Implications of Urbanization for Food Policy Analysis in Asian Countries

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A B S T R A C T

Trends suggest that Asian developing countries are yet to experience accelerated rates of urbanization in the coming years. While policy measures designed to influence the pace and pattern of urbanization may be essential, anticipatory policy responses to their unavoidable conse-quences are just as important. A consequence of urbanization that seems relatively unexamined is that on food demand structure. With urbanization accompanying economic development, the composition effect in food demand becomes more significant than the scale effect as consumers continuously switch to foodstuffs of better quality and more variety. Food policy and planning have been mainly supply-oriented and concerned largely with the aggregate supply of grains. A good part of the food problem, however, may have to do with the changing composition of requirements resulting not only from increasing incomes but also from the locational shifts of households. A significant welfare implication of changing demand structure, particularly insofar as urban low-income households are concerned, is that the per capita cost of food requirements rises while the command over food is simultaneously reduced because of competing non-food needs in the city. Furthermore, with urbanization there is the phenomenon of entitlement shifts as households move away from both direct and exchange entitlements to food in rural areas to only exchange entitlement in cities. A disaggregative analysis of food demand is called for as an input toward improving supply and distribution mechanisms in the context of continuing urban-ization.

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I. Introduction

The past few years have seen a growing awareness among scholars and policymakers of the urbanization phenomenon in developing countries. The concern about urbanization is likely to intensify in the 1980s and beyond as the dynamics of the process gather further momentum. Increasingly, urbanization is being recognized as a major development issue and, accordingly, attempts are being made at fashioning an urbanization strategy as an integral part of overall development policy.

But what is it in urbanization that is of particular concern for development policy? It is not really the scale, the speed, or the spatial pattern of urbanization per se but rather what these imply or lead to. Of course, understanding these manifestations of urbanization is important in finding ways of containing them so that their consequences, if socially undesirable, become more tractable from the standpoint of public policy. For example, a slower tempo of urbanization, or a lesser concentration of population in the capital city, may mean a lower aggregate demand for urban amenities and services or a more moderate revolution of rising expectations than might otherwise be the case.

Policies have been proposed, if not already implemented, to deal in certain ways with, among others, the speed, scale, and spatial pattern of urbanization. But it seems equally important to be able to correctly analyze their consequences so that appropriate responses can be made. In other words, "curative" measures need to be properly devised for the effects of a phenomenon that are already there or will occur in any case.

There are a number of problems brought about by or associated with urbanization having to do one way or another with employment, housing, transportation, public services, basic social and health services, and so forth. Judging by the references to these problems in oral and written discussions of urbanization, it appears that they have been receiving some attention from scholars and policymakers. A consequence of urbanization that seems relatively unexamined is that on food demand patterns.

The purpose of this paper is to provide an overview of the implications of urbanization in terms of the requirements for food in

Asian countries.[1/] This broad overview is meant to be a background for more in-depth country case studies of the relationship between urbanization and food which in turn can serve as more useful inputs into policy design. A closely related concern has to do with household fuel which, however, is not dealt with in this paper because of the utter lack of empirical data. This fact underscores the need for an investigation also into this basic household resource problem in the context of urbanization.

The next section takes a look at Asian countries in the context of the "urbanization cycle," pointing out that developing Asian countries are yet to experience sharply increased rates of urbanization. Then a conceptual framework is developed for analyzing the influences of economic development and urbanization on food demand. It is shown that the composition effect is much more remarkable than the scale effect. Elasticity estimates of food demand available for some countries, and for the rural and urban sectors of these countries, are next presented to lend some empirical content to the framework. A look at the supply side suggests that there is no food problem at the national (aggregate) level, but that the problem emerges when subnational, sectoral demand patterns are considered. The final section gives a summary and concluding remarks.

II. The Urbanization Cycle

It is now generally recognized that most developing Asian countries have experienced, over the past two or three decades, relatively slow urbanization but rapid overall urban population growth and persistent increase in the degree of urban primacy (Pernia, 1983). As of the early 1980s, only about a third or less of the total population in each of these countries were living in urban areas--a low level of urbanization, in comparison, for example, with East Asian countries (except the People's Republic of China) which were already well over 50 percent urbanized. The low level of urbanization in South and Southeast Asian countries implies that the potential for more urbanization is enormous, unless of course these countries follow an unusual future course. In the next two or three decades, along with continuing absolute growth in urban population, the pace of urbanization is likely to accelerate in these countries as they enter

the fastest phase of the urbanization cycle. This cycle is often depicted in the form of a logistic curve as in Figure 1. The segment from point a to point b on the time or GNP per capita (horizontal) axis is the period of most rapid urbanization. This corresponds to the portions of the curve shortly before and after the inflection point, which in turn is marked as 50 percent urban on the vertical axis.

The urbanization cycle as drawn in Figure 1 appears to be quite robust, as has been shown in other studies (e.g., World Bank, 1972; Renaud, 1981). This is illustrated once again with more recent data in Figure 2, which is a scatter of levels of urbanization against the logs of GNP per capita for several countries.[2/] Asian countries are

Figure 1. A Stylized Illustration of the Urbanization Cycle

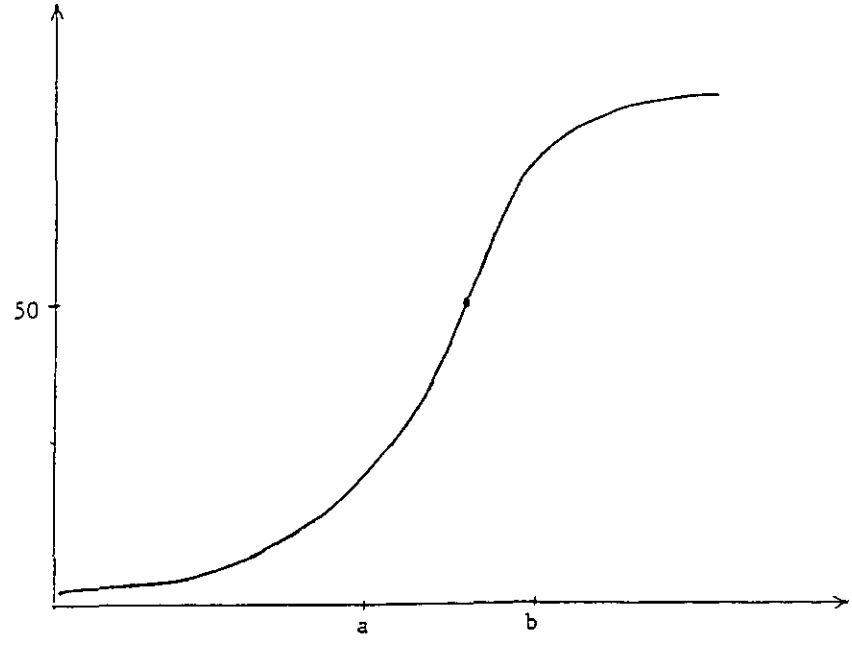
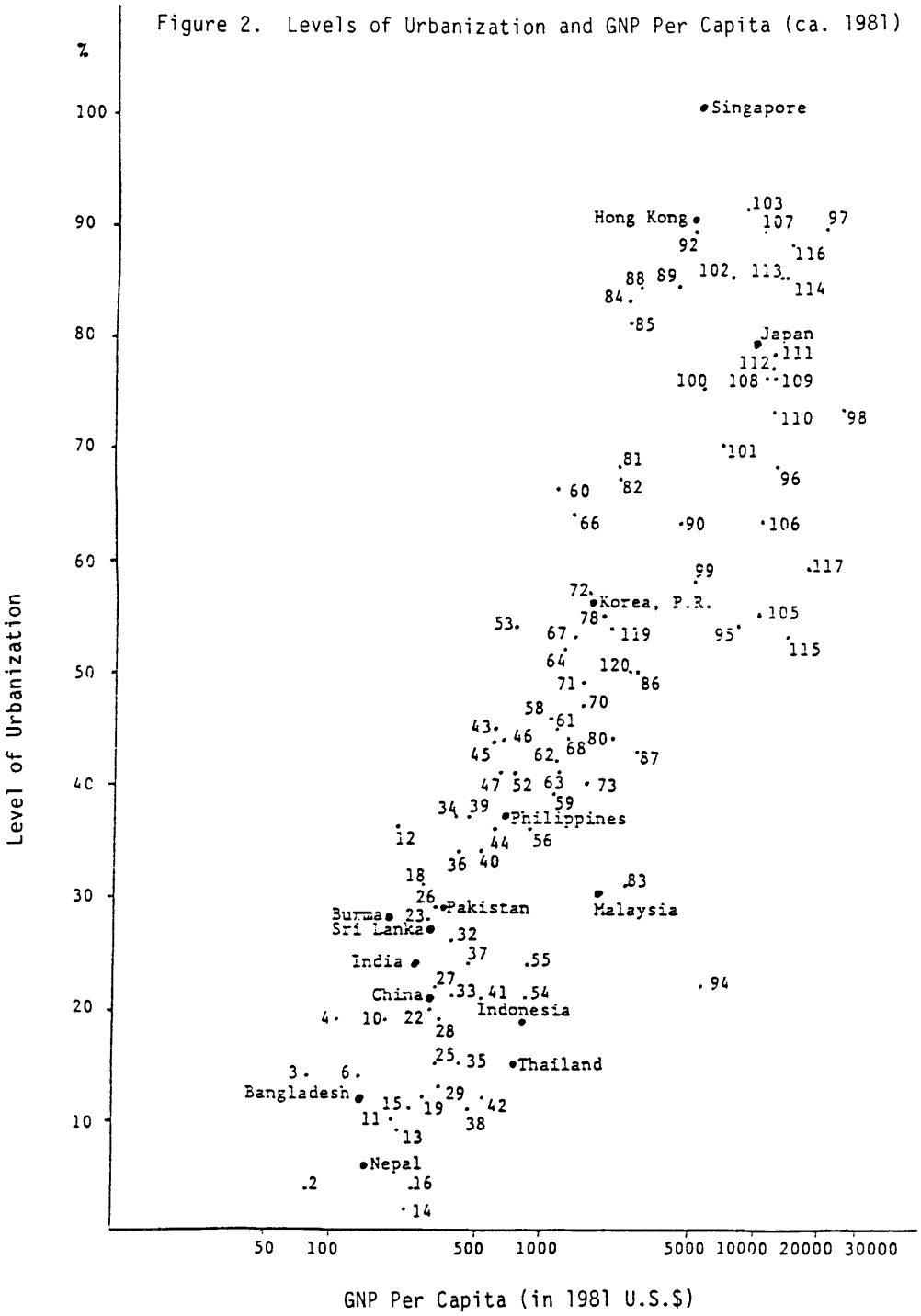


Figure 2. Levels of Urbanization and GNP Per Capita (ca. 1981)



Note: Country names corresponding to the numbers are shown in Appendix Table 1, and levels of urbanization for Asian countries in Appendix Table 2.

Source: United Nations (1982) and World Bank (1983).

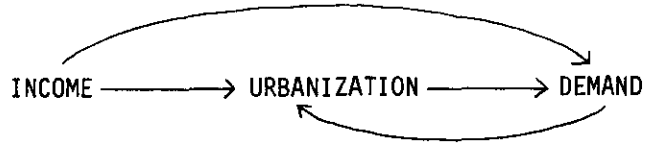
highlighted with the bigger dots while the smaller dots are numbered to correspond to country names in Appendix 1. What clearly emerges from the scatter is that the Asian NICs (newly industrializing countries including Taiwan (China) and Japan have passed the phase of most rapid urbanization; other Asian countries are yet to enter this acceleration phase, and still others (Bangladesh and Nepal) are further behind.

The obvious but significant thing to note about the "acceleration phase" is that rapid urbanization (change in rural-urban population balance) is typically associated with pronounced sectoral and structural shifts in incomes (income distribution), prices, tastes, preference, and needs. In this connection, entitlement shifts pointed out by Sen (1981) are also relevant. In addition, of course, it should be stressed that cities continue to grow on their own momentum and the primary city continues to expand likewise although perhaps at a slower rate (see Appendix Table 3). These represent further increases in aggregate demand.

III. Food and Urbanization: A Conceptual Framework

Food analysis has conventionally been done on the basis of changes in incomes and prices occurring to consumers with supposedly fixed tastes and preferences. A number of studies, however, have shown the significant influence of factors other than income and prices on food consumption behavior (e.g., Kaneda, 1968; Hay & Shinha, 1972). Other studies have demonstrated significant differences in household consumption patterns through a sectoral analysis of the demand for food (e.g., Dixon, 1982; Gray, 1982).

In a broader context, the process of urbanization may be viewed as having an effect on tastes, preferences and expectations, in addition to the usual effects of incomes and prices accompanying economic development. In terms of structural relations, urbanization can be considered as an intervening variable between development (income) and demand, and this may be depicted schematically as follows:



The simple schema shows that income can influence demand directly or through urbanization. The change in demand is greater with income and urbanization effects than with the direct effect of income alone. The feedback loop from demand to urbanization means that changes in the pattern of demand affect the speed of urbanization. Mohan (1982), for example, finds this effect to be significant and argues that the Engel-type of demand changes make the urbanization process logistic.[3/]

The effect of urbanization on food demand may be interpreted as a reinforcement or expansion of the Engel's law effect and the Bennet's law effect. Engel's law states that the share of food expenditure in the total household budget falls as income rises. Bennet's law, on the other hand, states that the proportion of calories that a consumer draws from starchy staples (the starchy staple ratio) declines at higher income levels as he diversifies his food consumption bundle. While the Engel effect and the Bennet effect are commonly understood to be linked only to income, it can be argued that they would be stronger with rather than without urbanization.

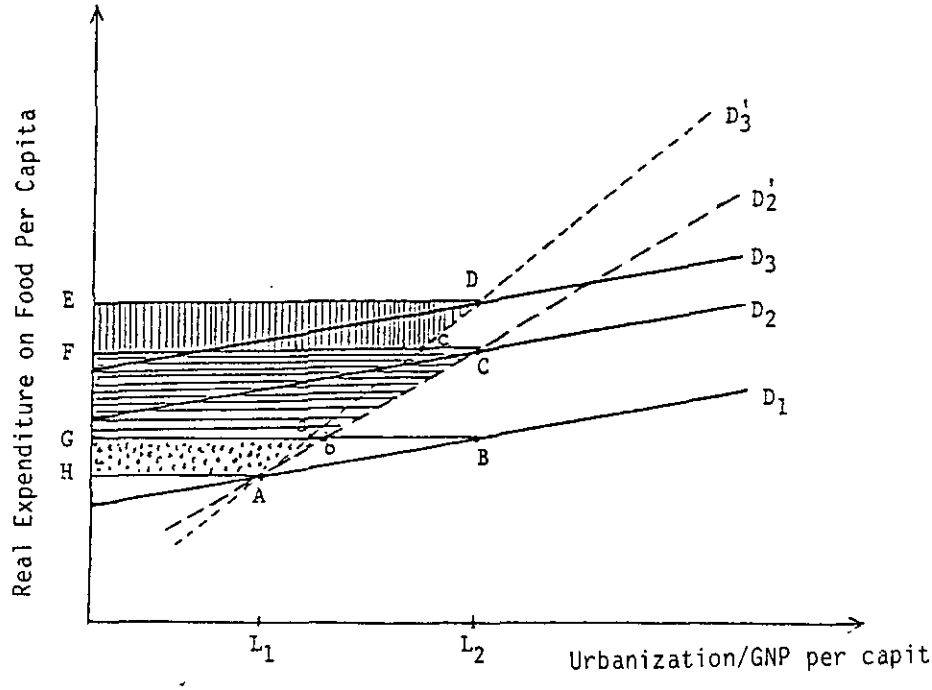
The urbanization effect is therefore conditioned by forces deriving from the two laws. First, in the urban sector consumers face a wider range of needs and are exposed to a greater variety of choices (e.g., food versus non-food commodities) than is the case in the rural sector. Second, in the urban sector consumers have different needs and tastes for food: For one thing, physical work is lighter in cities than in rural areas and accordingly fewer calories are needed; for another, the taste factor tends to become more dominant than the nutrition factor among urban consumers. The first means that the share of food expenditure in the total household budget falls faster if an increase in income occurs due to a rural-to-urban transfer than if such an increase were to happen to a household within the rural sector or within the city; putting it differently, such a drop in food expenditure share can happen by a mere rural-to-urban shift in the absence of a rise in income. The second mechanism implies that the absolute expenditure on food per capita goes up faster due to a shift in consumption from low-cost (e.g., starchy staples) to high-cost (e.g., animal protein) foods, or from nutrition-intensive to taste-intensive items, accompanying a rural-to-urban transfer than would be the case if a consumer experiences only an income increase within the rural sector or within the urban sector. The overall effect of the

two forces is that the budget share for food declines faster but the per capita expenditure on food also rises more rapidly with both income increase and urbanization than with income increase alone.

In a macro-perspective, urbanization can be seen to influence the aggregate level and composition of food consumption in three ways: (a) Urban and rural populations have different consumption patterns, and thus a change in the spatial distribution of the population necessarily alters the structure of aggregate food demand; (b) Rural-to-urban migration changes income distribution to the extent that migrants improve their incomes, with the result that per capita food expenditure rises more rapidly than otherwise; and (c) Changing tastes induced by urban development raise further the quality elasticity of demand for food (see also Rogers, 1978).

The relationship between food and urbanization may be conveniently summarized in Figure 3. As a country moves to a higher level of economic development (GNP per capita), say, from L_1 to L_2,

Figure 3. Effects of Urbanization and Economic Development on Food Demand



the resultant change in the demand for food is from point A on D_1 to point C on D_2, rather than from A to B on D_1. In other words, the change in demand is represented by a shift in the demand curve from D_1 to D_2 rather than a movement along D_1, such that the "true" demand curve is D_2'. This demand shift in the course of (long-term) economic development can be decomposed as two effects: the scale effect denoted by the dotted area HAbG, and the composition effect marked by the horizontally dashed area GbCF. As would be expected, because of the inelastic nature of the demand for food, the composition effect is noticeably larger than the scale effect. Note that without the demand shift, i.e., if rising demand is represented by a mere movement from point A to point B on D_1, the scale effect would be the dotted area plus ABb and, by definition, there would be no composition effect.

Because urbanization accompanies (or results from) economic development, the demand for food shifts further upward from D_2 to D_3 so that the "true" (long-term) demand curve is now D_3' (Figure 3). This means, as pointed out above, that the composition effect is further magnified, as indicated by the vertically dashed area FcDE. This additional composition effect would naturally be larger the faster the pace of urbanization, which was the thrust of the preceding section. The total composition effect (income plus urbanization) is indicated in Figure 3 as the horizontally plus vertically dashed area GaDE. In sum, Figure 3 illustrates the dramatic diversification, and hence increasing costliness, of per capita food requirements induced by overall economic development, and a part of it is accounted for by urbanization.

IV. Food Demand Patterns in Asia

A search of the literature on food demand in Asia yielded fragmentary information on patterns of demand. Few studies have looked at rural/urban differentials and only one (on the Philippines) has separate elasticity estimates for the metropolitan sector (as a sharply distinct entity from the broad urban definition). The data bases used for the analyses pertain mostly to the 1960s. Elasticity estimates from different countries that could be pulled together for some comparison are presented in Table 1. Income elasticities are shown for the national level and rural/urban sectors with respect to

Table 1. Illustrative Income and Price Elasticities for Food in Some Asian Countries by Rural and Urban Sectors

Country (year)	Income/Expenditure Elasticity			Uncompensated/Compensated Own Price Elasticity			Functional Form
	National	Rural	Urban	National	Rural	Urban	
			Total Food				
India (1958-59)		0.760	0.660				double-log
Indonesia (1969-70)		0.884	0.821				LES
S. Korea (1964-67)	0.545	0.690	0.508				double-log
Japan (1961)		0.529	0.472				double-log
			Starchy Staples				
India[a] (1958-59)	0.26-1.17	0.780	0.520				double-log
Indonesia[b] (1976)	0.386	0.410	-0.047	-0.904^{+}	-0.905^{+}	-0.861^{+}	log-log quadratic
Philippines[c] (1965)	0.658	0.692	0.717$_{*}$ 0.658	-0.508	-0.301	-0.617$_{*}$ -0.490	LES
Japan[d] (1952-62)		0.343	0.216				double-log
			Cereals				
India (1958-59)	0.16-0.57	0.610	0.240				double-log
Indonesia (1969-70)		0.710	0.500		-0.680	-0.510	LES
Philippines (1965)	0.296	0.429	0.336$_{*}$ 0.362	-0.258	-0.479	-0.317$_{*}$ -0.269	LES
S. Korea (1964-67)	0.571	0.825	0.588				double-log

Table 1. (continued)

Country (year)	Income/Expenditure Elasticity			Uncompensated/Compensated Own Price Elasticity			Functional Form
	National	Rural	Urban	National	Rural	Urban	
			Meat, Fish, Eggs, Milk				
India[e] (1958-59)	0.35-3.17						double-log
Indonesia (1978)		1.656	1.338				LES
Philippines[f] (1965)	1.083	1.151	1.042* 0.946	-0.821	-0.578	-0.890* -0.648	LES
S. Korea[g] (1964-67)	0.203	0.698	0.415				double-log
Japan (1961)		1.087	0.700				double-log

*Metropolitan. +Compensated.

[a]Pulses. [b]Fresh cassava. [c]Roots. [d]Cereals and starchy roots. [e]Meat. [f]Meat and eggs. [g]Meat and fish.

Source: Total food: India (Hay & Sinha, 1972); Indonesia (Heldley, 1978); S. Korea (Pak & Han, 1969); Japan (Kaneda, 1968).
Cereals: India (Hay & Sinha, 1972); Indonesia (Boediono, 1978); Philippines (Canlas, 1983); S. Korea (Pak & Han, 1969).
Starchy Staples: India (Hay & Sinha, 1972); Indonesia (Heldey, 1978); Philippines (Canlas, 1983); Japan (Kanda, 1938).
Meat, Fish, etc: India (Hay & Sinha, 1972); Indonesia (Hedley, 1978); Philippines (Canlas, 1983); S. Korea (Pak & Han, 1969); Japan (Kaneda, 1968).

total food, starchy staples, cereals, meat and dairy products. A sprinkling of uncompensated price elasticities are also shown; only Indonesia is shown with compensated price elasticities.

With due allowances made for data shortcomings (e.g., different sample sizes, survey schemes, and functional forms), one is able to discern from Table 1 some regularity in patterns of demand across countries and between sectors within countries. In general, as would be expected, income elasticities are less than unity but on the high side for low-income, lowly-urbanized countries and on the low side for high-income, more urbanized ones; rural elasticities are consistently above urban elasticities. Across types of food, income elasticities are lower with respect to inferior items such as starchy staples than with respect to high-cost types like meat and dairy products, while the rural-urban differentials persist. In the case of meat and dairy products, income elasticities are often greater than 1.0, suggesting a clear preference for these high-quality foodstuffs at higher income levels. The highly elastic demand for these high-cost foods in cities should be noted because it underscores the theme of this paper, namely, that with urbanization, food requirements tend to rise rapidly, not so much in terms of quantity but quality.

Because of the fragmentary nature of the price elasticity data, no clear pattern across countries can be gleaned from those data in Table 1. The values carry negative signs, as one would expect. Beyond that, insofar as rural-urban difference are concerned, rural households appear to be more price-responsive than their urban counterparts in respect to cereals while the opposite is the case as regards meat and dairy products. This is a reflection of the difference in the composition of the food baskets of rural and urban households, i.e., low-cost items dominate the rural food basket while superior foods figure more prominently in the urban food basket. The pattern is obscure for the data on starchy staples available for the Philippines and Indonesia, probably due to the differences in specific items under this food group between the two countries.

That rural-urban differences in income elasticity of demand for food are not simply attributable to income disparties between the two sectors can be demonstrated by an analysis that controls for income. This has been done for Brazil (Gray, 1982) and a pertinent table is reproduced here as Table 2, which displays urban and rural income

Table 2. Income Elasticities for Calorie Intake from Various Foods by Income Group, 1974-75, Brazil

	Lowest 30 percent		Middle 50 percent		Highest 20 percent	
	Urban	Rural	Urban	Rural	Urban	Rural
Cereals	0.649	1.00	0.194	0.250[a]	-0.071	0.121
Rice	0.852	1.99	0.298	0.172[a]	-0.224	0.173
Maize	0.329[b]	1.18	-0.151[b]	-0.044	-0.043[b]	-0.088[a]
Wheat bread	1.09	1.47	0.123[b]	0.316[a]	0.145	0.127[a]
Roots	-0.709	-1.09[a]	-0.504	0.019[a]	0.088[b]	-0.411
Cassava flour	-2.09	-3.50	-1.30	-1.59[a]	0.330[b]	-0.356[a]
Sugar	0.652	1.25	0.247	0.239[a]	-0.033[b]	0.077[a]
Legumes	-0.202[b]	-0.343[a]	-0.113[b]	-0.356	-0.178	0.079
Vegetables	1.27	1.52[a]	0.777	0.348	0.102	0.266[a]
Fruits	-0.027	0.380[a]	0.578	0.645[a]	0.399	0.078
Meat and fish	0.413	0.363[b]	0.336	0.481[a]	0.238	0.075
Beef	1.45	1.22[a]	0.737	0.679[a]	0.149	0.154[a]
Dairy products	0.809	1.52	0.721	0.628[a]	0.373	0.055
Milk	0.727[b]	2.27	0.945	0.147	0.061[b]	-0.172[a]
Eggs	1.15	1.93	0.603	0.630[a]	0.100	0.114[a]
Oil and fats	1.56	2.53	0.867	0.655[a]	-0.040[b]	-0.315[a]
Total calories	0.280	0.465	0.178	0.202[a]	0.039	0.057[a]
Mean per capita calorie intake (calories)	1.713	1.963	2.008	2.432	2.293	2.771

Table 2. (continued)

	Lowest 30 percent		Middle 50 percent		Highest 20 percent	
	Urban	Rural	Urban	Rural	Urban	Rural
Mean per capita expenditure	1.712	1.151	3.698	2.429	16.934	8.685
Mean family expenditure	7.685	5.609	19.456	15.502	80.805	56.790
Marginal calorie intake (calories)[c]	0.280	0.793	0.097	0.202	0.005	0.018

[a] This is not significantly different from the urban estimate at the 0.05 level using a two-tailed test.

[b] This is not significantly different from zero at the 0.05 level using a two-tailed test.

[c] This is the increase in daily per capita calorie intake from an increase of Cr $1.00 in annual per capita income.

Source: Calculations based on data from Fundacao Instituto Brasileiro de Geografia e Estatistica, Estudo Nacional da Despesa Familiar; Consumo Alimentar, Antropometrica; Dados Preliminares. 4 vols. (Rio de Janeiro: IBGE, 1977,1978).

Gray (1982), Table 14, p.26.

elasticities for each of three income strata. The rural-urban differentials for each income group are quite evident, supporting the main point of the preceding section that there is an urbanization effect distinct from the well-recognized income effect. The lower third of Table 2 is particularly relevant. It illustrates the fact that, although urban dwellers consume smaller amounts of calories per capita--from 15 percent to 21 percent less relative to rural persons in the case of Brazil, their mean per capita expenditure on calories from various food types is higher--from about 50 to 95 percent higher than the corresponding mean for rural dwellers. The mean family expenditure on calories in the urban sector is likewise higher (by 26-42 percent) than in the rural sector. All of this clearly indicates that urban households at all income levels demand foodstuffs of higher quality and wider variety, implying higher food costs with urbanization.

Table 2 also shows that poor households (the lowest 30 percent) tend to be more income-sensitive to high-quality foodstuffs than are higher income households. In the case of beef, for example, the elasticity is appreciably above unity and somewhat higher for the urban poor than for the rural poor. The high income elasticity for superior foods among poor households (whether rural or urban) reflects the continuing switch from low-cost to higher-cost commodities as households improve their incomes and/or move from the countryside to the city.

The rising demand for food variety with urbanizataion comes out even more clearly in Table 3 which presents quality elasticity estimates as indicated by the price paid for different food types. Four observations are noteworthy (Gray, 1982). First, quality elasticities for both urban malnourished (the lowest 30 percent) and urban well-nourished households (the highest 70 percent) are higher than their respective quantity elasticities. Second, malnourished households are more responsive to quality changes than are well-nourished households, as mentioned above. Third, within food types, superior items are substituted for inferior ones, as implied by the individual quality elasticities. Fourth, as opposed to quantity elasticities, urban households are consistently more sensitive to food quality than are rural households, controlling for nutritional status and income. These empirical results provide further evidence on the

Table 3. Income Elasticity of Price Paid per Calorie for Three Calorie Consumption Groups, for the Highest 20 Percent of the Income Distribution, and in the Aggregate by Urban or Rural Location, 1974/75, Brazil

Food	Calorie Distribution: Lowest 15 percent Urban	Lowest 15 percent Rural	Lowest 30 percent Urban	Lowest 30 percent Rural	Highest 70 percent Urban	Highest 70 percent Rural
Cereals	0.068	0.160[a]	0.131	0.071[a]	0.131	0.093
Roots	0.406	0.749	0.426	0.475[a]	0.177	0.164[a]
Sugar	0.049[b]	0.016[a]	0.084	-0.062	0.193	0.064
Legumes	0.146	0.180[a]	0.109	0.132[a]	0.137	0.129[a]
Vegetables	-0.025[b]	0.335	0.116	0.188[a]	0.094	0.105[a]
Fruits	0.172	0.276	0.220	0.439	0.185	0.088
Meat and fish	0.184	-0.114	0.168	0.073[a]	0.122	0.156[a]
Dairy Products	0.071[b]	-0.087[a]	-0.010[b]	-0.245	0.054	0.082
Oils and fats	0.167	-0.075	0.053[b]	0.027[a]	0.038	0.020[a]
Beverages	-0.337	0.202[a]	-0.528	-0.724	-0.150	-0.157[a]
Total calories	0.280	0.260[a]	0.288	0.234[a]	0.231	0.198

Food	Highest 20 percent of Income Distribution: Urban	Rural	Total: Urban	Rural
Cereals	0.103	0.010	0.124	0.096[a]
Roots	0.108	0.024[a]	0.225	0.155[a]
Sugar	0.169	0.030	0.179	0.096[a]
Legumes	0.125	0.130[a]	0.146	0.139[a]
Vegetables	0.097	-0.057	0.087	0.090[a]
Fruits	0.165	-0.061	0.168	0.110[a]
Meat and fish	0.087	0.076[a]	0.140	0.148[a]
Dairy Products	0.064	0.034[a]	0.049	0.075[a]
Oils and fats	0.033	-0.045	0.046	0.024[a]
Beverages	0.036[b]	-0.033[a]	-0.156	-0.141[a]
Total calories	0.164	0.060	0.243	0.199

[a] This is not significantly different from the urban estimate at the 0.05 level.

[b] This is not significantly different from zero at the 0.05 level.

Source: Calculations based on data from Fundacao Instituto Brasileiro de Geografia e Estatistica. Estudo Nacional da Despesa Familiar Consumo Alimentar Antropometrica; Dados Preliminares. 4 vols. (Rio de Janairo: IBGE, 1977, 1978).

Gray (1982), Table 21, p.37.

changing structure of food demand as a consequence not only of economic development but also of urbanization, as argued in the preceding section.

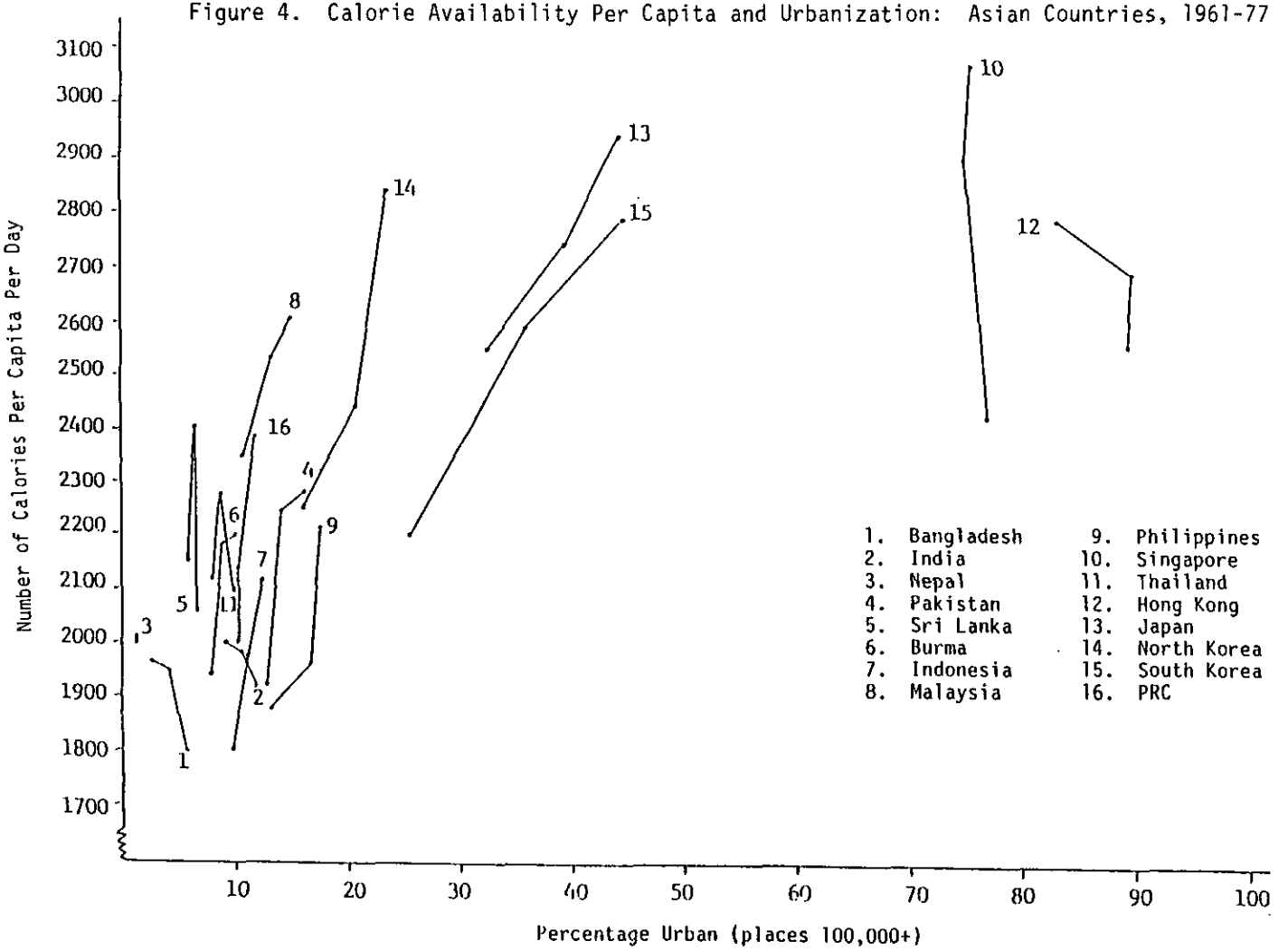
V. A Glance at the Supply Side

A look at the food balance sheets of Asian countries for 1975-77 compiled by the Food and Agriculture Organization (1980) would seem to suggest that there is no supply problem. Low-income countries of South and Southeast Asia seem to be self-sufficient with respect to the main food types[4/] in the sense that imports account for negligible shares of domestic supplies. In fact, there is a tendency for countries to become increasingly import-dependent as they move up the economic ladder. Singapore, Japan, South Korea, and increasingly Malaysia as well, exemplify this import dependence in contrast to Bangladesh, India, Pakistan, Indonesia, and Thailand, with the Philippines and Sri Lanka in between. This is a reflection, of course, of a country's shifting comparative advantage from agriculture to industry in the course of economic development.

An examination of food availability per capita in terms of calories and protein gives a different picture (Figures 4 and 5). Both calories and protein per capita per day have been increasing markedly for the developed and highly urbanized countries, increasing modestly for the middle-income countries, and declining or erratic for the low-income countries of the region. The problem with these data, however, is that they are too aggregative to be useful for meaningful policy analysis and planning. The crucial issue of distribution among broad sectors, more so among income and occupation groups within these sectors, cannot be addressed. Indeed, aggregate data, even if they show food supply adequacy, can be seriously misleading and can induce a false sense of complacency from the policy point of view, in much the same way as did creditable economic growth performance vis-á-vis the income distribution problem in many developing countries.

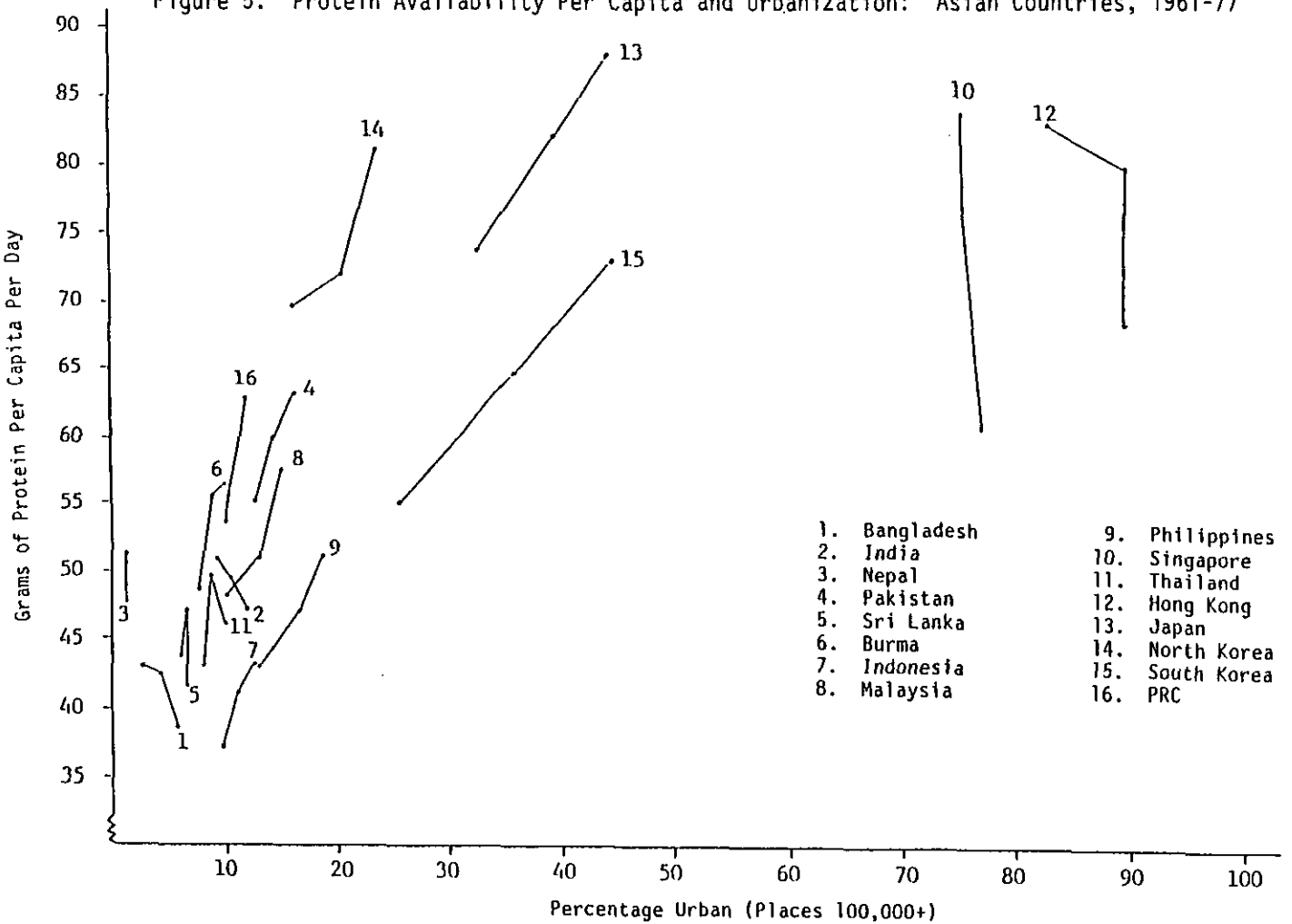
To what extent aggregate food availability can accommodate not just overall food demand, but the changing structure of demand, would depend in part on the efficiency of markets and policies that improve or supplement the market mechanism. Then, too, the question of why, despite generally increasing food supply, hunger and malnutrition

Figure 4. Calorie Availability Per Capita and Urbanization: Asian Countries, 1961-77



Source: Appendix Table 4.

Figure 5. Protein Availability Per Capita and Urbanization: Asian Countries, 1961-77



Source: Appendix Table 4.

continue to plague a great many, can be answered only in part by an aggregative and static analysis of demand or of policies relating to supply and distribution. Part of the answer would have to come from a disaggregative and dynamic analysis of demand that takes into account its changing composition resulting from both rising incomes and locational shifts of households.[5/] Food policy analysis and planning can be more realistic if, for instance, parameter estimates specific to a particular income group in rural, urban, or metropolitan areas, in respect to specific food items, are used. It then becomes possible, for example, to identify target groups as well as the types of food that are strategic for pricing of subsidy policies, or for broader production and distribution strategies (see Gray, 1982; Timmer, Falcon & Pearson, 1983).

VI. Concluding Remarks

Viewed as a series of changes in the spatial and socioeconomic structure of the population, urbanization has significant effects on patterns of demand via shifts in needs, tastes, preferences, and expectations. From most indications, developing countries in Asia are yet to experience accelerated rates of urbanization as they approach the inflection point of the urbanization curve. One way of influencing the structure of demand is for policy to operate on the determinants side of urbanization, for instance, by controlling the speed, scale, and spatial pattern of national urbanization. It is possible that by affecting these essential dimensions of urbanization, the demand for basic necessities and social amenities, for example, can be made more manageable from a policy standpoint. Attempts at influencing the speed, scale, and spatial pattern of urbanization have in fact been made, and well-known examples of these attempts are such strategies as rural development, industrial dispersal, and the promotion of small and intermediate cities. Their efficacy, however, has been rather limited, and the whys and wherefores have become a prominent subject of discussion in another forum.

But quite apart from the consideration of effectiveness of policy measures to shape urbanization trends, it would seem important, too, for policy to anticipate consequences that are bound to occur in any case. Among these consequences is the changing structure of demand

for such basic household resources as food and fuel. What is noteworthy about the demand structure is not that it will change, *because it has been changing, but that it will* change more dramatically with accelerating urbanization, let alone economic development. An important welfare implication of changing demand structure, particularly insofar as low-income urban households are concerned, is that the per capita cost of food requirements rises and yet the command over food is simultaneously reduced because of competing non-food needs. While food versus non-food purchases are a matter of individual choice, the foregoing implication underscores the more difficult bind poor urban households are in compared with rural households. Furthermore, there is the phenomenon of entitlement *shifts as households move away from* direct and trade entitlements to food and fuel in rural areas to only trade entitlements in cities.

Although food demand analysis has had a long tradition, studies in this tradition have not been done systematically to take into account the effect of urbanization, in addition to the impacts of income and price. While demand elasticity estimates from these studies can provide a clue to broad patterns or directions, they appear to be deficient as guideposts for forward-looking food policies especially in countries undergoing or about to undergo profound structural changes. Development planning with respect to the food *sector has been mainly supply-oriented and has been concerned largely* with the aggregate supply of grains. Not surprisingly, the common view is that there is no food problem. Such a view is obviously an oversimplification of a more complex issue and can be seriously misleading for policy purpose.

Given significant differences in incomes, needs and preferences among rural, urban, and metropolitan households, and considering their varied responsiveness to food and non-food goods in general as well as to specific food items, a disaggregated approach is required. This kind of analysis has been done to a limited extent for some countries. *For example, the metropolitan sector, which in a developing* country is a relatively large and distinct entity from other cities and urban areas, is lumped with the broad urban sector, thereby masking significant composition effects. Moreover, available studies have used a static one-period approach. A disaggregated sectoral analysis by socioeconomic groups in an inter-temporal framework would result in

appreciably improved guidelines for food planning policy. Finally, additional insights, probably at little extra cost, can be gained by a systematic comparison of case studies of countries at different levels of urbanization and development.

APPENDIX

Table 1. Country Names with Numbers Corresponding to Those in Figure 2.

2 Bhutan	61 Ecuador
3 Lao, PDR	62 Jamaica
4 Chad	63 Ivory Coast
5 Bangladesh	64 Dominican Republic
6 Ethiopia	66 Colombia
7 Nepal	67 Tunisia
8 Burma	68 Costa Rica
10 Mali	70 Turkey
11 Malawi	71 Syrian Arab Republic
12 Zaire	72 Jordan
13 Uganda	73 Paraguay
14 Burundi	74 Korea, Republic of
15 Upper Volta	77 Malaysia
16 Rwanda	78 Panama
17 India	80 Algeria
18 Somalia	81 Brazil
19 Tanzania	82 Mexico
21 China	83 Portugal
22 Guinea	84 Argentina
23 Haiti	85 Chile
24 Sri Lanka	86 S. Africa
25 Benin	87 Yugoslavia
26 Central African Republic	88 Uruguay
27 Sierra Leone	89 Venezuela
28 Madagascar	90 Greece
29 Niger	91 Hong Kong
30 Pakistan	92 Israel
32 Sudan	93 Singapore
33 Togo	94 Trinidad and Tobago
34 Ghana	95 Libya
35 Kenya	96 Saudi Arabia
36 Senegal	97 Kuwait
37 Mauritania	98 United Arab Emirates
38 Yemen Arab Republic	99 Ireland
39 Yemen, PDR	100 Spain
40 Liberia	101 Italy
41 Indonesia	102 New Zealand
42 Lesotho	103 United Kingdom
43 Bolivia	104 Japan
44 Honduras	105 Austria
45 Zambia	106 Finland
46 Egypt	107 Australia
47 El Salvador	108 Canada
48 Thailand	109 Netherlands
49 Philippines	110 Belgium
51 Papua New Guinea	111 France
52 Morocco	112 United States
53 Nicaragua	113 Denmark
54 Nigeria	114 Germany, Federal Republic
55 Zimbabwe	115 Norway
56 Cameroon	116 Sweden
58 Congo, PR	117 Switzerland
60 Peru	119 Hungary
	120 Romania

Table 2. Levels of Urbanization: Asian Countries, U.S. and the World, 1960-2000 (in percent)

Country	1960	1970	1980	1990	2000
Bangladesh	5.2	7.6	11.2	16.1	22.2
India	18.0	19.8	22.2	26.8	33.9
Nepal	3.1	3.9	5.0	6.8	9.8
Pakistan	22.1	24.9	28.2	33.6	41.1
Sri Lanka	17.9	21.9	26.6	32.9	40.6
Burma	19.3	22.8	27.2	33.2	40.9
Indonesia	14.6	17.1	20.2	25.2	32.3
Malaysia	25.2	27.0	29.4	34.2	41.6
Philippines	30.3	32.9	36.2	41.6	49.0
Singapore	77.6	75.3	74.1	75.0	78.5
Thailand	12.5	13.2	14.4	17.5	23.2
Hong Kong	89.1	89.7	90.3	91.4	92.6
Japan	62.5	71.4	78.3	83.0	85.9
N. Korea	40.2	50.1	59.7	67.4	72.9
S. Korea	27.7	40.7	54.8	65.2	71.4
PRC	18.7	21.7	25.7	31.5	39.1
Taiwan (China)	58.4	62.4	66.8	-	-
U.S.	70.0	73.6	77.0	80.3	83.4
World	33.9	37.4	41.1	45.8	54.2

Sources: U.N. (1982). "Estimates and Projections of Urban, Rural and City Populations, 1950-2025: The 1980 Assessment", Table 1; and Liu (1983), p. 3 for Taiwan

Table 3. Total Urban and Largest City Populations, Growth Rates, and Share of Urban Population in Largest City, 1960-2000

Country	Urban Population (in millions)			Growth Rate* (in percent)		Largest City (in millions)			Growth Rate* (in percent)		Share of Urban Population* (in percent)			City Name
	1960	1980	2000	1960-80	1980-2000	1960	1980	2000	1960-80	1980-2000	1960	1980	2000	
Bangladesh	2.6	9.9	33.0	274.1	232.9	0.5	2.8	10.2	446.4	264.3	19.6	28.7	30.9	Dacca
India	78.9	152.1	325.9	92.8	114.3	5.6	8.9	15.9	58.9	78.7	7.3	5.6	4.9	Calcutta
Nepal	0.3	0.7	2.2	145.2	210.3	0.1	0.2	0.5	61.0	164.7	41.4	26.8	22.8	Kathmandu
Pakistan	10.9	24.5	57.5	124.3	134.8	2.0	5.0	11.4	150.3	128.0	18.3	20.4	19.8	Karachi
Sri Lanka	1.8	3.9	8.6	122.1	117.4	0.5	0.6	1.1	32.0	73.9	27.7	16.4	13.2	Colombo
Burma	4.3	9.6	22.5	123.6	135.0	1.0	2.2	4.7	123.4	117.3	22.8	22.9	21.1	Rangoon
Indonesia	14.3	29.9	64.1	109.9	114.3	2.9	7.0	14.3	141.4	104.3	20.3	23.4	22.3	Jakarta
Malaysia	2.1	4.1	8.8	100.5	114.1	0.4	1.1	2.6	198.9	130.7	18.0	26.9	28.9	Kuala Lumpur
Philippines	8.5	17.8	37.8	109.3	112.0	2.3	5.7	10.5	147.6	84.2	26.9	31.8	27.8	Manila
Singapore	1.3	1.8	2.3	39.6	31.5	--	--	--	--	--	--	--	--	
Thailand	3.4	6.8	15.9	98.5	135.2	2.2	4.9	9.9	126.4	102.0	65.1	72.0	62.3	Bangkok-Thonburi
Hong Kong	2.7	4.6	6.5	68.4	40.0	--	--	--	--	--	--	--	--	
Japan	58.8	91.3	111.1	55.3	21.7	10.7	20.0	23.8	87.6	19.0	18.2	22.0	21.4	Tokyo
N. Korea	4.2	10.7	19.9	152.4	86.0	0.6	1.3	2.2	102.0	74.6	15.0	12.0	11.3	Pyongyang
S. Korea	6.9	21.1	36.2	204.1	72.0	2.4	8.5	13.7	254.4	61.2	34.1	40.3	37.9	Seoul
PRC	127.5	256.0	491.9	100.7	92.2	7.7	15.0	25.9	94.8	72.7	6.0	5.9	5.3	Shanghai
Taiwan	6.3	11.9	--	88.2	--	1.1	2.2	--	102.1	--	17.5	18.8	--	Taipei

*Computed from source tables, not from rounded figures presented here.

Sources: U.N., Patterns of Urban and Rural Population Growth, 1980. Table 48; "Estimates and Projections of Urban, Rural and City Population, 1950-2025: The 1980 Assessment," 1982, Tables 2 and 8; Liu (1982), p. 4 and Liu (1983), p. 3 for Taiwan.

Table 4. Food Supply Per Capita Per Day: Asian Countries, 1961-77

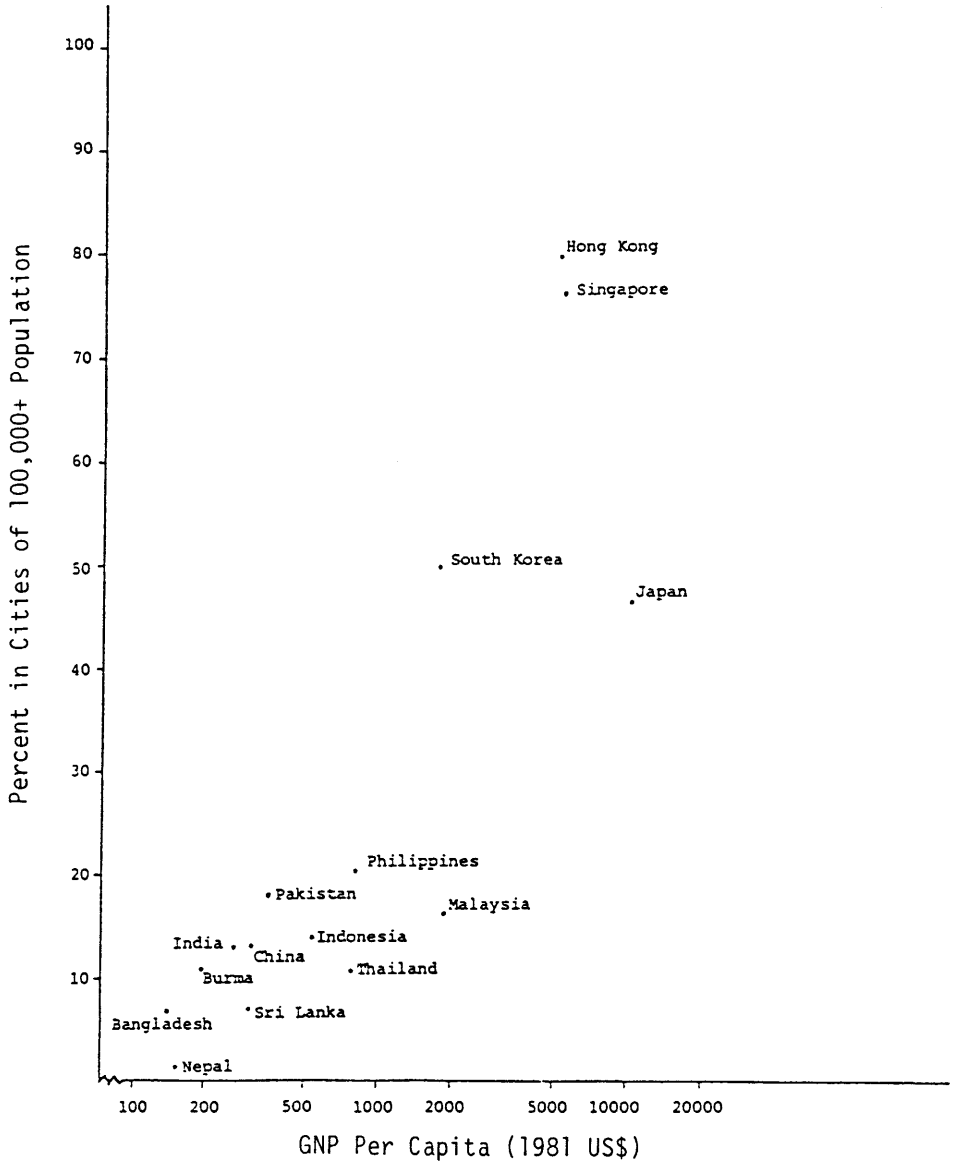
Country/Year	Calories (number)	Protein (grams)	Fat (grams)
Bangladesh			
1961-65	1968	42.9	15.9
1970	1951	42.6	16.3
1977	1796	38.5	13.3
India			
1961-65	2003	50.8	29.6
1970	1985	49.4	28.7
1977	1919	47.3	30.0
Nepal			
1961-65	2054	50.4	27.9
1970	2101	51.1	27.8
1977	2002	47.7	26.5
Pakistan			
1961-65	1920	55.0	36.6
1970	2243	59.7	40.1
1977	2281	62.9	41.6
Sri Lanka			
1961-65	2155	43.8	45.2
1970	2408	47.1	53.6
1977	2059	41.6	44.2
Burma			
1961-65	1948	48.5	31.3
1970	2179	55.4	35.2
1977	2198	56.4	30.3
Indonesia			
1961-65	1802	36.9	29.0
1970	1972	41.2	27.3
1977	2118	43.2	32.8
Malaysia			
1961-65	2352	48.2	41.2
1970	2532	51.1	40.5
1977	2613	57.6	45.5
Philippines			
1961-65	1875	42.9	28.8
1970	1964	47.1	27.9
1977	2216	51.1	32.2
Singapore			
1961-65	2430	60.8	48.9
1970	2905	77.0	59.0
1977	3074	84.2	76.8

Table 4. *(continued)*

Country/Year	Calories (number)	Protein (grams)	Fat (grams)
Thailand			
1961-65	2119	43.1	28.6
1970	2278	49.6	27.0
1977	2098	46.3	22.5
Hong Kong			
1961-65	2566	68.5	81.6
1970	2689	80.2	93.6
1977	2784	83.3	104.1
Japan			
1961-65	2549	73.8	40.8
1970	2741	82.1	60.9
1977	2946	88.0	74.1
North Korea			
1961-65	2251	69.7	21.7
1970	2443	72.1	24.4
1977	2837	81.3	26.3
South Korea			
1961-65	2204	55.0	14.7
1970	2584	64.6	21.6
1977	2785	72.9	27.1
China			
1961-65	2099	53.8	31.1
1970	2136	55.4	33.0
1977	2386	62.5	38.9

Source: FAO. (1980). Food Balance Sheets 1975-77, Average and Per Capita Food Supplies 1961-65,1967-77, Rome.

Figure 1. Levels of Citification and GNP Per Capita: Asian Countries, 1981



Notes

1/ Following accepted practice, urbanization is here defined as the rise in the proportion of total population living in urban places. This connotes the changing balance between rural and urban population brought about by spatial shifts (migration) of population from rural to urban areas as well as by differential natural increase between the two sectors. Urbanization, a structural concept and a relative measure, is not to be confused with urban population growth, and absolute measure, i.e., having no reference to rural population growth. It is obvious, nonetheless, that the two phenomena are mutually related or even overlap.

2/ Definitions of "urban" used are those of the respective countries --a practice adopted by the U.N. When a uniform definition-- cities of 100,000+ population--is used, a similar pattern obtains (see Appendix Figure 1).

3/ This point is pertinent to the preceding discussion of the urbanization cycle and its acceleration phase. In other words, because of the income-inelastic demand for food, agriculture tends to decline over time relative to industry, resulting in a rising migration rate from rural to urban areas. Often, higher-cost and processed foods become increasingly less dependent on the agricultural sector and more dependent on the agricultural sector and more dependent on imports, as will be pointed out below.

4/ Such as cereals, roots and tubers, vegetables and fruits, meat, eggs, fish, and milk.

5/ In addition, there are political-economical questions that are crucial to the issue of access and entitlements addressed by other treatises. See also Sen (1981) who argues that the food problem has to do more with entitlements rather than availability.

References

Alderman, Harnold C. and C. Peter Timmer. 1980. "Food Policy and Food Demand in Indonesia," Bulletin of Indonesian Economic Studies, Vol. 16, pp. 83-93.

Boediono. 1978. "Elasticitas Permintaan untuk Berbagi Barang di Indonesia: Penerapan Metode Frisch," "Demand Elasticities for Various Goods in Indonesia: The Frisch Estimating Technique", Ekonomi dan Kevangan Indonesia.

Canlas, Dante B. 1983. "Estimating Price and Income Elasticities of the Demand for Food: The Philippines, 1965."

Dixon, John A. 1982. "Food Consumption Patterns and Related Demand Parameters in Indonesia: A Review of Available Evidence," Washington D.C.: International Food Policy Research Institute.

Food and Agriculture Organization. 1980. Food Balance Sheets 1975-77 Average and Per Capita Food Supplies 1961-1965, 1967-1977. Rome: Food and Agriculture Organization.

Gray, Cheryl W. 1982. "Food Consumption Parameters for Brazil and Their Application to Food Policy," Research Report 32. Washington D.C.: International Food Policy Research Institute.

Hay, F.G. and R.P. Sinha. 1972. "Analysis of Food Expenditure Patterns of Industrial Workers and Their Families in a Developing Country," Journal of Development Economics, Vol. 8, pp. 425-446.

Hedley, Douglas. 1978. "Supply and Demand for Food in Indonesia," paper presented at the Workshop on Research Methodology, Department of Agricultural Economics and Rural Sociology, Bogor Agricultural University.

Kaneda, Hiromitsu. 1968. "Long-Term Changes in Food Consumption Patterns in Japan, 1878-1964." Food Research Institute Studies, Vol. 8, pp. 3-32.

Liu, Paul K. C. 1982. "Mobility and Utilization in Relation to Urbanzation in Taiwan," Industry of Free China. May & June, pp. 1-17.

_____. 1983. "Factors and Policies Contributing to Urbanization and Labor Mobility in Taiwan," Industry of Free China. May, pp.1-20.

Mohan, Rakesh. 1982. "The Effects of Population Growth, of the Pattern of Demand, and of Technology on the Process of Urbanization: An Application to India," World Bank Staff Working Paper No. 520, 48 pp.

Pak, Ki Hyuk and Kee Chun Han. 1969. An Analysis of Food Consumption in the Republic of Korea, 1964-1967 with Projected Trends, 1968-1971. Seoul: Yonsei University.

Pernia, Ernesto M. 1983. "Food, Fuel and Urbanization: An Explora-

tion of Relationships and Research Issues," Working Paper No. 83-22. East-West Resource Systems and Population Institutes, (November), 42 pp.

Renaud, Bertrand M. 1981. National Urbanization Policy in Developing Countries, New York: Oxford University Press.

Rogers, Andrei. 1978. "Migration, Urbanization, Resources and Development," Alternatives for Growth: The Engineering and Economics of Natural Resources Development. McMains, Harvey J. and L. Wilcox (eds.), Cambridge, Mass.: Ballinger, pp. 149-217.

Sen, Amartya. 1981. "Ingredients of Famine Analysis: Availability and Entitlements," Quarterly Journal of Economics, Vol. 46, pp.433-464.

Timmer, C. Peter, W.P. Falcon and S.R. Pearson. 1983. Food Policy Analysis. Baltimore: Johns Hopkins University Press.

United Nations. 1980. Patterns of Urban and Rural Population Growth. New York: United Nations.

_____. 1982. "Estimates and Projections of Urban, Rural and City Populations, 1950-2025: The 1980 Assessment."

World Bank. 1972. Urbanization, Sector Paper. Washington, D.C.: World Bank.

_____. 1983. World Development Report 1983. Washington,D.C.: World Bank.