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Stuctural, Spatial and Other Attibutes of House Price: The Case of Bangladesh

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Abstract

This paper examines the significance of structural and spatial characterstics of house contributing to the property value. Longitudinal data on property value over the last ten years and cross-sectional data on house rent have been analysed using Hedonic Regressions Function to derive a house price index for the current housing market in Bangladesh. The trend of house price is increasing more rapidly with the demand driven housing market in Bangladesh. Real estate attracts a great deal of speculative investment, but there is no indication of the relative importance of various factors in this process. This paper hopes to make an initial dent into this problem.

Introduction

Housing market of Bangladesh is booming over the last few decades to feed the growing demand by bourgeoisies, particularly, in the urban areas. Though the market is primarily dominated by the private realtors, the government housing authorities also keep impetus in this process. The increasing migration toward urban areas for availing better livelihood facilities coupled with the scarcity of urban land have made the housing demand skyrocketing. As such, houses are now being split into flats to accomodate the influx of city dwellers who having less purchasing power. Still the supply is far behind the level to meet the current demand which is causing less control over the exponential increase of market price. However, various physical and non-physical attributes determine the house price and make difference between in-house prices across the city. All changes across the area are not completely explicit, as such, to estimate the values of that changes always be complex since a number of factors and their multiple effects contribute to these changes. Many approaches and methods have been employed by far to measure the costs for marginal changes. Thus, in-house and outdoor factors need to be looked into carefully. A good house price index allows buyers and sellers to estimate the current value of houses.

A number of seminal works on House Price Dynamics have been written by a number of authors. Among them (Cho, 1996; Owen & Jeremy, 1999; Poterba, Weil, & Shiller, 1991; Taylor, 1992) are few noticeable, more specifically, Topel & Rosen (1998) on "Housing Investment", Case & Shiller (1990) on "Forecasting Prices and Excess Returns in the Housing Market", Goodman & Ittner (1992) on "The Accuracy of Home Owners' Estimates of House Value", etc. But all are based on data dealt with the housing market of developed countries. But, the housing market dynamics in the context of Bangladesh have never been reported or analysed anywhere. This paper has analysed the house price using Hedonic Price Function (HPF) based on data extracted from Dhaka and Brahmanbaria city, and hopes to provide an initial understanding of the housing market in Bangladesh. In the following section, the data sources along with variables used while collecting data have been discussed. The section also includes details of methodology that have been followed in the article. The section is followed by the theoretical aspect of Hedonic Price Function. It describes pros and cons of methodical approaches used while estimating house price and sets an equation to reach at the results. The next section is the empirical results, based on data collected from various sources for this articles. Finally, conclusion has been drawn out.

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Data and Methodology

The study areas for this article include Dhaka and Brahmanbaria city in Bangladesh. A total of 29 residential areas in Dhaka and 17 neighborhoods in Brahmanbaria municipality have been used for the collection of data. The selling prices and the rents of houses have been regarded as the reflection of buyers' preferences to housing features that have been assumed to have influence on house price. The selling prices of per square feet of floor space of the houses are collected from a number of Real Estate Companies in Dhaka city. Additionnally, land values and the rental prices are collected from the household surveys in Brahmanbaria city, since very limited house sales are available in the areas. Land values in Brahmanbaria over 10 years have been collected from District Land Office, is also adjusted on the basis of actual existing values. Estimated property values are also collected from 'Tax and Assessment Section' of municipality. Because of discrepancies in assessment between similar properties and less valuation strategies (in most of the cases) by the municipality, data have been adjusted for analysis.

Tenants' preferences have been checked by the surveys of 200 randomly selected households in all neighborhoods in city. Total 29 in-house and out-house variables have been identified as influencing factors on husing preferences and the respondents are asked to reply on the state of it's conditions. Among them, the number of in-house factors which are related to land and structures is 9. The out-(of)-house factors are 20: (a) communication (8); (b) utility services (7); (c) emviromental amenities (5). Details can be seen in Annexure A. Primary determinant of easy communication is estimated by distance between house and the facilities and it is assumed that the price reduces with the distance increases. The preference for a certain feature has been sorted into categories to understand it's level and finally, most commonly used method, Hedonic Regression, for house price estimate has been used for analysis (Annexure B).

The Hedonic Price Function

The Hedonic Model deals with the variables to estimate the value of a commodity based on people's willingness to pay for it and when its characteristics change. The Hedonic Price Function (HPF) is often used to assess the economic values of surrounding environment and amenities which influence the market prices. Hedonic analysis has found to be extensively used in the study of urban housing market dynamics. A number of seminal articles have followed the HPF in the varity of contexts. Estimating demand for housing and neighborhood attributes, e.g., in Nelson (1978), Harrison and Rubinfeld (1978), Witte, Sumka and Erekson (1979), Blomquist and Worley (1981), Bajic (1984), Follain and Jimenez (1985), and Ohsfeldt (1988); constructing housing price indices, e.g., in Goodman (1978) Mark and Goldberg (1984), Blackley and Follain (1986), and Thibodeau (1989); analyzing the impact of neighborhood externalities on house prices, e.g., in Gabriel and Welch (1984), Mark and Goldberg (1986), Grieson and White (1989), and Michaels and Smith (1990); the measurement of housing demand in residential mobility studies as in Ellickson (1981) and Shefer (1986); and the estimation of the benefits to accrue from public investment programs as in Quigley (1982) and Shefer (1990); the price also functions on its future transactions possibilities (Kiefer, 2011). The price of a house varies accordingly on land, structure, neighborhood, accessibility and location, respectively. First two are in-house qualities—land is the quality and size of the property, and structure is the quality and size of building. The other factors are outdoor qualities—neighborhood in an urban areas includes people of different attributes, e.g. the income, occupation and education of residents, and the place, e.g. the quality of local schools; accessibility is the proximity to transit, shopping, recreation and employment; and location is the proximity to enhancing qualities, such as parks, or to detracting qualities, such as crime, air pollution, noise pollution. However, both two have a cumulative effects on determining house prices. The neighborhood level price presumes outdoor factors is consistent that means in a community these are similar regardless of house; only factors related to the house itself vary in a neighborhood.

Considering the theoretical aspect of Rosen (1974), the hedonic price function (HPF) is the housing market clearing function produced by the interaction of bid functions of households and offer functions of suppliers. Letting housing be a heterogeneous commodity differentiated into a bundle of attributes, $H = (h_1, h_2, ..., h_k)$, HPF sets a functional relationship between the housing price, P(H), and the level of characteristics contained in vector H. It can be mathematically presented as follows:

$$P(H) = f(h_1, h_2, ..., h_k) \quad (1)$$

Specifically, the price of any attribute *k* in H can be denoteded as, $P_k = \frac{\partial P(H)}{\partial h_k}$

the equilibrium marginal price of that attribute. The estimated coefficients will provide the marginal prices of attributes given proper functional specification of HPF. At a particular level of demand and supply, a number of factors influence the house prices. The price is a function of land, structure, neighborhood, accessibility and location. Therefore, the estimated price of a house can be written as the summation of margial prices attributed from all characterstics in the range.

$$P = \sum_{1}^{k} \frac{\partial P(H)}{\partial h_k} + \varepsilon \quad (2)$$

Here, ε denotes the random error term. As the property values vary depending on the environment and amenities surrounding it, the differentials in value of property indicates the external costs that is the marginal willingness of buyer to pay for the variety of differences between houses. HPF is, thus, suitable to estimate house price differentials. It is a form of revealed preference method of valuation, and it uses proxy markets to estimate the value of the environment and amenities where such market is a concept used for when direct valuation is hardly possible.

In the hedonic literature, there has been a marked increase in studies highlighting concerns about the spatial interdependence of house prices. Because many factors associated with the price are implicit that make the model just rough guess to approximation.

The way neighborhood effects are estimated, however, directly corresponds to the hypothesized operation of the urban housing market under investigation. But there is no uniform housing market within the metropolitan areas. If the neighborhood effects attribute as direct determinants of housing prices, this implies the presence of a single competitive market in the long run since there will only be one price schedule. On the other hand, if the neighborhood differentials lead to varying attributal prices, this will indicate the presence of independent price schedules, thus the existence of a segmented market. Existance of geographic submarkets violates the assumption of a longrun equilibrium in urban housing markets since there will be independent hedonic price schedules within a single metropolitan area reflecting the demand and supply structures of submarkets. This implies the spatial heterogeneity in the parameters of the hedonic price depending on location across the urban landscape.

Empirical Analysis and Results

To the general sense, the value of the house is a dependent vaiable on the supply and demand in the existing market and it is assumed that the people are likely to negotiate the housing expenditures with their income. But, where the market is competitive, that means where the buyers have more options to choose their preferred features from the market, the market needs to satisfy the buyer's preference to housing features to attract the potential buyers. In the earlier section,

housing features have been discussed, and it have been grouped into two broad catagories: in-house charaterstics, and the out-house features. In this section, in-house characterstics have been analysed first, followed by the analysis of externalities.

Over the years, the increasing trend of land value has made the middle class city dwellers concerned. The unprecedented return on capital investment from property has offered the buyers a compatative interest rate with the formal banking sector. The increasing rates of house price in Dhaka city are uncomparable to other cities in the country, and within Dhaka city, the rate of return to investment is higher where the land offers high quality facilities. In an aristocratic area, such as Gulshan, the house price is almost two and a half times of the other residential areas, and it's return on investement is higher. In other zones in Dhaka city, the comparative land value is also higher than the other cities in the country to catch up by the middle class. Table 1 lists the zone-wise comparative house price differentials in Dhaka city. It shows that during the last three years period, the selling price by Real Estate Agencies increased by not less than 50 percent.

Table 1: House price scenario of Dhaka

Zone	Selling Price per sft (in Tk)		
	2011	2010	2008
Adabar	4,500	4,000	3,000
Azimpur	5,000	4,500	3,500
Bashaboo	4,500	4,000	3,000
Bashundhara	7,000	6,000	4,500
Eskaton	7,000	6,500	5,000
Gandaria	4,500	3,500	2,500
Gulshan	15,000	12,000	9,500
Green Road	6,000	5,000	4,000
Hazipara	4,500	4,000	3,000
Indira Road	6,500	5,500	4,500
Kakrail	7,000	6,500	5,000
Kathalbagan	6,000	5,000	4,000
Khilgaon	6,000	5,500	4,000
Lalmatia	9,000	8,000	7,000
Malibagh	5,500	4,500	3,000
Mazar Road	4,000	3,500	2,500
Moghbazar	6,500	6,000	5,000
North Badda	5,500	5,000	3,500
Rajabazar	6,000	5,500	4,000
Rajarbagh	5,000	4,500	3,000
Rampura	5,000	4,500	3,500
Shajahanpur	5,000	4,000	3,000
Shantinagar	7,000	6,500	5,000
Shaymoli	5,000	4,000	3,000
Shewrapara	5,000	4,000	3,000
Shiddeswari	7,500	7,000	6,000
Sutrapur	4,500	3,500	2,500
Uttara	7,000	6,000	4,000
Wari	6,500	5,500	4,000

Source: Mamun Chowdhury's field survey in April, 2011, June, 2008; and Magazine '*Ghar-bari'* 2010

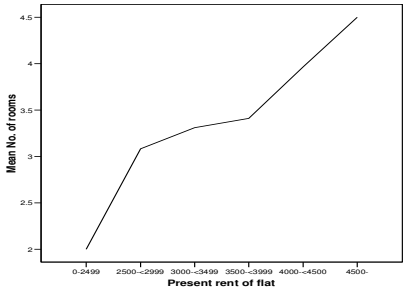
Sometimes, no significant difference among neighborhoods is visible but each neighborhood is not fairly similar in respect of spatial attributes — geographic location, communication with various facilities, quality of land, local environmental condition, crime rate, communal harmony vary neighborhood to neighborhood. Additionally, houses in a same neighborhood are heterogeneous in nature, in age, size, height, construction materials, fittings, security measure, availability of municipal services etc. Even, there is a set of spatial spill-over effects on a given residential structure of the physical quality as well as the uses associated with the surrounding neighboring structures (Can, 1992). These adjacency effects ultimately be capitalized into the prices of nearby residential structures, and thus leads to spatial dependence in the housing price determination process.

The house price as well as rental vaule is assumed to be determined by the certain factors. The physical and spatial characterstics include the number of bedroom, floor condition, number of stories, number of bathrooms, fittings of bathroom, type of foundation, geographic location, proximity to city heart, land area, the age of building. Other constant qualities for a given neighborhood are, utility services, crime rate, openness, communal harmony, environmental amenities that vary with the other neighborhoods. By considering the factors and holding other constant qualities similar for a neighborhood, an index can be produced that can feature the variation of the house price.

In an liveable area where housing market provides the basic services the in-house factors naturally put much effects on house prices rather than out-house factors. In an extisting market, that means if an area is not remotely located in the desert where none is interested to invest a doller, the land and structure are more important than the proper waste management or adjacent structures. Thus, out-house factors add constant value *(C)* to house price within the neighborhood level but varies among different communities. The level of significances of different factors have been regressed carefully to get an house price estimates based on household responses. The data infer that approximately, three-fourth portion of the house price is appreciated by in-house factors and rests of the value is attributed from out-house factors. However, size, age and fittings of the houses are as important to residents as communication, existing services and environment are.

In-house Factors

Land and both the structural and architectural designs of the house have significant impact on the house price since they have effects on the longevity of the structure and asthetical aspect of the house. For maximizing the utilities within their affordability, the buyers consider those two factors before any decision is made. Based on the variables, considered for collecting data of in-house factors, the statistics on rental price estimates that the average rental price for a room having 150 sq. ft of space, costs Tk[1] 800. With the increase of the floor space, the rent increases proportionately, but sharply between 450 sq. ft to 500 sq. ft.



Linear Regression:
$\mathcal{P}=m\mathcal{N}+c$
*=800*4+1000*
=4200 (Tk)

C= constant varies neighborhood to neighborhood for externalities

Fig.1: Rents variations against the number of rooms

[1] Bangladeshi currency. 1 $ (US)=80 Tk (Approx.)

Figure 1 features the rental price dynamics of houses in the Brahmanbaria city. The upward sloping line shows the functional relationship of floor space and the rents, mostly fluctuates between the space comprices three to four rooms. In this range, the rents of floor space fluctuates fromTk 2,500 to Tk- 4,000. But, in other segments of the line, the rent have not increased insimilar proportions as the floor space increases. This may happen because of a flat of three to four rooms is highly demanded in the cities. So in this range tenants tend topay higher rents . Beyond this range the rent is comparatively low and the variation of rents is comparatively less for a flat consists of less than 3 rooms or more than 4 rooms. However, considering the common factors influencing the rent, the rental value pattern can be fited in the following linear equation.

$$p=mN+C \qquad (3)$$

Where, *m, N, C* and *p* denote the slope of the line, number of room, constant factor, and rent, respectively. The small families always prefer small flat of certain rental value. Therefore, a flat of two rooms has found to be at least Tk. 2,000 which might not exactly fit to the equation because it can not explain the complex situation. On the other hand, a dwellers having big flat always pay less. It has been found from the household survey that house price is a multiple of house rent and it mostly varies by 330 to 350 times. Now, if rent is adjusted for the house price, the subsequent equation can be derived by the following expression.

$$P=(\geq 330-\leq 350)\,p \qquad (4)$$

In-house factors attribute to determining *m*, whereas out-house qualities determine *C*. At the rate of Tk. 800 per room, a 4 room flat offers rent of Tk. 3200 plus a constant, in this case, say Tk 1,000 for Handerpara or Maddhapara neighborhood. Cost per room, or the constant across neighborhoods allows buyers to compare the quality of houses. The charts below show the variation of rents in and between neighborhoods[2].

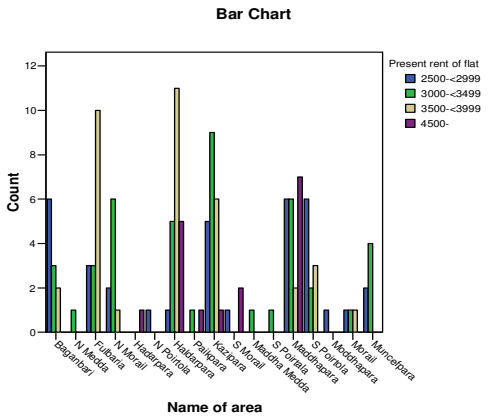


Fig. 2**:** Variation of house rents within and between neighborhoods

[2] Major residential areas in Brahmanbaria municipality include Medda, Fulbaria, Morail, Poirtala, Kazipara, Baganbari, Halderpara, Paikpara, and Muncefpara etc. Land values per decimal of these neighborhoods are, Medda=3,00,000 Tk, Fulbaria=3,00,000 Tk, Morail= 4,00,000 Tk, Poirtala=200,000 Tk, Kazipara=5,00,000 Tk and so on, which increased by 100%, 120%, 150%, 80%, and 150% respectively in last ten years. Neighborhood level price of houses also complies respectively with its land value and accordingly, the rent of house in Kazipara was 2,000 Tk in 1998, whereas present rent is Tk 4,500—more than100% increase.

Figure 2 explains the rent scenario of different neighborhoods in Brahmanbaria. It depicts that the rents are comparatively higher in Fulbaria, and Haldarpara. And the lowest rents offering neighborhoods are Mdda, Poirtala, Paikpara, Maddhapara and Morail. The rents of different ranges are found in Baganbari, Kazipara, Maddhapara and South Poirtola. Table 2 shows the range of rents offered by different facilities.

Different attribute of a house influences the rent or the property value. As the number of rooms increases, the rents increase, while the distances between house to various facilities decreases the rent increases. But how and to what extent they effect on the rents in somewhat complex. However, the data reveal that he floor condition moderate affects the rents. while the floor level, number of bathrooms and veranda, flat view, have no effect on house rent, communication and others facilities also have shown similar 'zero effects' on the house rents. However, The age of a building inversely affects the rents, that means newly built houses offer more rent than older one.

Table 2: Factors influencing house rent

Factors		House Rent			
		Tk 3000 -< Tk 3500	Tk 3500 -< Tk 4000	Tk 4000 -< Tk 4500	Tk 4500-
In-house	age (years)	10-15	10-12	8-12	5-10
	floor level	0-2	1-2	1-2	1-2
	bedroom	3-4	3-4	4	4-5
	bathroom	1-2	2	2	2
	floor condition	mosaic, cement	mosaic, cement,	mosaic	tiles, mosaic
	no of veranda	1-2	1-2	2	1-2
	flat view	moderate	good, moderate	good	moderate
out of house	Communication Facilities				
	rail	good	moderate	good	good
	bus	good	moderate	good	good
	kitchen market	good	good	good	good
	primary school	good	good	-	good
	hospital	moderate	good	-	good
	commercial area	moderate	-	-	-
	Other facilities				
	water supply	moderate	good, moderate	moderate	moderate
	gas	connected	connected	connected	connected
	electricity	good	good, moderate	moderate	moderate
	drain	connected	connected	connected	connected
	street light	present	present	present	present
	waste mgt	very few	very few	present	present
	access road	moderate	moderate	good	good
	security	moderate	moderate	moderate	moderate
others	water logging	few houses in rainy season	absent	absent	absent
	environmental quality	moderate	moderate	good	good
	communal harmony	good	moderate	moderate	moderate
	crime rate	1-2/pa	2/pa	1-2/pa	2/pa

Source: Field Survey 2008

That is why, a small-size flat in a demanding neighborhood (e.g. Munncefpara) reduces the rental values because of less floor area. On the other hand, large-size flat at the fringe areas (e.g. Chhaibaria) also decreases the rent because of longer distance parameter. It is also a complex function of a number of attributes, however,the physical attributes and the constant qualities of a locality determine the price. Considering the attributes associated with the land and structure of a house, in-house price can be determined.

For every year of age after five years of construction, the house rent reduces to a certain amount. Holding this devaluation constant, A rent can captures the the qualities of a flat. The house rent is regressed on the age, bedrooms, toilet and veranda; the average age, the number of bedrooms and the number of toilets, the number of veranda are multiplied by the appropriate coefficient to estimate the rent of a 'typical' house.

Estimation of house price can be simplified as:

$$p=(-24)a+400R+160t+80v+(1000) \qquad (5)$$

That means,

Rent, P=[(-24)*{age of building} +400*{ no of bedroom}+160*{no of toilet}+80*{no. of veranda}+{cost of externalities}+{constant value for the community, say Tk 1000 for Halderpara)]

t, R and *v* also vary with the size and qualities. However, house price is inversely proportional to as building gets aged—it seems that a house price remains same in first few years after construction, then starts to decline for certain period. For a building of age 20 years, price will decrease by around 20% compared of a newly built house. On the other, price is also reduced after a certain vertical height of the floor levels. However, it is directly proportional to fittings of toilets, rooms and surrounding space availability. It is also a factor that whether the front view of the house is south-faced to channel breeze into the house or offer an unobstacle views.

Externalities

The rents or values of the flats with similar size within a city differ with externalities, such as the provision of access road to home, openness, utility connections, and other civic amenities. By controlling land and structueral attributes much of these variation caused by externalities can be explained. As factors out of the house contribute to house price spatial characterstics, environmental quality and civic facilities available in the neighborhood influence the house price to some extent. The extent and magnitude of the effects varies in different ways. In some communities, such as Kazipara, North Morail, South Morail, and Kawtoli, communication with rail station, bus station, kitchen market, shopping centers is very good, but house rent is less compared to other neighborhoods in the municipality because of other factors like the crime rates (i.e. house no. 730 in Kazipara neighborhood, flat on 2nd floor with three bedrooms, one bathroom, one kitchen, one veranda, cement made floor, two sides open with moderate view costs Tk. 2500). On the other hand, though communication with major facilities is moderate, the rents are higher in the communities like West Paikpara, Muncefpara for less crime rate and communal harmony (i.e. house no. 124 of Muncefpara with same characteristics costs Tk. 3000). Most of the people living here are the members of religious minority group,*Hindu*. they are comfortable living here with high rent because they feel freedom while living together rather than living with other groups. Maddhapara and Haldarpara are generally of higher rental neighborhood, because all the externalities exist here are better compared to other localities in the city. Therefore, houses here have higher constant value which inceases the property value.

For determining constant factor *C*, all sub-factors of externalities have been considered. Let, the constant C comprises of three components: accessibility, available utilities and other services, environmental qualities. The leverage of access to various facilities is the most important out of all

out door factors. Thus, the houses offer higher price if the accessibility to various service is convenient from the house. The means of commute from nebourhood to city center are also a part of determining C. There are a number of such factors may influence the process of determining constant. Again, uninterrupted water, gas, and electricity supply, drainage system, available street light and proper waste management and security condition attribute to value of the property. Air pollution, water logging and crime at the neighborhood have the shocks on house price. However, the communal harmony seems to be asingnificant factor for determining the costs of externalities.

The most of the externalities used to verify the constant of the house price have been seen to be insignificant[3] anyway. In the Appendix B, details on the level of significance of externalities have been listed. However, the data still gives a notion to physical and non-physical attributes of the house price. This might happen because of small cities where the variation in externalities is nuance. But in the big cities where vaiety of eternalities exist, significant effects might be visible. Or even the house price fluctuates on the overall economic heterogeneity of the city dwellers as well as on the surrounding regions. To further develop the house price index in the context of Bangladesh, it will require to look into the house price of such cities where range of variations of externalities is higher.

Conclusion

A number of other factors such as government housing policies, demand for houses, access to finance, availability to construction materials, etc. influence the house price. Monetary policy of the country also influences the house price greatly—where inflation rate is high, people are more likely to invest in fixed assets. A theme that centers on the role of leverage in shaping the behavior of house prices has greater role. In its most general form, the proposition is that when buyers finance the purchase of assets by borrowing, this can lead the prices of these assets to become more sensitive to exogenous changes in fundamentals (Owen & Jeremy, 1999). It conferes that house price increases in an expansionary money market, where banking and non-banking financial institutes are ready to finance in housing sector. Again, labor and other resources (e.g. raw materials, used in house construction) are not highly specialized to the industry and are widely used in all sectors of the economy. Perhaps the seasonal and cyclical fluctuations in construction promote a certain adaptability and built-in flexibility in the organization of the industry that allow resource movements to respond quickly to changing economic conditions(Topel & Rosen, 1998). It obviously fluctuates the market price.

The functional relationship among various attributes and house price is not linear. This is why, Hedonic Price Function can not encompuses the complex relationships between houses and their characteristics. Thus, any in-house factor or spatial charactershic, or other externalities can not be captured by only an eqution of the house price. However, it can obviously give a primary notion about the house market dynamics. New homes are usually more valuable, since they offers better utilities to buyers. Yet, homes tend to decline in value for their first 10 years, as they become aged. Then, as homes are renovated or improved, they increase in value. Then they decline in value as these renovations depreciate and so on. It is believed that such changes would mainly result in less cyclical variation in housing investment and would not affect the equilibrium size of the housing stock (Poterba et al., 1991). As important as age, to determining house price, its relationship to house prices is not linear.

[3] Regression has been run in three steps. Firstly for communications, then utility services, then other amenities. But momst of the factors seems to be insignificant. This may be happened because of conversion of subjective matters into quantitative number.

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Annexures

Annexure A**:** Influencing variables considered for house price estimation

In-house factors	Out-house factors		
	communication	Services	Environment
age of building	rail	water supply	air pollution
no of room	bus	gas	noise pollution
floor condition	kitchen market	electricity	social & communal harmony
no of bathroom	primary school	drain	water logging
bathroom fittings	hospital	street light	crime rates
no of verenda	commercial	waste mngt.	-
openness	play field	security	-
flat view	access to house	-	-
floor height	-	-	-

Annexure B: Regression of in-house factors, spatial characterstics, and other externalities

rent_prsnt |	Coef.	Std. Err.	t	P>|t|	95% Conf.	Interval
com_rail |	-.3007837	.2778595	-1.08	0.281	-.8495553	.2479878
com_bus |	-.4770295	.3268415	-1.46	0.146	-1.12254	.1684813
com_kitc_markt |	0647946	.3091774	0.21	0.834	-.5458295	.6754188
com_pmry_scl |	-.039172	.2362315	-0.17	0.869	-.5057284	.4273844
com_hsptl |	-.5575947	.3301302	-1.69	0.093	-1.209601	.0944112
com_commcl |	-1.021699	.4127699	(-2.48)	0.014	-1.836918	-.2064802
watr_supl |	.2190836	.2551238	0.86	0.392	-.2853415	.7235086
contn_gas |	-1.554876	1.358266	-1.14	0.254	-4.24041	1.130658
contn_eltrcty |	-.0461208	.2773507	-0.17	0.868	-.5944924	.5022508
contn_drain |	-.2297937	.4163708	-0.55	0.582	-1.053033	.5934453
stret_lght |	.1150601	.3542209	0.32	0.746	-.5852976	.8154177
wst_mngt |	-.1026579	.2487811	-0.41	0.681	-.5945424	.3892265
fclty_rd |	-.2751896	.2289743	-1.20	0.231	-.7279125	.1775332
fclty_secrty |	-.584354	.2638256	(-2.21)	0.028	-1.105984	-.0627239
distnce_pl_fld |	.1433757	.1256095	1.14	0.287	-.1462804	.4330317
wtr_log |	-.7341198	.4480874	-1.64	0.140	-1.767411	.2991717
lcl_envt |	-1.291289	.5380009	(-2.40)	0.043	-2.531921	-.0506564
soci_commnl_hrmny |	1.665154	.5681686	(2.93)	0.019	.3549551	2.975353
rat_cirme |	-.1497278	.2865312	-0.52	0.615	-.81047	.5110144
other_prblms |	-3.497278	1.586474	(-2.20)	0.059	-7.155694	.1611382