Economics of Affordable Housing in Indian Cities : The Case of Mumbai

Sahil Gandhi

Environment and Urbanization Asia 2012 3: 221
DOI: 10.1177/097542531200300112

Economics of Affordable Housing in Indian Cities

The Case of Mumbai

Environment and Urbanization ASIA
3(1) 221–235

SAGE Publications
Los Angeles, London,
New Delhi, Singapore,
Washington DC
DOI: 10.1177/0975425312003001 12
http://eua.sagepub.com

Sahil Gandhi

Abstract

With increasing concentration of economic and commercial activities, rapid economic growth and influx of population in Indian cities, the pressure on affordable housing delivery is mounting, resulting in the proliferation of slums. For a sense of the magnitude of the problem, a snapshot view of slums in a few Indian cities has been provided in this article. Focusing on the case of Mumbai, it is estimated that at the present income distribution and institutional rates, only 5–6 per cent of households can afford a house in Mumbai. The article demonstrates that the failure of policies to adhere to basic economic principles results in massive distortions in the land and housing markets, leading to failure in resolving problems of affordable housing and slums. Thus, for cities to ameliorate affordable housing delivery whilst keeping a check on the growth of slums, it is essential that policies ensure the satisfaction of certain core economic principles—in particular, the household stock and flow principle—that are instrumental in efficient functioning of land and housing markets. The article advocates that the success of Rajiv Awas Yojana would depend upon its ability to understand the informal institutions in place, given the extant distortions in the land and housing markets.

Keywords

Slums, affordable housing, Mumbai, land markets, housing policies

Introduction

Burgeoning cities have been drivers of growth for many developing countries. However, growing unemployment, environmental degradation, and pressure on infrastructure have turned these cities into sites of crises (Kallidaikurichi and Yuen, 2010). The pressure on housing, in particular, has been severe. The concentration of economic and commercial activities in cities has led to a surge in population, and without a concurrent increase in housing capacity, formal housing has become distant dream for most of the poor. Public ownership of land and its inefficient management has also contributed to this problem by creating an artificial shortage of land supply and pushing up property prices (Annez and Buckley, 2009; Rajack, 2009). Providing affordable housing has thus become a formidable challenge confronting the authorities in de-veloping countries. The inability of the government to provide affordable housing causes rise of squatter and slum settlements (Ooi and Phua, 2007).

India's metropolises need to tackle two inter-related issues viz. 'slum and lack of affordable housing'.[1] According to Census of India 2001, 14.95 per cent of India's urban population lives in slums, while the housing shortage is estimated to be 24.7 million units (MHUPA, 2007). For large cities such as Mumbai, the chronic issue of slums requires urgent attention along with long-term planning for affordable housing supply. For new and growing metros, the challenge is to enhance the supply of affordable housing units.

It is vital to understand Mumbai's current affordable housing scenario and how it came to be, so as to prevent a similar situation from arising in India's emerging metros. The article argues that the present crisis in affordable housing in Mumbai is a consequence of regulations and policies that blatantly violate certain key economic principles–most importantly the equilibrating stock and flow principle.

The article is divided into seven sections including the introduction. The second section paints a broad picture of the problem of slums in some Indian cities. The third section provides a definition for the term affordable and examines affordability of housing in Mumbai looking at present property prices. The fourth section estimates the house price required to have a targeted percentage of population in formal housing. The fifth section elucidates the implications of the violation of certain economic principles in housing market on policy design. The sixth section gives recommendations for Mumbai's housing markets and other Indian cities. The seventh section concludes.

A Snapshot of Slums in India

A group of people who lack one or more of the following conditions: durable housing, sufficient living area, access to clean water, access to proper sanitation and secure tenure is a Slum Household (UN Habitat and UNESCAP, 2008). According to UN estimates, 1 billion urban people live in slums, the majority of them in developing countries (UN-Habitat, 2005). Slums have been an ubiquitous feature of the Indian cityscape. The concentration of economic and commercial activities in Indian cities has led to a surge in the urban population, severely hampering the capacity of cities to provide affordable dwellings and leading to the growth of slums. Government regulations exacerbate the problem by affecting affordability for households below certain income thresholds, making it viable for them to find housing only in the informal sector (Bertaud, 2010). Thus, the failure of formal housing markets to provide low cost housing has led to the emergence of slums as informal market solutions for many poor households (Annez et al., 2010; Baker and Mclain, 2009; Downs, 2004b; Lall et al., 2006; Sivam, 2003). Slum proliferation is a complex issue as it is not just a problem of magnitude, but also of inequality, exclusion and improper land and housing management (Pethe, 2012).

A snapshot of slum population in various Indian cities has been presented in Table No. 1. According to Census 2001, India has 14.95 per cent of its urban population living in slums. The proportion of slum population to urban population varies widely in different cities. A trend that can be discerned from the table is that the proportion of slum population in a city increases as the population density rises.[2] Thus, Mumbai, which has the highest population density, also has the highest proportion of slums. Emmel and Soussan (2001) show that communities in Mumbai's slums have to rely on their own community based organizations to access basic services in order to avoid environmental degradation. Thus there is a failure on the part of the numerous government organizations to provide access to essential services and a better environment to the vulnerable. Given the pace of urbanization in India, cities of all sizes will experience

Table 1. Urban and Slum Population in Some Indian Cities

	Slum Population (millions)	Urban Population (millions)	Slum/Urban Population (in per cent)	Population Density Persons/Km.sq.
Ahmedabad	0.47	3.52	13.46	18445.22
Bangalore	0.43	4.30	10.01	19010.55
Chennai	0.82	4.34	18.88	24963.48
Hyderabad	0.63	3.64	17.23	16762.59
Kolkata	1.49	4.57	32.48	24718.25
Mumbai	6.48	11.98	54.06	27366.18
India	42.6	285	14.95	

Source: Census of India 2001.

slum proliferation and a deterioration in the environment for the most vulnerable, which, if not handled pragmatically, will become as grave a problem as in the case of Mumbai. Recognizing the gravity of this problem the Government of India is launching a country-wide initiative titled the Rajiv Awas Yojana (RAY) that aims at brining the slums in the fold of the formal system, so as to provide them better access to basic amenities and also addressing the issue of shortage in urban land and housing.

Several policies and programmes have already been implemented in the past to tackle the problem of slums in Mumbai, albeit unsuccessfully. For such policies to be successful, they have to recognize that at the core of the issue of slums, lies the problem of undersupply of affordable housing, which has to be analysed using basic economic principles—the 'one price' or the no arbitrage principle, the intrinsic equilibrating relation between 'stocks and flows' and the 'goodness of law' supplemented by the epsilon truthfulness (Pethe, 2010a, 2010b; Pethe et al., 2011)—within the parametric framework of urban land governance.

Affordable Housing

The supply of affordable housing is limited in Mumbai due to severely regulated land market.[3] Before assessing the scenario of the affordable housing market[4] in the city, one needs to establish certain crucial benchmarks for understanding affordability in the housing sector.

Basic Concepts

There are three concepts for measuring housing affordability: *purchase affordability*, *repayment affordability* and *income affordability* (Gan and Hill, 2009).[5] Purchase affordability estimates whether the household can gather enough funds to purchase the house. Repayment affordability measures the stress on the household to make its mortgage payments. Income affordability measures the house prices to income. International standards require income affordability, that is, median house prices to median income, to be around three. Home affordability is severely lacking if this ratio is anything greater than 4 (Hawtrey, 2009). The house price to house income ratio for India was 7.7 (Jones and Datta, 1999). While all three measures rely on incomes and house prices (either directly or implicitly), Gan and Hill (2009),

by studying the Sydney prime mortgage market between 1996 and 2006, demonstrated the glaring difference in purchase and repayment affordability.

Housing Affordability in Mumbai

A balance of home price, mortgage interest rate and household income will determine housing affordability (Trimbath and Montoya, 2002). In order to assess affordability, the first step would involve estimating a dwelling size, such that minimum living conditions would be guaranteed. This dwelling size for the purpose of this article is assumed to be of 250 sq.ft. and then the cost of such a dwelling in Mumbai is then estimated. For this, the rates published in 'Times Property' (weekly supplement of the *Times of India*) are used to calculate the zonal property rates[6] depicted in Figure 1. The rates of an area in the supplement are given as a band. The lower bound of this band has been taken to calculate the zonal property rates, as the objective is to determine how many households can afford the basic minimum in the housing market.

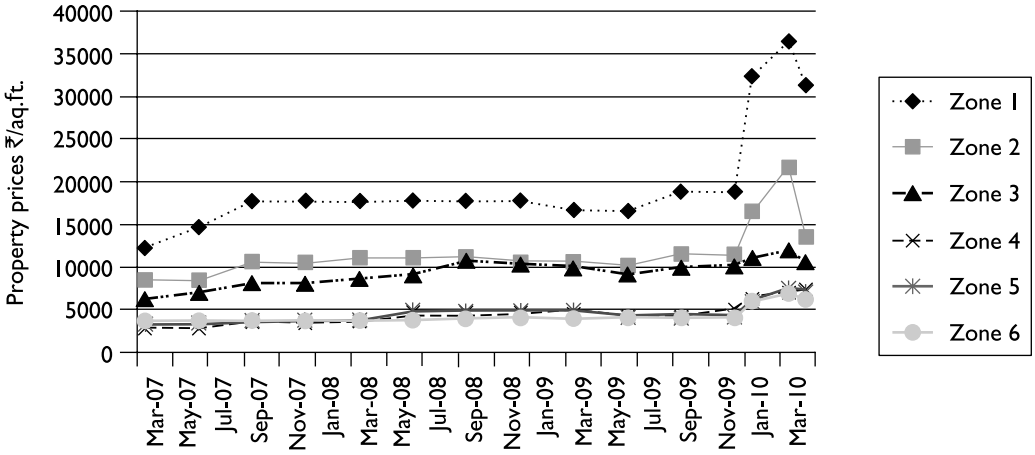

Figure 1. Zonal Property Rates in Mumbai

Source: Author's calculations using data from 'Times Property'.

It is seen from the figure that affordable housing projects can be planned only in Zones 4, 5 and 6 without tampering with prices. Property prices in these zones were 7300, 7000 and 6250 ₹/sq.ft. respectively in April 2010.[7] After December 2009 there have been some large movements, in property prices. To arrive at a dwelling price which has not been affected by such volatile price movements, property rates that have been recorded in the month of December 2009 have been considered. Property prices in zones 4, 5 and 6 December 2009 were approximately 5100, 4250 and 4100 ₹/sq.ft. A dwelling of 250 sq.ft. would then cost ₹1.025 million at ₹4,100 sq.ft.

What needs to be determined next is how many households in Mumbai can afford a 250 sq.ft. house in the suburban area (Zone 4, 5 and 6). In this exercise, affordability is considered for ownership rather than rent, as rental markets are thin in Mumbai.

There are two possible sources available to the household for acquiring loans—commercial banks and Micro-Finance Institutes (MFIs). Generally these institutes would extend a loan up to 80 per cent of the house price (Hp); hence the maximum loan amount would be ₹0.82 million. Conventionally, commercial banks charge an interest rate of 9.25 per cent on housing loans for a period of 15 years. If they were to lend to lower income groups—which they usually do not due to a perception that these groups are not creditworthy—the banks would have to incur some costs for evaluating the credit worthiness of these borrowers as well as costs for monitoring. Hence we may assume that they would charge an interest rate that is slightly higher—say 12 per cent—on loans to low incomes households to be repaid in 15 years and hence the Equated Monthly Instalment (EMI) charged would be ₹9,841.

On the other hand, housing loans extended to lower income groups by Microfinance Institutes (MFIs) are at 18–20 per cent for a period of 20 years (McKinsey Global Institute 2010). At a rate of 18 per cent for a 20 year period the EMI the household has to pay is ₹12,655 (Table 2). To meet the criteria of affordability the EMI accrued to the household should not be greater than the household's savings (assumed to be 25 per cent of monthly income); if this is not so, the household is said to be in 'stress'. Hence for acquiring a loan of such a magnitude it is imperative that the household's monthly income[8] is ₹39,366 if they borrow from commercial banks and ₹50,621 if they borrow from MFIs. In order to determine how many households in Mumbai have minimum incomes of ₹50,621 or ₹39,366, one requires the distribution of household incomes across Mumbai. In a study by Baker et al. (2005) data on income is available based on 5000 households selected randomly in Greater Mumbai Region.

Table 2. Income Required to Purchase a Dwelling at Present Institutional Rates

Property Rates (₹/sq. ft)	4,100	
Dimensions sq.ft.	250	
House price (Hp)	1,025,000	
Loan to Value (LTV)	0.8	
Loan Amount	8,20,000	
Loan Source	MFI	Commercial Bank
Loan Term (Years)	20	15
Rate of Interest (in per cent)	18	12
Equated Monthly Instalment (EMI) in ₹	12,655	9,841
Savings Rate	0.25	0.25
Monthly Income Required	50,621	39,366

Source: Author's calculations.

To assess affordability, a comparison is made between income distribution from the Baker et al. (2005) study and property prices in December 2009. Such a comparison would not be erroneous as changes in characteristics of the income distribution are slow. However, owing to the growth of the GDDP (current prices) in Mumbai one would require to shift the income distribution such that it incorporates these changes.

Table 3 shows the percentage distribution of households in Mumbai at different income levels according to the Baker et al. study (2005). GDDP at current price in the year 2005–06 was ₹92,9190 million which increased to ₹179,7290 million in the year 2009–10, an increase of 93.43 per cent. The income distribution would also need to shift by the same proportion. By keeping the characteristics of income

Table 3. Income Distribution in Mumbai

Income in 2005 (in ₹)	< 5000	5,000–7500	7500–10000	10000–20000	≥ 20000
Income in 2009–10	< 9671.28	9671.28–14507.92	14507.92–19342.56	19342.56–38685.13	≥ 38685.13
Population (in per cent)	26.5	27.7	21.9	17.8	6.1
Cumulative Population (in per cent)	26.5	54.2	76.1	93.9	100

Source: Author's calculations.

distribution the same, that is, not changing the percentage of population in each income slab, the shift of the income distribution would be brought about by increasing the income slabs by 93.43 per cent. Thus, income of ₹5,000 in 2005–06 would increase to ₹9,671.28 in 2009–10, an increase of 93.43 per cent. Likewise, an income of ₹7,500 in the year 2005–06 would grow to ₹14,506.92 in the year 2009–10 and so forth. From this income distribution we can infer that only 6.1 per cent of households in Mumbai have incomes above ₹38,685.12.

Given this income distribution, property prices, and the institutional figures of savings rate, interest rates, only 5–6 per cent of the city's population can afford a house in Mumbai (Figure 2). 94–95 per cent of the households would be left outside the formal sector housing if all the households in Mumbai City, *ceteris paribus*, were to purchase a dwelling.

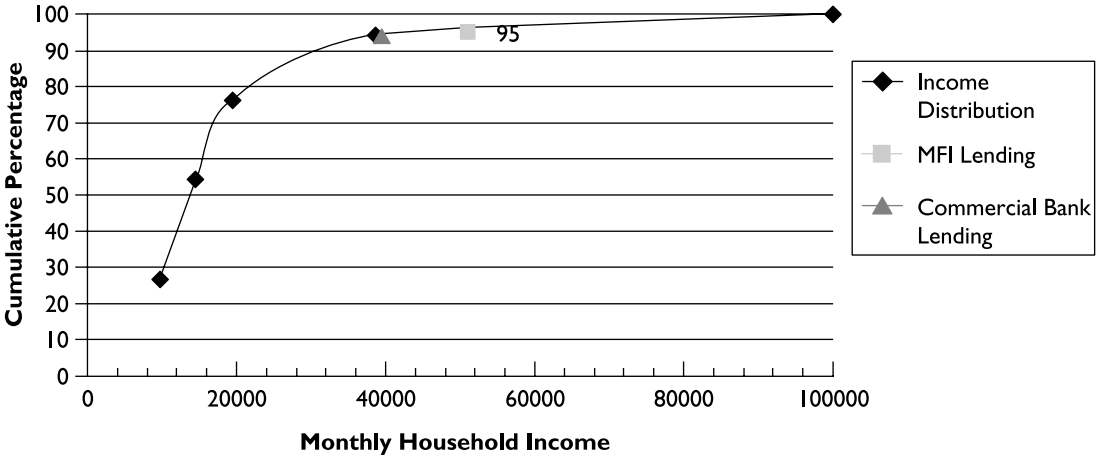

Figure 2. Percentage of Population Affording a Dwelling of ₹1.025 Million

Source: Author's calculations.

This exercise reveals that a large proportion of households living in Mumbai are not in a financial position to repurchase their own homes. Clearly there is a distortion between the household's income and the price of the house they live in, there is distortion between the household's stock and its flow.[9] The next section takes this model further and attempts to answer how the dwellings should be priced for them to be affordable to the majority of the population.

Targeting Population in Formal Sector Housing

From the above discussion it is clear that a house that costs ₹1.025 million is beyond the means of most of the population residing in Mumbai. Hence there is a need to arrive at a price estimate of a dwelling that would be affordable for the majority of Mumbai's population. In order to do this, the direction of the exercise needs to be changed, rather than moving from a house price and determining if it is affordable for the population (using the income distribution curve), the house price is determined after setting a target level of the population in formal housing. Affordable housing market in Mumbai should be accessible to 70 per cent of the population at the given institutional rates (setting a target of 100 per cent is unrealistic), the house price that would achieve this target is determined.

The target of 70 per cent would be achieved if households earning a monthly income of ₹10,000 were brought into the formal housing market (Figure 3). If the housing loan is provided by an MFI, for the house to be within the reach of a household earning ₹10,000, it should be priced at ₹0.202 million. On the other hand, if the housing loan is given by a bank, the house price should be ₹0.26 million (Table 4).

According to Gandhi (2007), the construction of a low cost housing would cost between ₹748 to ₹1,121 per sq. ft. At ₹1,121 sq.ft. the construction cost for a 250 sq.ft. house would be ₹0.28 million. Further, returns to the builder of 10 per cent and infrastructure cost of 20 per cent would escalate the cost of the dwelling to ₹0.37 million. The final ownership good would be marked up by the land costs. Hence, the market price of a 250 sq.ft. house is much greater than ₹0.26 million.

Affordability would be affected by the element of land costs if housing projects were carried out within the city limits—where land costs are high—but if these projects were undertaken in the hinterland

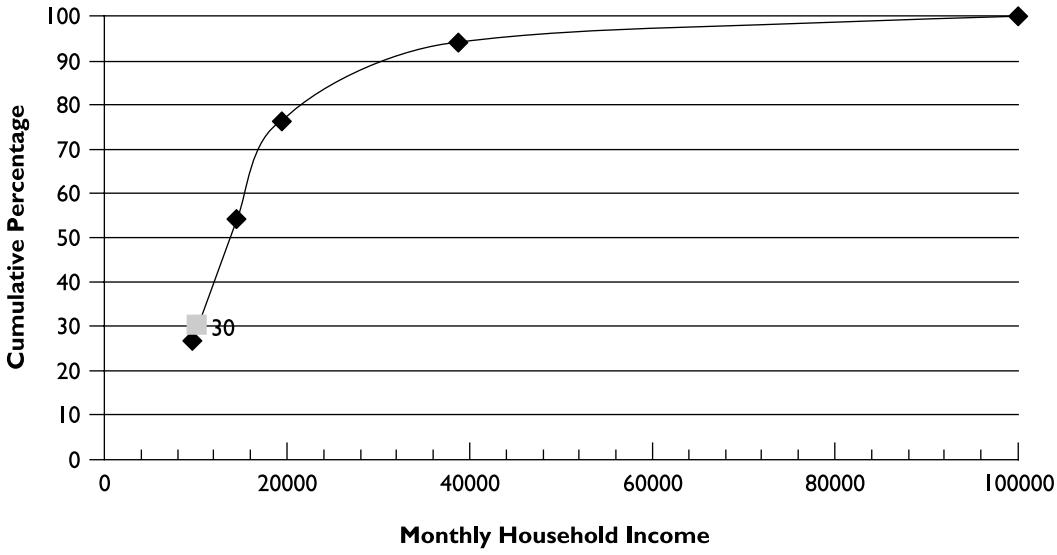

Figure 3. Targeting 70 per cent of Mumbai's Population

Source: Author's calculations.

Table 4. Housing Affordability of 70 Per cent Population

Income	10000	
Savings rate	0.25	
Savings = EMI	2500	
Loan Source	MFI	Commercial Bank
Loan Term (Years)	20	15
Rate of Interest (in per cent)	18	12
Loan Amount	161,950	208,300
LTV	0.8	0.8
Hp	202,437.5	260,375

Source: Author.

then affordability would be compromised only by land development costs. However, even if there are no land costs or development costs—which is unlikely—it seems rather daunting to achieve the 70 per cent target. This affordability gap calls for government intervention that inevitably results in price tampering policies by the State.

Analysis and Implications

The above exercise leads to two important findings. First, formal housing in Mumbai is unaffordable to the majority of its population. Majority of households have incomes that are not in congruence with the market price of the potential affordable houses. In other words, the household's stock and flow principle, essential for equilibrating the housing market, is violated in Mumbai. Second, providing low cost housing in Mumbai, even at construction rates, does not achieve the target of 70 per cent households in formal housing sector. Thus, there is a tremendous need for affordable housing but no sufficient effective demand. This makes a case for supplementing policies that tackle affordable housing supply with policies that provide housing subsidies to the needy.

Cities worldwide have a downward sloping Floor Space Index (FSI) when plotted against the distance from the Central Business District (Bertaud, 2008). This satisfies the one price principle (Pethe, 2010 a). However Mumbai's restrictive FSI is a flat line when plotted against distance from city centre, thus violating this principle. In such a highly regulated housing market, developers find it viable to supply luxury and semi-luxury housing and have little incentive to provide affordable housing; thus catering to the demand of a small segment of the population. This structure of Mumbai's housing market and the skewness of the income distribution imply that the property prices are affected by a small segment of the population—the chief reason for the wedge between households' stock of wealth[10] and income flows.

Given these distortions in the market, the ad hoc policies addressing slums and affordable housing implemented by the government have failed to redress these issues. Such non-adaptive interventions open up spaces for rent seeking when there is a mismatch between the households' stock and flow.[11] These spaces are exploited by agents, leading to a failure of policies in meeting intended outcomes.[12]

Recommendations

Getting the economics in the cities right is the key to ensure economic growth and development (Harvey, 1997). To ensure that Mumbai gets its economics right, the discrepancies in its housing market need to be urgently addressed and rectified. Policy makers have tackled the issues of slums and affordable housing in an unsystematic manner, without much success. In a study on Brazilian cities, Lall et al. (2006) demonstrate that a piecemeal approach towards resolving the issue of formal housing supply will not necessarily curb slum formation. Instead, policies should tackle the distortions in land and housing markets that affect the response of housing supply to demand. Thus, a case is made for undertaking system-wide changes pertaining to several aspects of the housing and land markets in Mumbai. Mumbai requires a combination of measures to be taken for policies to have any sort of positive impact on its housing market. First, policy correction measures are required for tackling the distortions in the housing market. Second, policy makers need to take a stand on the problem of slums in Mumbai. An analysis of Mumbai's housing market and the required policy changes also provides other Indian cities important lessons for improving efficiency in their housing markets.

Mumbai's Housing Market

Several archaic laws, which have affected the sound functioning of Mumbai's housing market, need to be reformed. The issue of a mismatch between the households' stock and flow needs to be addressed by repealing the Rent Control Act, which is creating a major discrepancy between the house price and the incomes of the tenants in South Mumbai. However, given the massive implications of this repeal on the tenant households, this measure should be gradual rather than cold turkey. One could think of a scenario where the rental rates reflect some percentage of the property value, and this value could be gradually increased towards the rental rate in the unregulated market.

Equilibrium between households' stock and flows can also be achieved by reforming the present rental value based property tax system in Mumbai to a capital value based system. For any change in the property tax system it is crucial to weigh the trade-off between the transition costs involved in bringing about the change and the future benefits of a better system (Bahl and Linn, 1992). The transition to the capital value based system is under way. However, the administrative costs involved in shifting to the capital value based system are indeed rather high with many delays (DNA, 2011). Although the change would be revenue neutral for reasons of political acceptability, it would be beneficial, as it would adhere to the 'goodness of law principle'.

As mentioned earlier, Mumbai has a severely restrictive FSI as compared to cities in other countries. The rationale given by the government is that Mumbai cannot absorb the excess FSI owing to its crumbling infrastructure. This has led to a major constraint on the supply of housing in Mumbai. This artificial scarcity is being exploited by the creation of Transferrable Development Rights (TDR), which are being used to finance infrastructure by the government through its numerous parastatals.[13] Given the tremendous infrastructure investment being carried out in Mumbai, there is scope for easing FSI restrictions. Relaxing these restrictions should be done in a manner that land markets satisfy the one price principle.

Besides ensuring that markets satisfy the stock and flow equilibrating principle, policies have to address the palpable issue of slums in Mumbai, in a systematic and focused manner. Polices pertaining

to slums have undergone a drastic change from eviction to resettlement and rehabilitation over the years.[14] Arnott (2009) maintains that the optimum strategy for developing countries would be to provide adequate level of public services in the surroundings of slum settlements. Patel (2010) shares this sentiment by laying emphasis on providing basic infrastructure to the slum settlement (Dharavi) and leaving the development process to the market. Hence policymakers should devise strategies to provide infrastructure facilities to existing slum settlements along with enforcement measures that restrict the area and density-wise growth of existing slums as well as the formation of new settlements.

Along with these measures, one needs to look at long term strategies that incentivize private player participation in increasing affordable housing supply concurrent with the provision of the necessary infrastructure in the vicinity and connectivity (Annez et al., 2010). Supply of affordable housing could be increased by *enabling* market players (World Bank, 1993). In order to enable the private sector to participate in creating affordable housing townships, policies need to carefully study the stakeholders involved in order to avoid unforeseen complications (Mukhija, 2001, 2004; Sanyal and Mukhija, 2001). Such townships should be a combination of ownership and rental dwellings. Looking at the property prices in Mumbai, such townships cannot be thought of within the boundaries of Mumbai—due to high land costs—but would be viable on undeveloped land abundant in the hinterland of the city.[15] With the usage of development charge, optimal FSI (Prud'homme, 2007) and correct incentives to private players, not only would viability be achieved but there could also be a scope for financing an efficient transport network from the township to Mumbai. It is envisaged that affordable housing projects would be Public Private Partnership ventures with the private sector handling the development and construction of the houses and the public sector concerning itself with supplying or acquiring land and selling the housing units. The policy of locating projects in the hinterland could be met with the criticism that it would lead to ghettoization of the poor communi-ties, however given the alternative of living in slums, the opportunity of better quality of life for the poor seems far more appealing.

One cannot talk of affordable housing and disregard the vital role played by government bodies such like Maharashtra Housing and Area Development Authority (MHADA), which has been involved with constructing and supplying affordable housing units for a long time. Whether the position taken by many that MHADA ought to be only a facilitator and not a direct provider of affordable housing holds merit, what would be the implications if MHADA were to strengthen its position as a supplier in the housing market, in what other manner can MHADA facilitate bridging the gap between demand and supply of affordable housing are questions that require careful deliberation as it would have major implications for affordable housing delivery and management. Another parastatal, Slum Rehabilitation Authority (SRA), which provides free *pukka* housing, is actually encouraging proliferation of slums by incentivizing players to act with strategic foresight. Hence there is an urgent requirement to critically examine the role of SRA in the management of slums. Mumbai Metropolitan Region Development Authority (MMRDA) has also been involved in resettlement and rehabilitation of slums along with providing affordable housing in PPP mode with private developers. Thus there are multiple government organizations involved in affordable housing provision. This multiplicity of organizations with overlapping jurisdictions and scopes makes affordable housing delivery polycentric in nature. Pethe et al. (2011) examine the ostensibly polycentric nature of governance in Mumbai and conclude that it is inefficient. For this governance system to work efficiently, it is essential to examine the underlying institutions and to undertake micro reforms. Thus ensuring affordable housing delivery in Mumbai requires an assessment of the institutional framework that govern the incentives of actors in Mumbai's housing and land markets and formulate self enforceable rules so that system functions efficiently.

While policies so far have largely addressed the supply side of affordable housing, the demand side of the market is not without its own problems. Even though it is starkly clear that there is a very high potential demand for low cost housing, it does not translate to a high effective demand, primarily because of insufficient access to formal credit for housing. Commercial banks are reluctant to provide housing finance to poor and low-income households, as they are not deemed creditworthy. As opposed to developed countries whose mortgage debt to GDP ratio is usually above 40 per cent,[16] the size of the mortgage market in India, despite the recent surge, is only around 10 per cent of GDP (Buckley et al., 2009). Out of the box solutions as provided by small microfinance institutions as well as expanding the reach of formal commercial institutions working together with local networks and NGOs or Community Based Organizations (CBOs) would go a long way in addressing these issues. There is also the need to increase the creditworthiness of the poor, which would require policies that provide better access to labour markets and encourage small, and medium scale enterprises, so as to enable the poor to augment their incomes. Thus the issue of better livelihoods becomes inextricably linked with bolstering effective demand for housing in Mumbai.

i. Other Indian Cities

Although the patterns of urbanization of different Indian cities differ depending upon geographic, economic and political factors, they face the same issues of infrastructure, slum proliferation and inefficient urban land management, which threaten to undermine their future growth. The prescriptive measures to reign in these problems, too, are more or less similar.

Ensuring that policies and regulations adhere to the economic principles of stock and flow, one price and goodness of law is *sine qua non* for enabling land and housing markets in cities to function efficiently. Thus, policy-makers have to carefully deliberate on the extant regulations and the distortions that these might be creating. From the case of Mumbai, it is seen that distortion in land and housing markets is one of the primary reasons for undersupply of affordable housing and, consequently, growth of slums. Hence, policies such as the RAY that aim to meet the dual objectives of affordable housing delivery and prevention of slum formation, should also discount for the distorted housing and land markets in various Indian cities for successful implementation.

There is also a need to ensure that basic infrastructure services can be made available along with affordable housing to lower income groups. Accessibility to the cities' business districts has to be made easier by providing adequate transport networks. Hence, integrated planning becomes crucial for ensuring that the growing cities continue to remain liveable. Given that population growth and economic development as well as rate of urbanization are difficult to predict accurately, such plans and policies should be adaptive so that unforeseen contingencies can be handled effectively.

Conclusion

India's rapidly urbanizing cities and towns require well functioning housing markets and sound policies to tackle the imminent malaise of slums. The proliferation of slums is the result of high population growth that is not accompanied by adequate provision of affordable housing. Ensuring that the core

economic principles—instrumental in the efficient functioning of urban housing and land markets—are met is the key to tackling the issue of slums. The experience of large metropolises like Mumbai demonstrates that the problems of slums and affordable housing can become chronic if policies fail to satisfy the economics of housing and land markets.

High population in-migration, archaic laws and market failures for provision of affordable housing, have led to massive slum proliferation in Mumbai. The soaring property prices and inadequate affordable housing supply have made owning a home a distant dream for the overwhelming majority of the population. Using present property rates, income distribution, and institutional lending terms (such as loan term, interest rates and loan to value), it is found that only 5–6 per cent of Mumbai's population would be able to afford a house in Greater Mumbai. This clearly indicates that the price of the dwelling a household resides in is not in sync with its income level, that is, there is a mismatch between the households' stock and flow. The chief reason for this is the high property prices relative to the incomes of the households. This problem is exacerbated by the restrictive upper bounds on FSI, which lead to an artificial scarcity of land in the city. There is a dire need to frame policies that bring about some degree of congruence between income and house prices. In order to examine the issue of affordability in an alternative way, an exercise, wherein a target level of population that ought to be in formal sector dwellings is set, is undertaken. The house price (demand side) is then determined using the income distribution curve. For a house to be within the reach of the target level of population set, at 70 per cent—depending upon whether housing credit is provided by commercial banks or MFIs—it should be priced at anything between ₹0.202–0.26 million, which does not even cover the construction cost.

Providing affordable housing requires well thought out policies that would strengthen housing markets as well as tackle the issue of slums. In order to correct markets, there is a need to dovetail the other elements of policy such as repealing rent control, rationalizing property tax, easing restrictions on FSI and others so that they bring about synchronization between the households' incomes and the house prices. Slum related policies should focus on providing infrastructure to existing slums and implementing measures that restrict the densification of slums as well as formation of new settlements. Besides supply side policies, effective demand for formal affordable housing needs to be bolstered through policies designed to augment livelihoods of the poor and help them get better access to credit markets and labour markets.

The case of Mumbai provides some important lessons for growing Indian cities. Along with social and political considerations, policies should satisfy basic economic principles in order to prevent market failure in housing. Success of policies, like the forthcoming RAY, would critically depend upon the ability to recognize the adaptive nature of informal institutions that are a result of extant distortions in the housing and land markets for it to meet its objectives.

Acknowledgements

The author owes a debt of gratitude to Abhay Pethe for his invaluable comments. He would also like to thank Vidhyadhar K. Phatak, Ritu Dewan, Vaidehi Tandel and Meenaz Munshi for their comments.

Notes

1. Downs (2004a) opines that for United States it is 'sprawl and affordable housing'.
2. The correlation between percentage of slum population in the city and the population density is 0.8.

3. Besides the naturally scarce availability of land in Mumbai, the rigid Floor Space Index further exacerbates this scarcity (Bertaud, 2004).
4. Affordable housing market is a sub market of the housing market. The housing market is part of a larger real estate market which is in turn governed by the broader institutional framework of the land market. Sivam (2002) affirms this by stating that housing and land markets cannot be studied in isolation.
5. These affordability measures look only into financial considerations of the family as physical quality of the dwelling in the developed countries is guaranteed, however in developing countries there is a tradeoff between affordability and quality and while keeping affordability in mind there is a need to create a minimum benchmark of quality.
6. I use the property rates for the following areas for calculating the Zonal Property Rates:

   Zone 1—Cuffe Parade, Churchgate, Marine Drive, Napeansea Road, Malabar Hill, Byculla.
   Zone 2—Worli, Prabhadevi, Sion, Wadala.
   Zone 3—Bandra, Khar, Vile Parle, Andheri.
   Zone 4—Goregaon, Malad, Kandivali, Borivali.
   Zone 5—Kurla, Chembur.
   Zone 6—Ghatkopar, Bhandup, Mulund.

   Zonal property rates are derived as simple average of the rates in the area.
7. Three data points have been taken between December 2009 and April 2010 to show volatile movements in property prices.
8. Income is arrived at by dividing the EMI by the savings rate.
9. Abhay Pethe (2010b) asserts that it is mandatory to adhere to the stock and flow relation for land and housing markets to function efficiently.
10. Assuming that the household's property forms a major component of its wealth.
11. Gandhi (2007) and Pethe (2010a) show how the Slum Rehabilitation Scheme (SRS)—implemented by the Slum Rehabilitation Authority (SRA)—led to rent seeking and corrupt practices among all stakeholders. This is because the scheme made no attempt to have the market price of the dwelling (stock) that was given out synchronized to the income of the household it was given to.
12. The SRS is ineffective in meeting its objective of providing housing to slum dwellers as they prefer to continue to stay in the slums and lease out the flats to middle class households (Kranthi and Rao, 2009).
13. Readers interested in knowing more about TDRs can refer to Nainan (2008) and Pruetz and Strandridge (2009), among others.
14. Assessing the various policies on slums is beyond the purview of the paper. However, interested readers can refer to O'Hare et al. (1998) and Gandhi (2007).
15. However if the government decides to undertake affordable housing projects within the city and tamper with the prices it would lead to arbitrage opportunities thus converging the outcome for the targeted back to status quo.
16. With the exception of Greece and Italy.

References

Annez, P.C., Bertaud, A., Patel, B., & Phatak, V.K. (2010). Working with the market: Approach to reducing urban slums in India. Working paper No. 5475, Policy research, The World Bank.

Annez, P.C., & Buckley, R.M. (2009). Urbanization and growth: Setting the context. In M. Spence, P.C. Annez, & R.M. Buckley (Eds), *Urbanization and growth* (pp. 1–45). Washington D.C: World Bank.

Arnott, R. (2009). Housing policy in developing countries: The importance of the informal economy in Spence. In P.C. Annez & R.M. Buckley (Eds), *Urbanization and growth* (pp. 167–96). Washington, DC: World Bank.

Bahl, R. W. & Linn, J.F. (1992). *Urban public finance in developing countries*. Oxford: Oxford University Press.

Baker, J.L., & McClain, K. (2009). Private sector initiatives in slum upgrading. World Bank, Urban Papers No. 8.
Baker, J., Basu, R., Cropper, M., Lall, S., & Takeuchi, A. (2005). Urban poverty and transport: The case of Mumbai. *Working paper No. 3693*, *Policy research, The World Bank.*
Bertaud, A. (2010). Land markets, government interventions and housing affordability. Wolfensohn Centre for Development at Brookings Working Paper No. 18.
———. (2008). Options for new alternatives for development control regulation and justification for increasing FSI. http://www.alain-bertaud.com/
———. (2004). Mumbai FSI conundrum: The perfect storm: The four factors restricting the construction of new floor space in Mumbai. http://www.alain- bertaud.com/
Buckley, R., Chiquier, L., & Lea, M. (2009). Housing finance and the Economy. In L. Chiquier & M. Lea (eds), *Housing finance policy in emerging markets* (pp. 1–27). World Bank.
DNA. (2011). Need more time for Property Tax bill: BMC. DNA, January 20.
Downs, A. (2004a). Introduction. In A. Downs (Ed.), *Growth management and affordable housing: Do they conflict* (pp. 1–19). Washington, DC: Brookings Institution Press.
———. (2004b). Growth management, smart growth and affordable housing. In A. Downs (ed.), *Growth management and affordable housing: Do they conflict*. Washington, DC: Brookings Institution Press.
Emmel, N.D., & Soussan, J.G. (2001). Interpreting environmental degradation and development in the slums of Mumbai, India. *Land Degradation and Development*, 12, 277–83.
Gan, Q., & Hill, R. (2009). Measuring housing affordability: Looking beyond the median. *Journal of Housing Economics*, 18(2), 115–25.
Gandhi, S. (2007). Housing Mumbai's poor. *Economic and Political Weekly*, 42(38), 3835– 37.
Harvey, D. (1997). Contested cities: Social process and spatial form. In N. Jewson & MacGregor, S. (Eds), *Transforming cities: Contested governance and new spatial divisions* (pp. 19–27). London: Routledge.
Hawtrey, K. (2009). *Affordable housing finance*. Basingstoke: Palgrave Macmillan Studies.
Jones, G., & Datta, K. (1999). From self help to self finance. In K. Datta & G. Jones (Eds), *Housing and finance in developing countries* (pp. 3–25). London: Routledge.
Kallidaikurichi, S., & Yuen, B. (2010). Introduction: The dynamics of living cities. In S. Kallidaikurichi & B. Yuen (Eds), *Developing living cities: From analysis to action* (pp. 1–11). Singapore: World Scientific.
Kranthi, N., & Rao, K. (2009). Security of tenure of urban poor settlements: Trends and experiences. *Urban India*, 29(2), 70–84.
Lall, S., Wang, H.G., & Da Mata, D. (2006). Do urban land regulations influence slum formation? Evidence from Brazilian cities. World Bank mimeo.
McKinsey Global Institute. (2010). India's urban awakening: Building inclusive cities, sustaining economic growth, viewed on 8 July 2010 (http://www.mckinsey.com/mgi/publications/india_urbanization/index.asp).
MHUPA. (2007). *National urban housing and habitat policy*. Ministry of Housing and Urban Poverty Alleviation, Government of India.
Mukhija, V. (2001). Enabling slum redevelopment in Mumbai: Policy paradox in practice. *Housing Studies*, 16(6), 791–806.
———. (2004). The contradictions in enabling private developers of affordable housing: A cautionary case from Ahmedabad, India. *Urban Studies*, 41(11), 2231–44.
Nainan, N. (2008). Building boomers and fragmentation of space in Mumbai. *Economic and Political Weekly*, 24 May, 29–34.
O' Hare, G., Abbot, D., & Barke, M. (1998). A review of slum housing policies in Mumbai. *Cities*, 15(4), 269–83.
Ooi, G.L., & Phua, K.H. (2007). Urbanization and slum formation. *Journal of Urban Health,* 84(1), 27–34.
Patel, S. (2010). Dharavi: Makeover or takeover? *Economic and Political Weekly*, 45(24), 47–54.
Pethe, A. (2012). Metropolitan public finance: The case of Mumbai. In R. Bahl, J. Linn, D. Wetzel & G. Ingram (Eds), *Metropolitan government finances in developing countries*.

Pethe, A. (2010a). Collusion, conflicts, informal systems & rent seeking: The great prototype Indian story of urban land management in Mumbai. Synthesis report of a study undertaken for World Bank presented at Urban Design and Research Institute, Mumbai on 10 December 2010.

———. (2010b). Contextualizing land management issues within the framework of urban governance: Case of Mumbai. Presentation at the International Workshop on Expanding Land Access, World Bank, Washington, DC. (http://siteresources.worldbank.org/INTHOUSINGLAND/Resources/339552-1272658002920/Pethe.pdf)

Pethe, A., Gandhi, S., & Tandel, V. (2011). Assessing the Mumbai metropolitan region: A governance perspective. *Economic and Political Weekly*, 46(26&27), 187–95.

Prud'homme, R. (2007). Seven notes on Mumbai's growth and how to finance it (http://www.rprudhomme.com/resources/2007+Seven+Notes+on+Mumbai+$28WB$29+.pdf)

Pruetz, R., & Standridge, N. (2009). What makes transfer of development rights work? Success factors from research and practice. *Journal of the American Planning Association*, 75(1), 78–87.

Rajack, R. (2009). Does the ownership and management of public land matter to land market outcomes in urban land markets: Improving land management for successful urbanization. In S. Lall, M. Freire, B. Yuen, R. Rajack & J.-J. Helluin (Eds), *Urban land markets* (pp. 305–36). New York, USA: Springer.

Sanyal, B., & Mukhija, V. (2001). Institutional pluralism and housing delivery: A case of unforeseen conflicts in Mumbai, India. *World Development*, 29(12), 2043–57.

Sivam, A. (2002). Constraints affecting the efficiency of the urban residential land market in developing countries: A case study of India. *Habitat International*, 26, 523–37.

———. (2003). Housing supply in Delhi. *Cities*, 20(2), 135–41.

Trimbath, S., & Montoya, J. (2002). Housing affordability in three dimensions: Price, income and interest rates. Milken Institute Policy Brief No. 31.

UN-Habitat. (2005). *Financing urban shelter: Global report on human settlement*. London: Earthscan.

UN-Habitat and UNESCAP. (2008). Low-income housing: Approaches to help the urban poor find adequate accommodation, in the series *Housing the Poor in Asian Cities*.

World Bank. (1993). Housing: Enabling markets to work. World Bank Policy Paper.

Sahil Gandhi is a Ph.D. Scholar at the Vibhooti Shukla Centre, Department of Economics, University of Mumbai. E-mail: sahil.gandhi1@gmail.com