

Public Expenditures on Housing in Less Developed Countries

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I. Introduction

The housing problem in developing countries is becoming more and more acute. This can be attributed to the rapid influx of unskilled and semi-skilled workers to the urban centers of these countries. Most recently, there has been some analyses of the role of housing investment for countries at different stages of development in an effort to understand some of the problems. For example, Burns and Grebler (1976) have provided a comprehensive and systematic cross-national study of the determinants of intercountry variations of the share of investment in housing. Renaud (1980) has provided further corroborating evidence of the determinants of housing investment using time series data for Korea.

These studies were mainly concerned with establishing final specifications of equations derived from pre-testing of all the potential forms of the variables hypothesized to explain the share of housing investment in the total output in the economy. Burns and Grebler (1976) and Renaud (1980) found evidence that there is a statistically significant nonlinear relationship between invest-

ment in housing construction and per capita output of a country. In general, the authors concluded that *economic* factors rather than *demographic* factors explain changes in the share of housing investment.

For the most part, past studies have neglected to test the factors determining the level of government expenditures on housing in less developed countries. Analysis of government expenditures by type for underdeveloped countries have been limited. Yet government expenditures play an important role in economic development because the government is usually assigned the task of promoting growth. The level of government expenditures is an appropriate index that should reflect the governmental attitudes towards broad demographic and economic priorities. One of the basic characteristics of economic development and industrial growth is the rapid rural-urban migration of the population and the concomitant displacement of families from the rural areas and villages to the urban centers. The increasing population shifts from rural to urban areas aggravates the severe housing shortages already found there.

It is their concern with this housing shortage that leads Burns and Grebler to provide some rationale for their efforts to identify and measure the independent effects of the factors hypothesized to explain international variations in resource allocation in housing within the economy. They argue that government intervention in the housing sector is vital for several reasons. Firstly, subsidies to the poor help to correct the highly unequal income distributions found in developing nations. Secondly, government expenditures to improve conditions for the poor lessen the incidence of disease and delinquency and strengthen social values thereby promoting a stable society. Thirdly, because of the rapid population growth and the accelerating pace of urbanization, housing assistance to the poor should be a major priority of the government in order to integrate marginal communities into a more structured urban pattern. In sum, the arguments for government intervention are made on economic, social and political grounds. Thus, it seems reasonable to explore some dimensions of the role of government in the housing sector.

1 For a good overview of the housing problems faced by less developed countries see the United Nations Housing survey 1974.

The main purpose of this note is to examine the relationship between levels of public expenditure on housing and economic and demographic factors for a cross section of less developed countries. Our sample is of particular interest since it is not biased towards high-income developed countries.² Section 2 of the paper gives a brief review of the past research efforts on public expenditures. It is followed by a discussion of the factors hypothesized to explain public expenditures on housing. Section 4 presents the results. The last section summarized the conclusions of the paper.

II. Past Research

Since there are numerous studies of public spending our review of the previous literature will be restricted to the important conclusions of previous studies which analyzed public expenditures for a group of nations with different economic systems eg.³ (Pryor, 1968). It must be emphasized that in none of these cross-national studies is there any attempt to focus on housing expenditures.⁴ Rather, the emphasis is placed on the determinants of other types of public expenditures (e.g. defense, health and welfare and education).⁵

There has been no explicit theoretical model underlying the specification of the cross-national expenditure functions in these earlier studies.⁶ Rather, the independent variables are discussed in three classifications. One set relates to the economic system. The

² Results of Burns and Grebler (1976) are heavily biased towards developed countries. From their sample twenty-one are high income nations representing Western Europe and North America. Nine represent Latin America. Two are representative of Africa.

³ For the most part empirical studies on public expenditures have focused their analysis on a single country. These studies are highly disaggregated with separate studies on the determinants of factors influencing expenditures at the state, local and federal levels and by function. For a survey of determinant studies see Bahl (1968).

⁴ Perhaps, the unavailability of data for analysis makes this type of study difficult. Recall that the Burns and Grebler study does not focus on public expenditures on housing.

⁵ See Pryor (1968).

⁶ Even for analysis of public expenditure functions for a country as a whole Smith V. K. and Fibiger (1972) have noted that the specifications have no direct relationship to the traditional economic theory of choice. They argue that it is desirable to build a model along the conventional lines reflecting the community's allocation problem for goods and services exchanged in private markets. That is, for a representative consumer, utility is maximized subject to a budget constraint. We derive a set of demand functions in terms of goods' prices and total income. They contend that while the decisions for publicly provided goods and services can be modeled within a similar framework, public decision making for goods and

second set relates to the level of economic development and the third set links geographical and social dimensions to expenditures. The major determinant of expenditures has been shown to be income per capita.⁷

The model we hypothesize to explain intercountry differences in the level of housing expenditures is derived from the earlier work. Equation 1 provides a general specification of the level of housing expenditures for the cross-section analysis.

$$\text{HEX} = \alpha_0 + \alpha_1\text{URB} + \alpha_2\text{DPOP} + \alpha_3\text{GNP} + \text{U} \quad (1)$$

where HEX = percentage of public expenditure on housing in each country.

URB = annual growth rate of urban population.

DPOP = annual rate of growth of population.

GNP = per capita GNP.

U = error term

The first two independent variables are in the demographic category. The annual growth rate of the urban population (URB) is a measure of the concentration of the population in urban centers. Both DPOP and URB may reflect measure of need for housing (Burns and Grebler (1976)). GNP per capita is postulated to influence demand.

III. Data and Empirical Results

The sample involves fifteen nations. The countries in the sample are Algeria, Barbados, Brazil, Dominican Republic, Hong Kong, Kenya, Malaysia, Mauritius, Morocco, Paraguay, Peru, Sri Lanka, Trinidad and Tobago, Venezuela, and Guyana. The data on the share of expenditures on housing for 1970-1971 were taken from a World Bank Study (1976).⁸ The data on GNP, URB and

services is not related to those for private market goods. Moreover, public goods and services are not priced in a private market mechanism. In expenditure functions for public goods the price variables are usually replaced by exogenous factors which influence supply. Consequently, they concluded that earlier studies have estimated a reduced form model of the expenditure process.

7 Pryor, F. L. (1968) found per capita income to be a consistent determinant for various expenditures by function.

8 The data on these countries were taken from Table A2, p. 128 in O. F. Grimes (1976). His footnotes to the table give the various sources he uses to compile the expenditures.

DPOP were taken from a United Nations World Housing Survey (1974).

We use multiple regression analysis to explain the international differences in the share of public expenditures committed to housing. The technique allows us to examine the independent effect of each factor postulated to explain variations in expenditures while holding all other factors constant. We are also to measure how much of the variation in public expenditures is explained by all the independent variables.

The final equations (1a) and (1b) were derived after some pre-testing of all potential forms of the variables using prior information on alternative specifications adopted in previous work (Burns and Grebler (1976)) and the reasons for them. After examining these equations with regressors in linear and squared terms using agreement of signs of the estimated coefficients with *a priori* hypotheses, overall goodness of fit of the model, and statistical significance of the measured effects as indicated by the student t-statistics, we report two specifications of the share of public expenditures on housing equations. The two equations are differentiated by a test of the measured effects of the income variable which is entered as the reciprocal of the per capita GNP measure.

$$\begin{aligned} \text{HEX} = & 37.95 - 7.967 \text{URB}^* + .759 \text{URB}^2 * - 17.692 \text{DPOP} \\ & \quad (-2.04) \quad (1.81) \quad (1.69) \\ & + 4.4460 \text{DPOP}^{2*} \\ & \quad (1.90) \\ \text{R} = & .57; \text{F} = 2.60; \text{N} = 15 \end{aligned} \quad (1-a)$$

$$\begin{aligned} \text{HEX} = & 30,442 - 9.454 \text{URB}^* + .906 \text{URB}^{2*} - 16.67 \text{DPOP} \\ & \quad (-1.89) \quad (1.76) \quad (-1.49) \\ & + 4.315 \text{DPOP}^{2*} + 210.653 \frac{1}{\text{GNP}} \\ & \quad (1.78) \quad (.522) \\ \text{R} = & .58; \text{F} = 1.95; \text{N} = 15 \end{aligned} \quad (1-b)$$

* significant at the 90 percent level.

Equations (1a) and (1b) report the ordinary least squares estimates of the model. The numbers in parentheses below the estimated coefficients are student t-statistics for the null hypothesis

of no association. Note that the rate of urbanization (URB) and the growth rate of the population (DPOP) are significant determinants of the share of public expenditures on housing. On further analysis we find that the share of public expenditures on housing falls with the rate of urbanization but the share tends to climb with increasing rates of urbanization (URB²). This finding may be explained by the pattern of squatter settlements found in less developed countries. As the population shifts towards the urban centers in increasing numbers, slums and squatter settlements grow more rapidly on the fringes of the city. As governments recognize the need to integrate these marginal communities into a more structured urban pattern of living, we would expect a greater share of public expenditures to be allocated to improve housing.

The population variable also exhibits the same pattern. The share of expenditure on housing falls with population growth, but this effect tends to increase as the population growth rate increases. Per capita GNP has no significant effect on explaining the share of housing expenditure variations. All the variables explained about 58 percent of the variation in share of housing expenditures as is indicated by the R²s.

IV. Concluding Remarks

In this note, we report results of the economic and demographic factors explaining the share of public expenditures in housing for a selected set of less developed countries. We find that the major factors explaining changes in the share of public expenditures on housing are the demographic variables rather than the economic variables. This is an interesting result. It suggests that influx of the unskilled and semiskilled into the major urban centers is being accommodated by the growing squatter settlements and slums. These settlement patterns can foster conditions for social and political instability. Consequently, strong domestic pressures may be exerted on governments to improve the housing conditions of these families who cannot be accommodated by the private sector.

Housing, transportation and environmental problems are the least studied in less developed countries. This is partly due to the lack of adequate and consistent data. However, some attempt

should be made to try to understand the problem as data becomes available. Our effort is of independent interest in that it provides an initial look at the housing problem. Further research is needed on the determinants of public expenditures in general and for housing in particular in less developed countries, as better and more detailed data become available. Any further research would provide valuable comparative evidence on our findings.

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