.8	3503	84.0	3157
	Upper	90.7	3394	91.3	3302

a. gms/adults equivalent/day

b. cal/adult equivalent/day

Source:Calculated from 1981 DRI-PAN nutrition survey. Nutrients from alcohol and food consumed outside the home not included.

Table 12. Purchases as Per Cent of Food Consumption for Selected Foods in Brazil.

	URBAN				RURAL			
	Recife	Belo Horizonte	Rio de Janeiro	Sao Paulo	Northeast	Minas Gerais	Sao Paulo	South
Rice	95.2	97.8	97.6	96.8	39.1	49.0	61.6	52.4
Maize	93.1	91.3	93.0	92.1	40.2	22.0	86.3	26.0
Wheat bread	94.7	96.8	96.6	97.0	92.3	89.8	87.3	89.4
Potatoes	94.0	95.6	97.2	96.6	86.8	74.3	84.5	39.3
Fresh Cassava	55.4	62.5	71.3	74.3	6.5	2.2	5.8	2.2
Cassva Meal	94.9	95.5	97.5	95.6	51.4	48.7	96.1	73.8
Beans	92.7	94.9	97.0	95.4	32.2	33.0	67.9	30.9
Vegetables	92.1	81.6	92.8	91.7	17.2	10.3	37.7	14.2
Fruits	78.7	79.5	90.4	93.9	18.3	6.5	24.3	12.6
Beef	93.4	96.3	95.2	96.3	89.7	67.5	83.9	75.1
Milk	93.1	96.1	97.0	97.3	11.6	65.0	23.3	66.2

Source : Instituto Brasilero de Geografia e Estadistica

Table 13. Per cent of Households at Risk from Caloric and Protein Deficits. All Colombia and Poorest 20% of Households.

Region	All Colombia			Poorest 20% of households		
	At Risk Calories[a]	At Risk Protein[b]	At Risk Calories and Protein	At Risk calories[a]	At Risk Protein[b]	At Risk Calories and Protein
Atlantic Rural	32.1	19.9	17.3	70.2	49.4	41.9
Atlantic Urban	27.8	9.8	9.4	79.2	45.3	43.9
East Rural	25.6	15.1	12.9	52.8	35.1	31.1
East Urban	38.9	16.3	16.1	88.4	48.6	48.1
Bogota	40.7	17.3	17.0	97.1	58.8	58.6
Central Rural	27.4	19.0	17.0	62.2	46.2	42.2
Central Urban	35.7	17.6	16.5	80.8	53.6	51.1
Pacific Rural	38.0	32.4	28.8	60.0	57.9	52.8
Pacific Urban	21.1	10.6	9.8	70.6	52.9	49.5

Source : Calculated from DRI/PAN data. Nutrients from alcohol and food consumed outside the home not included

a Less than 2200 cal/cap/day

b Less than 4

Table 14. Some Estimated Income Elasticities of Demand for Foods in Latin America

	Lima	Brazil[a] Urban Poorest 30%	Brazil[a] Rural Poorest 30%	Brazil[a] Urban Highest 70%	Brazil[a] Rural Highest 70%	Rural Panama	Cali Poorest 25%	Cali Highest 25%	Colombia Lowest 20%	Colombia Middle 20%	Colombia Highest 20%
Cereals	.42	.54	1.27	-.03	.11						
Rice		.78	1.98	-.15	.11	.12	.10	.03	.89	.85	.74
Maize		.17	1.72	-.20	-.60	0.00			1.04	.64	.09
WheatBread		.74	.39	.21	.21				1.74	1.05	.07
Meat	.89	.36	.12	.33	.27						
Beef		.84	.57	.41	.47	.23	.59	.42	2.46	1.28	-.39
Dairy Products	1.00	.65	1.43	.55	.34	.21			1.92	1.10	-.06
Tubers	.48										
Cassava Flower		-3.21	-.29	-.74							
Fresh cassava							.24	.07	1.17	.57	-.55
Pulses	.43	-.07	.05	-.18	-.17						
Beans						.04					
Beans,large							.64	.13			
Beans, Small							-.09	-.04			

Source: Ferroni 1976; Grey; Franklin, Shearer and Arcia; Pachico, Ruiz de Londono, and Duque; Sanint et al.

a Calorie elasticities of demand

BIBLIOGRAPHY

Brown, L. (1980) Food or Fuel: New Competition for the World's Cropland. Worldwatch Institute, Wash. D.C.

Crouch L. and A. de Javry (1980). "The Class Basis of Agricultural Research". Food Policy, 5: pp. 3-13

FAO (1977) The Fourth World Food Survey. Rome.

Ferroni, M. (1982). "Food Habits and the Apparent Nature and Extent of Dietary Nutritional Deficiencies in the Peruvian Andes. "Archivos Latinoamericanos de Nutrición . 32" 4, pp. 850-866.

Flores, M. (1976). "Perfiles Dieteticos Según el Nivel Socioeconómico en Honduras". Archivos Latinoamericanos de Nutrición. 26:4, pp.401-425.

Flores, M. and V. Vent (1980). "Canasta Familiar de Alimentos: Definicion y Metodologia". Archivos Latinoamericanos de Nutrición 30: 1, pp.58-74.

Franklin, D., E. Shearer, and G. Arcia (1984). The Consumption Effects of Agricultural Policies: The Case of Market Intervention in Panama. Research Triangle Institute, Research Triangle Park, North Carolina, U.S.A.

Gray, C. LO. (1982) Food Consumption Parameters for Brazil and Their Application to Food Policy. International Food Policy Research Institute, Wash., D. C.

Mellor, J. (1976) The New Economics of Growth. Cornell University. Press, Ithaca, New York.

Mellor, J. (1981) Food Trends and the Research Agenda. International Food Policy Research Institute, Wash. D.C.

Pachico, D. (1984) "Nutritional Objectives in Agricultural Research: The

case of CIAT". Presented at workshop on Nutrition and International Agricultural Research, Addis Abeba, Feb. 19 - March 2.

Pachico, D., W. Janssen, and J.K. Lynam (1984). "Marketing Research as in Input to Priority Determination in Commodity Research". Presented at IDRC Workshop on Marketing of Foods in Latin America, July 11-14, Cali, Colombia.

Pachico, D. and J. K. Lynam (1981). "Food supply and malnutrition in Latin America". Latin American Agriculture, pp. 41-68. CIAT, Cali, Colombia.

Pachico, D. N., Ruiz de Londoño, and M. C. Duque (1983). Economic Factors, Food Consumption Patterns, and Nutrition in Cali, Colombia. CIAT, SE-4-83, Cali, Colombia.

Pinstrup-Andersen, P. (1983a). Export Crop Production and Malnutrition. Institute of Nutrition, University of North Carolina.

Pinstrup-Andersen, P. (1983b). Incorporating Nutritional Goals into the Design of International Agricultural Research. International Food Policy Research Institute, Wash., D. C.

Pinstrup-Andersen, P., N. Ruiz de Londoño and E. Hoover (1976). "The Impact of Increasing Food Supply on Malnutrition "Implications for Commodity Priorities in Agricultural Research Policy". Amer. J. Agric Econ. 58:1, pp132-142.

Poleman, T. H: (1981) "Quantifying the Nutrition Situation in Developing Countries". Food Resarch Institute Studies. 18:1, pp 1-58.

Reutlinger, S. and M. Selowsky (1976). Malnutrition and Poverty: Magnitude and Policy Options. Johns Hopkins Press, Baltimore.

Rubinstein, E. and G. Nores (1980) Gasto en Carne de Res y Productos

Lácteos por Estrato en Doce Ciudades de America Latina. CIAT (mimeo), Cali, Colombia.

Sanders, J. H. and G. H. Nicoleti (1982). "A situacao do Feijao no Brasil com Algumas Sugestoes para a Politica". Revista de Economia Rural. 20:4, pp 605-624.

Sanint, L. R., L. Rivas, M. C. Duque, and C. Seré (1984)."Food Consumption Patterns in Colombia. A Cross Sectional Analysis of the DANE-DRI 1981 Household Survey". Trend Highlights in CIAT Commodities. CIAT, Cali, Colombia.

Timmer, C. P. and H. Alderman (1979). "Estimating Consumption Parameters for Food Policy Analysis". Amer J. Agric. Econ. 61, pp. 982-987.

Torun, B., Y. R. Young and W. M. Rand (1981) Protein Energy Requirements of Developing Countries: Evaluation of New Data. United Nations University, Tokyo.

Ward, J. O. and J. H. Sanders (1980) "Nutritional Determinants and Migration in the Brazilian Northeast: A Case Study of Rural and Urban Ceara". Economic Development and Cultural Change. 29:1, pp. 141-164.