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Poverty and the Quality of the Housing: Construction of Index Using FFDP Approach

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Abstract

Poverty is multidimensional and more complex concept. The researchers have sufficiently explored the causes of poverty, but still have to be explored in the context of effects of poverty. There is increasing consensus that the income and/or consumption measures do not fully capture the qualitative dimension of poverty such as the lack of comfort, education, health, housing, personal safety, and social inclusion etc. Usually the poor has inadequate health and education facilities, low housing facilities and the other similar ills. This paper explores the housing condition of the poor by constructing the quality of the housing index (QHI). This QHI is very detailed and comprehensive incorporating the various dimensions in depth including housing facilities, distance of the facilities available to the house, frequency of the use of these facilities and perception about the services available to the households. This paper will use the recently available country-wide micro -level data collected by Pakistan Bureau of Statistics under the title of Pakistan Social and Living Standards Measurement Survey (PSLM): Round VI (2010-11). It is concluded that urban non-poor residents who live in ketcha houses have the highest quality of housing, on average. Second, the urban non-poor households come who have both the land line and mobile facilities. The third rank is observed in the rural non-poor households who use gas as a source of cooking food. The worst quality of housing is found in rural poor households who have almost no regular source of lighting in their houses.

Keywords: Poverty, Poverty Measurement, Quality of life, Social Indicator, Rural, Urban, Regional Housing Demand

JEL classification: I300, I310, I320, R1, R23, R210

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1. Introduction

Poverty does not only mean the lack of economic resources for maintaining minimum standard of living, but also leads to deprivation of other social services like education, access to fresh drinking water, health facilities, good housing conditions etc. Poverty restricts households from getting certain facilities which are accessible to the non-poor. In other words Poverty leads to economic deprivation like hunger, lack of shelter and health facilities, unemployment, lack of appropriate housing facilities, lack of schooling etc. we can say that to access the poverty is one side of the picture. But what happens to households being poor is the other side of the picture. Given the households is poor, what can happen to them in terms of lack of health and education facilities, poor housing conditions, hunger etc. So it is also important to explore the effects of poverty. Though poverty leads to many ills, as described above, but our main emphasis is on the assessment of the quality of housing as a result of poverty.

The theme of this paper is to construct the quality of housing index by considering both internal as well as external factors including facilities, location of facilities from the house, frequency of use these facilities and the perception about quality of services available to the households.

The layout of the paper is as follows. Review of literature is given in second section. The methodology used in this study is described in section three. Section four discusses the results and last section concludes the study.

2. Review of Literature

Many researchers have explored the effect of poverty on many dimensions of life. For example, Dao, (2008), Hong and Pandey, (2007), and Hussain, (2008) explored poverty and vulnerability of urban poor through measuring housing conditions and the quality of life through four dimensions: health status, personal safety, existing social support and involvement in social activities. The study found that urban poor are vulnerable to their respective human capital investment variables.

Fiadzo et al., (2001) estimated the quality of housing index for Ghana by using Core Welfare Indicators Questionnaire (CWIQ) Survey: 1997. They used various housing characteristics for the construction of housing Index. All these facilities are weighed according to their location from the household using all these weights, quality of housing index is thus generated for Ghanian households.

Using American Housing Survey in 1987, Golan and Greca, (1994) used data from the 1987 to assess housing quality of elderly household heads in various

metropolitan and non-metropolitan cities in the United States. In their study, multiple measures of housing quality were used. Their findings indicate that elderly household heads in central cities or in the south are more likely to occupy inadequate housing than their counterparts in suburban locations or other parts of the country.

Similarly, various studied have constructed housing index by using different housing facilities. See, for example, Hatch and Laura, (1998), Herrin et al., (2013), Nazli et al., (2003) and Zey-Ferrell et al., (1977)

Herrin et al. (2013) estimated the relationships between housing quality and occupant health using "count outcome" regression models consistent with the economic model and other empirical work, the results show that exposure to burning of biomass for cooking has the largest adverse health effect.

Zainal et al., (2012) examined the relationship between housing conditions and the quality of life of the urban poor in Malaysia. A small but significant positive relationship between housing conditions, health, safety, and social support was found which provide empirical evidence of the relationship between housing conditions and quality of life. The major causes of poverty in the urban regions of Malaysia were urbanization, migration of low income groups from the rural to urban areas, the entry of foreign workers and the rising costs of living.

Mukhopadhyay and Rajaraman, (2011) compared the two way traffic of poverty analysis (in and out of poverty) for India by using two housing surveys of 2002 and 2009. They furthers examined the rural housing to understand the housing quality transition. They categorized the houses into pucca, semi-pucca and ketcha.[2] By comparing the rural housing between the two rounds, researchers observed that quality of housing has improved over time. There was remarkable decline in the ketcha houses and a considerable increase in semi-pucca and pucca houses.

Dewilde and Keulenaer, (2003) argued that there has been a growing consensus on the multi-aspectual nature of poverty by linking poverty with housing. They furthered in-sighted into different occupancy status: owner occupier, rental and rent-free households and concluded that poverty resulted into inadequate housing facilities.

[2] If both roof and walls of a house are pucca, the house is termed as pucca. If either roof or walls are pucca, the house is semi-pucca.

Nazli et al., (2003) highlighted the importance of housing as an important dimension of poverty by considering its various dimensions including occupancy status, type of material used in houses, source of cooking, light and drinking water; telephone, room density etc. They calculated the housing poverty index by using the micro level data of PIHS: 1998-99.[3] They concluded that relatively more people are housing-poor in rural areas than in urban areas. However, most of the urban poor are living in worse housing conditions.

Bradbury et al., (1986) compared the poverty and the housing in U.S. and also explored the effect of compensation given to the poor having different socio-economic conditions. They compared before and after payment for housing to the poor. They also compared the housing payments to the poor having different occupancy status. They concluded that after having the housing payments some poor are better off and some are worse off.

Zey-Ferrell et al., (1977) constructed a housing quality index from a set of indicators including interior and exterior housing condition, heating and cooling, indoor plumbing, and persons per bedroom. Factor analysis and OLS regression reveal that households living in rented housing and those living in northern Louisiana communities have lower housing quality than the households who own their dwellings or live in southern Louisiana. Further, households with higher levels of education tend to occupy better housing than those with lower levels.

The existing studies showed the relationship between poverty and the housing conditions by using the indicators including nature /status of the housing[4], occupancy status[5], and other housing facilities like type of fuel used for cooking and lighting, nature of toilet facilities, type of sewerage/sanitation system for the construction of housing index. Distance of the available housing facilities from the house is also considered in the literature. However, very few of the studies considered the perception about the housing facilities / services available to the households (Richerd et al., 2007). But no study has used the proposed dimensions of housing indicators (frequency of use the facilities available and the perception about the quality of facilities and services over time). The present study will attempt to use all these dimensions together

[3] PIHS stands for Pakistan Integrated Household Survey
[4] Ketcha, semi pucca and pucca
[5] Owner occupied, rental and rent free

3. Methodology

Our starting point is the identification of each household as poor/non-poor. This is done by using the appropriate poverty line. In this respect, we have used the methodology adopted by Hussain, (2008). Under this methodology, cost of basic needs (CBN) approach is used. This approach states the minimum food and non-food requirements of each household. That is, the amount of expenditure needed to fulfill the basic food and non-food components by the households. If any household has their consumption expenditure at least equivalent to this minimum food and non-food requirements is treated as non-poor. The rest of the households are treated as poor.[6]

Our proposed QHI is detailed and comprehensive in the sense that it covers the four important and diversified aspects of housing. It covers the detailed housing characteristics used by the households at their premises. Since the different housing facilities have different qualities available to the households, all these housing facilities are given different weights according their quality. Of course, the higher quality is assigned higher weight and vice versa. By adding all these weights at each household level, we got certain summed numerical values for housing facilities as a variable "WEIGHT1".

Distance of the facilities from the house is included in constructing the quality of the housing index (QHI). Obviously, some facilities are very near to the house, whereas some are distant from the house. So these distances are given weight accordingly. By adding these distances' weights at the household level, we again get certain aggregated numerical value under a variable "WEIGHT2"

The frequency of use of these facilities is also included in the Index, which shows the number of time a specific facility is utilized by the household. Most frequently used facilities are assigned highest weights and least used facilities are given minimum weights. All these weights are added together to get a variable "WEIGHT3". Perception of the households about the quality of available facilities and services are also the part of this Index. Weighted perceptions are also added up to form the variable "WEIGHT4" Now all the constructed weights are added up to have the quality of housing index (QHI).

4. Results and Discussion

The results of the Quality of the housing Index (QHI) ,constructed, is decomposed under status of the housing, occupancy status, source of drinking

[6] For further details about CBN approach, see Hussain, 2008.

water, cooking fuel, lighting, toilet facilities, telephone connection and room density. The results of all these facilities are shown in terms of poor vs. non poor and urban vs. rural.

It is very much important to note that, in all tables of results shown below; the numerical values imply the average of the quality of the index (QHI) against each dimension.

The results of the status of the housing show that in all the three status of housing (Pucca, semi pucca and ketcha), the quality of housing is better in the non-poor than the poor. It is also noted that absolute level of quality of housing in urban area is higher than the rural area. But the relative position of the Index is the same in both urban and rural areas. That is, the non-poor are better off than the poor in both urban and rural regions. The detail is given in the Table 1.

Table 1: Quality of Housing based on House Status

Housing status	**Economic well-being**	**Average QHI**	
		Urban	**Rural**
Pucca	Non-poor	81.4316	79.6823
	Poor	78.7692	76.25
Semi-pucca	Non-poor	82.2879	79.364
	Poor	80.518	76.8539
Ketcha	Non-poor	85.2964	79.1368
	Poor	81.6085	77.8318

When we look into the occupancy status, the pattern of the results is almost the same as in case of status of the housing. The results of the subsidized-rental households have a versatile in both urban and rural regions. That is, in the urban area; the quality of housing of non-poor households is highest having subsidized-rental houses, whereas in the rural area, poor households have highest quality of housing residing in subsidized rental houses. The rest of the results are shown in Table 2.

The non-poor households having drinking water through tape have highest quality of housing in both urban and rural regions. Conversely, the rural poor households getting drinking water through other sources have the least quality of the housing, as shown in Table 3. Overall, the non-poor households getting drinking water through any sources are better off than the poor households, irrespective of their location of residence.

Table 2: Quality of Housing based on Occupancy Status

Occupancy Status	Economic well-being	Average QHI	
		Urban	Rural
Owner Occupier	Non-poor	82.4981	79.7419
	Poor	80.8561	77.6852
Rental	Non-poor	80.6541	78.3697
	Poor	79.171	78.303
Subsidized Rent	Non-poor	82.8504	77.1212
	Poor	79.1579	80.0
Rent Free	Non-poor	77.977	73.8249
	Poor	75.0918	73.8144

Table 3: Quality of Housing based on Drinking Water Source

Drinking Water	Economic Well-being	Average QHI	
		Urban	Rural
Tape water	Non-poor	82.4389	81.8888
	Poor	80.7458	79.8298
Hand pump	Non-poor	79.7623	78.3209
	Poor	78.8814	77.3788
Motor pump	Non-poor	81.9663	81.6951
	Poor	80.9706	80.1315
Other	Non-poor	80.5692	75.8734
	Poor	77.0431	74.175

Like in other facilities, Consistent results of housing quality are found in source of cooking their food. It shows that whether the households are using

firewood, gas or other sources, the non-poor are better off than the poor households. This is also true in both regions as per Table 4[7].

When we look into the source of lighting in the households, non-poor are still better off than the poor in both urban and the rural regions, except those households who use gas as a source of lighting.

That is, the rural-poor households using gas as a lighting source are better off than the non-poor households. However, the highest quality of the housing is found in the urban-non poor using electricity as a lighting source. On the other hand rural poor using other source of lighting has the least quality of housing.

Table 4: Quality of Housing based on Cooking Source

Source of Cooking	Region	Average QHI	
		Non-poor	Poor
Firewood	Urban	80.8146	79.605
	Rural	78.9215	77.251
Gas	Urban	82.3666	80.8414
	Rural	83.1212	82.1351
Others	Urban	79.3289	77.5357
	Rural	78.3624	76.6571

Table 5: Quality of Housing based on Lighting Source

Source of Lighting	Region	Average QHI	
		Non-poor	Poor
Electricity	Urban	82.0713	80.2875
	Rural	80.2568	78.7015
Gas	Urban	80.5921	80.4286
	Rural	76.3469	79.3333
kerosene oil/diesel/petrol	Urban	75.7059	75
	Rural	73.2864	72.2646
Other	Urban	75.5455	71.25
	Rural	72.1019	70.2619

Under toilet facilities, the urban non-poor households have highest quality of housing who has managed flush at their houses. On the other hand, the poor households in the rural area who have no toilet facility at their houses have the

[7] Except for those households who use gas as a cooking source. In this category rural non-poor has the highest quality of housing

minimum quality of housing (74.4). Overall, the non-poor households are better off in each toilet facility than the poor households. This is also true in both geographical regions as in Table 6.

As far as telephone facility is concerned, the non-poor urban households having both mobile and fixed-line phone facilities have the higher quality of housing (85). Conversely, rural-poor having no telephone facility have the smallest quality of housing (74.8). The detail is shown in Table 7. Like in other housing facilities, here too, the urban non-poor households are better-off than the rural poor households having different phone facilities, except in case of land-line phone facility. In the latter, poor in the rural area are better-off than the rural non-poor.

Table 6: Quality of Housing based on Toilet Facilities

Toilet facilities	Economic Well-being	Average QHI	
		Non-poor	Poor
No toilet facility	Urban	77.2299	76.1389
	Rural	74.6509	74.4082
Managed flush	Urban	82.2675	80.8173
	Rural	82.4358	81.3433
Open flush	Urban	81.6037	80.2157
	Rural	80.4588	79.3534
Latrine	Urban	81.3096	79.0739
	Rural	78.2137	77.1601

Table 7: Quality of Housing based on Telephone Connection

Telephone Connection	Region	Quality of housing index	
		Non-poor	Poor
No telephone	Urban	78.3002	77.3593
	Rural	75.3309	74.793
land line only	Urban	81.1667	78.5556
	Rural	78.7115	83.5
Mobile	Urban	81.8328	81.0909
	Rural	80.8146	79.4769
both (land line and mobile)	Urban	85.019	84.0667
	Rural	84.5078	84.7778

At the last the housing quality is shown on the basis of room density in the households. The urban non-poor households having 1-2 person per room have the

highest housing quality (82.4). On the other hand, the rural poor have the minimum housing quality (75.4) though having the smallest interval of the room density, as shown in Table 8. Across the all intervals of the room density, non-poor have consistently better-off than the non-poor in both urban and rural regions.

Table 8: Quality of Housing based on Room Density

Room Density	Region	Quality of housing index	
		Non-poor	Poor
up to 1	Urban	81.3223	75.4
	Rural	78.5163	79.75
>1 – 2	Urban	82.4224	80.1698
	Rural	79.9155	76.1163
>2 – 3	Urban	82.1136	81.2046
	Rural	79.4714	77.4322
>3 -4	Urban	81.976	80.5395
	Rural	79.1462	77.774
> 4- 5	Urban	81.3406	79.8642
	Rural	78.9185	77.1165
>5 - 6	Urban	80.8467	79.7247
	Rural	78.6831	77.3031
>6	Urban	80.9652	79.1708
	Rural	78.8113	77.3387

5. Conclusion

Overall, in all the various housing facilities non-poor households have the higher housing quality than the poor. When we compare the urban households with the rural households, it is found the urban households are relatively better off than the rural households. It may be due to the reasons that housing facilities are based on the facilities at the household level as well as the community level that is provided by the public sector.

Overall community level facilities are more biased towards the urban areas than the rural areas. Specifically, the location of the community level facilities is nearer in the urban area than in the rural area. Facilities being located nearer to the houses in the cities, the households may assess these facilities more frequently as compared with the rural households. Resultantly, the perception about the quality of facilities and services available at urban level is better than that of rural level.

So when we integrated the four aspects for the quality of the housing, we found that overall quality of the housing is higher in the urban area than in the rural area.

Finally, it is concluded that on average, urban non-poor residents who live in ketcha houses have the highest quality of housing (85.29) while the worst quality of housing (70.3) is found in rural poor households who have almost no regular source of lighting in their houses.

Since the rural households have smaller quality of the housing than the urban ones, by providing the community level facilities by government to the rural population in terms of roads, health, education and fresh drinking water facilities can improve the housing quality of the non-poor in general and the poor in particular of rural regions of the country.

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