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SOME DETERMINANTS OF PHILIPPINE URBANIZATION

By

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Introduction

The relationship between urbanization and socioeconomic development has in recent years become a subject of much discussion and debate. They only reveal that the relationship is more complex than is usually believed. Classical theories of urbanization and economic development (i.e., theories based on the historical experience of developed countries) purport a close nexus between the two processes (e.g., Hoselitz, 1953; Lampard, 1955). These theories, however, have come under serious attack in the light of recent experience of less developed countries (LDCs). Increasingly, it has been realized that urbanization in LDCs is to large extent not the result of economic development (Weitz, 1973). Several authors now suggest that urbanization has far overtaken the development process, thereby, giving rise to "overurbanization", "hyperurbanization", or "pseudourbanization" (e.g., Hauser, 1957; Friedmann, 1971; McGee, 1967).

The confusion and preoccupation about the nature of the relationship between urbanization and development clearly indicate the need for better and more applicable theories. Given the varied histories behind, and conditions obtaining in, different developing countries, individual case studies seem warranted. This paper attempts to examine how urbanization is related to social and economic development in the Philippines.

The Problem

What are the principal determinants of urbanization? Ideally, this problem should be approached by investigating urbanization variables against socioeconomic variables at the

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national level over a reasonably long period of time. This, however, is not feasible due to lack of consistent time-series data. An alternative approach is a cross-sectional analysis of urbanization at the provincial level. Thus, instead of the original question addressed at the national level, a surrogate question is confronted: Why do the levels and rates of urbanization in the different provinces vary? In other words, what factors account for differences and changes in provincial urbanization?

Theoretical Model

The general hypothesis is that the process of urbanization is influenced by agricultural development, on the one hand, and industrialization, on the other. Improvement in agricultural technology is assumed to unleash labor from the farms; at the same time, industries tend to coax migrants to urban areas, especially if a rural-urban link facilities such movements.

The hypothesis will be tested by means of two simple models. The first attempts to explain differences in provincial levels of urbanization at period **t** using independent variables at period O; the second uses independent variable at period O to explain changes in provincial levels of urbanization between period O and period t. The "lagged effects" equation assumes that the effects on urbanization levels of socioeconomic conditions now can be perceived only after some time lag. The other equation, which may be called "deviational changes" equation (Duncan **et al.**, 1961:163), assumes that the changes in levels of urbanization between two points in time are affected by the levels at the initial time period. Thus, although the models are simple, they are to some extent dynamic. An additional advantage is that by lagging backwards the explanatory variables they become exogenous or predetermined and, hence, independent of the error terms. In other words, the econometric problem of "simultaneous equations bias" is avoided. One way this problem may arise is when a regression model uses cross-sectional data at a point in time and it is believed, on **a priori** grounds, that a two-way causation is likely.

Formally, the "lagged effects" model is

$$U_t: \quad MC_o,\ R_o,\ RN_o,\ CWR_o,\ FM_o,\ FD_o \qquad [1.0]$$

where

U_t = level of urbanization — per cent of provincial population urban;

MC_o = manufacturing and commercial establishments per 100,000 population;

R_o = radio ownership — per cent of occupied dwelling units with radio;

RN_o = road network — kilometers of roads, weighted by type, per 1,000 square kilometers of area;

CWR_o = child/women ratio — children aged 5 to 9 per 1,000 women aged 20 to 49;

FM_o = farm machines (tractors and harvesting machines) per 100,000 farm populations; and

FD_o = farm density — farm population per 1,000 hectares of farm area.

The subscripts o and t indicate the values at the start and end of the period, respectively.

The "deviational changes" model is of the form

$$U_t - \hat{U}_t : MC_o,\ R_o,\ RN_o,\ CWR_o,\ FM_o,\ FD_o \qquad [2.0]$$

where

$\hat{U}_t = a + bU_o + o$; and all the explanatory variables are the same as in the first regression equation.

MC denotes the degree of industrialization and commercialization in a province. Inasmuch as industrial and commercial establishments are mostly located in urban areas, these would exert a "pull" from rural areas. Hence, the more establishments there are at a certain time period, the greater will be the effect on urbanization process during the subsequent period. R indicates several things, such as levels of both intra- and inter-provincial communication, literary, and relative affluence — all of which would have a positive impact on urbanization. RN would also have a positive effect on urbanization to the extent that it facilitates or lowers the barriers to mobility. CWR is a proxy for level of fertility and burden of dependency — it would have a retardative effects on migration and urbanization. FM denotes the level of farm mechanization or the status of agricultural technology. Farm mechanization displaces actual as well as potential farm work-

ers, who would then be inclined to migrate to the cities. Lastly, FD would exert a "push" from the farms — hence, a positive impact on urbanization process during the subsequent period.

Empirical Results

Regressing provincial levels of urbanization in 1970 against socioeconomic variables around 1960 (53 observations) gives the following estimated "lagged effects" equation

$$U_{1970} = 19.666 + 0.409\ MC + 1.524\ R - 0.025\ RN - 0.011\ CWR$$
$$(2.326)^* \quad (7.085)^* \quad (-0.788) \quad (-0.014)$$
$$+ 0.023\ FM + 0.0002\ FD \qquad [1.1]$$
$$(2.389)^* \quad (0.101)$$
$$R^2 = 0.744; \qquad F = 22.328.^*$$

The estimated "deviational changes" equation for the 1960-1970 data is

$$U_{1970} - \hat{U}_{1970} = 8.823 + 0.223\ MC + 0.581\ R - 0.015\ CWR$$
$$(1.627)^{**} \quad (3.542)^* \quad (-1.329)^{***}$$
$$- 0.013\ FM - 0.000\ FD \qquad [2.1]$$
$$(-1.631)^{**} \quad (-0.0002)$$
$$R^2 = 0.420; \qquad F = 6.807^*$$

Regression analysis using 1948 - 1960 data (50 observations) gives the following results: For the "lagged effects" equation

$$U_{1960} = 3.472 + 0.300\ NAE + 2.420\ R + 0.004\ CWR + 0.017\ FM$$
$$(1.798)^{**} \quad (3.188)^* \quad (0.374) \quad (1.187)$$
$$+ 0.002\ FD \qquad [1.2]$$
$$(0.369)$$
$$R^2 = 0.575; \qquad F = 11.892^*$$

For the "deviational changes" equation

$$U_{1960} - \hat{U}_{1960} = 8.767 + \underset{(0.820)}{0.118}\ NAE + \underset{(0.883)}{0.579}\ R + \underset{(0.337)}{0.003}\ CWR - \underset{(-.053)}{0.001}\ FM + \underset{(0.521)}{0.003}\ FD \qquad [2.2]$$

$$R^2 = 0.134; \qquad F = 1.360$$

Figures in parentheses are the computed t-values. One asterisk denotes significance at the 1 per cent level, two denote significance at the 5 per cent level, and three denote significance at the 10 per cent level.

In general, data for the 1960 - 1970 period gave better results than those for 1948 - 1960. One probable explanation for this is that the data for the later period are more reliable than those for the earlier period. Although probably more theoretically plausible, the "deviational changes" equation for both periods gives a less promising fit than the "lagged effects" equation.

Equation [1.1] shows that radio ownership (R), which is our indicator for levels of communication, literacy, and relative affluence, is the most significant determinant of levels of urbanization. It is followed by farm mechanization (FM) and industrialization/commercialization (MC) at about equal levels of significance. Road network (RN) gives an unexpected sign, which may indicate that a good system of roads facilitates movements both **into** and **out of** urban areas. In other words, because transportation is relatively easy it may not be necessary to permanently reside in the cities. Our index for fertility and burden of dependency (CWR) gives the expected negative sign although it has little explanation value. Farm density (FD) has the expected sign but its effect on urbanization/migration process appears practically nil. This is supported by the 1973 National Demographic Survey which reveals that only 14.5 per cent of the adult population migrated due to "lack of land to work on".

In equation [2.1] R and MC maintain their relative explanatory values. CWR becomes more significant than in the previous equation, but FM and FD give unexpected signs.

Similar patterns emerge from equations [1.2] and [2.2] but at lower levels of significance.

Conclusion

Our analysis suggests that levels of communication and literacy (education), industrialization, and farm mechanization are important determinants of the urbanization process. Density in agricultural areas, which represents the "push" factor, appears to be unimportant relative to the "pull" of industrial/commercial activities in urban areas. Thus, on the whole, it appears that urbanization in the Philippines has not been "pseudo", i.e., it could not just have proceeded without the support of social and economic development.

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