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# Magnitude of the Housing Shortage in Pakistan

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This paper analyses trends in housing conditions in Pakistan. Various indicators of housing consumption like household size, persons per room, real rents per capita, etc., are quantified for the period from 1960 to 1980, and their apparently contradictory signals are highlighted. It is demonstrated that the approach adopted to date in Pakistan to quantify the magnitude of the housing shortage is too simplistic and could lead to wrong conclusions. As such, an alternative methodology is developed which highlights a significant improvement in housing conditions over time and a relatively slow growth in the housing shortage. A series of policy implications are then derived for the development of the housing sector.

## I. INTRODUCTION

There is a widely held perception in Pakistan that, although shelter is one of the basic needs, the country is not adequately coping with its housing requirements. One statistic which is usually quoted to support this contention is that growth in the number of housing units has lagged behind the growth of population and that, consequently, the size of the housing deficit has increased over time. Between the two Housing Censuses of 1960 and 1980, while the population grew annually at the rate of 3 percent, the number of housing units increased by 2.1 percent.[1] This has meant that households have become bigger during the period when, as a consequence of modernisation and urbanisation, the trend should have been towards more nuclear families, implying a reduction in the household size. It has been argued that the process of new household formation has been retarded due, first, to supply constraints in the housing market. The IBRD (1987), for example, has emphasized that the relatively slow rate of development of residential plots in the cities and the lack of municipal infrastructure have limited the construction of new housing units. Second, on the demand side, inflation in the prices of building materials has reduced levels of affordability for housing and implied, on the one hand, that residential densities have increased and, on the other hand, that slums (*katchi abadis*) have taken up a progressively higher share of the urban population.

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[1]According to the Housing Census 1960: "A housing unit is a structurally separated and independent place of abode". According to the Housing Census 1980: "Housing unit means a residential place inhabited by one household". We have used the 1980 definition to derive the growth rate in the number of housing units. This is tantamount to working with the number of households in both the Censuses.

The alleged decline in levels of consumption of housing has, however, taken place during a period of rapid growth in real per capita income. During the last 26 years, real per capita income has more than doubled. Therefore, either there has been a major deterioration in the distribution of income[2] and the share of the population below the poverty line has increased or housing is an inferior good in the consumption basket. Alternatively, the relative price of housing may have increased significantly, with demand for housing being price-elastic.[3] In the absence of one or more of these factors, it is difficult to reconcile the finding that housing consumption has declined simultaneously with the large growth in incomes.

The objective of this paper is to analyse this apparent contradiction. In the process, a number of indicators of housing consumption are identified and their trends over time are quantified in Section II. This is followed by a review in Section III of the estimates made of the magnitude of the housing shortage in Pakistan. This review reveals that the approach adopted to date [Zaki (1981)] is somewhat simplistic, and that an alternative strategy has to be developed to properly quantify the size of the housing deficit. As such, a different methodology for an analysis of the housing shortage is presented in Section IV. Results obtained by applying this approach are presented in Section V. Implications of the analysis are highlighted in Section VI, followed by a brief statement of conclusions in Section VII.

## II. INDICATORS OF HOUSING CONSUMPTION

(i) *Average Household Size:* As shown in Table 1, the average number of persons per housing unit (household size) has increased from 5.5 persons in 1960 to 6.5 persons in 1980. This is taken as a clear indicator of the fact that housing consumption has declined over time. However, larger households may not necessarily reflect constraints to new household formation, as these may also be a natural consequence of various demographic factors.

The impact of various demographic factors is referred to by Zaki (1981) as the "habitation density" effect. It captures the increase in household size due to the presence of more unmarried members, resulting from a rise in the age of

[2] Gini coefficient of household incomes for Pakistan was 0.39 in 1963-64 and has remained unchanged at 0.39 in 1984-85 [See 7th Five Year Plan 1988–93 and Perspective Plan 1988–2003, Planning Commission, Government of Pakistan].

[3] The index of housing and household operations has increased less rapidly than the overall consumer price index. At 1975-76 prices, the housing index which was 40.01 in 1960-61 increased to 198.6 in 1984-85 whereas the consumer price index increased from 33.67 to 224.21 during the corresponding period. The price index of building materials has increased to 240 in 1984-85 at the base of 1975-76. The absolute price elasticity of housing demand in Pakistan is about one. It is –0.976 with respect to current income and –1.035 with respect to permanent income. [See Pasha and Ghaus (1988)].

Table 1

*Indicators of Housing Consumption in the Rural and Urban Areas of Pakistan*

| Indicators | Rural | | Urban | | Total | |
|---|---|---|---|---|---|---|
| | 1960 | 1980 | 1960 | 1980 | 1960 | 1980 |
| **No of Persons per Housing Unit (Household Size) According to** | | | | | | |
| Housing Census | 5.4 | 6.4 | 5.8 | 6.7 | 5.5 | 6.5 |
| Population Census | 5.4 | 6.3 | 5.7 | 7.0 | 5.5 | 6.5 |
| **No. of Rooms per Housing Unit** | | | | | | |
| Unadjusted | 1.6 | 1.8 | 1.8 | 2.2 | 1.7 | 1.9 |
| Adjusted | 1.6 | 2.0 | 1.8 | 2.6 | 1.7 | 2.2 |
| **Persons per Room** | | | | | | |
| Unadjusted | 3.3 | 3.6 | 3.1 | 3.2 | 3.2 | 3.3 |
| Adjusted | 3.3 | 3.2 | 3.1 | 2.6 | 3.2 | 3.0 |
| **Percentage of All Units Owner-occupied** | 79.7 | 82.6 | 47.7 | 67.7 | 72.4 | 78.4 |
| **Per Capita Monthly Real Rent (Rs) at 1969-70 Prices** | 1.9 | 2.5 | 4.8 | 8.9 | 2.5 | 6.5 |

*Sources:* (i) Housing Census, 1960 and 1980, Population Census Organization, Government of Pakistan, Islamabad.

(ii) Population Census, 1961 and 1981, Population Census Organization, Government of Pakistan, Islamabad.

(iii) Household Income and Expenditure Surveys, 1963, 1984-85, Federal Bureau of Statistics, Government of Pakistan, Islamabad.

marriage,[4] and of more surviving children, as a consequence of an improvement of the infant mortality rate[5] in the absence of any significant decline in the birth rate.

[4] Proportion of the married in the age group 14–24 has substantially declined in Pakistan between 1960 and 1980. In 1960, 15.9 percent of the males and 52.8 percent of the females in age group 15–19 years were married. These proportions had declined to 7.4 percent and 29.1 percent respectively by 1980. Also, in age group 20–24, the proportion of married males has declined from 45.3 percent to 34.7 percent, and for females from 86.2 percent to 72.4 percent during the same period.

[5] Infant mortality rate in Pakistan has declined from 126 in 1960–65 to 112 in 1984-85, whereas the fertility rate has declined only marginally from 6.12 in 1963-64 to 5.9 in 1984-85. [See Chishti and Rehman (1988)].

An increase in the number of married adults per household is the best indicator of a decline in the rate of new household formation, caused perhaps largely by the housing shortage. However, the total impact of this phenomenon also includes the increase in household size due to the presence of children of the additional married adults living in a household. As such, the overall increase in household size which can be attributed to postponement of new household formation is given both by an increase in the married adults and the additional children of such married couples.

Table 2 presents changes in household composition and size due to different factors. The table shows that the increase in household size resulting from a reduction in the rate of new household formation is 0.520 in the rural areas and 0.699 in the urban areas. For the country as a whole, it is 0.577. The housing pressure, according to this analysis, appears to be stronger in the urban areas. However, the share of the increase in household size due to postponement of household formation in the overall change in household size is 56 percent in the rural areas, 53 percent in the urban areas, and 55 percent for Pakistan as a whole. Therefore, it appears that there would have been a significant increase in household size between 1961 and 1981, even in the absence of a housing constraint, due to the "habitation density" effect. On the average, it is estimated that demographic factors would have increased the household size by about 0.469 over the twenty year period.

(ii) *Rooms per Housing Unit:* Another important indicator of housing consumption is the average number of rooms per housing unit. In 1960, the average number of rooms per housing unit/household was 1.7. According to the Housing Census 1980, this has increased to 1.9 (Table 1). The 1980 Census used the same definition of households as the 1960 Census, but the kitchens were not counted as rooms in 1980, whereas they were counted as rooms in 1960. Accordingly, we have adjusted the number of rooms in 1980 by a factor of 50 percent of the number of households in the urban areas and 20 percent in the rural areas[6] to make it comparable with the 1960 definition. The adjusted measure of rooms per housing unit is 2.2 for Pakistan as a whole, with a bigger increase in the urban areas.

Also, in 1960, 18.7 percent of the urban housing units in Pakistan had three rooms or more. This percentage increased to 25.9 percent in 1980, which points to the fact that the size of housing units has generally increased over time, and that the growth is not concentrated only in the case of upper-income dwelling units.

(iii) *Number of Persons per Room:* The above indicators show that both the household size and the housing unit size have been growing over time. It is, therefore, necessary at this stage to see which of the two has been growing faster. If

[6]According to the 1980 Housing Census, approximately 50 percent of the urban housing units had kitchens; whereas 20 percent of the rural housing units were reported to have kitchens in 1973, according to the Housing, Economic and Demographic Survey, 1973.

Table 2

*Changes in Household Composition and Size, 1961 to 1981*

| | Average Change per Household (No.) | | |
|---|---|---|---|
| | Rural | Urban | Total |
| **Children** | **0.543** | **0.668** | **0.578** |
| **Adults** | **0.386** | **0.646** | **0.468** |
| Unmarried | 0.234 | 0.381 | 0.282 |
| Married | 0.253 | 0.341 | 0.281 |
| Widowed and Divorced | –0.101 | –0.076 | –0.095 |
| **Total** | | | |
| Average Increase in Household Size | **0.929** | **1.314** | **1.046** |
| Increase because of Postponement of New Household Formation[a] | 0.520 (56) | 0.699 (53) | 0.577 (55) |
| Increase because of Demographic Reasons[b] | 0.409 (44) | 0.615 (47) | 0.469 (45) |

*Source:* Population Censuses, 1961 and 1981.

Figures in brackets represent percentages of the total.

[a] According to the 1961 Census, the proportion of children attributed to the additional married couples living in the household is equal to 1.055 in the rural areas, 1.050 in the urban areas, and 1.053 for Pakistan as a whole. Therefore, the increase due to postponement of new household formation is the additional married persons per household plus their children.

[b] Corresponds to the average increase in household size minus the increase due to postponement of new household formation.

household size has been growing substantially faster than housing unit size, it indicates that habitation densities have increased and congestion in housing has been growing in Pakistan. According to Table 1, the ratio of persons per room for Pakistan as a whole has, more or less, remained the same between 1960 and 1980. It has increased for the rural areas but has remained, more or less, constant for the urban areas.

These estimates, however, need to be adjusted by the inclusion of kitchens in the total number of rooms in 1980. The adjustment reveals that the number of persons per room has actually declined in Pakistan from 3.3 persons in 1960 to 3.0 persons in 1980. The decline is much more dramatic in the urban areas from 3.1 persons to 2.6 persons, as compared to the rural areas.

(iv) *Share of Owner-occupied Houses:* Another indicator of the improvement in housing consumption and of increased rather than reduced housing affordability is the rise in the share of owner-occupied houses between 1960 and 1980. For example, in 1960, 48 percent of the housing units in the urban areas were owner-occupied whereas this percentage increased to 68 percent in 1980.[7]

(v) *Per Capita Real Rents:* Monthly real per capita rents, which are an important composite indicator of real per capita housing consumption, have been increasing over time both in the urban and the rural areas of Pakistan, as shown in Table 1. Data from the various Household Income and Expenditure Surveys (Various Issues) carried out by the Statistics Division reveal that at 1969-70 prices, these increased from Rs 2.49 in 1960 to Rs 6.45 in 1980. (See Table 1).

Altogether, it is difficult to conclude that the levels of housing consumption have declined between 1960 and 1980. While the number of persons per housing unit has increased and a higher proportion of married couples has had to defer household formation, simultaneously housing units have also become larger. If proper adjustments are made for definitional differences between the two Censuses, it appears, in fact, that the availability of living space per person has improved as indicated by the decline in the number of persons per room. Also, a higher proportion of the population has been able to afford the acquisition of its own housing. Further, expenditure on rents (market plus imputed) per capita has increased significantly in real terms both in the rural and the urban areas.

Given the contrasting signs from the various indicators of the trend in housing consumption, it is not immediately obvious what has happened to the size of the housing shortage in the country in relation to some desired minimum standard.

## III. MAGNITUDE OF THE HOUSING SHORTAGE

Various attempts have been made to quantify the magnitude of the housing

[7] As indicated by the Table below, the pattern of increase in owner-occupied housing units is observed irrespective of the size of the properties.

*Share of Owner-occupied Properties in Total Urban Housing Units*

| | (1960) | (1980) |
|---|---|---|
| 1 Room | 42 | 61 |
| 2 Rooms | 50 | 69 |
| 3 Rooms | 59 | 75 |
| 4 Rooms | 61 | 79 |
| 5 Rooms | 64 | 80 |
| Above 5 Rooms | 63 | 78 |

Therefore, the increase is not concentrated only at the lower end due to the formation of *katchi abadis.*

shortage in the country. The government publishes its annual estimate of the housing shortage in the Pakistan Economic Survey (n.d.) the latest being 3 million housing units in 1985-86, with 1.6 million in the rural areas and 1.4 million in the urban areas. Substantive work has also been done by Zaki (1981), who has estimated the national housing shortage for the year 1980. By taking the habitation density level in 1960 as the benchmark, i.e., 5.5 persons per housing unit, he concludes that in 1980 there was a housing shortage of approximately 3.0 million housing units, with 2.5 million in the rural areas of the country.

There are numerous problems with the approach of quantifying the extent of the housing shortage in terms of the number of housing units. First, when housing units are becoming larger, allowance has to be made not only for the number of housing units but also for the size of units. Otherwise, the gap will be overstated. Therefore, the consumption standard has to be specified in terms of the living space per person. The empirical evidence available in Pakistan, as highlighted in the Appendix, demonstrates that the number of rooms in a housing unit is a good proxy for the living space within it. As such, the density standard can be defined in terms of persons per room.

Second, the housing deficit cannot be quantified by simply comparing the average observed density with the standard. This does not allow for the underlying variation in density among households. The method adopted by Zaki, if applied to quantifying the extent of poverty, is tentamount to saying that if the average household income of a country is above the notional poverty line, then there are no poor households in the country. Therefore, this relatively simple approach could lead to significant biases in the estimate of housing shortage. It is not surprising, then, that Zaki assumes that there was no housing shortage in 1960. In fact, it is likely that a significant proportion of the households were living in overcrowded conditions even in that year. There is a need, therefore, to look at the joint distribution of housing units both in terms of the number of persons and rooms, and to identify that part of this distribution where access to living space appears to be below the desired minimum level. This is the essential feature of the methodology developed in the next section.

## IV. ALTERNATIVE METHODOLOGY FOR ESTIMATION OF HOUSING SHORTAGE

We designate the number of housing units with *'r'* rooms and *'m'* persons in a particular year as $N(r, m)$. Then the total population, $P$, enumerated by the census and the housing stock, $H$, in rooms are given by:

$$P = \sum_r \sum_m mN(r, m) \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (1)$$

and

$$H = \sum_r \sum_m rN(r, m) \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (2)$$

Given $r$ and $m$, the persons per room or habitation density, $d$, is

$$d = \frac{m}{r} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (3)$$

A housing unit is overcrowded if $d > d^*$, where $d^*$ is the density standard. The population, $\bar{P}$, living in overcrowded conditions can be derived as

$$\bar{P} = \sum_r \sum_m mN(r, m), \text{ for values of } r \text{ and } m \text{ such that } d > d^* \quad \ldots \quad \ldots \quad (4)$$

and the *extent of overcrowding*, $E$, is given by

$$E = \frac{\bar{P}}{P} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (5)$$

The actual number of rooms with overcrowding is represented by $\bar{A}$, with

$$\bar{A} = \sum_r \sum_m rN(r, m), \text{ for values of } r \text{ and } m \text{ such that } d > d^* \quad \ldots \quad \ldots \quad (6)$$

The minimum number of rooms, $\bar{H}$, required to accommodate the population living in overcrowded conditions, at a density of $d^*$, is given by

$$\bar{H} = \frac{\bar{P}}{d^*} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (7)$$

The shortage of rooms, $\bar{D}$, is $\bar{H} - \bar{A}$.

The *intensity of overcrowding*, $I$, can then be derived as

$$I = \frac{\bar{D}}{\bar{A}} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (8)$$

and the *magnitude of the housing shortage*, $S$, in relation to the existing stock as

$$S = \frac{\bar{D}}{H} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (9)$$

The above methodology can be used for deriving the extent and intensity of overcrowding, and the magnitude of the housing shortage for the country as a whole

and for the rural and urban areas separately.

## V. RESULTS

Both the Housing Censuses of 1960 and 1980 respectively give the joint distribution of housing units[8] in terms of persons and rooms. Therefore, the above methodology can be applied to the data. Three density standards in terms of persons per room have been used. The first is 3¼, which is very close to the actual density in 1960. The other two standards are chosen so as to enable sensitivity analysis of the magnitude of housing shortage with respect to the density standard. As such, one standard is above 3¼ at 3½ and the other below at 3. Chishti and Rehman (1988) suggests that habitation density should not exceed 2 persons per room. This is, however, considered as unrealistically low for Pakistan, given its level of development.

A number of key conclusions emerge from the analysis. First, contrary to Zaki's assumption, over-crowding existed even in 1960. In fact, with a density standard of 3¼ persons per room, as shown in Table 3, almost 69 percent of the population lived in overcrowded conditions in 1960. The extent of overcrowding was significantly higher in the rural areas, at 72 percent. Since then, there has been a decline in the share of population living in overcrowded conditions. In 1980, the share of such population in Pakistan was estimated to be 63 percent.

Second, the analysis reveals that while the extent of overcrowding has declined somewhat, there has been a more dramatic fall in the intensity of overcrowding, i.e., percentage of excess of people (above the density standard) living in overcrowded rooms. It stood at over 80 percent in 1960. By 1980 it had decreased to 59 percent. As demonstrated by Table 3, there has been a more rapid decline in the intensity of overcrowding in the urban areas of the country. Therefore, not only is a smaller share of population in the 80s living in housing units with habitation densities exceeding the desired norm, but also the divergence from this standard is less.

Third, the housing deficit measured in rooms has increased from 4 million in 1960 to 6.1 million in 1980. However, the magnitude of the shortage (number of additional rooms required to meet the defined standard), as a proportion of the housing stock, has declined significantly from 32 percent to 20 percent. In the urban areas, the decrease is somewhat more pronounced, from 27 percent to 11 percent, as compared to the rural areas where the fall is from 33 percent to 25 percent. Overall, the per capita housing shortage has diminished by 24 percent between

[8] Data in the 1960 Housing Census is given at the household level. However, since the 1980 Census takes the housing unit and the household as being analogous, the two Housing Censuses effectively give the information at the household level and, therefore, can be compared directly.

Table 3

*Magnitude of the Housing Shortage in Pakistan, 1960 and 1980*

| | Indicator[a] | 1960[b] | | | 1980[c] | | |
|---|---|---|---|---|---|---|---|
| | | Rural | Urban | Total | Rural | Urban | Total |
| **d* = 3** | | | | | | | |
| Population Living in Overcrowded Conditions ('000s) | $\bar{P}$ | 23638 | 6172 | 29810 | 41622 | 12955 | 54577 |
| Extent of Overcrowding (%) | $E$ | 72.8 | 60.0 | 69.4 | 68.9 | 54.3 | 64.8 |
| Shortage of Rooms ('000s) | $\bar{D}$ | 3785 | 1039 | 4824 | 5163 | 1541 | 6704 |
| Intensity of Overcrowding (%) | $I$ | 92.4 | 100.2 | 94.4 | 59.2 | 55.5 | 58.4 |
| Magnitude of Housing Shortage (%) | $S$ | **39.4** | **32.1** | **36.3** | **27.3** | **16.6** | **23.5** |
| **d* = 3¼** | | | | | | | |
| Population Living in Overcrowded Conditions ('000s) | $\bar{P}$ | 23486 | 6118 | 29604 | 40589 | 12542 | 53131 |
| Extent of Overcrowding (%) | $E$ | 72.3 | 58.4 | 68.9 | 67.2 | 52.6 | 63.1 |
| Shortage of Rooms ('000s) | $\bar{D}$ | 3176 | 882 | 4058 | 4834 | 1250 | 6084 |
| Intensity of Overcrowding (%) | $I$ | 78.4 | 88.2 | 80.3 | 63.1 | 47.9 | 59.3 |
| Magnitude of Housing Shortage (%) | $S$ | **33.1** | **27.3** | **31.6** | **24.8** | **10.6** | **19.5** |
| **d* = 3½** | | | | | | | |
| Population Living in Overcrowded Conditions ('000s) | $\bar{P}$ | 22215 | 5958 | 28173 | 37382 | 11903 | 49285 |

*Continued –*

Table 3 – (*Continued*)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Extent of Overcrowding (%) | $E$ | 68.4 | 56.9 | 65.6 | 61.9 | 49.9 | 58.4 |
| Shortage of Rooms ('000s) | $\bar{D}$ | 2694 | 746 | 3440 | 4002 | 883 | 4885 |
| Intensity of Overcrowding (%) | $I$ | 73.7 | 78.0 | 74.6 | 59.9 | 35.1 | 53.1 |
| Magnitude of Housing Shortage (%) | $S$ | **28.1** | **23.1** | **25.9** | **21.0** | **9.5** | **17.1** |

[a] Refer to Section IV.

[b] 1960 figures are adjusted for population under enumeration by a factor of 1.089.

[c] 1980 figures are adjusted to include kitchens.

1960 and 1980.

Fourth, the results also indicate that the bulk, 79 percent, of the housing shortage in 1980 was in the rural areas. This is close to Zaki's estimate of 83 percent and substantially higher than the government's estimate of 53 percent. Therefore, housing conditions appear to be relatively worse in the villages, and any policy designed to reduce the backlog in the housing stock will have to be largely oriented towards the rural areas.

Fifth, estimates of the magnitude of housing shortage appear to be very sensitive to the assumed magnitude of the density standard. With a target density of 3, the shortage in 1980 increases to 6.7 million rooms and with a standard of 3½ it falls to 4.9 million rooms. Therefore, planning in the housing sector will have to be based on a careful specification of the desired habitation density level.

A comparison can also be made of our estimate of the magnitude of the housing shortage with that of Zaki for 1980. Using 1960 densities as the standard, our estimate is 20 percent, while that of Zaki is 23 percent of the housing stock. The divergence between the estimates is due to two factors which tend to operate in opposite directions. The first adjustment to Zaki's approach is to allow for the household size distribution among housing units, with a housing unit being considered overcrowded if the number of persons living in it exceeds the 1960 average household size of 5.5. Such an adjustment actually implies a much larger housing shortage in 1980, of 4.6 million housing units[9] as compared to the Zaki estimate of 3 million. The second factor relates to the size of housing units, which has tended to increase in Pakistan over time. Allowing for this trend leads to a substantial reduction in the shortage. The net effect of these two factors is a smaller magnitude of the housing shortage in 1980.

Further, it needs to be emphasised once again that, contrary to Zaki's claims that there was no housing shortage in 1960, our analysis reveals not only that there was a sizeable shortage in 1960 but also that the shortage as a proportion of the housing stock has tended to decline over time. Therefore, the two approaches lead to fundamentally different conclusions. According to Zaki, the housing shortage

[9]Given the distribution of housing units with '$m$' persons living in them, housing units are considered overcrowded where $m > d^*$, $d^*$ indicates the minimum density standard of 5.5 persons per housing unit used by Zaki (1981). In notional terms, the number of overcrowded housing units, $\bar{N}$, is given by

$$\bar{N} = \sum_{m} N(m) \qquad \text{where } m > d^*$$

Population living under overcrowded conditions, $\bar{P}$, is given by

$$\bar{P} = \sum_{m} mN(m) \qquad \text{where } m > d^*$$

has grown rapidly whereas our results highlight a relatively slow growth in the absolute size of the housing deficit in the country.

## VI. POLICY IMPLICATIONS

A number of policy implications emerge from the analysis, as follows:

### Building on Existing Policies

The success that the country has had in containing the growth in the housing deficit, and thereby reducing the size of the per capita shortage, can be attributed at least partially to the policies adopted for the development of the housing sector, especially from the mid-70s onwards. These include, first, the policy of relatively rapid development of new plots for housing, largely in the public sector. As a consequence, between 1978-79 and 1982-83 (Fifth Plan period), the average annual number of new plots developed was 57,000, while in the Sixth Plan period it is 88,000. This compares with an average of less than 24,000 plots during the non-plan period, 1970-71 to 1977-78, and 16,000 plots during the Third Plan period.

Second, allocations for institutional housing credit, primarily through the House Building Finance Corporation (HBFC), have increased rapidly. At 1975-76 prices, the real credit availability per capita was Rs 2.8 in 1974-75. This increased to Rs 8.1 by 1986-87. Third, the supply (primarily through an expansion in domestic production capacity) position for the major building materials has improved substantially. For example, the domestic production of cement has increased from 3.2 million tons in 1975-76 to 5.0 million tons in 1985-86. This has implied that during the 80s, inflation in building materials prices has lagged behind the overall price index.[10]

Therefore, if housing conditions are to continue improving, then the above policies will have to be sustained and further reinforced. In particular, an emphasis will have to be placed on land development in the cities at affordable rates to compete effectively with *katchi abadis*. Credit allocations will have to be increased further to make available more housing finance, especially to the lower income groups, at perhaps moderately subsidized rates. In addition, greater priority will have to be attached to an expanded provision of basic municipal infrastructure for bringing about improvements in quality of life.

[10]Minimum number of housing units required to accommodate $\bar{P}$ is given by Index (1975-76 = 100) of building material prices in 1985-86 was 181.2 while the general prices was 217.4, implying less inflation in the former.

$$\bar{R} = \bar{P}/d^*$$

Finally, shortage of housing units is given by: $\bar{S} = \bar{N} - \bar{R}$

**Priority for Rural versus Urban Housing**

Traditionally, greater priority has been attached in Pakistan for developing the housing sector in the urban areas largely to accommodate the faster growing population owed to migration there. However, the 1980 Census reveals that in all the housing consumption indicators the urban areas fare better than the rural areas. For example, habitation densities are higher in the latter while real rents per capita are lower. Also, the rate of improvement in these indicators is slower. It is not surprising, therefore, that our analysis indicates that the bulk of the housing shortage is in the rural areas.[11]

It appears that the time has come now for a reorientation in policy, with greater priority being attached to rural housing as compared to urban housing. The Seven Marla Scheme represents a first step in this regard. This will have to be supplemented by measures for the development of a rural housing credit market and for expanding the supply of rural building materials and infrastructure.

**Improvement versus Construction Financing**

Our analysis has indicated that the intensity of overcrowding has declined substantially over time. This means that a significant proportion of the households living in overcrowded conditions is only marginally below the minimum standard for housing consumption. For such households, a relatively small enhancement in living space could eliminate overcrowding.

This conclusion has a basic implication for housing finance policy. It highlights the need for relatively more funds for additions or improvements to the existing units. This will require more though smaller loans, and the possibility of more than one loan over time for a particular household.

## VII. CONCLUSIONS

This paper has analysed trends in housing conditions in Pakistan over the period 1960 to 1980. The analysis reveals a mixed trend in housing consumption over time, with some indicators highlighting an improvement while others point to some deterioration in levels of housing consumption. It is not immediately obvious, therefore, what has happened to the size of the housing shortage in the country.

A new methodology for the quantification of housing shortage has been

[11]It needs to be emphasized that these conclusions are reached when the housing shortage is seen purely in terms of living space within rooms. However, in rural areas, outdoor space is sometimes used for sleeping and other activities (cooking, washing, etc.). There is the evidence from the AERC Study (1989) that plot sizes are roughly twice as large in the rural areas of Pakistan as in the urban areas for the same household income level. Therefore, the scope for utilization of outdoor space is greater in the former.

developed in this paper which incorporates the fact that not only the number of housing units but also their size could change in response to the growth in population and incomes. This is done through an examination of the joint distribution of housing units both in terms of persons and rooms, as well as identification of the part of this distribution where access to living space appears to be below some desired norm.

The basic conclusions reached by the application of the alternative methodology are that housing conditions have tended, in fact, to improve significantly over time, especially in the urban areas, and that, consequently, the per capita housing shortage has declined by over 24 percent between 1960 and 1980. Evidence on the level of housing investment after 1980 tends to further substantiate these conclusions [see Pasha and Ghaus (1988)].

A number of policy implications are derived to further reinforce these trends. These include a higher priority for rural housing, enhanced availability of housing finance, higher allocations of funds for land development (especially small, affordable plots in larger cities), and for greater provision of basic municipal infrastructure. A recommendation is also made for diversification of housing credit to include financing of additions to the existing units.

Finally, a caveat is in order here. The housing shortage has been seen only in its quantitative dimension. Clearly, there is a need also to specify minimum standards of quality. However, the view taken is that the provision of adequate living space is a more basic need. Removal of this gap is, therefore, likely to precede any major attempt at upgradation in the quality of the housing stock in the country.

*Appendix*

## NUMBER OF ROOMS AS AN INDICATOR OF LIVING SPACE

The use of the number of rooms as an indicator of the living space in a housing unit depends upon the existence of a proportional relationship between this indicator and living space. Also to the extent that rents rise proportionally with living space, the same conclusion can be reached if the rents and the number of rooms are proportionately related to each other. These relationships can be tested empirically in the Pakistani context.

Specifically the hypothesis can be stated as:

$$\ell n\ R = \beta_0 + \beta_1\ \ell n\ N + \epsilon$$

$$\text{or}\quad \ell n\ CA = \beta'_0 + \beta'_1\ \ell n\ N + \epsilon'$$

where $R$ = rent, $CA$ = covered area and $N$ = number of rooms.

A proportional relationship exists if $\beta_1$ or $\beta'_1$ is not significantly different from unity.

The Housing, Economic and Demographic Survey 1973 (1989) gives information on rents (which is a composite indicator of housing consumption) and the number of rooms in a housing unit. This enables estimation of the relationship, if any, between the rents and the size of the housing unit as reflected by the number of rooms. Estimation (see Table A-1) shows that $\beta_1$ is not significantly different

Table A-1

*Regression Results*

| | Dependent Variable | Independent Variable | $\beta_1$ | $R^2$ |
|---|---|---|---|---|
| A. | Log of Rent | Log of Rooms | | |
| | All Pakistan | | 1.11 (11.8) | 0.95 |
| | Urban | | 1.11 (11.8) | 0.95 |
| | Rural | | 1.12 (10.5) | 0.95 |
| B. | Log of Covered Area | Log of Rooms | | |
| | Karachi | | 0.98 (10.0) | 0.92 |

*Note:* Figures in parenthesis are *t*-statistics.

from 1. This implies a proportional relationship between the rents and the number of rooms.

Also, data on covered area and the number of rooms in a housing unit is

available for a sample[1] of housing units in the city of Karachi. A proportional relationship is again reflected between the two (see Table A-1). It can, therefore, be concluded that the number of rooms is a good indicator of living space.

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[1]A Socio-economic Survey of 6285 households in Karachi was carried out in 1987-88 by the Applied Economics Research Centre (AERC) on behalf of the Master Plan and Environmental Control Department, Karachi Development Authority.