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URBANIZATION AND ECONOMIC DEVELOPMENT IN THE PHILIPPINES:
SOME IMPLICATIONS FOR REGIONAL POLICY

by

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ABSTRACT

The paper analyzes urbanization in the context of population growth, migration, and economic development. It suggests that the process of national urbanization decelerated in the post-war period due to the acceleration of population growth in the rural sector, stagnant agricultural productivity, and capital-intensive industrialization. The common concern about rapid urbanization due to massive rural-to-urban migration would seem to be better directed to the unremitting movement of population to the metropolitan region and the consequent widening disparities between this region and all the other regions.

The major determinants of rural-urban population shifts appear to be socioeconomic development factors in both rural and urban sectors rather than demographic pressure in rural areas, suggesting that rural development may not be considered as an antidote to urbanization. Rather, it implies that rural development along with a purposive and well-designed industrial location strategy can make important contributions to a policy of more balanced urbanization. Although rural demographic pressure may not have been effective as yet in unleashing population, it may well be so in the near future as land frontiers disappear and rural density "limits" are reached. A serious regional development policy is, therefore, needed so that potential massive population flows can be re-routed to areas other than the metropolitan region.

URBANIZATION AND ECONOMIC DEVELOPMENT IN THE PHILIPPINES:
SOME IMPLICATIONS FOR REGIONAL POLICY*

Ernesto M. Pernia

Urbanization has been observed to be closely tied to economic development in the history of advanced nations.¹ It was natural for labor and the population in general to constantly shift from the rural to the urban sector as the economy increasingly matured. This proceeded gradually at first and then rapidly until the overwhelming majority of the people were settled in cities and only a handful was left to tend to the farms.

Apparently, on the basis of the historical experience of developed countries, some scholars contend that cities can play a catalytic role in the economic growth of less developed countries.² In fact, it is held that the process of urbanization is an integral

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¹For example, Eric E. Lampard elaborates on this point in "The History of Cities on Economically Advanced Areas," Economic Development and Cultural Change 3 (January 1955): 81-136.

²An early proponent of this view is Bert F. Hoselitz, "The Role of Cities in the Economic Growth of Underdeveloped Countries," Journal of Political Economy 61 (June 1953): 195-208 and "Urbanization and Economic Growth in Asia," Economic Development and Cultural Change 6 (October 1957): 42-54.

component of development in general.³ Hence, to the extent that urbanization is an inevitable phenomenon in the course of development, there is a need to incorporate it explicitly in national plans so that it can be guided onto a socially desirable pattern.⁴

The acceleration of population growth in recent years and what has appeared to be a resultant rapid urbanization, however, have led to contrasting views. Many believe that urbanization is, to a large extent, not the consequence of economic development but massive migration to urban areas due to population pressure from rural areas. Thus, urbanization has far overtaken socioeconomic development, giving rise to "overurbanization" or "pseudourbanization" in less developed countries.⁵ An implication is that contemporary urbanization should be stopped or reversed.

³ Among others, Leo F. Schnore analyzed cross-sectional data on about 75 countries to arrive at this conclusion in "The Statistical Measurement of Urbanization and Economic Development," Land Economics 37 (August 1961): 229-245.

⁴ John Friedmann advocates a policy of "deliberate" and accelerated urbanization in order to step up development in "The Strategy of Deliberate Urbanization," Journal of American Institute of Planners 34 (November 1968): 364-373. See also Gavin Jones, "Implications of Prospective Urbanization for Development Planning in Southeast Asia," Population and Development in Southeast Asia, eds. John F. Kantner and Lee McCaffrey (Mass.: Lexington Books, 1975), pp. 99-117; and John Friedmann and Flora Sullivan, "The Absorption of Labor in the Urban Economy: The Case of Developing Countries," Economic Development and Cultural Change 22 (April 1974): 385-413.

⁵ The negative position toward urbanization has become popular in recent years. See, e.g., T.G. McGee, The Southeast Asian City: A Social Geography of the Primate Cities of Southeast Asia (London: G. Bell & Sons, 1967); and The Urbanization Process in the Third World (London: G. Bell & Sons, 1971); Gunnar Myrdal, Asian Drama: An Enquiry into the Poverty of Nations, 3 vols. (New York: Pantheon Press, 1968) pp. 468 ff.; and Raanan Weitz ed., Urbanization and the Developing Countries (New York: Praeger, 1973).

In this paper we argue that, while a model of urbanization wholly derived from the Western experience could be gravely misleading, the negative views about urbanization seem to stem from mistaken notions of the relationship between urbanization, population growth, and development. Taking the Philippines as a case, we attempt to demonstrate that urbanization is closely linked to economic development, and that the main effect of population growth acceleration is to dampen the pace of urbanization rather than to untie it from the development process.

In the next section we set out a conceptual framework. Then, we survey the national trend of urbanization and its relationship to population growth and economic development. This is followed by an examination of urbanization and development at the regional level. We then analyze province-level data in a regression framework. Lastly, we present the conclusion and some implications.

I. Conceptual Framework

The negative effect of population growth on urbanization can conceivably come about in three ways: (a) directly, because an acceleration in population growth may be sharper in the rural sector than in the urban sector; (b) also directly, because high fertility may entail greater dependency burden which would retard mobility; and (c) indirectly, through its negative consequence on economic development. On the other hand, development can affect urbanization positively also in three ways: (a) directly, because rural development, in terms

of higher agricultural productivity, higher literacy and communication levels, tends to occasion greater rural-to-urban migration; (b) directly, because urban development in the way of jobs and other human commodities attract in-migrants; and (c) indirectly, through its negative effect on population growth.

It is important to distinguish urbanization from urban growth although the two concepts are commonly confused in the literature and in discussions.⁶ Whereas urbanization hinges on the growth of both urban and rural populations, urban growth as such may be independent of rural growth. As Kingsley Davis puts it: "A common mistake is to think of urbanization as simply the growth of cities. Since the total population is composed of both the urban population and the rural, however, the 'proportion urban' is a function of both of them. Accordingly cities can grow without any urbanization, provided that the rural population grows at an equal or a greater rate."⁷ The distinction

⁶See, for example Frederick C. Terzo, Urbanization in the Developing Countries: The Response of International Assistance, International Urbanization Survey (New York: The Ford Foundation, 1972); and similar country surveys done by the Ford Foundation staff. The indiscriminate use of the two concepts probably originated in United Nations studies, like in Philip M. Hauser ed., Urbanization in Asia and the Far East (Calcutta: UNESCO Research Center on the Social Implications of Industrialization in Southeast Asia, 1957); and Urbanization in the Second Development Decade (New York: United Nations, 1970). On the other hand, other studies make a clear distinction between urbanization and urban growth, e.g., Kingsley Davis, "The Urbanization of the Human Population," Scientific American 213 (1965): 40-53; and World Urbanization 1950-1970, 2 vols. (Berkeley: University of California, Institute of International Studies, 1972); also World Bank, Urbanization, Sector Working Paper (Washington, D.C., 1972); and Gavin Jones, "Implications of Prospective Urbanization for Development Planning in Southeast Asia."

⁷"The Urbanization of the Human Population," p. 5.

between urbanization and urban growth is analogous to that between economic development and economic growth -- the former referring to structural and qualitative changes, the latter to gross increases in national product.⁸ Inherent, therefore, in the term urbanization is the notion of structural transformation of the population and not the absolute growth of its urban segment.

In the present paper we adopt the following basic definitions:

(a) level or degree of urbanization is the proportion of the population living in urban places; (b) urbanization as such (or the process of urbanization) means the rise in the urban proportion; (c) rate of urban growth is the percentage change of urban population during an interval (and similarly for rate of rural growth); and (d) tempo or pace of urbanization is the difference between the urban and the rural rates of growth.⁹

⁸ See, e.g., Charles P. Kindleberger, Economic Development (New York: McGraw Hill, 1958), p. 3. For instance, a more meaningful indication of development, apart from the structural shift from agriculture to industry, is income distribution as reflected in the Gini ratio, or the proportion of the population above some poverty threshold. Better income redistribution can proceed quite independently of growth in GNP, and vice versa. For the Philippine experience of stagnating or slow income distribution in the face of respectable advances in GNP, see Mahar Mangahas, "The Measurement of Philippine National Welfare," Social Indicators Project (Manila: Development Academy of the Philippines, 1975).

⁹ An alternative measure for tempo or pace of urbanization is simply the percentage change in urbanization level or urban proportion during an interval, but this has inherent pitfalls, and urban-rural growth difference (URGD) is recommended as a superior measure. See United Nations, Methods for Projections of Urban and Rural Population, Manual VIII, Manuals on Methods of Estimating Population (New York, 1974), pp. 26-31.

II. National Trends

Trends in urbanization and growth of total, urban, and rural populations across major census years are presented in Table 1. A noteworthy observation that can be gleaned from the table is the deceleration in the tempo of urbanization that accompanied the acceleration in total population growth during the 1960-1970 period. This acceleration seems to have occurred in the rural sector rather than in the urban sector, thus dampening the rise in urbanization level. In fact, as Table 1 demonstrates, the rate of growth fell slightly for the urban population, but increased significantly for the rural population during the 1960s as compared to the previous period (1939-1960). It is also significant to note that, contrary to common impression, total urban growth in the 1960-1970 period was mostly (about 64 percent) generated by urban natural increase, with only a minor component (11 percent) due to net rural-urban migration, and the remainder due to the reclassification of places. By contrast, during the 1939-1960 period, net rural-urban migration contributed almost a quarter (23 percent) to total urban growth while natural increase accounted for just over one-half of it.¹⁰

¹⁰ A decomposition of urban growth over several periods is done in Ernesto M. Pernia, "A Method of Decomposing Urban Population Growth and an Application to Philippine Data," Papers of the East-West Population Institute, No. 41 (Honolulu: East-West Center, 1976). A similar finding on the relatively minor impact of rural-urban migration on urban growth in Latin American countries was reported by Eduardo E. Arriaga, "Components of City Growth in Selected Latin American Countries," Milbank Memorial Fund Quarterly 46 (April 1968): 237-252. For opposite views without documentation, see, e.g., Rhoads Murphey, "Urbanization in Asia," Ekistics 21 (January 1966): 8-17.

TABLE 1

Level and Tempo of Urbanization, Total, Urban and Rural Populations,
and Respective Annual Growth Rates, Philippines: 1903-1970

Variable	1903	1939	1960	1970
Level ^a (%)	13.1	21.6	29.8	32.9
Tempo ^b (%)		1.73	2.11	1.46
Total Population (000's)	7,635	16,000	27,023	36,684
Percent Change		2.09	2.52	3.01
Urban Population (000's)	1,000	3,451	8,072	12,069
Percent Change		3.52	4.10	4.02
Rural Population (000's)	6,635	12,550	19,015	24,616
Percent Change		1.79	1.99	2.56

^a urban proportion

^b urban-rural growth difference

NOTE: Data on urban and rural populations in this table and throughout the paper were derived by consistently applying the National Census and Statistics Office 1960 urban definition to the population censuses of 1903, 1939, 1960, and 1970. The procedure entailed inspecting each municipality, and its constituent población and barrios, with boundaries at each census year, and then culling urban inhabitants according to the urban criteria. See Appendix for the definition of an urban place.

Source: National Census and Statistics Office, Census of Population (Manila, various years)

The slowness of recent Philippine urbanization becomes more manifest when a comparison is made with the experience of Western countries when they were at a similar phase of urbanization in the 19th century. And, relative to the recent experience of Southeast and East Asian countries, the Philippines evinced the most sluggish urbanization.¹¹ This phenomenon may be directly related to the conditions in the industrial sector and the agricultural sector.

The deleterious effects of industrialization policy via import substitution in developing countries during the 1950s and 1960s is now well understood.¹² The Philippines seems to be one of those economies whose development suffered badly on the account of that policy.¹³ Because such industrialization strategy turned out to be, inter alia, inordinately capital-intensive, the urban-industrial sector could not generate the capacity to absorb much additional labor; that is, it could not have been too attractive to migrants from the

¹¹For an elaboration of this point, see Ernesto M. Pernia, "Urbanization in the Philippines: Historical and Comparative Perspectives," Papers of the East-West Population Institute, No. 40 (Honolulu: East-West Center, 1976), pp. 19-27.

¹²See, e.g., Hla Myint, Southeast Asia's Economy: Development Policies in the 1970s (New York: Praeger, 1972).

¹³See Gerardo Sicat, Economic Policy and Philippine Development (Quezon City: University of the Philippines Press, 1972), esp. pp. 266 ff.

rural-agricultural sector. For example, comparative statistics show that employment growth in manufacturing was relatively weak in the Philippines:¹⁴

	<u>1963</u>	<u>1967</u>	<u>1970</u>
Philippines	100	105	109
West Malaysia	100	126	---
South Korea	100	175	216
Japan	100	111	120

Of course, the lack of job opportunities in the urban sector does not necessarily deter migration from the rural areas.¹⁵ We must, therefore, look into the agricultural sector for complementary explanation on why the rate of rural-urban migration was kept low, or at least lower than is popularly supposed.

Data on cereal production of Southeast Asian countries reveal that, during the 1950s and at least the first half of the 1960s, the growth of population exceeded the increase in cereal output in the Philippines and Indonesia.¹⁶ In Thailand, Burma, and West Malaysia

¹⁴United Nations, Statistical Yearbook (New York, 1973), Table 23.

¹⁵Michael P. Todaro, for example, argues that migration persists in the face of high urban unemployment because people migrate due to 'expected' rather than nominal wage differentials, which is determined by the interaction of the nominal wage and the probability of obtaining employment in the urban sector ("A Model of Labor Migration and Urban Unemployment in Less Developed Countries," American Economic Review 59 (March 1969): 138-148).

¹⁶George L. Hicks and Geoffrey McNicoll, Trade and Growth in the Philippines (Ithaca: Cornell University Press, 1971), p. 32.

the margin of output growth over population growth ranged from over one-fourth to just under two-thirds. Productivity was the lowest in the Philippines contributing only 13 percent to output change, with the remainder accounted for by the expansion of farm area.¹⁷ Stagnant agricultural productivity implies that farm workers had to keep increasing their numbers pari passu with the expansion of farm lands to be able to furnish, if barely, the necessary crops to a fast-growing population.¹⁸ This is evidenced by data on labor and land productivities as well as land/labor ratio in the Philippines, as follows:¹⁹

<u>Year</u>	<u>Output/Labor</u>	<u>Output/Land</u>	<u>Land/Labor</u>
1950	86	91	94
<u>1955</u>	100	100	100
1960	103	96	108
1965	112	105	107
1968	102	106	96

¹⁷West Malaysia, a rapidly urbanizing country, evinced the highest agricultural productivity hand in hand with the strongest industrial performance (Pernia, "Urbanization, Population Growth, and Development in the Philippines," (Ph.D. diss., University of California at Berkeley, 1976), pp. 35-39).

¹⁸While there may still be some unused gross potential of agricultural lands, it is dubious if land expansion can still be counted upon in the future considering the cost of conversion and problems of ecological balance. See, e.g., International Labour Office, Sharing in Development: A Programme of Employment, Equity, and Growth for the Philippines (Geneva, 1974), pp. 82-83; also pp. 55-108, on the need to mobilize the lethargic rural sector.

¹⁹Hicks and McNicoll, Trade and Growth in the Philippines, p. 57.

A slackening in aggregate economic growth after 1950 can also be pointed out. While no data on GNP before the war are available, the average annual growth rates of real GNP and GNP per capita appear to have decelerated markedly and steadily after the 1946-1950 period on to the subsequent two decades.²⁰

In sum, the point is that, had economic policy fostered employment in industry and productivity in agriculture, economic development and, as a consequence, urbanization would have been more rapid. And, to the extent that total population growth could have been slower, rural-urban migration would have been greater relative to the increase of both urban and rural populations but smaller in absolute terms.

III. Regional Patterns.

Regional patterns of urbanization can be conveniently and instructively presented by grouping the country's twelve regions into metropolitan, more urbanized, less urbanized, and frontier regions. The level of urbanization that divides the metropolitan and more urbanized regions, on the one hand, and the less urbanized and frontier regions, on the other, is the national level in 1939, 1960, and 1970 computed excluding Metropolitan Manila.²¹ The regional groupings

²⁰ Estimates from the National Economic and Development Authority (NEDA) data. See Pernia, p. 81.

²¹ When Metro Manila is included in the computation, the national average becomes too high and virtually all regions fall below the average.

according to their respective urbanization levels during the four major census years and the corresponding intercensal tempos are displayed in Table 2, and graphed for better appreciation in Figure 1. Figure 2 illustrates the geographic positions of the regions.

The data in Table 2 and Figure 1 can be briefly summarized. First, the metro region started out already in 1903 at a much higher level (77 percent) than all other regions, urbanized very rapidly and completed the process by 1970. Thus, it has been an urban "island" in a predominantly rural "sea", as Figure 1 dramatically illustrates. Second, the more urbanized regions, comprising Central-Southern Luzon and Western-Central Visayas, started out at a level (10 percent) lower than the less urbanized group, but proceeded fast, particularly after 1939, reaching 30 percent in 1970. Third, the less urbanized regions of Ilocos, Bicol, and Eastern Visayas urbanized extremely sluggishly, gaining merely eight points (12 to 20 percent) throughout the entire period of some seven decades. This group of regions is characterized by consistently severe net out-migration and incomes even lower than those in the frontier regions, as will be shown below. Fourth, the frontier regions of Cagayan and Mindanao were the least urban in 1903 (6 percent), urbanized most rapidly up to 1939, but diminished in speed thereafter, remaining still the least urban at 18 percent in 1970.²² Fifth, the national trend changes considerably when the metro region is excluded, that is, the levels are consequently lower and the tempos slower.

²²The rapid pace before 1939 can be attributed to massive frontier-ward flows which subsequently slowed down and shifted to the metropolitan and more urbanized regions.

TABLE 2
Regional Urbanization Levels and Tempos, 1903-1970 (in percent)

Region	Level				Tempo		
	1903	1939	1960	1970	1903-39	1939-60	1960-70
Metro Manila	76.9	90.3	98.1	100.0	3.0	8.3	4.9
<u>More Urbanized</u>	<u>10.1</u>	<u>17.5</u>	<u>26.7</u>	<u>30.5</u>	<u>1.9</u>	<u>2.6</u>	<u>1.9</u>
Central Luzon	11.1	16.5	26.5	31.8	1.3	2.9	2.6
Southern Luzon	10.1	18.0	26.8	32.8	1.9	2.5	2.9
Western Visayas	13.3	21.5	30.5	27.6	1.6	2.2	-1.4
Central Visayas	5.7	13.7	22.2	28.5	2.8	2.8	3.3
<u>Less Urbanized</u>	<u>12.5</u>	<u>16.5</u>	<u>19.8</u>	<u>20.5</u>	<u>0.9</u>	<u>1.0</u>	<u>0.4</u>
Ilocos	13.8	15.9	17.6	20.6	0.5	0.6	1.9
Bicol	14.3	18.0	21.9	21.8	0.7	1.1	-0.1
Eastern Visayas	9.5	15.4	18.9	19.0	1.6	1.2	0.1
<u>Frontier</u>	<u>5.8</u>	<u>16.2</u>	<u>18.6</u>	<u>18.3</u>	<u>3.4</u>	<u>0.8</u>	<u>-0.2</u>
Cagayan	3.4	11.5	14.1	14.3	3.8	1.2	0.1
Western Mindanao	3.8	21.7	16.8	16.2	5.7	-1.6	-0.4
Northern Mindanao	12.5	15.2	20.2	18.7	0.6	1.7	-1.1
Southern Mindanao	1.6	18.1	20.9	21.5	7.8	0.9	0.4
<u>Philippines</u>	<u>10.2</u>	<u>17.0</u>	<u>22.9</u>	<u>24.8</u>	<u>1.7</u>	<u>1.8</u>	<u>1.0</u>
(excl. metro)							
Philippines	13.1	21.6	29.8	32.9	1.7	2.1	1.5

Note: Metro Manila comprises the four cities of Manila, Quezon, Caloocan, Pasay, and the 13 municipalities of Makati, Mandaluyong, Navotas, San Juan, Malabon, Marikina, Las Piñas, Parañaque, Pateros, Pasig, Taguig, Meycauayan, and Valenzuela. More urbanized regions are those whose 1939, 1960, and 1970 urbanization levels were above the national (excluding metro) average; less urbanized regions had 1939, 1960, and 1970 urban levels below the national average; and frontier regions had urban levels below the national average but experienced consistently significant net in-migration. See also note to Table 1 on how urban data were derived.

Source: National Census and Statistics Office, Census on Population (Manila, various years)

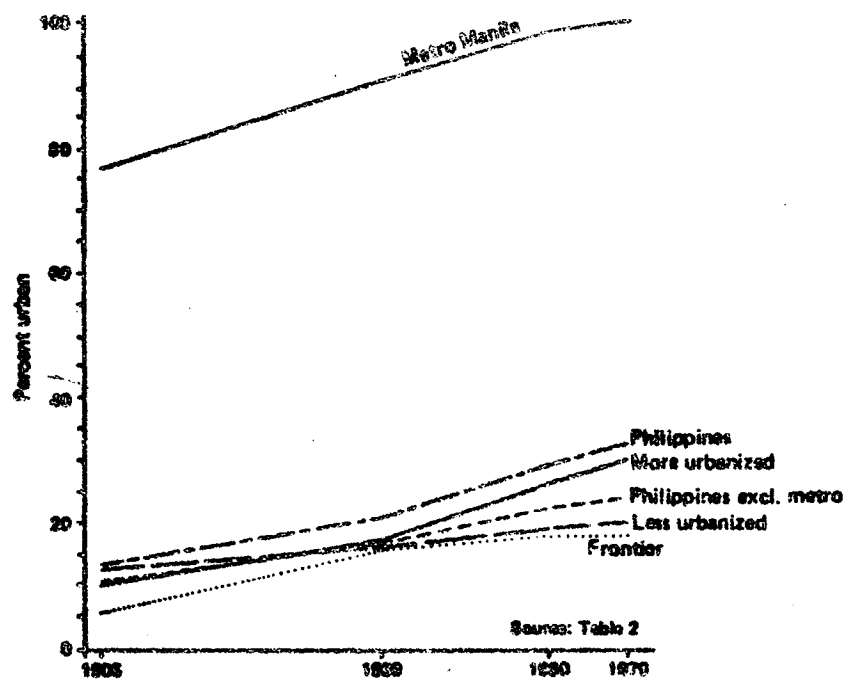


Figure 1 Urbanization trends by broad regions and for the country as a whole

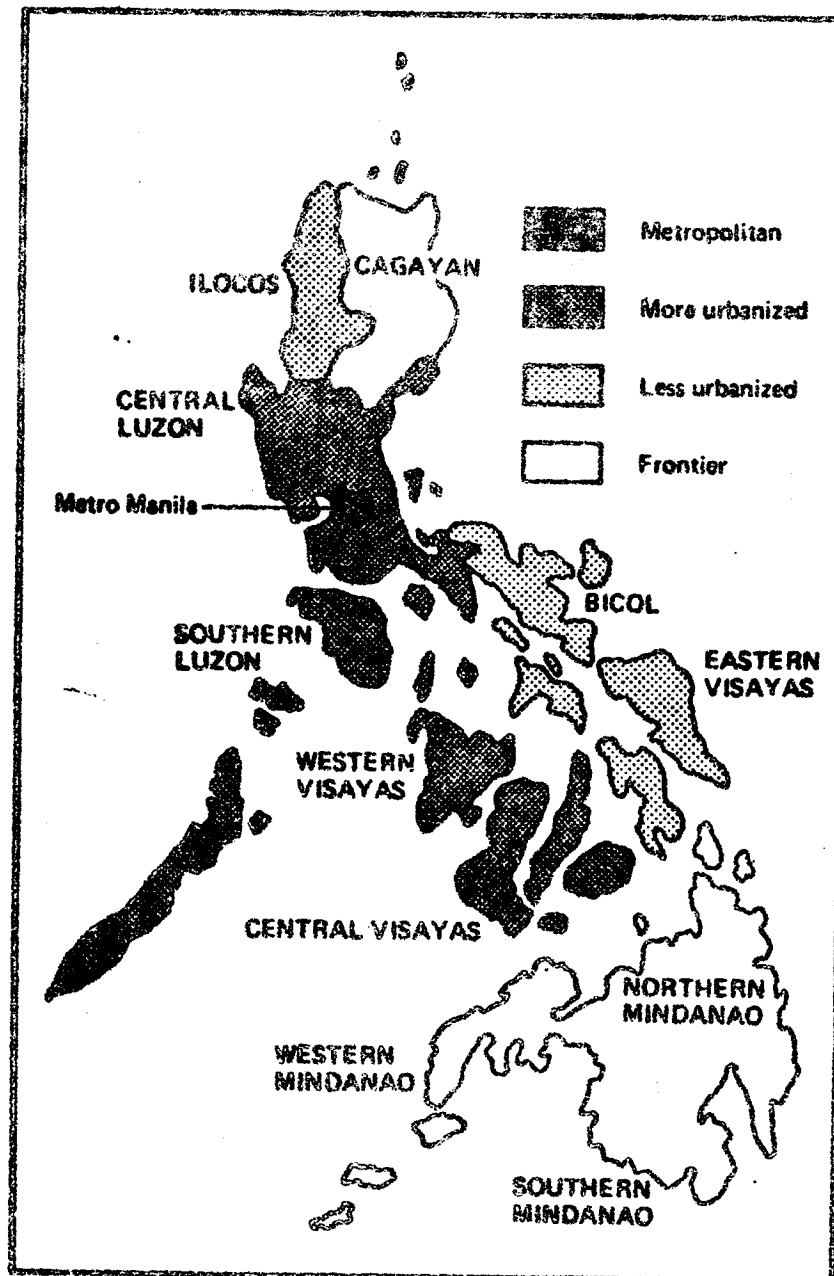


Figure 2 Philippines : metropolitan, more urbanized, less urbanized, and frontier regions, 1960 and 1970

The singularity of Metropolitan Manila can be accounted for by the fact that close to two-thirds of the country's manufacturing activity, not to mention the presence of government offices, major educational institutions and so forth, are concentrated in this area.²³ Not surprisingly, therefore, it has continuously drawn population from the other regions, including the more urbanized ones, so that its share of the total urban population has increased unremittingly from a fourth in 1903 to a third in 1970. Its population of some four million in 1970 was more than eight times the size of the next largest metro area, Cebu, located about three hundred miles south.

Setting Metro Manila aside, the regional patterns over time explain further the faltering rhythm of national urbanization noted in the preceding section. All regions evinced decelerating urbanization in the 1960-1970 period, and this was especially pronounced for the less urbanized and frontier regions, which virtually stagnated. In 1970, these regions were five or more percentage points below the national (excluding metro) average, and 10 or more points below the more urbanized level. The divergence between the less urbanized and frontier regions, on the one hand, and the more urbanized regions, on the other, has become very significant indeed. To illustrate, for example, it took approximately 25 years for the country as a whole to transform itself from 19 percent to 30 percent urban.

²³ Metro Manila comprises the four chartered cities of Manila, Caloocan, Pasay, Quezon, and the thirteen municipalities of Makati, Mandaluyong, Navotas, San Juan, Malabon, Marikina, Las Piñas, Parañaque, Pateros, Pasig, Taguig, Meycauayan, and Valenzuela. The total metro land area is about 610.8 square kilometers.

As expected, interregional disparities in urbanization are associated with differences in industrialization and income. Table 3 shows that, in 1960, about two-fifths of the labor force in the more urbanized regions were employed in the industrial sector compared to less than one-third in the less urbanized regions. In 1970, the disparity widened to 24 percentage points as more than one-half (56 percent) of the labor force was industrialized in the more urbanized regions and only one-third in the less urbanized group. On the other hand, there was a nine-point difference between the less urbanized and frontier regions in 1960, which narrowed to merely four percentage points in 1970. With the singular case of Greater Manila excluded, the correlation coefficient (r) between levels of urbanization and industrialization for the eleven regions was 0.87 for 1960 and 0.93 for 1970. Moreover, a positive, though weak ($r = 0.25$), relationship obtained between tempos of urbanization and industrialization during the interval.²⁴

A close positive association between regional urbanization and family income levels (Table 3) is also apparent. The correlation coefficient is 0.78 with Greater Manila excluded, and goes up to 0.97 with the inclusion of Greater Manila. It is interesting to note that the frontier regions generally had higher incomes compared to the less urbanized regions. Although the frontier regions were backward in terms of industrialization, they seemed to be better off with respect to

²⁴ Analogous to urbanization tempo, industrialization tempo is the difference between the growth rates of non-primary and primary employed labor force.

TABLE 3

Labor Force Industrialization Levels (percent) in 1960 and 1970 and Mean Family Incomes (pesos) in 1971, by Region

Region	1960 Industrialization ^a	1970 Industrialization ^a	Mean Family Income
Greater Manila ^b	98.9	98.6	7,785
<u>More Urbanized</u>	<u>40.7</u>	<u>55.8</u>	<u>3,943</u>
Central Luzon	41.6	60.2	4,127
Southern Luzon	52.5	67.5	4,332
Western Visayas	30.6	41.7	3,206
Central Visayas	33.7	41.5	2,548 ^c
<u>Less Urbanized</u>	<u>27.1</u>	<u>32.2</u>	<u>2,754</u>
Ilocos	19.9	31.7	3,299
Bicol	31.6	36.4	2,785
Eastern Visayas	28.6	27.9	2,548 ^c
<u>Frontier</u>	<u>18.2</u>	<u>28.3</u>	<u>3,217</u>
Cagayan	13.6	22.4	2,390
Western Mindanao	18.9	24.9	3,062 ^d
Northern Mindanao	22.9	34.5	3,062 ^d
Southern Mindanao	15.4	27.6	3,577
Philippines	34.1	45.4	3,736

^aIndustrialization of employed workers aged 10 and over, i.e., proportion in non-primary activities.

^bA smaller version of Metro Manila comprising the cities of Manila, Caloocan, Pasay, Quezon, and the municipalities of Makati, Mandaluyong, Navotas, and San Juan.

^cCentral and Eastern Visayas were taken as one region in collecting income data.

^dDitto for Western and Northern Mindanao.

Sources: National Census and Statistics office, Census on Population; and "Income and Expenditures in the Philippines:1971," An Economic Situation Report (Manila, 1960, 1970; and 1972).

income because of their agricultural endowments. For this reason, whereas the less urbanized regions suffered severe out-migration, as noted above, the frontier regions experienced significant in-migration and comparatively little out-migration.²⁵

IV. Province-Level Analysis

The hypothesized relationship between urbanization, population growth, and development may now be tested more rigorously in a regression framework. Using province-level data, this approach should be able to explain the differences in urbanization across provinces.²⁶ In other words, it should enable us to identify specific variables underlying the process of urbanization as well as the relative importance of each variable.

Theoretical Model

The general model to be tested may be formulated as

$$U = f(MC, FM, R, CWR, UI, FD, RN, PM)$$

where

U = level of urbanization or proportion urban,

MC = manufacturing and commercial establishments
(employing 10 or more workers) per 100,000
population,

²⁵For the patterns of interregional migration, see Pernia, pp. 100-111.

²⁶The regions of the country are further subdivided into provinces. In 1960, there were 54 provinces excluding Greater Manila; in 1970, the number increased to 66 because certain provinces were split. For the analysis we use the 53 (less Rizal which is too atypical) provinces of 1960 because we have a complete data set for these.

FM = farm machines (tractors and harvesting machines) per 100,000 farm population,

R = radio ownership -- percent of occupied dwelling units with radio,

CWR = child-woman ratio -- children aged 5 to 9 per 1,000 women aged 20 to 49,

UI = urban-rural in-migration ratio -- the ratio of the number of urban in-migrants to rural in-migrants in a province from other provinces,

FD = farm density -- farm population per 1,000 hectares of farm area,

RN = road network -- kilometers of roads (weighted by type) per 1,000 kilometers of land area, and

PM = proximity to Metro Manila -- a dummy variable taking the value of 1 if a province belongs to the region of Central Luzon or Southern Luzon and 0 otherwise.

The independent variables may be roughly classified as: economic -- MC and FM; social variable -- R; demographic variables -- CWR, UI, and FD; and situational variables -- RN and PM. MC denotes the degree of provincial industrialization and commercialization; inasmuch as industrial and commercial establishments are mostly located in urban areas, they would exert a "pull" from rural areas. FM indicates the level of farm mechanization or the state of agricultural technology, which would tend to displace actual as well as potential farm workers, who would then be inclined to migrate to urban areas. R signifies several things, such as levels of both intra-and inter-provincial communication, literacy, and relative affluence -- all of which would have a positive impact on urbanization. CWR is a proxy for level of fertility and burden of dependency which would have a retardating effect on migration and

urbanization; alternatively, to the extent that rural fertility is higher than urban fertility, it could exert a demographic pressure to migrate from rural areas. UI is designed to capture the exogenous impact of in-migration in urban areas relative to in-migration in rural areas of a province from other provinces. FD is assumed to measure the "push" from the farms which would mean a positive effect on urbanization. RN would also exert a positive effect on urbanization to the extent that it facilitates, or lowers the barriers to, spatial mobility. Finally, PM is a measure of the radial influence of Metropolitan Manila on surrounding provinces relative to other provinces located farther away.

We assume that the effects on urbanization of socioeconomic and demographic conditions at a particular period would materialize only after some time lag. In other words, a "lagged effects" model would explain differences in provincial levels of urbanization at time $t+n$ using the independent variables at time t . Alternatively, we may assume that conditions at the start of some time interval affect changes in urbanization levels during the interval. Accordingly, a "deviational changes"²⁷ model would use the independent variables at time t to explain changes in provincial levels of urbanization between t and $t+n$.

²⁷ This specification seems superior to absolute changes or the usual rates of change during an interval which would tend to be biased in favor of those at lower or higher levels. See Otis D. Duncan et al., Statistical Geography: problems in analyzing areal data (Glencoe, Illinois: Free Press, 1961), pp. 162-163.

The general model may, therefore, be specified as two types of equations. The "lagged effects" equation would be stated as

$$U_{t+n} = f(MC_t, FM_t, R_t, CWR_t, UI_{t+n-t}, FD_t, RN_t, PM).$$

And the "deviation changes" equation would be formulated as

$$U_{t+n} - \hat{U}_{t+n} = f(MC_t, FM_t, R_t, CWR_t, UI_{t+n-t}, FD_t, RN_t, PM)$$

where

$\hat{U}_{t+n} = a + b U_t + e$, and the other notations are as defined above. To the extent that the independent variables in the two models are lagged, they are predetermined or exogenous. Consequently, they are independent of the error terms, and the problem of "simultaneous-equations bias" is avoided.²⁸ As formulated, the models may be useful in predicting urbanization levels, say ten years hence, given the data on the explanatory variables now.

Empirical Results

The regression models are tested with the most recent data on urbanization and socioeconomic-demographic development at the provincial level, 1960-1970. Before going into regressions, an inspection of the correlation matrix of the variables to be used in the regressions would be instructive (Table 4). The matrix shows correlation signs in the

²⁸This would have been a problem as we could also assume an interactive relationship between urbanization and economic-demographic development. The only independent variable that appears simultaneous with the dependent variable is the urban/rural in-migration ratio (UI_{t+n-t}) in the "deviation changes" model, but this is assumed a priori as exogenous. On simultaneity bias, see, e.g., J. Johnston, Econometric Methods, 2nd ed. (New York: McGraw Hill, 1963) pp. 341 ff.; Michael J. Greenwood elaborates on the simultaneity bias in single-equation, multiple-regression migration models ("Simultaneity Bias in Migration Models: An Empirical Examination," Demography 12 (August 1975): 519-536).

TABLE 4
Correlation Matrix of Variables Used in Regressions

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
	MC	FM	R	CWR	UI	FD	RN	PM	U	U- $\hat{U}$
1. Manufacturing & Commercial establishments, MC	1.000									
2. Farm Machineries, FM	0.184	1.000								
3. Radio Ownership, R	0.494	0.322	1.000							
4. Child-Woman Ratio, CWR	-0.079	0.121	-0.160	1.000						
5. Urban-Rural In-Migration Ratio, UI	0.323	0.120	0.413	-0.367	1.000					
6. Farm Density, FD	0.231	-0.142	0.199	-0.632	0.226	1.000				
7. Road Network, RN	0.066	0.057	0.328	-0.297	0.133	0.530	1.000			
8. Metro Proximity, PM	0.114	0.232	0.660	-0.084	0.175	-0.029	0.168	1.000		
9. Urbanization Level, U	0.579	0.419	0.792	-0.139	0.610	0.115	0.095	0.436	1.000	
10. Change in Urbanization Level, U- $\hat{U}$	0.441	-0.031	0.513	-0.327	0.463	0.264	0.197	0.335	0.539	1.000
Mean	8.453	65.092	6.809	936.346	0.626	1880.935	139.633	0.283	21.847	0.032
Standard Deviation	6.254	102.289	5.411	85.373	0.736	801.547	79.979	0.450	12.339	6.745

expected direction between level of urbanization and all the explanatory variables. The expected signs also obtain between "deviational change" in urbanization level and the independent variables, except farm machineries. Furthermore, Table 4 reveals high correlations between only a few independent variables, namely, farm density and child-woman ratio (-0.63), and between metro proximity and radio ownership (0.66). To avoid multicollinearity, two highly correlated independent variables are not both used in the same regression run.

Table 5 displays the empirical results of the lagged effects model: regressions of 1970 provincial urbanization levels against 1960 development indicators. Different regressions are necessary so that two highly correlated explanatory variables can be run separately. Thus, regression 1 has radio ownership and child-woman ratio instead of metro proximity and farm density, respectively, which in turn are included in regression 2. The results of regression 1 seem to be superior: all the regression coefficients, except one (child-woman ratio), are significant at least at the 5 percent level and together they explain about 80 percent of the inter-provincial variation in urbanization levels. Regression 2 gives two insignificant independent variables (farm density and road network) and a lower coefficient of determination (R^2) of 0.69. Regressions 3 and 4 show that dropping non-significant independent variables (child-woman ratio from regression 1 and farm density from regression 2, respectively) enhances slightly the significance of the remaining variables, and yet their combined explanatory power (R^2) remains stable for both regressions.

TABLE 5

The Lagged Effects Model: Regressions of 1970 Provincial Urbanization Levels on 1960 Development Variables

Variable	Regression 1	Regression 2	Regression 3	Regression 4
Constant, a	6.045	8.230	8.757	8.225
1. Manufacturing and Commercial Ests., MC	0.341 (2.264)*	0.733 (4.085)**	0.342 (2.292)*	0.733 (4.248)**
2. Farm Machineries, FM	0.021 (2.441)**	0.029 (2.702)**	0.021 (2.556)**	0.029 (2.812)**
3. Radio Ownership, R	1.299 (6.606)**		1.300 (6.675)**	
4. Child-Woman Ratio, CWR	0.003 (0.256)		-	
5. Urban/Rural In- migration, UI	5.459 (4.216)**	7.039 (4.669)**	5.343 (4.448)**	7.038 (4.780)**
6. Farm Density, FD		-0.000 (-0.003)		-
7. Road Network, RN	-0.023 (-2.092)*	-0.007 (-0.443)	-0.024 (-2.269)*	-0.007 (-0.540)
8. Metro Proximity, PM		7.434 (3.091)**		7.435 (3.157)**
R^2	0.805	0.686	0.804	0.686
$\bar{R}^2$	0.779	0.645	0.784	0.652
F-ratio	31.605**	16.733**	38.683**	20.516**

Note: The number of observations (provinces) is 53 with Manila City and Rizal province, which are too atypical, excluded. Figures in parentheses are the t-values; those with two asterisks are significant at 1 percent level, and those with one are significant at 5 percent level.

On the basis of the regressions using the lagged effects model, important determinants of provincial urbanization seem to be industrialization and commercialization, farm technology, better communication or higher literacy, urban in-migration from other provinces, and proximity to the metropolitan area. Child-woman ratio, a proxy for fertility and dependency burden, exhibits the positive sign but is insignificant. Farm density, an indicator of the rural demographic pressure to migrate, has the reverse sign and is also insignificant.²⁹ It is curious to note that, contrary to our original expectation, road network has a moderate negative influence on urbanization. It may be that, instead of inducing one-way and permanent migrations, a good road system rather facilitates streams and counterstreams as well as short visits to urban centers and back to the countryside.

Table 6 gives the results of the deviational changes model: regressions of derived 1960-1970 urbanization level changes on 1960

²⁹ Several other studies show that the "push" factors are less important than the "pull" or development factors in migration and urbanization. See, e.g., Paul D. Simkins and Frederick L. Wernstedt, Philippines Migration: The Settlement of the Digos - Padada Valley, Davao Province, Monograph Series, no. 16 (New Haven: Yale University, Southeast Asia Studies, 1971); Joginder Kumar, Population and Land in World Agriculture: Recent Trends and Relationships (Berkeley: University of California, Institute of International Studies, 1973); and K.C. Zachariah and E.M. Pernia, "Migration in the Philippines with Particular Reference to Less Developed Regions," A Report Prepared for the World Bank (Washington, D.C., 1975). Gerry E. Hendershot's study of two Philippine rural communities suggests that high fertility is not related to high levels of out-migration ("Fertility, Social Class, and Out-migration from Two Rural Communities in the Philippines," Population and Development in Southeast Asia, eds. John F. Kantner and Lee McCaffrey (Mass.: Lexington Books, 1975), pp. 119-137).

TABLE 6

The Deviation Changes Model: Regressions of 1960-1970
Urbanization Level Changes on 1960 Development Variables

Variable	Regression 1	Regression 2	Regression 3	Regression 4
Constant, a	4.840	-6.960	4.310	-6.934
1. Manufacturing and Commercial Ests., MC	0.247 (1.742)*	0.363 (2.680)**	0.249 (1.777)*	0.362 (2.708)**
2. Farm Machineries FM	-0.013 (-1.596)	-0.012 (-1.456)	-0.013 (-1.613)*	-0.012 (-1.475)
3. Radio Ownership, R	0.454 (2.439)*		0.443 (2.557)**	
4. Child-Woman Ratio CWR	-0.011 (-1.074)		-0.011 (-1.073)	
5. Urban/Rural In- migration, UI	2.037 (1.666)*	2.880 (2.545)**	2.045 (1.691)*	2.882 (2.575)**
6. Farm Density, FD		0.001 (0.595)		0.001 (0.794)
7. Road Network, RN	-0.002 (-0.172)	-0.001 (-0.094)	-	-
8. Metro Proximity, PM		4.364 (2.401)**		4.404 (2.518)**
R^2	0.438	0.423	0.437	0.423
$\bar{R}^2$	0.363	0.346	0.376	0.360
F-ratio	5.837**	5.493**	7.150**	6.735**

Note: The number of observations (provinces) is 52 with the exclusion of Manila City and Rizal province which are too atypical, and Batanes province which was completely rural in both 1960 and 1970. Figures in parentheses are the t-values; those with two asterisks are significant at 1 percent level, and those with one are significant at 5 percent level.

development variables. With the exception of farm mechanization which also exhibits the reverse sign, the same independent variables are significant although the degree of significance is generally lower than in the previous model. The coefficients of determination (0.44 and 0.42) are likewise markedly lower than previously. Discarding the least significant predictors (regressions 3 and 4) results in slightly more significant coefficients and the same explanatory power (R^2) for the model.³⁰ On balance, the deviational changes model, though of inferior empirical results, serves to corroborate the findings from the lagged effects model on what are the chief determinants of urbanization.

V. Conclusion and Implications

Recent urbanization in the Philippines has been slow relative to earlier periods and in comparison with either the historical experience of Western countries or the contemporary experience of Asian countries. This can be explained demographically by the acceleration of population growth which occurred mostly in the rural sector. But it can also be related directly to stagnant agricultural productivity, which entailed the expansion of farm labor to put land frontiers to agricultural use, and to capital-intensive industrialization.

The common concern about rapid urbanization due to massive rural-to-urban migration appears to stem from a mistaken concept of urbanization and its relationship to population growth and economic development.

³⁰ We tried logarithmic transformations of the data for the two regression models, but the results were significantly inferior.

This concern would seem to be better directed to the unremitting movement of population to Metropolitan Manila and the consequent widening disparities between the metro area and surrounding provinces on the one hand, and all the other regions on the other.

The major determinants of rural-urban population shifts appear to be socioeconomic development factors in both rural and urban sectors rather than demographic pressure in rural areas. This suggests that rural development should not be considered as an antidote to urbanization. Rather, it implies that rural development along with a purposive and well-designed industrial location strategy can make important contributions to a policy of more balanced urbanization.

Although rural demographic pressure does not seem to have been effective as yet in unleashing population, it may well be so in the near future as land frontiers disappear and rural density limits are reached. An effective spatial development planning is, therefore, more urgently needed so that potential population flows can be re-routed to areas other than the metropolitan region.

APPENDIX

A. DEFINITION OF AN URBAN PLACE

The definition of an urban place developed in 1963 by the Philippines Bureau of Census and Statistics (now National Census and Statistics Office), which is adopted in the present study, includes the following criteria:

1. A whole municipality with a density of at least 1,000 persons per square kilometer.
2. In a municipality with a density of at least 500 persons per square kilometer:
 - (a) the población regardless of population size,
 - (b) a barrio of at least 2,500 persons, and
 - (c) a barrio of at least 1,000 persons that is contiguous to the población.
3. In a municipality of at least 20,000 persons:
 - (a) the población regardless of population size, and
 - (b) a barrio of at least 2,500 persons that is contiguous to the población.
4. A población of at least 2,500 persons.

The above is a succinct presentation of the official version which can be found in several publications of the Census Office.³¹

³¹E.g., Bureau of Census and Statistics, "The Growth of Urban Population in the Philippines and Its Perspectives," Technical Paper no. 5 (Manila, 1973), pp. 2-4.

The procedure by which the urban definitions was applied retroactively to the Censuses of 1903, 1918, 1939, 1948, 1960, and 1970 is described in an earlier work.³² Estimates of levels and tempos of urbanization for the country and the different regions shown in Appendix, Table A are based on this definition.

³²See Pernia, "Urbanization in the Philippines: Historical and Comparative Perspectives," pp. 4-6.