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Author
Young, Cheryl

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by

Cheryl K. Young

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Committee in charge:

Professor Carolina Reid, Chair
Professor Emerita Elizabeth Deakin
Professor Paavo Monkkonen
Professor Steven Raphael

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Abstract

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Since the nation's first Five-Year Plan in 1951, the Government of India has focused attention on increasing the country's housing supply, particularly for low-income households. The nature of housing policy has shifted over the years, however, with the most recent period focused on developing a private housing market through governmental support of mortgage finance institutions and the establishment of a housing finance regulator. Despite these efforts, recent estimates place India's housing deficit at close to 19 million units with tens of millions of the nation's population living in slums. There has been limited research that has traced the evolution of India's housing policy since 1951, precluding our ability to understand the persistence of unmet housing demand and the proliferation of slums.

This dissertation fills this gap by examining how low-income housing policy is shaped in India at three scales: 1) the global, 2) the national, and 3) the local or household scale. It argues that this multi-scalar approach to examining housing policy is necessary in order understand the factors that shape specific policy regimes. In India, international flows of capital collide with nationalistic goals of "slum-free" cities to produce specific policy actions, which again are shaped by the particulars of households' decisions about where they choose to live and why.

The dissertation is organized as follows. Chapter 1 introduces the low-income housing challenge in India, describes the three housing policy paradigms that dominate global housing policy discourse and praxis, and provides a review of how housing is funded in India.

Chapter 2 approaches low-income housing policy at the global scale, applying theories of policy diffusion to make the case that low-income housing policy in India is shaped by funding flows and knowledge-sharing from international actors. This chapter traces shelter lending from the World Bank Group, the single largest outside provider of development capital for housing to India, and examines the degree and type of influence the Bank has had on India's approach to low-income housing. This analysis reveals that India is most susceptible to policy shifts that reflect the World Bank's own policy objectives when it is most in need of outside funding. When

India's financial position is strong, housing projects are seen as attractive investments by the World Bank Group's private sector arm and serve to provide momentum for India's own housing policy objectives.

Chapter 3 is situated at the national scale and examines the role of policy frames in India's public discourse on low-income housing in shaping the specific policies of different planning eras. The analysis applies a mixed-methods approach to reading the housing-related chapters in each of India's twelve Five-Year Plans. These documents provide an ongoing, textual record of national directives and external messages concerning the country's central planning efforts. Subjecting the plans to qualitative content and computational text analyses reveals the contours of India's housing policy frames. This chapter finds that larger shifts in policy frames occur after significant events that fundamentally alter the Government of India's conception of its institutional and fiduciary role in low-income housing provision.

Chapter 4 concentrates on the local scale, examining housing demand across two major Indian cities. The myriad low-income housing policies implemented by the Government of India have systematically overlooked low-income households' demand or willingness to pay for housing. This chapter questions whether low-income housing policies have been remiss in ignoring their beneficiaries' preferences for housing characteristics. The data used here are previously-collected household surveys in the Maharashtrian cities of Mumbai and Pune. Using a hedonic analysis of housing markets, this chapter compares income and price elasticities of demand between slum and non-slum households. The findings reveal that demand elasticities are higher among slum-households, but also expose a number of empirical issues that compromise external validity when using pre-existing household survey data.

The findings from this dissertation have implications for India as it continues to urbanize and craft housing policies to address imminent growth. Other developing and emerging economies can also benefit from this scaled analysis that utilizes a range of data sources and methods to critically examine the role external forces play in shaping national housing policy, how the national government frames its approach to low-income housing, and what household behavior can reveal about which policies to pursue.

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Acronyms

EWS – Economically Weaker Section

FDI – Foreign Direct Investment

GoI – Government of India

DHFL – Dewan Housing Finance Limited

DIPP – Department of Industrial Policy and Promotion

HDFC – Housing Development Finance Corporation

HIG – High Income Group

HUDCO – Housing and Urban Development Corporation

IBRD – International Bank for Reconstruction and Development (World Bank)

ICICI – Industrial Credit and Investment Corporation of India

IDA – International Development Association (World Bank)

IFC – International Finance Corporation

IFI – International Financial Institution

IPO – Initial Public Offering

IMF – International Monetary Fund

JNNURM – Jawaharlal Nehru National Urban Renewal Mission

MFI – Microfinance Institution

MHUPA – Ministry of Housing and Urban Poverty Alleviation

MIG – Middle Income Group

NHB – National Housing Bank

NLTK – Natural Language Toolkit

NSSO – National Sample Survey Organization

OECD – Organisation for Economic Co-operation and Development

PAD – Project Appraisal Document

RAY – Rajiv Awas Yojana

RBI – Reserve Bank of India

SAR – Staff Appraisal Report

SEWA – Self-Employed Women's Association

UN – United Nations

UN-Habitat – United Nations Human Settlements Program

WDI – World Development Indicators

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Chapter 1. Introduction

1.1. Organization of Dissertation

This dissertation analyzes India's approach to urban, low-income housing policy as far back as 1951, four years after Independence, when the country issued its first Five-Year Plan. Since then, the issue of low-income housing has surfaced as a perennial issue that the Government of India has actively addressed as an integral part of India's economic and social development. The concern here, thus, focuses on uncovering how housing policy is shaped through the ways in which the Government of India is influenced by external policies or actors, defines its role in the low-income housing provision process, and conceives of the needs and demands of low-income households.

The dissertation is structured around three key chapters, each of which examines the evolution of low-income housing policy in India at a different scale. Ensuing sections of this chapter provide an overview of the research context, a review of the three global housing policy paradigms, and discussion of how housing is funded in India. Chapters 2 through 4 of the dissertation then addresses three important issues: the international precedents that have shaped Indian housing policy, the ever-changing national policies on housing as represented in successive Five-Year Plans prepared by the central government, and the impact of the policies as revealed by an analysis using data from two major Indian cities. Each chapter contains its own literature review and methodology, but together they cast light on the formation of India's low-income housing policy.

Chapter 2 approaches low-income housing policy at the global scale, and unpacks the processes of policy diffusion to make a case that low-income housing policy has been shaped in some part by the policy regimes and resource mobilization of international actors. Like many developing countries, India has encountered large housing deficits and a rising number of informal housing settlements among the poor throughout its history as an independent nation. During this time, external influences, both in terms of knowledge-sharing of how to address low-income housing issues as well as funding resources were available to India. This chapter traces the World Bank's shelter lending to India and questions the degree and type of influence external funding had on the country's approach to low-income housing. This chapter uses a dataset of the World Bank's shelter lending portfolio to India and examines the evolution of lending by housing project categories. The findings are compared against the prevailing global housing policy paradigms espoused by the World Bank and other development agencies as well as the types of housing policies and programs India ends up implementing at a national level. The chapter argues that funding is an important mechanism for the diffusion of low-income housing policies to India.

The analysis for the third chapter in this dissertation is situated at a national scale, in order to question the internal logic at work in India's approach to low-income housing. Specifically it examines the role of policy frames and India's public discourse on low-income housing to understand how low-income housing is presented to the public and discussed by policymakers. This inquiry asserts that the Government of India's attitudes towards low-income housing have been dynamic and changeable, rather than consistent and predictable. As a result, this exposes variation in policy frames across a number of contexts, which are

defined by who are named as beneficiaries, thematic sentiments towards low-income housing, and how the Government of India defines its roles vis-à-vis other stakeholders. The analysis here is based on a mixed-methods approach to reading the housing-related chapters of India's twelve Five-Year Plans. An in-depth reading of the housing-related chapters of these plans and simple computational text analysis methods reveal the contours of these policy frames. This chapter finds that larger variations in policy frames occur after significant events that fundamentally shift the Government of India's conception of its institutional and fiduciary role in low-income housing provision.

The fourth chapter concentrates on the local scale, specifically examining households across two major India cities. Despite the spate of low-income housing policies that were supported and formulated by the Government of India, very few have relied on an assessment of households' demand or willingness to pay. This chapter questions if low-income housing policies have been remiss in overlooking these fundamental questions related to demand characteristics of its beneficiaries. In this case we compare slum and non-slum households' demand for housing in the Maharashtrian cities of Mumbai and Pune and examine how these findings can contribute to better shaping low-income housing policy. The method used here is a hedonic analysis of housing markets in these two cities using household survey data to estimate income and price elasticities of demand. The findings show higher demand elasticities among slum-dwellers than non-slum dwellers, and reveal critical issues in the external validity of using pre-existing household survey data to estimate hedonic models in developing country cities.

The rest of this chapter provides an overview of the research context and the research contribution of the dissertation. The former is a review of the low-income housing challenge in India, including a working definition of slums, an introduction to the three global housing policy paradigms, and a discussion of how housing is funded in India. The global housing policy paradigms outline the key efforts that shaped international housing policy since the middle of the 20th century. They dictate the course of housing activity that is funded by international development agencies and championed by national governments of developing countries. These paradigms will be referenced to throughout this dissertation and provide the global context in which India's low-income housing policy is shaped and transformed. Similarly, a description of the source of national funding mechanisms for publicly funded housing developments and housing schemes elucidates the relationship between the Government of India and external funding partners. Together these elements set the stage for the subsequent analysis of the formulation of India's housing policy at various scales.

1.2. Research Context

1.2.1 The Low-Income Housing Challenge in India

India's current urban housing shortage amounts to 18.78 million units, a figure that factors in overcrowding, poor quality from obsolescence, and homelessness.[1] Over 95 percent of those affected by the housing shortage belong to the Economically Weaker Section (EWS)

[1] Specifically, this estimate is a sum of the units needed to address obsolescence, overcrowding, non-serviceable housing units, and homelessness. Government of India, Ministry of Housing and Poverty Alleviation, National Buildings Organization. "Report to the Technical Group on Urban Housing Shortage (2012-2017).

and Lower Income Group (LIG)[2]—the Government of India's designation for households at the bottom of the economic ladder. The scale of urbanization in India further concentrates the urban housing need among the country's lowest income earners. India is expected to gain a staggering 218 million people in its urban areas from 2011 to 2030 (United Nations 2012). Much of current urban growth is being absorbed into India's urban slums. As of 2001, India's total slum population was 42.6 million people, representing 15 percent of the total population and 22.6 percent of its urban population.[3]

The release of more recent figures of the slum population by various organizations have sparked controversy because of their discrepancies. According to one estimate, the slum population more than doubled by 2012, reaching 94.98 million.[4] The official 2011 Indian Census released a figure in terms of slum households, which it identified to be a 13 million. Assuming a household size of five would only bring that total to 65 million in total slum population, roughly 30 million less people than originally estimated. The National Sample Survey Organization (NSSO) arrived at yet another lower figure, announcing that nine million households lived in slums, or roughly 44 million people. The difference between the Census and NSSO figures may be attributed sampling strategies, highlighting the complexity in identifying accurate slum figures.[5] While these differences in slum population counts amount to tens of millions of people, what remains to be true is that slums continue to be a significant issue for Indian cities as the country continues to urbanize.

Discrepancies in slum figures also expose the fact that slums, and low-income housing, carry a normative definition that can vary widely and make consensus on official counts difficult. UN-Habitat (2003), in a survey of national definitions of slums, found a number of characteristics used to describe slums that included overcrowding, the presence of concentrated poverty, lack security of tenure, to lack of basic services. The inclusion of attributes of slums varied by government or institution. A review of the definition of slums in the Indian context here will illustrate this point and provide a foundation for the working definition used throughout this dissertation. The Register General of India broadly defines a slum as an area containing 300 people or 60 to 70 households in "poorly build congested tenements, in [an] unhygienic environment with inadequate infrastructure and lacking proper sanitary and drinking water facilities." The Register General's definition is used in calculating the Indian Census slum population figures. The NSSO separates slums into two categories: 1) declared slums, or those recognized by local bodies for purposes of identifying areas for program funding, and 2) undeclared areas that were a collection of 25 or more non-permanent structures with inadequate water and sanitation. The NSSO adopted a more vague definition since the 1990s by describing slums as "a compact area with a collection of poorly built tenements, mostly of temporary nature, crowded together usually with inadequate sanitary and drinking water facilities" (Government of India, Ministry of Housing and Urban Poverty

[2] The income ranges for EWS and LIG defined in the Government of India's housing shortage report are below US$100 per month and from US$100 to US$200 per month, respectively. When referring to low-income households, I include both EWS and LIG populations.

[3] 2001 Slum Census, Census of India.

[4] Ministry of Housing and Urban Poverty Alleviation and Report of the Pranab Sen Committee on Slum Statistics (2010). This amount is much larger than the housing deficit since this is measured in terms of individuals rather than housing units. Moreover, some housing in slums do not fall unit housing that is below the minimum standard.

[5] Varma, Subodh. "Census, NSSO differ on slum population figures." *The Times of India,* January 5, 2014.

Alleviation 2011). Undeclared slums also followed that broad definition but were counted if 20 or more households lived a particular area. Finally, in 2011 the Government of India adopted the strict definition of slums as follows:

> A slum is a compact settlement of at least 20 households with a collection of poorly built tenements mostly of temporary nature, crowded together usually with inadequate sanitary and drinking water facilities in unhygienic conditions (GoI, MHUPA 2011).

Unless otherwise noted, when slums are mentioned in this dissertation they generally refer to the working definition used by the Government of India during the time period in which they are discussed.

Slums are a subset of low-income housing in India. Low-income housing is defined in this dissertation as the provision of housing for those typically priced out of the traditional housing market. This working definition in this dissertation is not concerned with the identification of the beneficiaries of this housing, which might take on a strict cut-off households' income levels. Typically, when the Government of India refers to low-income housing it is concerned with the housing the EWS and LIG income groups. However, this dissertation expands this definition to that it can take on encompassing terms such as "urban poor" or "slum dweller," or point even more broadly to those who are victim to the housing deficit or those who fall into the demand-supply gap for housing. The complicated nature of attaching parochial definitions to low-income housing is part of the theme of this dissertation. Chapter 3, in particular, exposes the various frames used to dictate India's housing policy and how conceptions of low-income housing change over time.

1.2.2 Housing Policy Paradigms

Government intervention into housing is driven by a number of different rationales, ranging from beliefs that housing is a human right to the understanding that housing is fundamental to economic growth. Like food and clothing, housing is oft cited as addressing a basic need.[6] The United Nations Economic, Social, and Cultural Rights covenant codifies adequate housing as a basic human right (General Comment 4, 1991), yet the interpretation of this right by individual states leads to varied forms of implementation.[7] The extent of government support for housing ranges from a comprehensive approach, such as the wholesale provision of public housing to a more hands-off approach of playing a facilitating role in market-based activities. As mentioned previously, many countries, like India, do not have explicit mention of housing in their constitutions, which has the effect of relegating housing to the periphery of national policies.

Additionally, the shape of government intervention in housing policy has certainly shifted over time and has presented a range of solutions that reflect varied motivations. For example, the argument that the housing market plays a critical role in economic development introduces a different tenor to the justification for support for housing. Researchers have

[6] Other languages have adopted this phrasing as well. In Hindi the phrase *roti, kapda, aur makaan* (food, clothing, and shelter) is often used to denote basic necessities.

[7] South Africa is an example of a country that legally recognizes housing as a right; the right to a house is mandated in the country's constitution. The responsible agency for enforcing and developing program around this is the Department of Human Settlements.

found that housing investment comprises at least three to eight percent of a country's GDP (Buckley 1994: 318) and housing services account for an additional five to ten percent of GDP (World Bank 1993). These figures are exclusive of the multiplier effects from investment in the housing construction industry. In India, a recent study found that each additional rupee invested into the housing sector yields a return of 1.54 rupees to national GDP (National Council of Applied Economic Research 2014). Additionally, recognizing that a house is often the most valuable asset a family will own, the state has an interest in increasing savings through housing assets (Angel 2000). These various rationales for government intervention into housing illustrate the many ways in which states embrace and justify housing policies, and become critical points used to analyze the effects of policy diffusion on Indian housing policy making.

The following sections detail the three main housing policy paradigms that have shaped international housing policy: 1) slum clearance; 2) aided self-help; and 3) enabling policies. These three paradigms have been shaped by international finance institutions (IFIs) and international aid agencies, through both funding and technical assistance. As funding agencies, these organizations showed a vested interest in certain policies being implemented through their member countries. Mosley et al. (1991) observe that the World Bank has always lent with conditions, offering the example of financing a power plant with the condition that the electricity tariff be restructured. The logic followed that the World Bank's interest was in successful loan repayment by the borrowing country as well as encouraging behavior that would ensure more efficient pricing down the road (27). These paradigms have been shaped by assumptions about the linkages between housing, poverty, and economic development as well as the relative role of the government compared to the market. The degree to which these paradigms were implemented in different contexts was shaped by both the politics and the relative economic power or bargaining position of the state versus international aid agencies. The influence of these paradigms on India's housing policy will be explored in depth in Chapters 2 and 3.

1.2.2.1 Slum Clearance and Urban Renewal

The perception of slums as havens for those stuck in cyclical poverty and as a place where public health ills and social chaos originate, led to widespread slum clearance programs in developing countries from the 1950s and 1960s. Taking cues from urban renewal and slum clearance programs that characterized urban transformation across Europe and in the United States from the 1930s to 1960s, developing countries adopted this method of eviction and relocation to clear the way for new housing development (Abrams 1964; Mayo, Malpezzi, and Gross 1986; Mukhija 2003). This adoption of slum clearance from developed countries was one of the first examples of housing policy diffusion in practice. The roots of slum clearance and urban renewal reach as far back as Haussmann's attempt to control social order through physical planning in 18th century Paris, but was only fully implemented as part of a national policy by the United States through the National Housing Act of 1949 (Grebler 1964). While the links between slum clearance in the United States and developing countries is not clear, the contemporaneous adoption of these policies point to a global convergence in approaches to addressing the issues of substandard housing.

While opponents decried slum clearance based on their often violent methods of bulldozing and forced evictions, the state justified these efforts in a number of ways,

including on the basis of illegal settlement on government land, as a way to address what was billed as a mounting health problem resulting from poor sanitation, and to free up often valuable land on which the settlements were located. But while slum clearance in the West was predicated on the relocation of the displaced—albeit not always in terms agreeable to the dispossessed—developing countries struggled to find adequate new shelter for those evicted. Moreover, when settlements were located on government land or private property, eviction was within the bounds of legal recourse that did not warrant compensation to informal settlers. State officials often cited financial and land supply constraints as reasons they were unable to accommodate the displaced. Abrams (1964) stated that "there is nothing that slum clearance can accomplish that cannot be done more efficiently by an earthquake"(126), alluding to the inability of developing countries to adequately plan and provide for relocation. Slum clearance may also exacerbate overcrowding as displaced households are forced into remaining low-income settlements or find accommodation that is even less secure than from where they were evicted (Payne 1977; Gilbert and Gugler 1982).

Critical to the slum clearance paradigm was a view that slums were a nuisance rather than integral to the urban fabric of developing country cities. This view served as both a justification for slum clearance that disregarded the livelihood advantages and community dynamics of slums. In a number of empirical case studies of slum clearance, the precedence of government decisions over community input points to a further disregard for informal settlements as warranting treatment worthy of ordinary citizens (Patel and Arputham 2007). However, a growing number of scholars attempted to dismantle the myths around slums and slum dwellers that characterized them as a drain on urban resources. In Brazil, for example, Perlman (1976) noted the "functionality" of *favelas* both in terms of the self-built environment and the social networks on which its residents relied. The efficacy of low-income settlements was the reason that there was so much resistance from residents to agree to government relocation plans, demonstrating the tension between justifying slum clearance and formulating policies that took into account ground realities.

India embraced the blight-eliminating promise of slum clearance by legislating policies to ensure that the state would be able to take action to address slums. The Slum Areas (Improvement and Clearance Act) of 1956 established state-level slum clearance boards that were charged with undertaking the demolition and relocation of slum dwellers. The act was billed as a means of protecting slum dwellers from ostensibly dangerous living conditions, granting the state the authority to intervene when "a building in a slum areas is in any respect unfit for human habitation" (Section 4 (1)). While slum clearance in India took cues from the West, it was particularly ineffective at acquiring and providing sufficient land for relocating those displaced from cleared slum sites (Sivam and Karuppannan 2002). Moreover, these relocation programs disregarded "social and economic networks," so dislocated slum dwellers often returned to resettle in their original settlement sites "in their quest for economic survival and their need for community kinship ties" (Burra 2005: 70).

Slum clearance as a housing policy paradigm was largely replaced by more participatory approaches in the 1970s as international policy-makers attempted to converge towards long-term efforts to provide shelter for low-income urban populations. However, idiosyncratic slum evictions in India persist in the name of later policies to achieve "cities without slums"(Gilbert 2007), to appease growing middle class concerns (Ghertner 2012), and

more conspicuously in the wake of major global events such as the 2010 Commonwealth Games (Dupont 2008; 2011).[8]

1.2.2.2 Self-Help Housing: Slum Upgrading and Sites and Services

Since slum clearance marked the beginning of what was one of the first forays into urban sector strategies by organizations like the World Bank, the liberal borrowing of policies from the West came as no surprise (Payer 1982). The inability of slum clearance to effectuate a decrease in slum populations and address the chronic housing supply problems plaguing the urban poor, however, instigated a hard pivot towards *in situ* slum upgrading and sites and services schemes.

By 1972, based on the emerging knowledge that low-income, urban households had been creating housing solutions for decades using limited resources in a flexible and piecemeal fashion, slum upgrading and sites and services emerged as the *de rigueur* instruments of housing provision in the 1970s and 1980s. While slum clearance occurred contemporaneously across a number of developing countries and in a similar fashion through urban renewal in the United States, its provenance did not point to a seminal theory or propagator. The origins of these *in situ* programs, however, are very clear. They trace back to the notion of self-help, popularized by John F. C. Turner's writings based on his fieldwork in Peru and Mexico (Turner 1968; Turner 1976). Self-help differentiated itself from centralized control over housing development, such as government-led slum clearance, by recognizing and legitimizing low-income households' informal housing processes. International aid agencies such as UN Habitat and the World Bank adopted the language of self-help as well, setting the international agenda for shelter provision. Turner's theories on self-help influenced the World Bank's first housing sector policy paper—*Housing* (World Bank 1975), where Turner's ethos of "learning by doing" featured heavily in the document's recommendations. By harnessing the tenets of spontaneous self-help—largely unplanned and self-constructed shelter—the state, along with the support of aid agencies, promoted what was termed as aided self-help. Versions of aided self-help include site-and-services and slum upgrading and were defined as project-based shelter provision where the state provides essential infrastructure and limited amounts of housing construction assistance and leaves the remainder to beneficiaries (Abrams 1964; Potter and Lloyd-Evans 1998).

Empirical critiques of self-help—bolstered by reviewing outcomes from self-help projects around the globe—argue that as a broad concept, self-help muddled the extent of the government's role, leading to implementation challenges and varying outcomes. Skinner and Rodell observe that "[H]ow self-help programs work depend to a large extent on which model policy-makers try to implement" (1983: 12). Thus, despite the fact that self-help followed programmatic themes of upgrading and sites and services, the effectiveness of self-help depended largely on local government capacity and their interpretation of its goals. Often, there were harmful results, including mistargeting which priced out poorer households

[8] Worth noting is that in Tamil Nadu the state agency responsible for slum-related development is still called the Slum Clearance Board and carries the same functions it has since it was established in 1970. Other states still maintain separate slum development agencies, such as the Slum Development Board in Karnataka. Most states, however, have placed slum improvement within other housing or urban development agencies. Gujarat's Slum Clearance Board was merged with the Gujarat's Housing Board in 2007, for example, and Maharashtra's Slum Improvement Board now falls under the Maharashtra Housing Area Development Authority.

(Rodell 1983), intra-city equity issues in implementation (Baross 1983), and the institutional challenges of meeting the needs of a wide-variety of stakeholders. Slum upgrading and sites and services had greater impact when governments engaged in carrying out policy related to more systemic issues of land tenure and financing, but the lack of dedicated national policies to address low-income settlements meant that this was not often the case (Buckley and Kalarickal 2006).

Scholars have also argued that self-help was a convenient way for government to opt-out of intensive, long-term housing programs that required resource-sapping monitoring and reporting. An early supporter of slum upgrading while working at the World Bank, Werlin became dissatisfied with the failure of slum upgrading to make an impact after decades of effort (1999). Werlin was most concerned that confining the state's role as "minimal" meant that critical issues such as land acquisition and land tenure would be sidelined when the focus was on slum upgrading. On the same note, Crooke (1983) viewed sites and services and slum upgrading as temporary relief to land and housing scarcities, but found that only through supporting institutional forces that ensure the efficient use of housing and land, can fundamental issues related to low-income housing be addressed.

Reflections on the project-specific outcomes of self-help housing also called into question the readiness with which international aid agencies promulgated Turner's ideas through slum upgrading and sites and services. On the one hand, analyzed as a collective policy, these projects did not measure up to the World Bank's insistence on cost-recovery and replicability (Wadhwa 1988). On the other hand, many of the individual upgrading projects resulted in positive housing outcomes through laudable goals such as community participation (Pugh 2000), albeit at a limited scale. Indeed, Nientied and van der Linden (1985) find that while organizations like the World Bank adopted Turner's language of self-help, their support of the popular sector's participation through self-help was predicated on increasing project efficiency. Turner, however, saw participation as the most important means of carrying out housing processes, which may have simply been untenable given the World Bank's mandate as a lending institution.

The adoption of self-help programs in India occurred at roughly the same time as the first World Bank housing loan to India in 1973 that critiqued the use of resources for slum clearance. In India's Fourth Five-Year Plan, the government recognized that slum clearance and relocation were likely generating more slums, as displaced slum dwellers simply established new settlements elsewhere while some re-established their homes on clearance sites. Self-help programs in India were meant to implement a more effective approach to curbing slum growth while relieving pressure on public spending on housing for the poor. Sengupta's (2014) review of India's policy responses to housing the urban poor notes that despite the pro-poor messaging around sites and services, the fact that funding came from the World Bank meant that "it relied excessively on neoliberal principles of affordability, cost recovery, and replicability to succeed"(139). To be clear, affordability and cost recovery simply meant that the ability of beneficiaries to pay should cover the cost borne by a third-party, in this case the Government of India. Additionally, the World Bank's concern with replicability of their projects was to ensure that their lending efforts would reach scale rather than ending with a one-off project. This critique of the World Bank's prioritization on a narrow definition of project success over beneficiary needs largely echoed the more general criticisms about self-help. In India this translated into many of the sites and services projects

having mixed results. A study found that satisfaction of site and services program beneficiaries was in Chennai, India was high in terms of the housing itself, but services such as water supply, roads and bus access were largely unsatisfactory (Nathan 1995). This illustrates the difficulty in ensuring standards across projects to ensure both the intended outcomes of loan recovery as well as beneficiary satisfaction.

1.2.2.3 Enabling Housing Markets and Policy-Based Lending

Previous paradigms of slum clearance and self-help reflected an era of project-based housing interventions. Project-based lending became increasingly problematic for lending institutions because repayment of these development loans already built in as much contingencies as the financing would allow. With long time horizons came issues in calculating present value because of real price volatility in developing and emerging economies as well as what Mosley et al. (1991) identify as a "fungibility problem"(29). As a result, the thrust of foreign aid shifted focus to more market-driven approaches to poverty reduction, fueled in part by Structural Adjustment Programs (SAPs), which conditioned aid-receiving countries to prioritize free market solutions to address fiscal imbalances. Thus this policy shift presented an approach along the lines of the World Bank's policy-based lending that moves away from project-based, local interventions to one that created opportunities to engage the entire housing market (Pugh 2001).

While still embracing the sites and services model of shelter assistance, World Bank lending for housing shifted away from particular urban areas and embraced nationwide strategies. Buckley and Kalarickal (2006) identify the 1978 Tanzania urban shelter project as the hallmark example of this change in lending policy. By the 1980s, and after some success with national approaches to shelter lending, the World Bank began to focus strictly on policy-based lending for housing which regarded a national, sector-wide approach to be best addressed through reforming key regulatory and finance mechanisms to facilitate housing investments (Mosley, et al. 1991; Buckley and Kalarickal 2006). To cynics, these efforts marked the attempts of international lenders to make good on urban poverty alleviation through the valorization of housing for the poor, either in terms of capitalizing on equity or land values (Payer 1982). Nevertheless, this transformation of self-help from localized projects to more expansive national and sector-wide policy approaches heralded the current, and most recent, policy paradigm.

The World Bank's *Housing: Enabling Markets to Work* (1993) presented the enabling strategy by identifying policy instruments related to housing demand, supply, and management of housing. Enabling policies are premised on the fact that the role of government act as an "enabler" or facilitator of housing policies in order for the private market to work more efficiently. The World Bank report argued that stringent regulations and market failures contributed to inefficient housing and land markets. At the same time, UN-Habitat also began to cite enabling strategies to tackle the pressing problems of urbanization and housing for the poor in its *Global Strategy for Shelter to the Year 2000* (1990).[9] While these policy instruments required the government support to usher them in, the World Bank's 1993 policy paper did not explicitly circumscribe the role of government, nor did it mention

[9] In a more limited scope, USAID looked strategically at public-private partnerships, most notably private models of land and housing development in India (1991).

continuing the previous decades' reliance on self-help practices that guided informal housing construction. Moreover, while enabling polices were forthright in placing the government in a facilitating role, they did not specify how the urban poor would benefit from these policies. Instead, enabling policies rely on assumptions that through a more efficient housing market, low-income households would simply rise with the tide (Pugh 1994b).

Enabling policies for housing have faced a number of criticisms that exposes a wedge between the influence of external policies and the appropriateness of these housing policies for individual countries. UN-Habitat's (2006) review of enabling policies identifies its successes in expanding housing opportunities at a national level, but finds such policies frequently are not appropriately designed for lower-income households. As Pugh (2001) notes, the "whole sector housing development" attempted to address the entire formal housing system, but as a result smaller housing solutions that thrived outside the formal housing market were overlooked. These solutions often provided the critical means for low-income households to gain a foothold in developing their own shelter. Incremental housing, for example, or small improvements and piece-meal expansion of a low-income household's home coincident with income and savings flows, is not readily compatible with enabling policies (Greene and Rojas 2008). This example, along with the South African experience of proactively adopting the enabling framework (Jones and Datta 2000; Tomlinson 2002) as a global "best practice" shows that enabling policy implementation may not be consistent with goals related to poverty alleviation and equity in housing. Keivani and Werna (2001) further explain that a focus on the private market tends to exclude practices by low-income households that are already in place when it comes to housing provision. The authors argue for a more pluralist view on housing tenure, for example, instead of a parochial definition used the enabling framework, which ends up excluding portions of the population who cannot be expected to be in possession of legal title. These critiques of enabling policies highlight the issues related to applying private market solutions to address housing issues at the lower end of the income spectrum.

Despite these criticisms and cautionary tales, the World Bank appeared committed to the enabling framework. Their faith in these market oriented policies rested on the experience of Bangkok, Thailand, one of the early examples of successful down-marketing of affordable housing where private developers were able to develop housing stock to supply affordable units to low-income households otherwise priced out of the market (Dowall 1989; Angel and Chuated 1990; Dowall 1992). The success of Bangkok's pointed to the city's initial conditions that paved the way for developers to expand into the affordable housing segment. These conditions were characterized by efficient land and housing markets already in place and lent empirical support to enabling policies that advocated a broad "reform of government policies, institutions, and regulations to enable housing markets to work more efficiently"(World Bank 1993; 3). However, for developing country cities that did not have the prerequisite conditions to ensure the efficient housing markets to begin with, enabling policies are presented as a means of resetting initial conditions.

India's experience with enabling policies varied across cities and focus on various aspects of the housing market. Specific examples include encouraging private developers to participate in constructing low-income housing or relaxing the regulatory environment for construction to reward developers for redeveloping slum areas. While enabling policies created new incentives for the private sector to engage in low-income housing provision it

also introduced a number of challenges in setting expectations when confronting a new market as well as redefining the role of institutions and the state to address a shift in the policy environment.

Mukhija's (2004) case study in Ahmedabad, India shows that the efforts of a private developer struggled to meet the expectations of low-income consumers. The developers used a mix of informal and formal practices, which were entrenched in the onerous regulations of the construction industry in many cities in India. Permitting processes in Ahmedabad, for example, were expensive, lengthy, and often factored in the cost of bribes. The developers that Mukhija studied did not receive all the necessary permits in order to move ahead with construction. However, because of the involvement of HUDCO, India's government-owned corporation responsible for the construction of affordable housing and urban development, customers of this affordable development expected full legality. The government's backing also raised expectations regarding quality of the housing construction. Despite the fact that these developers had completed a number of projects on the lower end of the market with similar quality in terms of finishings and amenities in the development. The government enabling of a private developer to construct affordable housing legitimized the development in such a way that the consumer expectations changed in a way that the developer could not fulfill and ended in the developer walking away from the remainder of the project. This example highlights the uneasiness of applying an enabling framework to places where informal practices govern housing development.

In similar research in India, the application of enabling policies to slum redevelopment created an even more complex relationship between the state and institutions in policy implementation (Mukhija 2001; Mukhija 2003; Gandhi 2012). One of the tenets of enabling policies is a push for deregulation in order to address regulatory burdens that made the housing market less efficient. In Mumbai, development regulations were amended to make slum redevelopment easier including the change in land use plans, building code requirements, and the relaxation of the floor-area-ratio (Mukhija 2001). The slum redevelopment scheme (SRS) in Mumbai used private developers to construct permanent housing for slum dwellers and in exchange they were granted portable development rights (here they were called Transferable Development Rights, or TDR) to build in designated parts of the city about their FAR. While this scheme was novel in its ability to engage private developers in slum redevelopment and embraced the deregulation aspects of enabling policies, managing TDR and overseeing construction quality to high rises for slum relocation begged institutional oversight that could only come from a new form of regulation or institutionalization. Nainan (2008) cites under regulation in the SRS scheme as the reason that at one point fake TDR flooded the market, driving prices down and developer incentive and trust along with it. These instances are perceived as additional risks for private developers and emerge as what Mukhija would describe as unintended consequences of a naïve application of enabling policies (2004).

1.2.3 Funding Housing in India

The principles of the three global housing policy paradigms found their way to India and manifested themselves in national policy. However, in order to better understand the relationship between the government and other forces (e.g. external funding, etc.) necessitates a review of the ways in which housing—particularly social sector, or lower income housing—

is traditionally funded in India. The subject of housing in India has been an economic planning and budgetary priority since 1951. This year marked the country's formulation of its first Five-Year Plan where housing occupies its own chapter within this central planning document. At the same time, the finance minister's speech announcing the Union budget for 1951-52 specifically named outlays for industrial housing as an important capital expenditure.[10] This was the first instance since India's independence in 1947 that the Union budget provided outlays for housing. These two pieces of evidence demonstrate the long-standing Government of India's regard for housing both as a policy priority as well as an issue that deserves public funding commitment.

In the Indian Constitution, housing is not explicitly laid out as a right. However, Article 21 which calls for the protection of life and personal liberty is often invoked when justifying housing programs. The absence of explicit references to housing does not dampen its importance in policy making and the fact that it has appeared in every Union Budget since the nation's first. This is also despite the fact that, strictly speaking, the Government of India did not have an official housing policy until the release of the National Housing Policy in 1994. The appearance of housing in Union budgets and Five-Year plans serve as a barometer of the relative priority of housing for the State, both in terms of funding as well as State's accountability.

Public funding for housing is allocated at the federal level through national programs and disbursed through the state-owned Housing and Urban Development Corporation, Limited (HUDCO). The Government of India established HUDCO in 1970 with a mandate to manage urban development and develop affordable housing. While India lacked a national policy towards housing, state-level acts and development codes were incorporating housing needs and lobbying for federal funding for low-income housing.[11] HUDCO disburses wholesale funds to State Housing Boards (the state level administrator of publically funded housing development and programs), local level Development Authorities, and Urban Improvement Trusts. This funding is for the implementation of schemes and programs formulated by the Union Government.[12] These schemes and programs are assigned funding through the annual Union Budget. The other principal contributors to HUDCO's funding for housing in India include government insurance agencies such as the General Insurance Corporation of India and the Life Insurance Corporation (Sen 1998). Through the 1970s and most of the 1980s, HUDCO was the main source of domestic funding for housing.

It was not until the late 1980s that the Government of India supported private finance for housing with the creation of the National Housing Bank (NHB) by the Reserve Bank of India (RBI). The NHB was created under the National Housing Bank Act of 1987 with the mandate of regulating housing finance companies and providing lower interest wholesale

[10] Speech of Shri C.D. Deshmukh, Minister of Finance, introducing the Budget for the year 1951-52. http://indiabudget.nic.in/bspeech/bs195152.pdf

[11] It is important to note that throughout this brief history of funding housing, the focus of the government has always been on homeownership. No explicit mention of rental housing was made until the release of the Government of India's draft National Urban Rental Housing Policy in October 2015 (Government of India, Ministry of Housing and Urban Poverty Alleviation 2015).

[12] The Government of India is interchangeably referred to here as the Central Government, Union Government, or more generally as the federal government. The Union Government is considered the official title of the Government of India and is often seen as a referent in policy documents that represent national affairs, such as the annual Union Budget.

financing for the nascent housing finance market. The creation of the NHB reflected financial reforms meant to liberalize the Indian economy. These reforms aimed to open the country's economy to private investment and expand the role of the market. While India's first mortgage lender, Housing Development Finance Corporation (HDFC), was created in 1977 with the help of Industrial Credit and Investment Corporation of India (ICICI), a development credit institution, it was not until 1984 that the second housing finance company was privately established as Dewan Housing Finance Limited (DHFL). Private mortgage financing served as a crucial demand-side element of driving the development of the housing market in India.

On the supply side, foreign direct investment (FDI) into housing construction brought scale to the construction industry. The financial reforms that began in 1991 paved the way for FDI flows into India, which began slowly as Government of India relaxed restrictions over time. Prior to these reforms, India relied mostly on bi- and multilateral aid for longer term financing, perceiving FDI mainly as a tool to acquire technological expertise and licensing (Nagaraj 2003). The lifting of FDI restrictions began slowly at first; the Government of India did not allow 100 percent FDI into townships and housing construction projects until 2005, for example.[13] According to FDI Fact Sheets published by the Department of Industrial Policy and Promotion (DIPP), FDI into housing and construction related activities has averaged around 10 percent of all foreign investment since 2006. Most recently, in an effort to address decline in FDI into construction development and related liquidity crunch in the real estate sector, the Union Government further relaxed FDI norms for construction in late 2015. These rules would decrease the minimum built-up area for real estate projects and make it easier for foreign investors to exit investments. While FDI is a valuable source of capital for real estate projects, the relationship between FDI and low-income housing development is not well known. Given the fact that FDI augmented capital access for a country previously reliant on bi- and multilateral funding, it is worth exploring the relationship between publically funded housing and FDI flows into real estate.

[13] This relaxation of FDI into housing development was announced in the Planning Commission's 10th Five Year Plan in 2002 and implemented in 2005.

Figure 1. Public Funding and Foreign Equity Investment into Housing in India, 1990-2015[14]

Source: HUDCO and India FDI Factsheets 2005-2015, Department of Industrial Policy & Promotion, Ministry of Commerce and Industry, Government of India

The simultaneous time trends for HUDCO funding and FDI flows presents a picture of public and private funding for housing changes over time. Figure 1 shows trend lines for both amounts disbursed by HUDCO since the 1991 financial reforms as well as FDI investments since GoI allowed 100 percent FDI into real estate projects. Dwelling units funded by HUDCO are represented by purple bars. While the HUDCO disbursements track upwards from 1991 until around 2002, housing units do not follow the exact same trend. This might be explained by the fact that the per unit housing cost is not consistent since HUDCO funds a number of programs that do not directly impact the construction of housing units such as financing enterprises to develop building materials and providing infrastructure for new or satellite towns. Additionally, HUDCO's mandate covers housing for the Economically Weaker Section (EWS) through High Income Groups (HIG).[15]

The most revealing trend in Figure 1 occurs when FDI is introduced after 2005; the rise of FDI into real estate construction coincides with a precipitous drop in housing units funded by HUDCO as well as a decline in HUDCO funds disbursed. While this figure is stylized and does not provide any additional factors that determine the relationship between

[14] Note that FDI figures for housing and real estate changed designation by the Department of Industrial Policy & Promotion starting in fiscal year 2011 to 2012. It was expanded from the line category of "Housing and Real Estate" to also include townships, housing, and built-up infrastructure. None of the figures reported here disaggregate rural and urban housing, so the reader should note that these figures cover both types of housing.
[15] The breakdown of HUDCO funding by year varies to some degree. Numbers at a glance from 2015 can be used as indicative of the overall funding trend. For example, 37% of dwelling units funded were urban, and the majority of all dwelling units (84%) were for the EWS segment. Of total loans sanctioned, 35% of that amount was for housing loans, 61% was for urban infrastructure, and 4% was for HUDCO Niwas, the agency's individual housing loan program. See "HUDCO at a Glance," accessible at http://hudco.org/writereaddata/Performance.pdf.

the HUDCO disbursement trends and FDI into real estate, the seemingly negative relationship between public and private funding indicates a potentially complicated dynamic in housing development. It is against this backdrop of public and private funding, the evolving role of the government in the provision of low-income housing, and the entry of the market as a catalyst for the expansion of low-income housing supply that this dissertation studies India's stance on low-income housing. These funding flows also intersect with the paradigmatic shifts that shape global policy and direct India's own efforts.

1.3. Research Contributions

This dissertation contributes to the literature and practice of city and regional planning through the construction of housing policy analytics for India, which holistically examines its diffusion, discourse, and demand. As India continues to grapple with large amounts of unmet demand for affordable housing and the persistence of slums, this research should appeal to India's policymakers by providing a review of the ways in which the nation has responded to these issues over the course of its development. These insights should also be of interest to policymakers in other developing nations crafting low-income housing policy since this analysis provides lessons from the Government of India's role in addressing housing policy in light of inflows of development capital and the rise of market-based efforts to address housing provision.

The review of the World Bank's shelter lending to India in Chapter 2 contributes to the literature on housing policy and policy diffusion by understanding the relationship between development capital and the formation of national policies. Findings from this chapter unveil that India was most susceptible to policy diffusion through the mechanism of aid lending when it was most in need of external funding. By considering when India was most influenced by the World Bank's policy direction, government officials can better strike a balance between policy-based aid needs and its own goals for policy outcomes.

An examination of the language of policy documents generated by Government of India in Chapter 3 also contributes to the literature on housing policy and literature on methods to analyze policy discourse. In particular, findings from this chapter extend the literature on analyzing policy frames through discourse analysis by providing an example from development and housing policy in India. An understanding of the evolution of frames used to describe low-income housing is a useful self-check for Indian policymakers as they craft policy documents for public consumption. Moreover, the ways in which low-income housing is discussed and argued has real consequences for both policy formation as well as public opinion. This discourse lends to the legitimization of policy actions by the State and contributes to public attitudes towards conceptions of low-income housing. While it appears that Five-Year Plans—the lens through which this examination took place—will be discontinued once the current Twelfth Plan expires in 2017, the Government of India will continue to produce and express policy language that reflects its understanding of the problems associated with low-income housing.

The hedonic pricing model used in Chapter 4 to compare slum and non-slum households contribute largely to the fields of housing policy, urban economics, and urban planning. By examining the differences in demand for housing attributes between slum and non-slum households, this analysis provides new case studies for the literature on hedonic models by examining two major Indian cities. In addition, comparing slum sub-markets

across two cities raises methodological issues in relying on previously collected household data. Findings from these methods developed in the field of urban economics inform the ways in which the Government of India factors in household behavior and proclivities towards housing in shaping housing policy, considerations that appear to be largely absent from the formation of current housing policies.

Chapter 2. The Influence of Global Housing Policy on India

2.1 Introduction

Since the nation's independence in the mid-19th century, housing policy in India has transformed in terms of its focus, goals, and degree of state support. While policy shifts and changes are not unique to India or housing, understanding the contours of these shifts is essential to understanding how the state has prioritized housing and who has influenced these priorities. Two types of forces emerge as vectors of influence—external and internal—which work to shape and transform India's housing agenda. Of particular interest in this investigation on housing policy is the implications for affordable housing and slums, populations that are particularly susceptible to ebbs and flows of funding and find themselves at the short shrift of policy priorities. This chapter examines how external forces influence, shape, or extend India's housing policies and what the implications are for lower income populations.

The concerns of international donors and funding agencies represent external forces in housing policy. These forces operate at a global scale and manifest at the country level through the allocation of international aid and foreign investment. Prior to the economic reforms in the 1990s that eased the way for foreign direct investment into India, the bulk of external financing for housing originated from aid agencies whose concerns were both to grow the housing market as well as address the inability of the state to made a dent in the supply of affordable housing. However, India became much more susceptible to external pressures when it liberalized its economy following the 1991 Indian financial crisis. This crisis also meant that India required international funding tied specifically to policy instruments to encourage fiscal discipline and staunch the depletion of its foreign exchange reserves. The opening of the economy relied heavily on debt obligation relief from the International Monetary Fund (IMF), bringing with it conditions of stronger market orientation.

Against this backdrop of market-based approaches to economic growth and fiscal stabilization, India's economic advisors slowly warmed to the infusion of private capital into areas previously funded by public resources. Washington Consensus-promoted financial reform policies urging market-based approaches captivated development policy on a global scale, exerting influence over sectors that were seen to have potential in multiplying economic growth. The World Bank's *Housing: Enabling Markets to Work* (1993) policy paper marked the apex of this approach in terms of housing and sought to correct market failures arising from state control, which was seen as attributing to over-regulation and poor planning. The confluence of policy conditionality along with an embrace of foreign investment set the stage for an environment in which sectors that had previously relied on public funding, such as housing, were particularly vulnerable to the influence of external factors.

These external forces acting upon housing policy continued to exert their influence into the 2000s as India began to experience double digit growth, a growing middle class, and mounting confidence that the national economy could compete with China, its neighboring economic powerhouse. Proliferating slums and lack of affordable housing were seen as a significant barrier to attracting foreign capital. As a result, Indian policy makers identified slums and their related urban problems of concentrated poverty and poor infrastructure as the

impediment to India becoming a "world class" destination for foreign capital investment and its corollary of economic growth. Policymakers internalized this message of global competitiveness and were keen to rectify that which was holding the country back.

This chapter explores how external influences have shaped India's housing policies, focusing specifically on the role of international housing and shelter policy paradigms. It examines how external forces work through the mechanism of policy transfer, and specifically argues that funding from international organizations for housing supports the coercive theory of policy diffusion. This chapter extends existing literature on policy diffusion by tracking housing commitments by the World Bank Group, the single largest source of international aid for housing projects in India. The policy diffusion literature provides a means to trace the ways in which policy knowledge from one place shapes policies in another. However, both urban planning and low-income housing policy are overlooked in the literature. Attention to the evolution of the types of projects funded through World Bank Group commitments and a parallel examination of India's main policies addressing low-income housing begins to illustrate the relationship between external forces and the ways in which the state absorbs and adopts housing policy decisions. This chapter concludes with the implication of these influences, particularly for low-income households.

The chapter recalls the three key international housing policy paradigms discussed in Chapter 1—slum eradication and clearance, self-help housing, and enabling policies—and how they have manifested in Indian housing and shelter policy as international aid flows aggregate. Each paradigm introduces the pattern of aid flows into housing from the World Bank Group, which I disaggregate for India from the World Bank's aid portfolio. The resulting dataset are a set of observations which detail every loan commitment made by the World Bank Group to India for housing related activities. Details include the year in which the loan is made and the commitment amount. I also present descriptive trends concerning the concomitant international private sector investments, in the form of foreign direct investment (FDI) and public sector outlays for housing. The logic follows that the flow of funds illustrates the mechanism of policy diffusion. As a result, this analysis anchors India's housing policy within the arc of international shifts in policy-making and begins to trace how external influence may have shaped India's domestic housing policy agenda.

2.2 Theoretical Framework

The Government of India's shifting discourse and policy choices are viewed throughout the course of this dissertation in terms of scaled analytics of India's housing policy as outlined in Chapter 1. At the global scale, and what is discussed in this chapter, the mechanism of funding flows from a major international finance institution (IFI) provides a lens through which to analyze housing policy diffusion, which traces how India's housing policy has been influenced by outside actors and global trends. In particular, the transmission of the notion of market efficiency in housing and the role of slums, on the surface, appear to derive provenance from efforts led by international aid agencies. Literature on policy transfer and diffusion covers a vast terrain, with its strongest anchoring in studies related to political science and public policy.

Policy transfer, policy diffusion, and policy convergence all generally refer to the ways in which policy knowledge from one place is used to shape policies in another (Bennett 1991;

Rose 1991; Dolowitz and Marsh 1996; Shipan and Volden 2012).[16] The transfer of policy knowledge can refer to the flow of a range locally developed ideas and experiences such as the shape of institutional arrangements, the development of policies, or aspects of various policies or administrative action (Dolowitz and Marsh 1996; Dolowitz and Marsh 2000). Existing literature covers a range of topics in policy diffusion, including the role of agents in making policy choices, how effective a lessons from another place might be for those adopting it locally, and ways in which policy learning flows. The empirical challenge in this literature lies with identifying a mechanism through which to investigate diffusion. Shipan and Volden (2012) finds that the political science literature centers on legislation as an indicator of policy diffusion, while in transportation policy the transfer of "best practices" is the focus of the investigation of the transfer of policy innovations (Marsden et al. 2011). However, research opportunities exist in understanding more ambiguous outcomes that help to identify the mechanisms policy learning. While the use of these frameworks in terms of planning a housing policy much thinner than the political science literature, the most pointed scholarly work tracing the flow of planning ideas and practices situates itself in the importance of planning histories as critical narratives of policy diffusion (Harris and Moore 2013).

The transmission of planning ideas have largely been the domain of planning historians who have examined the national contexts in which planning traditions are both promoted and adopted over time. Ward (2011) finds that the international "discourse of planning" emerges from a set of various countries such as the tradition of town planning in Britain, city planning in the United States, *urbanisme* in France, and *Städtebau* in Germany. It is through the work of planning historians that Ward develops typologies of international planning diffusion to characterize the role of external forces, mechanisms, and levels of diffusion within the respective country that is "borrowing" planning ideas. Ward extends the historical viewpoint by going on to explain the ways in which planning is uniquely embedded in and adopted by the borrowing country. In his study of Vancouver, Canada's planning regime (Ward 1999), he finds that borrowing comes from both British and United States planning traditions, but it evolves within Vancouver as new international planning traditions emerge and is in the also highly determined by what Ward identifies as a "*milieu*" of professionalism established in Canada.

Literature related to Ward's place-specific policy adoption proposes that policy diffusion and transfer focus on the transaction of "packages" of policies without accounting for how policies might be disaggregated, reproduced, and transformed or mutated in new policy environments. This notion of policy *mobilities* moves away from orthodox methods and rational-choice frameworks of policy diffusion and transfer to account for relational, spatial, and temporal characteristics of policies (Peck and Theodore 2010; Peck 2011; McCann 2011). Although this literature finds particular tractability in discussing urban policies, this chapter's analysis relies on methods better suited towards applying traditional concepts of policy diffusion and transfer that acknowledges the Indian context through Ward's conceptualization of local professionalism and practice.

[16] In this chapter, I use the terms policy diffusion and policy transfer interchangeably. However, if a specific article or author distinguishes the two, I maintain consistency with their interpretation.

This legacy of urban planning histories and their impact on urban knowledge are situated in a complex history in India as was the case in many post-colonial developing nations. The explicit governance structures of colonial occupation often leave long-lasting vestiges of the transfer of ideas. Indeed, the British exportation of town planning, an evolution of Garden City planning, is still evident in India as each state has a Town and Country Planning department that oversees urban and regional development and monitors federalized Central Government planning schemes. Home (1990) notes that the 1915 Bombay Town Planning Act was the earliest British colonial planning legislation passed in the commonwealth, which meant that the "experience was transferred from there to other colonies, both through institutional models, such as the improvement trusts, and by individuals"(24). Home's examination of the degree of transfer of British colonial town planning policies across the Commonwealth recognizes that the extent of adoption depends on both internal factors endemic to the particular country, such as the level of urbanization or size of urban problems, as well as the governance and reach of the colonial administration operating in each country.[17]

More contemporary studies of orthodox policy diffusion and transfer take a broader view than that of planning histories, typically focusing on national level diffusion rather than cities and urban areas. The empirical study of policy diffusion also identifies agents and incentives around explanations for why and how policies diffuse. In recent times, Washington-based institutions and international aid agencies, consistently surface as key agents of economic policy diffusion, particularly as policies wend their way to developing countries. Policy diffusion is not a new concept as Dobbin et al. (2007) note in their study of rapidly diffusing global policies of the late twentieth century. Policies of this particular era, however, spread more quickly and with far wider geographic reach than their predecessors, fueled by combined goals of economic and political reform (450). The widespread nature and rapidity of policy diffusion during this time led to a spate of research grounding it in a several paradigms that emerge from a number of social sciences such as political science, economics, and sociology.

Dobbin et al. (2007) identify four theories of policy diffusion that emerged from this time, which they categorize as 1) constructivism; 2) learning; 3) coercion, and 4) competition. The former two theories study the transformation of ideas, whereas coercion and competition theories focus on the structure of incentives for countries (450). For purposes of this chapter I will be principally focusing on the coercive theory of policy diffusion, due to the fact that the evidence I trace is rooted in power structures denoted by aid flows for housing. These data allow me to trace the imposition of monetary incentives through aid dollars for housing, and identify the ways in which Indian housing policy has responded to these coercive forces.

Some of the more conspicuous actors in late twentieth century coercive policy diffusion emerged from the architects of structural adjustment programs and the Washington

[17] See also King's (1976) case study of Delhi which presents a different perspective on the colonial influence on city planning where the confluence of indigenous and colonial institutional arrangements and spatial planning are naturally occurring tensions that shape cities in that era. Throughout his exploration of Delhi's urban development under the British Raj, the themes of Westernization and modernization, simply put, emerge as the impetuses for both environmental planners and social scientists as they reconcile the indigenous with the colonial (King 1976: 291).

Consensus, namely international finance institutions (IFIs)[18] such as the International Monetary Fund (IMF) and World Bank.[19] These institutions were formed after World War II out of the Bretton Woods accord and were established to aid in the post-war reconstruction and the stabilization of financial markets by governing the international monetary system. The latter effort empowered IFIs to exert influence into shaping fiscal policies of their member countries. The degree of influence of these institutions on general policy-making, however, are contested in the literature. The narrative of structural adjustment among the left tends to paint a portrait of an imbalance of power, where IFIs leverage their offer of loan conditionality to advance their own policy agenda on weaker developing countries (see Armada, et al. 2001 on health policy in Latin America). Similarly, others argue that the sheer flow of funds from these institutions translates to economic power laying the "foundation for coercion" (Shipan and Volden 2012: 791) that influences governments to adopt policies. Countries facing economic crises and those unable to fund infrastructure projects through capital accounts often turned to IFIs. The argument that conditionality coerced recipient countries to adopt policies that they otherwise would not is buttressed by findings that these policies actually had detrimental effects such as increasing poverty, widening income disparity, and limiting economic growth (Easterly 2003; Vreeland 2003; Easterly 2007).[20] The logic behind these findings and their link to coercive policy diffusions is based on the premise that sovereign states would never choose such deleterious outcomes out of choice.

The emergence of the "Washington Consensus" provided fodder for the mounting sentiment that structural adjustment programs' stringent policies were being foisted on helpless developing countries resulting in a "race to the bottom." Examining the rise of this term, however, reveals that it is itself a product of ideological diffusion that borrows from a range of ideological strands including those drawn up in developing countries. This point is surprising because the term "Washington Consensus" is often used as a catchall description of Washington's power over fiscally impotent developing countries. The term Washington Consensus was originally used by Williamson (1993) to describe ten specific economic reforms for fiscal crisis-ridden Latin American countries, which reflected the "conventional wisdom" of how best to address these issues among the U.S. government and IFIs based in Washington, D.C. In naming the agents of this reform agenda, Williamson unwittingly sparked global ideological dissension. Those on the left used the term Washington Consensus as a rallying cry to build a defense against what was identified as globalization and neoliberalism, two forces that put more and more power in the hands of market determinism

[18] I define IFIs as financial institutions governed by international law or charter. The may be established by many countries (multilateral) or one country (bilateral). In my later discussion on aid flows, non-financial donors such as the United Nations and foundations are included along with IFIs as financiers of international aid.

[19] For a comprehensive overview of the World Bank's policy based lending, see *Aid and Power: The World Bank and Policy-Based Lending* (Mosley, Harrigan, and Toye 1991). This review is a classic study in policy transfer and diffusion, and the authors state their intention as: "We are interested in assessing the power which international organisations dispensing concessional development finance can exert over the domestic decisions of developing countries"(35).

[20] In many instances, structural adjustment prioritized fiscal discipline by limiting or cutting social programs, which further contributed to the view that IFIs were influencing recipient countries to adopt policies at the detriment to national interest. One of the strongest rejoinders to structural adjustment was UNICEF's efforts in the 1980s entitled "Adjustment with a Human Face" that mounted evidence in their plea to the IMF and World Bank to increase lending for health, education and child welfare (Jolly 1991).

at the expense of social programs.[21] As the term Washington Consensus was used to draw attention to the power of Washington elites to push certain policy agendas, Williamson spent considerable effort reminding audiences that his term had taken on new life and its intention was far from vilifying Washington (Williamson 2000). In fact, Williamson's original conception tips a hat to Latin American economists like Hernando de Soto's work on property rights and taxation, stating that the Washington Consensus "is the outcome of worldwide intellectual trends to which Latin America contributed"(1993: 1329). The resulting interpretations of Williamson's phrase, which in the public eye, exaggerated the role of Washington IFIs illustrate the difficulty of tracing the degree, direction, and extent of coercive diffusion.

Efforts to examine coercive policy diffusion with respect to specific policies create opportunities to better understand the mechanisms of specific actors and incentives. While the impacts of structural adjustment and the Washington Consensus are largely examined in terms of their influence on economic policy, few scholars have examined how external forces shape urban policies such as those affecting housing. In the most detailed account of policy transfer in terms of a nation's housing policy outcomes is Gilbert's (2002a) examination of Chile's housing subsidy model and the role of the Washington Consensus in influencing the policy's implementation. Gilbert notes that the influence of Washington on developing countries was such that: "In the search for loans and technical assistance, it was important to align your government's rhetoric with whatever Washington thought"(2002: 306). While Gilbert (2002) goes on to find that Chile was able to craft its housing policy on its own terms by eschewing the "conventional wisdom" of Washington and was actually able to reverse the direction of influence when the World Bank began exporting Chile's housing subsidy model to other countries, he notes how anomalous this experience is.

Gilbert's focus on the unusual nature of the Chile experience, which highlighted the country's experience of forging its own policy path, implicitly assumes Washington's omnipotent role in housing policy diffusion. However, Gilbert produces yet another example of exceptionalism through South Africa's experience in creating a capital housing subsidy (Gilbert 2002b). In his examination of South Africa's housing program, Gilbert embraces the policy transfer literature more fully. Gilbert also attributes the eagerness to learn from others to globalization and increasing international competition by invoking Joseph Stiglitz's "scan globally; reinvent locally"(1999). Stiglitz's eponymous keynote as the Chief Economist of the World Bank, called for a shift of the World Bank from a traditionally regarded "money bank" to that of a "knowledge bank"(7). Stiglitz builds on then-president of the World Bank, Paul Wolfensohn's development framework which serves as a response to the findings that conditionality was harming development more than helping. Wolfensohn wanted to ensure that the World Bank's policies put developing countries "in the driver's seat." Stiglitz's aim is to point out ways in which knowledge, and the resulting success of globally driven policies, should be adapted locally.

Gilbert builds on Stiglitz's emphasis on local conditions and finds that despite exposure to lessons abroad, a few unique characteristics empowered South Africa to craft a bespoke housing subsidy. For example, because of apartheid, South Africa perceived itself as

[21] This analysis does not discuss the rise of the usage of neoliberalism, a term that has a number of meanings depending on various contexts and literature, but is defined here as closely associated with economic liberalization and the related roll-back of the state.

distinct from other countries, particularly developing ones and may have actually intentionally shied away from explicitly borrowing housing policy from others. Other circumstances Gilbert attribute to South Africa's experience include the time at which this policy was formulated—during a period of flux where there was not sufficient time to learn from others, competing internal political compromises, and the need to insert market enforcing policies in anticipation of Nelson Mandela's return to power. Given the market-friendly capital subsidy adopted by South Africa, Gilbert notes that policymakers may have missed an opportunity by not learning more from the Chile experience as well as the World Bank's in the process of Chilean housing policy formation. In highlighting these examples, Gilbert shines light on the view that while external forces play a role in shaping housing policies, they are not necessarily totalizing in their influence.[22]

This chapter reviews the influence that one particular international actor—the World Bank Group—has had on India's housing policy since the nation's independence. The following analysis takes a broader view than Gilbert's case studies on the national contexts that shape localization of specific housing policy interventions. Instead it begins with a more basic question of whether or not the World Bank Group's lending for housing in India reflects a type of coercive policy diffusion and focuses the analysis on a specific mechanism of policy diffusion—funding flows. While Gilbert's approach relied on a rich set of interviews and mapping the landscape of actors on the timeline encompassing housing subsidy policy decisions in Chile and South Africa, this chapter instead uses the data from the World Bank's lending portfolio in place of interviews. This record of lending frees the data of potential biases that come from interviews, such as recall and selection bias. This chapter proceeds with the research methodology and then examines the World Bank Group's commitments for shelter from its first commitment in 1973 until today, reflecting on what this reveals about India's shifts in housing policy.

2.3 Methodology

2.3.1 Shelter Lending and the World Bank Group

Aid flows to India represent relationships the country has to the international community of donors, IFIs, and bilateral agencies, and are a strong indicator of the extent to which external forces play a role in development policy. The largest contributor of aid for housing in India has been the World Bank (see Appendix A for my analysis on aid flows). Since the World Bank's lending data is fairly accessible, I examine its lending portfolio for urban housing to understand the patterns over time and the types of loans sanctioned in order to understand the magnitude of the World Bank's efforts in housing. Buckley and Kalarickal (2006) provide a comprehensive review of the World Bank's shelter lending from 1972 to 2005, reflecting on both the evolution of the World Bank's foray into housing as well as

[22] Weyland (2006) explores the degree of autonomy Third World governments (in his case, Latin American countries) by attempting to understand their "margin of choice" and how this explains the nature of policy diffusion. His critique of the argument that IFIs dictate policies arises from the fact that there appears to neighborhood effects because of geographic clustering of policies. These cannot be explained from the vertical imposition of IFIs. Weyland instead adopts a bounded rationality approach, explaining the diffusion of policies through a cognitive heuristics framework. While this chapter does not incorporate Weyland's framework, it internalizes the notion that internal forces are just as important in external ones in crafting housing policies.

lessons learned from over 30 years of lending efforts. They find that over the past three decades while the World Bank has supported housing, the policy environment has changed to more fully embrace a role for the private sector in housing provision. This change is captured most acutely through the rapid expansion of housing finance in middle and low-income countries. Another key change over the decades is the progress made in community involvement in government-led housing projects, which has strengthened the stability and increased success of project outcomes. Buckley and Kalarickal (2006) recognize that despite these gains, the World Bank has much to improve upon in terms of its shelter lending. The enabling policies shifted focus away from the World Bank's core mission of ridding the world of poverty. Thus, they argue, the World Bank must re-focus efforts dedicated to slum upgrading and poverty alleviation and expand their understanding and knowledge of urban land markets and conditions in slums.

Buckley and Kalarickal's (2006) review of World Bank's shelter portfolio provides a strong framework for investigating funding flows. Their review, however, only goes through 2005, and they did not perform country specific analysis beyond noting where large commitments may have gone. My analysis extends their review to approved projects up until 2014, and also delves specifically into loans to India in order to use lending as a measure of external forces on housing policy formulation in India. Their efforts examine the entire lending portfolio to all of the World Bank's member countries and disaggregates lending by five project types given the following definitions:[23]

1) *Slum upgrading*. These loans include any form of upgrading to actual houses or infrastructure within a slum. The supporting infrastructure for slums were critical spending priorities and were typically much costlier than the housing itself.
2) *Sites & services.* Such loans provide primary infrastructure needed for wholesale *in situ* housing developments such as land preparation and infrastructure installation. These loans range from land development (infrastructure), to self-help programs that cover the construction of core housing.
3) *Housing policy*. These projects include loans that attempt to reform housing and land use policy and the ancillary items necessary for housing policy reform, such as land registries and technical assistance. These projects also include institutional development loans to support land and housing regulation and development.
4) *Housing finance*. This refers to money given to help to develop a sustainable financial market for housing, including finance to support mortgage schemes and subsidies and credit to support mortgage markets.
5) *Disaster relief*. These are loans provided in the aftermath of a major disaster that include a housing rehabilitation or construction component.[24]

A number of considerations should be noted about these five project types with respect to the three main housing policy paradigms. The first is that the premier World Bank shelter lending project in India occurs in 1973 and is a slum upgrading program in Calcutta. As a

[23] These definitions are taken directly from Buckley and Kalarickal (1996) in order to stay true to their classification methods (88).

[24] The one modification to the above categories I make is that disaster relief lending takes on a proactive role starting around 2013 in India. Instead of loans being approved strictly for disaster response activities, the World Bank began to lend specifically for disaster risk mitigation and recovery for disaster prone areas. Lending that occurred for disaster mitigation with a housing component is also included in the "Disaster relief" category.

result, the typology and timeline do not overlap with the paradigm of slum clearance. Instead of being problematic, this provides an entry into understanding the types of projects the World Bank Group supports and through a reading of the project documents, illustrates how the World Bank Group justifies moving away from slum clearance. The second thing to note is that not all of these five types fall into the remaining two paradigms. Slum upgrading and sites and services clearly fit into the paradigm of slum upgrading and sites and services. I examine housing policy, as it is described above, and housing finance as part of the enabling policy paradigm. Disaster relief falls into its own category, but may have implications for emerging policy paradigms as climate change and disaster risk management demand greater amounts of funding and policy prioritization.

2.3.1.2 Funding and the World Bank Group

In discussing the funding flows from the World Bank, it is important to review the lending arms of the World Bank, the types of countries they support and from where World Bank contributions originate. World Bank commitments consist of two main sources: International Bank for Reconstruction and Development (IBRD) and International Development Association (IDA). The IBRD is the traditional lending arm of the World Bank and functions as a self-sustaining business. As a result loan terms are based on a floating reference rate and a spread determined by the World Bank. IDA lending, on the other hand, is geared towards lending to the poorest countries and bundles low-interest, concessional loans and grants to fund projects. Buckley and Kalarickal (2006), for example, note that the IDA projects for shelter had a flat interest rate of 0.75%, a 10-year grace period and a 30-year maturity.

The World Bank lists IDA borrowing countries, which typically are some of the lowest income among its member countries based on a Gross National Income threshold. [25] The World Bank also notes that India graduated from IDA status at the end of the 2014 Fiscal Year, but will still receiving some IDA support through Fiscal Years 2015-2017 to ease the transition. While the IBRD is largely funded through the world's capital markets, IDA relies on grants from contributor countries. Contributor countries to the IDA currently consist of 52 countries drawn primarily from developed countries along with a few some middle-income countries. The top three contributors to the IDA Sixteenth Replenishment[26] include the United States (12.08%), the United Kingdom (12.00%), and Japan (10.87%). The dominance of the United States in the World Bank's decision-making reflects its status as the World Bank's largest shareholder. Because of this status, the World Bank president has always been an American citizen. The concern over the influence of World Bank lending is thus tied to the clout of dominant developed nations that leverage financial imbalances to dictate decisions related where and to whom development capital goes.

2.3.2 Identifying Housing Projects and Commitment Amounts

The above five project types are not always mutually exclusive. For example, a sites and services program might also have some housing policy elements to it in order to address

[25] For a full list of IDA borrowing countries, see: http://www.worldbank.org/ida/borrowing-countries.html.
[26] For the full table of donor contribution breakdowns. See http://www.worldbank.org/ida/papers/IDA16_Donor_Contributions_Table_1.pdf

underlying land registration issues that affect the supply of housing. In cases where I was able to further disaggregate funding categories, I calculated the commitment amounts by examining the Project Appraisal Documents (PAD—for some earlier projects these are referred to as Staff Appraisal Reports (SAR)). PADs and SARs contain cost tables that break down loan amounts and foreign financing by the total cost of project components. When actual percentages of housing costs are not listed, I derived housing related project costs by dividing by the total base project cost to calculate a percentage of total housing costs by the categories listed above. These percentages were multiplied by the total commitment amounts from the World Bank in order to arrive at a commitment amount corresponding to a housing category. Often, the amounts were rounded up to the nearest half million dollars to account for project contingencies. When I was not able to further disaggregate commitments when categories may have overlapped, I allocated the entire cost line to the one that best fit. The World Bank commitment amounts in the following graphs are adjusted to 2011 U.S. dollars to make them comparable over time.

I obtained information on the World Bank's lending portfolio through a number of related sources. Initially I accessed a table of all World Bank projects to India through their internal database as far back as records existed, which in India's case was 1949. While these projects had key information associated with them including the sector board (i.e. departments or topic areas), project names, loan amounts, sector categories, lending instruments, and (sometimes) themes, there was not always enough information to glean whether there was a housing component in the loan. For example, a Transport sector board project in an Indian city may have a large resettlement or housing infrastructure component not readily identifiable from the tabular data.

After filtering all projects in the Urban Development sector board I also included in the list projects that met at least one of the following criteria: 1) projects with the word "housing," "shelter," or "slums" in their project name; 2) projects with themes that included "urban services and housing for the poor" or "urban development;" 3) Transport sector board projects with the name of a city in India; and 4) Water sector board projects with the name of a city in India. After establishing this long list of 60 projects, I needed to verify whether the projects had a housing component by searching through project descriptions and documents from the World Bank's Projects & Operations web portal[27] using the Project ID code. While I set out to include only closed or active loans, I also included some dropped loans to examine what kinds of projects had not closed and whether they were different in nature to the surviving loans.

A number of projects did not have status indicators and were missing lending cost figures. Many of these were not "found" by either searching for the Project ID or Project Name fields. These do not figure in the total number of project commitments, but they are kept in the initial table in order to understand trends in the types of projects the World Bank was exploring and investing staff time on. Eighteen projects were not found and a further seven projects did not contain a significant housing component in terms of theme classification or a line item in the project approval document that specified that any of the funds were going towards housing. A total of 34 World Bank projects made the short list of those that were directly related to housing (see Appendix B, Table B-1). Once these were

[27] The World Bank Projects & Operations web portal: http://www.worldbank.org/projects

identified, I double-checked the commitment amounts. I do not differentiate between IDA and IBRD commitments since we are concerned with trends in overall commitments, but for reference IDA funds comprised over 70% of commitments of the housing projects I examine here. IDA and IBRD splits likely vary more by country than specific project type.

I also included projects funded by the International Finance Corporation (IFC) just as Buckley and Kalarickal (2006) did. The IFC is seen as the private arm of the World Bank Group and has the mandate of encouraging private sector development in developing countries through direct investment or advisory services. As a result much of their projects support private sector companies—in housing this often translates to mortgage finance companies and public-private partnerships. In a search for projects through the IFC projects portal[28] I used "housing" in my keyword search. I also tried "slums" and "shelter" as I did with the World Bank database, but this yielded a number off-topic results.[29] Using a similar process of eliminating projects based on further documentation, I identified 25 projects that specifically focused on housing investments in India (see Appendix B, Table B-2). IFC housing investments in India have a shorter history than World Bank projects, with the earliest disclosed investment dating back to 1999, and with 19 of 25 project identified approved from 2010 to 2014.

Notably, a unique project type emerges from the IFC investments, which appears after the period Buckley and Kalarickal examine in their initial study and is not included in their five project types. These investments are for private developers to build affordable housing developments, and appear to be similar to project finance used in residential real estate development where the investments come in the form of equity sponsorship. The developers that the IFC invests in range from established luxury developers that have begun to develop units for the low-income household market as well as for new developers focusing only on affordable housing. Four out of 25 projects fall into this category, which is what I call "Housing Development."[30] Indeed, this project type reflects many of the tenets of enabling policies since it leverages the market to determine its success. Patterns in project lending by the World Bank Group are presented as findings that I discuss throughout the rest of this chapter, which I link the role of external funding in shaping Indian housing policy.

2.4 Findings

Using the five categories of housing projects put forth by Buckley and Kalarickal (2006), the distribution of housing projects for India and the World Bank as a whole tend to show the shift from the self-help housing paradigm to enabling policies (Figure 2). Along the way,

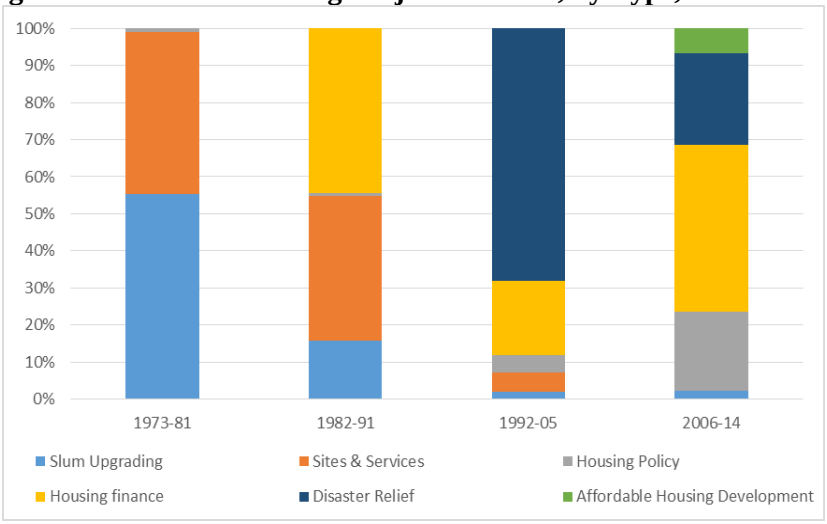
[28] The IFC project web portal is here: http://www.ifc.org/wps/wcm/connect/CORP_EXT_Content/IFC_External_Corporate_Site/IFC+Projects+Database/

[29] Examples of the types of projects that were found using "slums" and "shelter" as keywords include a "bottom of the pyramid" investment firm looking to capitalize on small enterprises that reach the poorest, many of whom live in slums, and a telecom company that needed to provide shelters for its equipment.

[30] While one could argue that superficially these projects share similarities to the sites and services type of projects in that they fund new housing developments, they differ markedly in terms of who they intend to serve, their location, and the agents involved in developing these projects. Sites and services focus on slum redevelopment and capitalize on resources that already exist in informal housing sites while affordable housing development refers distinctly to new housing development on green-field sites where units are available for ownership through purchase. This distinction will be covered more extensively in the next chapter.

disaster relief project commitments grow and in India a new category emerges through the IFC's investment in affordable housing developments that contributes to the enabling policies framework.

Figure 2. Percent of Housing Projects in India, by Type, 1973 to 2014



Source: Author's calculations based on the World Bank's and IFC's project database. See Appendix B for full list of projects.

The first project funded by the World Bank that directly addressed housing was the Istanbul Development Project in 1972, a component of which focused on slum upgrading through the improvement of basic infrastructure for squatter settlements. India's first project in the World Bank portfolio that contained urban housing elements followed soon after with the Calcutta Urban Development Project in 1973, which incorporated a slum redevelopment scheme and sites and services development. Both of these projects were focused on city-wide urban development where shelter held its place in a suite of programs that included improvements to basic infrastructure such as water supply, sewerage, urban transportation, and services such as garbage collection and planning for wholesale markets.

2.4.1 Slum Clearance

All slum upgrading programs attributed to the World Bank's first decade of efforts in housing fell squarely under the self-help paradigm, denoting a sharp turn away from national policies focused on slum clearance. For example, the premiere 1973 project in Calcutta included slum upgrading to *bustees*[31]through improvements to existing settlements and environmental health. Other early projects, such as urban projects in Madras and Calcutta in 1977 included specific efforts to improve basic infrastructure in slum areas. Early SARs included explicit critiques about slum clearance, attributing nearly all of their lack of favorability to the high cost per capita, which they claimed led to limited state impact and the burgeoning of slums. These arguments highlighted the departure from expensive slum clearance and resettlement programs that lacked a clear cost recovery component to them. In the 1977 Madras SAR for example, the report compares "costly slum clearance" to "inexpensive improvement," highlighting the example of a government-led slum clearance

[31] *Bustee* is another term for slum area.

program in the state of Tamil Nadu that structured rents in such a way that they only covered 10 percent of project costs. These early projects were clear about distancing themselves from slum clearance using the basis of cost as a reason to pursue slum upgrading and sites and services.

While early urban projects supported by the World Bank were consistent with both the global policy paradigms of slum upgrading and sites and services discussed above, they also reflected an overarching aim towards urban poverty reduction. According to World Bank's Operations Evaluation Department's (OED) assessment of the first decade (1972-1982) of its urban portfolio, the policy and technical papers of that decade focused on improving livability standards for the poor through meeting basic needs (2004). Moreover, 1975 also marked the year World Bank President Robert McNamara focused his Annual Meetings speech on tackling urban poverty through improving services (World Bank 1975). The first decade of urban projects, therefore, were not only a way to design cost recovery into housing projects per the World Bank's objectives, but also to assert a the World Bank's larger policy priority of making inroads into poverty reduction through tackling the specific issue of urban slums.

2.4.2 Slum Upgrading and Sites and Services

Unsurprisingly, across all project commitments by the World Bank in housing, over 90 percent of funding was for slum upgrading or sites and services in the first decade of urban sector lending (Figure 3b). Sites and services also edged out slum upgrading during this same period across all countries. Slum upgrading has largely been overshadowed by commitment amounts for sites and services across all decades in which the World Bank committed to such projects (Figure 3a). This is likely a result of the fact that sites and services programs tended to be larger in scale and scope; this is particularly true from 1982 to 2005 when commitment amounts per sites and services projects are a multiple of slum upgrading projects during the same time (Table 1). Slum upgrading in the World Bank often translated to basic infrastructure improvements in slums, while sites and services typically included the installation of core infrastructure and even core housing structures. The only other type of housing projects that figure into the first decade of shelter lending is disaster relief, capturing just over 5 percent of the total lending portfolio.

Table 1. Average Commitment Amount Per Project—All Countries, by Project Type (2011 US$)[32]

Decade	Slum Upgrading	Sites & Services	Housing Policy	Housing Finance	Disaster Relief	Housing Development
1973-81	34.57	27.13	3.42	0.00	0.00	0.00
1982-91	24.15	83.51	4.96	475.36	0.00	0.00
1992-05	25.65	66.27	30.75	50.74	291.12	0.00
2006-14	7.81	0.00	42.75	28.42	61.93	17.17

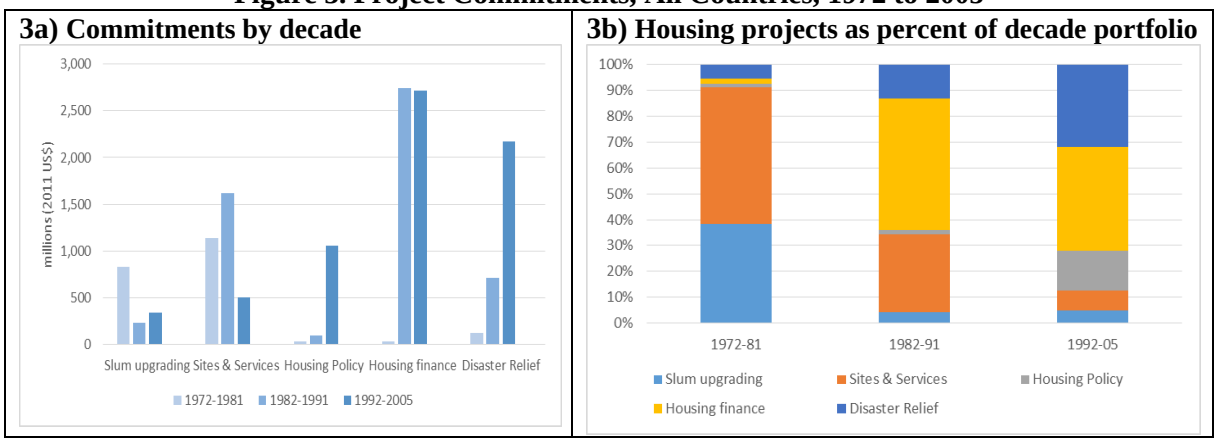
Source: Author's calculations based on the World Bank and IFCs project database.

The decade also concluded with an internal evaluation of the nascent urban sector projects and determined that interventions would scale best by supporting institutions and

[32] All dollar amounts for commitments reflect constant, or real dollars, adjusted for inflation. Note that inflation adjusted commitments were calculated given the project approval year, but the per project averages do not adjust by decadal inflation.

local governance structures rather individualized city-level urban programs (World Bank 1983). Housing commitments, then part of the urban sector portfolio, also concentrated on physical, place-based projects. City-level programs aimed to tackle rampant urbanization that was taking place in the 1970s and 1980s, but the World Bank recognized that without concurrent institutional support, the long-term success of these projects was questionable. This global review of urban projects also recognized that the World Bank's efforts across a number of cities were accompanied by local contexts that could affect the outcome of urban projects. Priorities and focus areas depended on the outcome of an initial sectoral analysis completed by the World Bank, examples included "housing finance in the Philippines, institutional capacity in Kenya, the role of municipalities in Ecuador, [or] citywide investment strategies in Lagos"(World Bank 1983: 23).

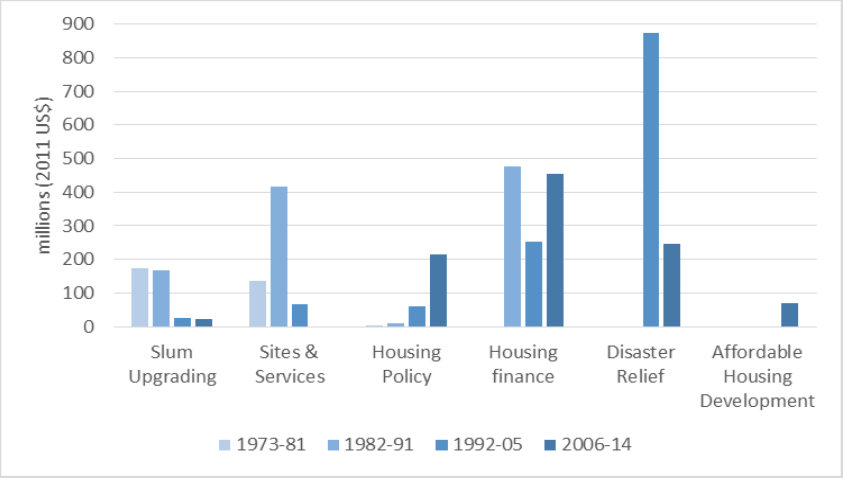
Figure 3. Project Commitments, All Countries, 1972 to 2005



Source: Buckley and Kalarickal (2006)

Reviewing the experience in India in terms of slum upgrading and sites and services provides a detailed look at one country's experience and how policies were and attitudes towards housing programs were localized at a subnational level. In India, the story was similar in terms of the focus on self-help housing projects in the first decade of the World Bank's urban sector lending, if not more pronounced. From 1973 to 1981, slum upgrading and sites and services projects comprised nearly 99 percent of all housing commitments (Figure 2). A key difference between housing commitments across all lending countries and India during this period, is that in India, slum upgrading project commitments outnumbered sites and services (Figure 4).

Figure 4. Project Commitments, India, 1973 to 2014



Source: Author's calculations based on the World Bank's and IFC's project database. See Appendix B for full list of projects.

While slum upgrading commitments outpaced sites and services in this first decade, commitments for sites and services were greater than those for slum upgrading thereafter, following the trend in the global portfolio. Worth noting, however, is that the relative commitment per slum upgrading project decreases significantly. In India slum upgrading dropped to 15 percent of the commitment portfolio in the next decade spanning 1982 to 1991. In the previous decade slum upgrading comprised 55 percent of the portfolio. The number of slum upgrading projects increase from five to seven projects over those two decades (Figure 5).

In India, slum upgrading serves as a natural transition from slum clearance programs that preceded them. As mentioned previously, early SARs and PADs for urban projects critiqued the costs of slum clearance in India. Additionally, changes to local policies around slums in the early 1970s also marked a shift away from slum clearance towards a more integrated approach that included upgrading. For example, in 1971 the state of Maharashtra passed the Slum Areas (Improvement, Clearance and Redevelopment) Act, which updated the national Slum Areas Act of 1956 by explicitly stating that the purpose of the act is "to make better provision for the improvement and clearance of slums areas…and for the protection of occupiers from eviction and distress warrants"[33] The language of the act reflects a different motivation from the World Bank's cost recovery argument, focusing instead on the poor outcomes in terms of curbing slum growth as well as the grievances raised as a consequence of slum eradication (Nijman 2008).

Kumar's assessment of the sites and services component of the Madras Urban Development Project I addresses the influence of the World Bank in the process and draws a number of similar conclusion (1987). In particular, he notes that the World Bank was critical in introducing several concepts that were ideological shifts for the local development agency, such as "affordability, cost recovery for replicability and the policy shifts towards investment in housing reflecting the composition of the population" (1987: 71). He also corroborates the claim that the World Bank shifted away from slum clearance, but also notes that the state government of Tamil Nadu was also independently converging towards a similar view. As

[33] Maharashtra Act No. XXVII of 1971.

early as 1974 a Working Group of a seminar on Slum Clearance at the Indian Institute for Public Administration suggested winding down slum clearance based on the high cost and insufficient corresponding resources, difficulty in rehousing displaced slum dwellers, and the lack of an integrated plan (Administration 1974: 139). The influence of the World Bank, as Kumar (1987) may sometimes be consistent with local attitudes, but that its financial influence cannot be undervalued:

> As has been the experience, the World Bank has probably been most successful in influencing Third World housing policies and programmes over the past decade, mainly due to financial leverage. Other institutions, generally did not use as much financial leverage to move governments into the direction of low cow cost viz. sites and services housing strategies and away from low cost housing approaches of a conventional nature (1987: 71).

Kumar goes on to document that the negotiation between the Madras Metropolitan Development Authority and the World Bank did entail some "give and take." But there were a number of issues that affected the financing and eligibility criteria of beneficiaries where the World Bank would not drew a hard line and the project proceed to their satisfaction. While there is little additional evidence from India's sites and services programs, it is clear that sites and services required a compromise between existing land, financing, and construction policies and new development practices. With urban development funds on the line, it is not difficult to imagine that local governments and agencies would eventually relent to the varying degrees of the World Bank's criteria in the name of slum upgrading and sites and services.

2.4.3 Enabling Policies

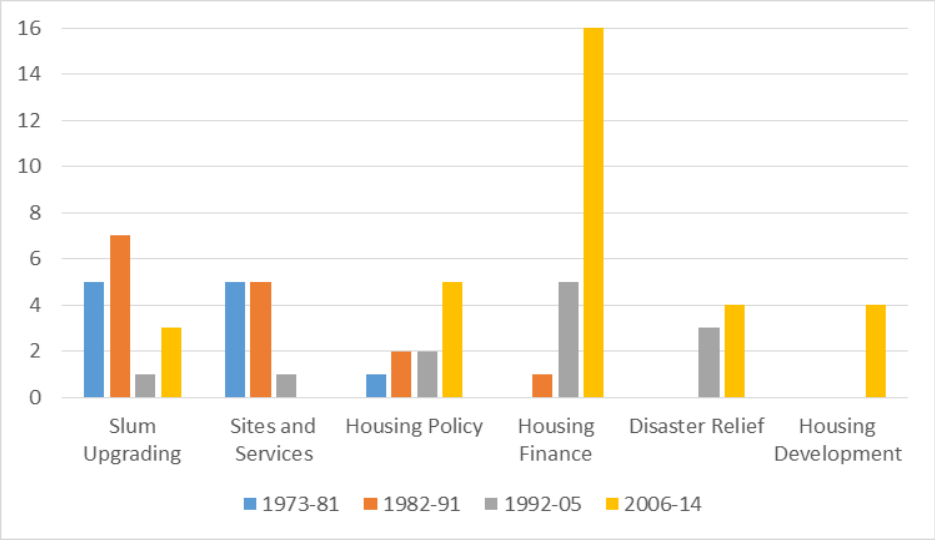
Across all recipient countries as well as India, the 1980s saw a decline in project based lending from the World Bank, with an especially pronounced drop in commitments for slum upgrading. By the 1990s, slum upgrading and sites and services comprised a minority of the World Bank's shelter lending portfolio. For the period 1992 to 2005, this figure hovered by just above 10 percent of all project commitments across all geographies and dipped below 10 percent for projects in India. The trend from the previous decade demonstrated that the World Bank had shifted its lending priorities away from project based commitments to one that continued to embrace the "enabling" policy paradigm that served to address the entire sector's development. Moreover, the entry of the private sector as a major force in developing housing supply and demand instruments meant that national and local governments had to contend with another stakeholder that had the potential to wield influence over housing policy.

2.4.3.1 Housing Finance

Housing finance began to feature prominently as a percentage of total lending in the 1980s, which heralded the beginning of shift towards commitments for projects that address issues endemic to the entire housing sector rather than specific projects. Buckley and Kalarickal (2006) note that the shift to housing finance and housing policy began with a loan to Zimbabwe in 1982, which focused on financing shelter. For the World Bank, the shift was favorable to their lending portfolio since loan recovery improved, and the business of promoting housing finance, particularly for private sector entities created opportunities for the World Bank Group's private sector investment arm, the IFC. There was an implicit trade-off

in this lending shift, however. Urbanization and its related pressure on cities were not easing across developing countries, but the decision of the World Bank to move away from shelter upgrading and infrastructure improvements appeared to be motivated less by need than to boost loan recovery outcomes. Whether or not private sector participation would help to free up public resources remained to be seen.

Figure 5. Number of Projects by Type and Decade, India, 1973 to 2014



Source: Author's calculations based on the World Bank and IFC's project database. See Appendix B for full list of projects.

India's Seventh Five Year Plan (1985-1990) established a sub-group on housing finance, which identified the lack of long-term mortgage financing for individuals as a major impediment to the sector. While this appears to be a major shift in lending towards housing finance, the actual number of housing finance projects in India was exactly one (Figure 5). The entirety of housing finance commitments to India was to expand India's Housing Finance Development Corporation (HDFC) lending for market rate mortgages. While HDFC was founded as a mortgage lender in 1977, growth was slow due to India's closed economy. The objectives of this project aligned with the World Bank's focus on whole sector development since it promoted the extension of lending to a larger geography as well as a broader market, including middle and lower-income borrowers.

The World Bank also saw the development of HDFC as an opportunity to lead the way for other housing finance companies to create demand in capital markets and generate supply of market-rate housing loans. As Van Waeyenberge notes, the HDFC commitment "served as an 'ideal vehicle' for discussions with the Indian government on policy issues bearing on the housing and housing finance sector" (Van Waeyenberge 2015: 16). This loan amounted to US$250 million in nominal dollars, the largest commitment to India for housing until that point. GoI articulated their interest in entering the space of private sector financing for mortgage market development, and the direct participation of the World Bank in this effort allowed an entrée for the multilateral agency to assert standards in the form of policy and institution building around housing finance. The World Bank states that the enduring objective was for the larger "development of a supportive regulatory framework to promote the financial integrity of housing finance institutions and their capacity to mobilize resources

at market rates."[34] The final objective led to the establishment of a housing regulator and apex lending organization for housing finance—the National Housing Bank (NHB). The NHB was formed by statute in 1988 under the National Housing Bank of 1987 and is owned by the Reserve Bank of India. The development of the housing finance market in India bears the indelible mark of the World Bank's resources and policy intentions.

The last decade (2006 to 2014) also drew large shares of World Bank Group commitments for housing finance, and to a lesser extent housing policy.[35] This time period saw no commitments for sites and services, indicating that this project type had largely fallen out of favor with the World Bank. Slum upgrading, however, was still a component of the World Bank's shelter strategy, but made up only a few percent of lending. Besides the commitment to support HDFC, the World Bank only supported one other housing finance project. The World Bank's 2013 "India Low-Income Housing Finance" project focuses specifically on the EWS segment which is often overlooked in terms of housing credit. This loan specifically supported the NHB and specialized lending institutions in capacity building for new, low-income housing product development as well as financial support through direct lending to housing finance institutions or refinancing through the NHB.[36]

While the World Bank only had one commitment for housing finance in the last decade, the IFC funded sixteen housing finance projects from 2006 to 2014, and commitments for housing finance comprised roughly 50 percent of the World Bank Group's housing commitments in India during that time. Paradoxically, this time period overlaps with the 2008 financial crisis that led to a global recession. Overvalued and risky mortgage securities led to the bursting of the housing bubble in the United States, precipitating a global financial crisis. As a result, credit tightening, particularly around housing finance, and a decline in investments in housing construction followed suit (Bardhan et al. 2011). The stagnation of the housing market was not as pronounced in India[37] as the U.S. (Independent Evaluation Group 2012), but as Bardhan et al. note, the decline of FDI in the sector had an negative impact on housing supply (2011). Investor risk aversion, particularly to lending to the lower end of the housing market in emerging markets came as no surprise. The rise in housing finance commitments by the World Bank in India, however, appeared to be moving counter to the general sentiment towards the housing sector, especially for low-income or less creditworthy borrowers, elsewhere.

The IFC's housing finance practice viewed reinvigorating the housing finance sector of developing countries in the immediate aftermath of the financial crisis as its mandate. It

[34] "Memorandum and Recommendation of the President of the International Bank for Reconstruction and Development to the Executive Directors on a Proposed Loan in an Amount Equivalent to US$250 million to the Housing Development Finance Corporation Limited (India)" (February 12, 1988).

[35] I do not cover housing policy as a separate discussion here. The reason for this is that project commitments that contained housing policy aspects were almost always part of larger efforts to manage urban growth, implement land policy that would impact housing markets, institutional development, or support training for pro-poor urban planning. Housing policy is also interwoven throughout all the decades of the World Bank's shelter lending without reflecting clues about any single housing policy paradigm.

[36] Project Appraisal Document on a Proposed Credit in the Amount of US$100 million to the Republic of India for a Low Income Housing Finance Project, April 18, 2013.

[37] The Independent Evaluation Group of the World Bank Group notes that across all sectors India was the largest borrower from the World Bank (i.e. IBRD and IDA) in fiscal year 2010, which amounted to US$11.5 billion. They also note that nearly half of this amount was designated for financial sector lending (2012: 302).

states: “In the wake of the financial crisis of 2008, IFC is again ramping up its housing practice to help resuscitate an important asset class that has fallen out of favor with some investors” (IFC 2013). The spate of housing finance investment and advisory projects initiated by the IFC fell into two categories: housing microfinance and mortgage market expansion.

From 2010 to 2013, the IFC had nine project commitments dedicated to supporting the growth of housing microfinance or housing loans for low-income borrowers. Housing microfinance, it turns out, was a perceived safe haven for housing finance loans issued by the IFC. These small loans were typically used for home improvement and originated out of specialized financial institutions.[38] In 2010 the IFC developed a Housing Microfinance Toolkit that served as a guide for financial institutions seeking to offer a housing microfinance product. Around the same time the commercial viability of microfinance in India was all but proven when SKS Microfinance, an Indian microfinance institution (MFI) based in Andhra Pradesh, had its initial public offering (IPO) on the Bombay Stock Exchange in July of 2010. This was India’s first IPO for an MFI and the largest in the world to date. In March of 2010, the Indian credit and social rating agency for microfinance, M-CRIL, noted that here were 25 MFIs with portfolios in excess of US$22 million.[39] Microfinance, it seemed, was very low risk because of structures like group-lending or guarantors that served in places of collateralized loans, particularly in India.

However, tension between local government entities and these lending institutions came to a head soon after SKS’ IPO. The microfinance sector in India hit a major stumbling block later in 2010, as the state government of Andhra Pradesh cracked down on microfinance lending in the wake of farmer suicides. Many of these farmers died while indebted to multiple MFIs, and local and state leaders called on these MFI clients to stop paying their loans. MFIs also competed with the state self-help groups, which politicians were known to wield as political patronage. The repercussions of this would be felt throughout the global microfinance sector as regulation and unchecked growth in the sector raised concerns about its long-term sustainability. Despite this, the IFC forged ahead with supporting housing microfinance in India.

M-CRIL also notes that the percentage of the microfinance portfolio at risk (greater than 30 days) was lower in India (0.67%) than in Asia (1.5%) or compared to the global average (3.1%), making this type of lender attractive to the IFC.[40] Moreover, housing microfinance portfolios were likely a fraction of the size of traditional mortgage loan portfolios since housing microfinance loan size and tenure mimicked the small size and short repayment period of microfinance loans (Daphnis and Ferguson 2004). These factors lowered the risk perception of housing microfinance compared to wholesale lending to traditional mortgage institutions. For India, the opportunity for MFIs to expand their product offerings from microenterprise finance was a natural next step in expanding their portfolio.

[38] Housing microfinance loans were used to support incremental building processes, which usually meant they were typically used for home improvement or expansion. For an overview of housing microfinance as an extension of mortgage finance see Ferguson (2003) and Smets (2006); as a product to improve livelihoods see Daphnis and Ferguson (2004) and Rust (2007); and for examples of housing microfinance programs in India see Cities Alliance (2002) and Manoj (2010).

[39] M-CRIL. 2010. Microfinance Review 2010: Microfinance Contributes to Financial Inclusion, p. vi.

[40] M-CRIL (2010), pg. 22.

Despite the 2010 microfinance crisis, the IFC appeared to show continued interest and commitment to the housing microfinance sector. The IFC portfolio for housing from 2006 to 2014 included four housing microfinance projects that ranged from an equity fund for microfinance to advisory services to encourage housing microfinance pilot projects. The 2010 Lok II investment sought to capitalize on the existing opportunity in the microfinance sector in India and supported this equity fund's business of investing in MFIs to expand their portfolio offerings, which were to include housing microfinance products. Two IFC projects were approved in 2012 for advisory services to lend support for housing microfinance pilots in established MFIs (Ujjivan and Grameen Koota). Finally, the last of the four projects supported the growth of Equitas Microfinance, one of India's largest MFIs at the time, to scale its new business offerings, including a foray into housing finance through housing improvement loans and micro-mortgages for the low-income segment.

Mortgage financing is the other prong of the IFC's business in housing finance, and the World Bank also supported improvements to expanding this sector at the regulatory level. The World Bank's PAD for their "Low Income Housing Finance" project stated that to fulfill the demand side of affordable housing, the IFC invests primarily in housing finance companies (HFCs) which provide more traditional mortgage finance since "financing provided by the IFC serves a higher income segment (up to ₹25,000[41] per household per month)…and IFC is focused solely on secured mortgage finance" (2013: 5). Indeed, the review of the IFC housing portfolio discussed above shows that in addition to unsecured home improvement loans through housing microfinance, the IFC made a number of investment in housing finance through micro-mortgage development through the tradition channels of HFCs. Micro-mortgages are much like traditional mortgages loans in that they are used to purchase a home and are recourse loans secured by the property being purchased. But as their name suggests, they are smaller in ticket size, and aimed at lower-income households seeking affordable homes. Most traditional mortgage lenders did not actively pursue this segment since some applicants in this income segment did not have income proof, a critical piece of information used to underwrite loans. To manage risk, micro-mortgages rely on a number of the same principles as mortgages such as using land as collateral and legal recourse to foreclose in the case of default. Establishing proof of income, however, borrowed from strategies in microfinance which employed loan officers to spend time observing borrowers performing informal labor and corroborating income estimates.[42] Smaller ticket sizes also meant that the amount spent in transaction and staff costs drove down profits for lenders.

Some examples of the types of investments pursued by the IFC in this period include Aadhar, a new micro-mortgage lending company that is a subsidiary of DHFL; Au Housing, an HFC aimed at serving low-income households in Rajasthan; and SEWA Grih Rin, an HFC promoted by the Self-Employed Women's Association (SEWA), one of India's long-standing and most respected NGOs. In 2011, the IFC also invested in the creation of a mortgage guarantee company IMGC Housing, promoted by NHB. Discussions around the creation of a mortgage guarantee company in India gained ground in the mid-2000s, and it appeared that the American-based international insurance company AIG was poised to set up its mortgage

[41] When this PAD was issued in April 2013, ₹25,000 was equivalent to approximately US$464.

[42] These loans typically go to self-employed individuals. An example of this type of mortgage product is Gruh Suvidha. Loan officers for this program appraise income "based on surrogate income proofs." http://www.gruh.com/GRUH_suvidha.html

insurance operation not long after the RBI circulated draft guidelines for a mortgage guarantee in 2007.[43] However, the Great Recession and subsequent U.S. government bailout of AIG quickly ended that proposition and the NHB later decided to take the lead with home-grown IMGC Housing. Given India's activity in growing housing finance despite global risk aversion towards investing in housing markets, Indian policy makers appeared to want to stay the course in terms of pushing forward on the agenda to deepen housing finance to low-income segments. The IFC played a supporting role by lending capital and investment support.

2.4.3.2 Housing Development

The mid-2000s also marked the emergence of affordable housing development projects where the IFC invested in private developers to develop new housing aimed at the affordable housing segment. An unlikely alliance with a multi-national consulting firm and aid agencies spearheaded these efforts. In 2006, the global management consulting firm Monitor Group's Mumbai office launched their Inclusive Markets agenda to engage the private sector in the delivery of goods for India's poor; affordable housing became their pilot initiative. The World Bank, IFC,[44] and various foundations funded the initial market research undertaken by the Monitor Group to kick-start private developer efforts in the affordable housing space. As a result, the Monitor Group became one of the most recognized names promoting affordable housing development in India, energizing the sector through qualitative research demonstrating the financial viability and business opportunities latent in affordable housing development.[45] By 2008 the Monitor Group launched pilot projects in the cities of Ahmedabad and Mumbai, driving interest and momentum for private sector development of affordable housing.

The IFC had four investments into housing development projects beginning in 2012. Three of these investments were equity stakes in housing development companies looking to construct homeownership units for the "underserved sector." One investment was for a new company, Value and Budget Housing Corporation, and two other investments were for new entities sponsored by household names in luxury housing development. Tata Housing, part of one of India's largest multinational conglomerates, Tata Group, established Tata Smart Value Homes to enter the affordable housing market for those priced out of core areas in major metropolitan areas. Likewise, the juggernaut real estate developer and engineering firm Shapoorji Pallonji and Company Limited, entered the affordable housing market (SPAH) in a

[43] Rebello, Joel, "Mortgage Guarantee Makes for Big Play by Foreign Firms," *DNA India,* April 3, 2007, http://www.dnaindia.com/money/report-mortgage-guarantee-makes-for-big-play-by-foreign-firms-1088734

[44] Support from the World Bank's Capital Markets Group comes in the form of a sponsoring a consultant report entitled "Expanding the Housing Finance Market to Cover Lower Middle Income Segments in India," which Monitor Group prepared the World Bank and the FIRST Initiative (an effort led by a consortium of donors to promote financial sectors) in June 2007. IFC's support appears to be more indirect, but its decisions to actively pursue low-income housing finance investments is likely partially substantiated by Monitor's 2007 report findings that conclude with a positive assessment that there is market viability for this segment.

[45] See the initial white paper for full details on findings from Monitor Group: Deb, Anamitra, Ashish Karamchandani, and Raina Singh. 2010. "Building Houses, Financing Homes." Monitor Inclusive Markets: Mumbai, India.
http://www.aspeninstitute.org/sites/default/files/content/docs/ande/Building%20Houses%20Financing%20Homes%20-%20Monitor%20Inclusive%20Markets.pdf

joint venture with IFC and the Asian Development Bank in 2015. Affordable housing is a departure from Shapoorji Pallonji & Co.'s core market; the developer is known for the development of the Imperial Towers, the country's tallest luxury residential towers located in the heart of Mumbai. Besides investing in developers, the IFC assisted the Bhubaneswar Development Authority, a local development agency that undertakes development in the city of Bhubaneswar in the Eastern state of Orissa. Support for the development agency went to structuring and implementing a public-private partnership to develop housing for low and middle-income households. Affordable housing development in India clearly reflected to the bullish attitude of the private sector in India, and led to mutually beneficial partnerships between both local governments and investors. While the World Bank may have espoused enabling policies since the early 1990s, India's edition of developing affordable housing was uniquely its own.

2.4.4 Disaster Relief

While disaster relief is not captured under the three main policy paradigms, disaster relief emerged as a significant and recurring need in international aid as natural disasters presented a unique commitment type. Worldwide, disaster relief became a more prominent share of World Bank commitments from the 1980s to the 1990s and early 2000s. From 1982 to 1991 disaster relief comprised around 15 percent of World Bank commitments in housing, but in the next time period, from 1992 to 2005 it increased to over 30 percent of all commitments. The impact of the 2004 Indian Ocean Tsunami on aid flows was particularly significant; roughly USD14 billion in disaster aid was committed worldwide, across all donors and private funding.[46] This stands as one of the largest humanitarian disasters in recent history and affected several World Bank member countries in South and Southeast Asia such as India, Sri Lanka, and Indonesia.

From 1992 to 2005, India saw its first World Bank commitments for disaster relief as the country was the victim of a number of natural disasters. Major earthquakes in the Maharashtra district of Latur (1993) and in Gujarat's Kutch district (2001) killed over 20,000 people and destroyed hundreds of thousands of homes. The Indian Ocean Tsunami impacted coastal states in the southwest part of the country as well as the Andaman and Nicobar Islands, an Indian territory. These disasters meant that World Bank housing commitments for disaster relief comprised nearly seventy percent of total commitments to India in that period. Per project commitments for disaster relief from 1992 to 2005 also far overshadowed per project commitment amounts for the remaining project types; average disaster relief project commitments were almost 4.5 times greater than per project commitments for sites and services, the project type with next largest average commitment amount (Table 1). Early disaster relief projects in India were often reactive and typically served to aid in reconstruction in the aftermath of disasters such as earthquakes and the impact of a tsunami. Starting around 2013, World Bank projects slated for disaster recovery were proactive, addressing disaster risk in advance. Project commitments for Tamil Nadu Coastal Disaster Risk Reduction (P143382) focuses on mitigating risks related to oceanic events; the housing component of the project funded construction of disaster resilient homes.

[46] UNICEF. (2009). "Tsunami Report 5 Year Anniversary."

In the last two decades disaster relief has occupied a substantial portion of the World Bank's shelter lending portfolio to India. In this analysis, disaster relief does not contribute to an existing housing policy paradigm, but is correlated with natural disasters. Recent global reports, however, reflect an impetus to plan and adapt for climate change and related impacts on cities. UN-Habitat's *Cities and Climate Change: Global Report on Human Settlements 2011* (UN-Habitat 2011) argues for mitigation and adaptation strategies as climatic events impact cities with increasing frequency and severity, for example. The World Development Report in 2010 also tackled the topic of climate change and development but did not specifically address the impact on cities and housing. In 2014, however, the World Bank visited the broader topic of risk in the *Risk and Opportunity: Managing Risk for Development* World Development Report. Natural hazards present opportunities to develop policies to create disaster risk management systems in areas prone to natural disasters, such as the Philippines, or countries that have been adversely affected by disasters because of unplanned urbanization, such as Colombia (World Bank 2013: 76). The recent focus on proactive projects to mitigate impending disasters signals a potential housing policy paradigm in the making

2.5 Conclusion

Since the early 1970s the World Bank's resources have affected housing policy in India. As a relatively new nation at the start of the World Bank's intervention into housing, India grappled with balancing economic performance with the social goals of housing provision. The World Bank Group's funding to India for housing clearly reflects the latter two global housing paradigms of self-help housing and enabling policies, both of which were aggressively championed by the World Bank in terms of its own policy stance. Whether or not their project commitments had a coercive force in housing policy-making in India is less clear cut. It appears that at times the World Bank Group's influence had a strong hand in guiding India's housing policy, especially when India was particularly reliant on aid dollars. In recent years, however, the strength of India's economy actually appeared to create opportunities of mutual benefit for the World Bank's investment arm as well as private sector development in delivering affordable housing.

As mentioned in the analysis, the World Bank intervened into housing after India's era of slum clearance and slum eradication. Indeed, the World Bank used early project commitments for slum upgrading and sites and services to create a sharp departure from slum eradication by making a case for project level cost reduction and recovery. This shift led to eventual institutional changes, as most state slum clearance boards were reassigned or restructured. While an analysis of the World Bank Group's lending portfolio around the period of transition between slum clearance and self-help housing does not present a causal link as to whether India eventually distanced itself from slum clearance based on World Bank funding, it does indicate that the country relied on external funding for large urban projects. One point that was made clear in the early days of World Bank financing for housing related projects, was that the government alone would not be able to finance comprehensive housing solutions as it attempted to do in the era of slum clearance. As urban development projects often included financing for infrastructure, housing, and capacity building, the World Bank was in a unique position to leverage its funding to institute projects and policies of its choosing, including those related to housing.

Enabling policies presented the strongest potential to showcase evidence of the World Bank's coercive housing policy diffusion given their provenance from structural adjustment and the market determinism ethos of the Washington Consensus. However, an analysis of the portfolio, particularly the IFC's investments into demand side (housing finance) and supply side (affordable housing development) instruments, suggests that India's strong economic position and market potential provided an attractive place in which the IFC pursued housing investments. The confluence of growing negative sentiments towards risk in the primary and secondary mortgage markets following the global financial crisis, and India's burgeoning and untapped lower-middle class provided a unique opportunity for the IFC. Low-income housing finance support and investment highlighted the attractiveness of the India's growing housing finance market and robust microfinance sector in the midst of a global recession. At the surface, it appears that India's policy environment was already following the path of developing private sector partners in addressing the a lack of housing for low-income households. Microfinance also provided an avenue to innovative housing product development on the coattails of the already proven success of the sector in India; the World Bank Group stepped in with technical support, additional capital, and risk-reducing instruments to ensure housing microfinance and micro-mortgage products would grow into a sustainable market for future investment.

In fact, private stakeholders appeared to wield more influence over affordable housing development efforts, albeit with support from the World Bank Group. For example, the Monitor Group's Inclusive Markets work was seminal in offering evidence that affordable housing development was a viable and lucrative pursuit. This report had the effect of convincing private actors, government and multilateral aid institutions that market-led affordable housing development was profitable, a way to address the demand-supply gap in housing, and also yielded social returns. The World Bank Group may have recognized that the private sector was already moving towards housing development and simply supported efforts already in motion in order to ensure continued momentum. This viewpoint would support the idea of the World Bank Group's influence, but would eliminate the element of coercion.

In the end, policy makers were most susceptible to coercion when there was resistance to World Bank policy interventions. These instances were most prevalent when the government had a greater role to play in housing, such as when the responsibility of low-income housing supply fell largely to government funding and action. In such cases, as was mentioned in terms of sites and services, the World Bank's provisos that regulations be relaxed in order for projects to achieve cost recovery provided clear instances where the promise of resources were enough for policies to bend and shift. The next chapter will focus more on the Government of India's stance on housing policy, and its changes over time. In particular, it will examine the Five-Year Plans and show how the state's view on housing policy has shifted over time and when sentiments towards housing policy paradigms were most pervasive in the government's discourse. Bridging the analysis on the World Bank's lending with the government's economic planning documents will also provide insight into the ways in which housing policy is formulated in India and the degree with which the Government of India was influenced by outside policy ideas.

Chapter 3. Internalizing Housing Policy: An Examination of India's Five-Year Plans

3.1 Introduction

India's national housing polices chronicle a complex interplay between the external forces discussed in the previous chapter, the nation's development goals, resource constraints, and the pressures of public accountability in the world's largest democracy. The last chapter explored the influence of external forces on India's housing policy shifts through the mechanism of funding flows, but focused specifically on the interaction between international development institutions and the Government of India. The analysis begins only when the World Bank committed its first project loan for shelter lending to India in the early 1970s. However, the life of housing policy in India is as old as the nation itself, with the first publically documented commitment to funding emerging in its First Five-Year Plan in 1951.

A chronicle of India's housing policy stance since independence exposes the ways in which housing is discussed, problematized, and prioritized at the national level. Since independence, India has confronted the challenge of housing a growing and urbanizing nation and has responded over the years with a myriad of housing schemes, national and state policies, and budget line allocations. Despite these efforts, the net effect has done little to completely overcome the challenges of low-income housing provision. However, the Government of India's perennial discussion of how best to address low-income housing offers a unique opportunity to trace the State's housing policies in an effort to better understand how these policies have taken shape and evolved. Across the housing sector, low-income housing is a particular focus of the public sector since it requires government intervention and funding. As a result, India's housing policies keenly reflect how the government perceives its role in addressing low-income housing.

Low-income housing, viewed by the Government of India to consist of slums and other substandard housing for the nation's poor, is a persistent policy problem that cannot be immediately solved. While the Government of India has made efforts to marshal resources to increase the supply of housing, the demand-supply gap is too large for the State to bridge on its own. Consequently, the State's efforts appear to be a combination of efforts that reflect experimentation through attempting new programs and iterating on them, as well as borrowing from elsewhere (as discussed in Chapter 2). The internal logic of addressing the challenge of low-income housing is best exposed through an analysis of the Government of India's perception of its role in low-income housing provision and its rationale behind its efforts.

This chapter posits that an analysis of habitual, public discourse on housing policy in India since 1951 can elucidate the Government of India's motivation for making specific decisions about low-income housing policy. In order to undertake this analysis, the following relies on a study of policy discourse frames identified through India's twelve Five-Year Plans. This record of public discourse includes the government's objectives, budget outlays, and understanding of the low-income housing policy issues. These plans capture a perspective that frames the government's interpretations which shape and explicate housing policy in India. The hypothesis is that the changes in housing policies themselves are the result of shifting frames over time. The Government of India's conception of low-income housing challenges,

or frames, are explained through the discourse of the plans and operationalized through a series of schemes and programs.

The purpose of this chapter is to understand how the Government of India has framed issues related to low-income housing over time and how context plays a role in shaping decisions. It extends the previous chapter's work on tracing the influence of global housing policies on India's own housing policies and introduces a logic to the Government of India's policymaking. The national scale is the locus of this analysis. This chapter begins by reviewing the literature on framing policy discourse as an organizing theory for this analysis and then provides a brief overview of the competing frames in which low-income housing has been conceptualized in the literature. The methodology of this chapter covers both a close reading and assessment of the data provided by the corpus of Five-Year Plans coupled with a content analysis that makes use of computational methods to examine patterns in speech and language. The frames that emerge in this analysis all represent ways to compel the State to take policy action. The frame of housing as an economic aggregator is used throughout by the Government of India, as is the frame of housing as a fulfilling a basic need. Slums are also framed in more than one way, either as housing unfit for cities and their inhabitants where the policy solution necessitates eradication, or as a housing type that accommodates the poor, in which case the policy solution is to provide better services. The chapter concludes with a discussion of the findings and compares the previous chapter's assessment on the context of global housing policies and discusses how shifting public messaging around housing policy for low-income groups might impact the design of local policy interventions.

3.2 Literature and Theoretical Framework

3.2.1 Interpreting Changes in Housing Policy in India: Naming and Framing

In this chapter, the analysis of India's housing policy relies on the study of frame discourse. The use of discourse analysis for policy making grants analysts a means of understanding why policy choices are made given publically available information. In the Indian context, using discourse analysis to study housing policy is particularly attractive since there is a public record of discourse that stretches almost as far back as the age of the nation.

The theory of policy discourse and frames relies heavily on the fundamental definitions given by Rein and Schön (1993). By their account, policy discourse reflects the "interactions of individuals, interest groups, social movements, and institutions through which problematic situations are converted to policy problems, agendas are set, decisions are made, and actions are taken"(145). This understanding of policy discourse locates the competing interests of stakeholders and a course of action is taken to address the policy problem at hand. Meanwhile, framing offers a way to uncover the logic behind the policy discourse:

> Framing is way of selecting, organizing, interpreting, and making sense of a complex reality to provide guideposts for knowing, analyzing, persuading, and acting. A frame is a perspective from which an amorphous, ill-defined problematic situation can be made sense of and acted on (146).

Frames aid in understanding and identifying these "complex realities" that pose as normative understandings laden with a set of values and preconceptions. However, together these

definitions both identify the subjectivity of policy problems and provides an organizing logic with which to understand how policy problems are understand by both agents and the public.

Schön and Rein (1995) explain that the policy frame is one used by a specific institutional actor as an "institutional action frame." These frames "tend to be complex and hybrid in nature" and "do not usually consist in a single, coherent, overarching frame, but in families of related frames"(33). In their example, Schön and Rein (1995) describe the Boston Redevelopment Authority (BRA) framing of low-income housing as a means of preserving Boston's housing stock. Schön and Rein imagine that in various scenarios the idea of "decaying" or "healthy" stock could be alternatively attributed to "landlord neglect or tenant dissatisfaction"(33). While these descriptions of the housing stock use different language they are still in the family of BRA's action frames and reflect the fact that "institutions possess characteristic points of view, prevailing systems of beliefs, category schemes, images, routines, and styles of argument and action"(33). In other words, these seemingly different descriptions of Boston's housing stock both reflect the BRA's policy position, which necessitates the BRA's intervention in order to improve housing conditions.

In the case of low-income housing policy, the Government of India represents a particular institutional actor whose discourse is captured in India's Five-Year Plans. Over time, these plans expose a variety of instances in which the Government of India's framing of low-income housing morphs in order to legitimize the State's actions. In this way, frame analysis is applied to housing discussions across Five-Year Plans with an assumption that while frames reflect both what the public expects from the Government of India in managing low-income housing it also reflects the evolution of the institution itself as it responds to emerging contexts.

Two concepts from Rein and Schön (1993) and Schön and Rein (1995) provide a straightforward approach to beginning the process of frame analysis. The first is the act of "naming and framing" the policy issue at hand. The act of naming the issue offers a way of making sense of it. Formally, the "process of naming and framing socially constructs the situation, defines what is problematic about it, and suggests what courses of action are appropriate to it"(Rein and Schön, 1993: 153). Essentially this process allows the identification of that which is to be analyzed and allow "the 'normative leap' from data to recommendations, from fact to values, from 'is' to 'ought'"(Schön and Rein, 1995: 26). This initial step of naming and framing is the critical juncture at which a policy issue or problem moves out of simply a set of prescriptive directives into a value and meaning-laden entity. Rein (1983) describes framing as analytical tool to investigate the "theory-fact-value" relationship.

The other important element of each frame is the context in which it resides and its relation to influential forces. Varying contexts can both influence frames and the goals of particular policies, or provide the motivation for frames by locating them in a particular moment in history. Rein and Schön (1993) identify four nested contexts. The first is an *internal* context that is typically influenced by human resources changes or organizational restructuring. They find that frames typically do not change in this context, but an organization may adapt to the new environment or rules that govern it. The second is the *proximate* context in which a policy issue operates, typically vis-à-vis closely related policy issues. In the case of low-income housing in India, policy issues related to urbanization or urban infrastructure may constitute part of the proximate context. The third context is the

macro context, which relates to institutional and economic changes that bear on the policy. The authors note that the macro context tends not to lead to reframing immediately, despite a change of discourse signaling imminent changes in the policy environment. Finally, the fourth context is influenced by *global* shifts that are often tied to eras or themes that resonate at a global scale (1993: 154-5). The global housing policy paradigms introduced in the previous chapter are examples of how the global context impels framing of India's housing policy. In this analysis the last three contexts will be considered in great detail. While there are arguments concerning the influence of national political power at various times in India's history, particularly through party politics and the formulation of particular schemes, the Five-Year Plans are ill-equipped to offer a lens into the inner-workings of organizations involved in policy framing.

Rein and Schön provide strong foundation with which to identify policy problems and investigate frames, particularly as this method applies to evaluating the intent of low-income housing policy in India over time. However, there are deficiencies in their methods that, if addressed, can expand the understanding beyond identifying frames to illuminate how frames are created. The concept of *framing* elaborates on the Rein and Schön methods of frame study to identify how policy actors utilize the language of discourse to craft specific courses of action. Van Hulst and Yanow (2014) liken framing to "sense-making" and add two features to the Rein and Schön's notion of naming and framing in order to clearly articulate the action of framing. They suggest that *selecting* and *categorizing* are crucial framing actions that provide distinction to frames by denying more general interpretations. Categorizing, they contend is "a form of naming [and] entails identifying things as a 'this' and not 'that'"(8) that works by "highlighting some aspects of policy discourse while occluding and even silencing others"(9). Other theorists also suggest a more specific formula for analysis. Beyond framing Gasper (1996) suggests identifying the choice of terms or categories as well as the key images and metaphors used in the formulation of frames (48). These additional features provide a way forward in analyzing the construction and existence of frames through the texts of India's Five-Year Plans.

Discourse analysis on the subject of low-income housing is not novel. In fact, a long history exists of conceptualizing poor housing conditions using various frames to make sense of what is an intractable, or what Rittel and Webber called a "wicked" (1973) planning problem. The next sub-section reviews the various frames used to discuss low-income housing, focusing specifically on the naming of slums and informality as policy problems.

3.2.2. Low-Income Housing Discourse – A Brief Review

The ways in which housing is discussed by policymakers, particularly low-income or affordable housing, implies a position about how to handle them. Literature on slum theory provides a compelling background on how frames operate when referencing low-income housing. The use of the term slum to describe low-income housing also provides a lesson in the Rein and Schön concept of naming a policy problem. In the context of low-income housing, slums occupy a particularly fraught place in policy making since the term itself has implied meaning, despite having no universal definition (Simon 2011). For example, the use of the term slum might carry connotations used to influence a particular audience. Gilbert (2007) notes that slums tend to take on meanings that reflect a political view rather than a

hard and fast scientific definition; "The word 'slum' is not just an absolute but it is a relative concept"(700). Moreover, the context in which terms like "slum" is used in policy documents frames the ways in which policymakers represent low-income housing to the public to sway public opinion.

Slums in developing country cities are alternatively viewed as both a problem and a solution. This conflicting viewpoint echoes those posited by larger theories concerning economic development and urbanization processes. Dualists and modernists see slums as the pathological outgrowth if urbanization, representing the failed integration of the rural population into the urban industrial sector. These scholars articulate the blight of slums as representing the inefficiency-inducting marginality of its inhabitants to the economy. Structuralists view informal housing as a solution to housing the large informal labor force that feeds capitalist expansion. Slums represent an alternative site of production that is crucial for development. Associations of slums as negative or positive to urban development are aligned with schools of thought that extend beyond policies addressing slums themselves. Framing, thus, can be embedded in lineages of theory that are wide in scope.

Slums are also frequently aligned with economically marginalized populations, as they are in the focus of anthropologist Oscar Lewis' (1966) ethnographies of the urban poor in Mexico and Puerto Rico. He found that vicious cycles of poverty owed to a "culture of poverty" which he attributed to behaviors and attitudes distinct to the poor such as apathy, fatalism, and ignorance. The implication of the culture of poverty was that the poor were helpless and inferiors, occupying the lowest run of capitalist society. Bonilla (1970) saw the *favelas* of Rio de Janeiro in terms of a reproduction of the rural experience within the city, where attitudes towards political participation and pessimism were aligned between rural dwellers and *favelados*. This dualist view of slums embodying traditional, or non-urban tendencies also served to marginalize informal settlements.

Several years later, Perlman (1976), through detailed survey research in Rio de Janeiro's *favelas*, challenged Lewis' theories and Bonilla's assertion that slums were a testament to the inability of its inhabitants to assimilate into urban life. Perlman asserts that classical definitions of marginality are misreadings of the urban poor. For example, she finds that the notion of social marginality evokes social chaos and isolation, but *favelas* actually reflect greater social cohesion through trust built from kinship networks. Additionally, Perlman finds that economic marginality arguments rest on false claims that *favelados* burden the urban economy rather than contribute to it. High employment amongst the *favelados* defeats the claims of economic parasitism, however, the lack of economic mobility and economic integration exists, but only because of economic exploitation and repression. Perlman's systematic dismantling of the "myth of marginality" through empirical research to test these operative definitions paved the way for theories around how low-income settlers are in fact integrated in the city.

In dismantling myths around slums, Perlman asserted that inhabitants of *favelas* were not monolithic. From an economist's point of view, one could segment slum dwellers based on their potential for economic mobility. Stokes (1962) introduced an intermediate theory of slum marginality and integration. Departing from Lewis' view of slums as only marginal spaces where the culture of poverty thrives, Stokes offers two typologies of slums—"slums of hope" and "slums of despair"—in order to unify an understanding of the slum growth he witnessed in both the United States and in Latin America. Depending on the socio-economic

mobility and aspirations of its inhabitants, slums were either an entry point for migrants to new economic opportunities in cities, or the end of the line. Likewise, Turner's (1968) fieldwork in Mexico and Peru augments this idea of upward mobility trajectories for slum dwellers. Linking trajectories to urban settlement patterns, he finds that initial migrants ("bridgeheaders") gradually move through phases of greater permanency with the possibility of achieving middle-income "status seeker" in their lifetime. This socio-economic trajectory follows increasingly desirable locations within the city, denoting not only the possibility of full integration into the city, but also the effects of urban settlement patterns on the city itself.

A number of scholars have also challenged the myth of economic marginality from a structuralist viewpoint. The importance of the informal dweller to the urban economy is in part from low-wage labor that fuels the formal economy (Mangin 1967; Moser 1978; UN-Habitat 2003). The role of the informal sector is particularly important in the age of global markets, where low wages allow domestic producers who are anchored in cities to remain globally competitive (Castells and Portes 1989). While consequences of labor exploitation are recognized by this viewpoint, the informal sector's efforts in developing a foothold in the city are remarkable. Informal settlers contribute to urban development by investing in their housing through home improvement and sometimes land exchanges, despite often lacking legal title. Frequently, these capital improvements are made over the course of many years and include both cash and labor housing through sweat-equity (Mangin 1967; Turner 1976; Peattie 1987). In fact, low-income households often spend a greater portion of their income in rent than higher income households (Sanyal 1987; World Bank 1993). This spate of research and theorizing on slums illustrate the various frames that even researchers take on and the types of data they use to provide evidence to build their arguments. In this case, the dualists frame slums as concentrations of blight and poverty that must be eradicated, while structuralists frame slums as an integral part of the economic fabric of the city that deserve to be recognized. These studies are influential to policymakers and highlight another sphere of influence in framing low-income housing policy.

The use of slums as a discursive mechanism to appeal to populist fear and disgust an example of leveraging the term to stoke broad support for their removal. Ghertner's (2008) findings from discourse analysis on judicial documents related to slum cases in Delhi finds that legal decisions to criminalize slums are correlated with the theme of the aesthetic principle of "nuisance." In these cases, identifying slums as nuisances galvanizes a larger public interest to incriminate slums because they do not fit a civic order of hygiene and cleanliness. "The law has codified middle class aesthetic norms, giving them material leverage over urban space"(21). The danger in this framing of slums is that it also aligns people that live in them as equally undesirable.

The mechanism of marshalling public support for urban revitalization policies by problematizing areas appearing neglected and housing the poor is not new nor is it specific to India. Rein and Schön's (1995) case study of the Boston Redevelopment Authority's finds one of the dominant frames used to argue for tenement removal and urban redevelopment is by addressing blight. In an analysis of legal proceedings, Pritchett (2003) points to the systematic use of blight terminology to justify urban redevelopment in the United States and codify it through the U.S.'s constitution's Fifth Amendment's Public Use clause. Pritchett shows that the identification of blight was suffused with motivations to restrict racial mobility since many of the areas identified for urban renewal were areas containing large numbers of

minority and low-income groups. Dominant messages in framing low-income housing may obfuscate more sinister motives that have long-term impacts in equity and urban policy making.

A recent trope in global housing policy is the idea of ridding cities of slums, which presents a mixed-message in terms of policy frames and complicates implementing policies to achieve this goal. On the global level, Cities Alliance launched the "Cities without Slums" action plan in 1999. This initiative was adopted the following year by the United Nations through the Millennium Declaration and reflected in the Millennium Development Goals (MDGs) under Goal 7, Target 11: Acheiv[ing] significant improvement in the lives of at least 100 million slum dwellers. On the one hand, the notion of slum-free cities provide a rallying point for a number of stakeholders to work together to focus on low-income housing, on the other it offers a false sense of what is possible given the extent of the problem. Gilbert (2007) critiques the "Cities without Slums" initiative, asserting that the slogan leverages the persuasiveness of imagining developing country cities rid of one of its most vexing problems. His argument that the campaign is simply a rhetorical device rests on the fact that the slogan itself is unachievable.[47] UN Habitat's use of the slogan, Gilbert argues, is to legitimize its role in international development by introducing a campaign that is so sweeping and aspirational that it would behoove others to throw support behind it. In this manner, the frame of slum-free cities is used as a political tool for organizations pushing its agenda. In another example from housing policy, Monkkonen (2013) explains that the use of housing deficits as a frame for housing policy efforts in Indonesia may lead to misspecified policies since the definition of a housing deficit can be ambiguous. Mokkonen (2013) explains the part of the housing deficit derived by the government and development institutions was erroneously inflated due to demographic changes in Indonesia, particularly around household formation. Housing outcomes can only improve through a better understanding of the specific frames that dictate housing policy.

Another issue arises when poverty is used as a frame for addressing low-income housing. While there is a correlation between poverty concentration and slums, efforts to rid cities of slums are not necessarily the most effective ways to address poverty at large. Arabindoo (2011) notes that slums do not encompass all of urban poverty in India: "What is puzzling is its rather naïve argument that slums are a viable entry point for addressing the visible manifestation of poverty when according to its own estimate only 43 million of the 86 million urban poor are supposed to reside in slums"(637). Aligning slums with poverty allows for characterizations of slum dwellers that warrant state sponsored action and undesirability in the public eye. Bhan (2009), using a frame-based discourse analysis, finds that the criminalization of slum dwellers in Delhi is attributed to "naming and categorizing [them] as encroachers and thieves"(139) in order to justify legal precedence for their removal. The blurring of the distinction between slums as a housing condition and slums as a manifestation of poverty are reflected in the housing policies. Housing policies, as mentioned previously, calibrate attitudes towards urban poverty, the reach of government, and the role of the market.

[47] Gilbert also acknowledges that the MDG and the campaign itself is not actually claiming to get rid of slums everywhere but to lessen the problem. However, that bolsters his argument since the campaign is an inaccurate advertisement for its intended goal.

This chapter builds on these findings through methods that strengthen the relationship between frames in low-income housing and housing policies.

3.3 Interpreting Frames

3.3.1 Data – India's Five-Year Plans

India's Five-Year Plans provide a body of habitual, textual evidence that encapsulates both national directives as well as external messages concerning the country's central planning efforts. These plans are also instrumental in setting educated estimates of budget outlays over the plan years.[48] In discourse analysis, texts allow both the analysis of message and stories as well as the parsing of terms and phrases to derive meaning and interpretation.[49] India's Five-Year Plans are one of the few holdovers from centrist planning agendas that were *en vogue* around the time of India's independence.[50] Their origins and longevity as a planning tool in India reflect less about the political ideologies engendered by central planning, and more about the act of a new nation borrowing successful policies from elsewhere. Joseph Stalin launched the U.S.S.R's first Five-Year Plan in 1928 as a way to usher in agricultural collectivization and rapid industrialization at scale. As a result, Five-Year Plans are largely aligned with a Soviet approach to centralized, economic planning. The lineage of the role of the Five-Year Plan in carrying forward a communist agenda is best exemplified by China's continued use of Five-Year Plans. Mohan and Aggarwal (1990) explain that, indeed, India's inspiration for implementing Five-Year Plans came from the observed success of the Soviet Union's economic growth through industrial development. Mohan and Aggarwal (1990) found that when it came to industrial policy Five-Year Plans exposed gaps between policy intent and capacity: "although planners and policymakers in India understood the need for using a wide variety of instruments and controls to plan a mixed economy, there has always been a mismatch between planning intentions and the instruments available for realizing these intentions" (689). What their analysis demonstrates is that Five-Year Plans are critical records that reflected both the intentions of the Government of India as well as the intended policy direction, use of policy instruments, and how this influences which programs end up being implemented.

The use of Five-Year Plans to situate India's housing policies draws on Mohan and Aggarwal's reliance on these documents to shed light on broader economic policy shifts, but focuses more narrowly on passages on housing. There is also a precedence that illustrates when Five-Year Plans are referenced to help trace policy shifts in housing. Sivam and Karuppannan (2002) use the Five-Year Plans (the First through Ninth Plans) to track public sector involvement by identifying the role of government, aims of the plans with respect to housing, and public sector outlays during that time period. This deep reading is used to

[48] In principle, the annual Union Budget should be based on the budget outlays identified in the Five-Year Plans, but can differ substantially based on resources available to the Finance Ministry or other adjustments.
[49] Moretti and Pestre (2015) present a comprehensive review of World Bank documents using quantitative linguistic techniques, or computational text methods, where they study the changing discourse of these documents over the years. I employ similar methods related such as word frequency, but their findings are embedded in a much deeper linguistic analysis of grammar and semantics.
[50] For a detailed explanation of Indian planning procedures, see Mohan and Aggarwal's (1990) review of Indian industrial development from 1951 to 1990 through the lens of Five-Year Plans.

organize and identify key state and private actors in India's low-income housing policy. In a more specific reading of the Five-Year Plans, UN-Habitat (2008) tracks the role of housing finance in India over the First through Tenth Plans and finds that these Plans provide "[A] clear perspective on the evolution of housing policies in India"(11). Indeed, these widely available documents provide rich information on housing. These past uses of Five-Year Plans, however, focus on their factual and descriptive nature, whereas this chapter extends this analysis by employing frame analysis that is supported by mix of methods that includes qualitative content analysis and basic computational text analysis.

In terms of content, India's Five-Year Plans have evolved somewhat over the years, but tend to follow a basic structure. The role of the Five-Year Plan is to act as a guide for national economic activity in the coming five years, with the longer term, overarching goal of sustained economic growth and ensuring the health of major economic sectors. The core features of the plan include the budget outlays required by the public sector for each plan period's development goals. These outlays are typically accompanied by the context and justification for these amounts. Despite the sectoral focus of the plans, they also address the social development of the country, particularly when the state has a role to play. For example, employment, education, and infrastructure are all key inputs to the economic production, but also require institutional development to ensure that social development goals are met. Intended as a tool for policymakers, the plans also provide a form of public accountability, both as published documents available for public consumption as well as to the larger community of international donors and investors who may reference these plans as an "executive summary" of India's economic planning priorities.[51]

These plans cover a variety of topics related to the country's economic and social development, stretching as far back as 1951, the first Five-Year Plan since India's independence from British colonial rule in 1947. To date there have been twelve Five-Year Plans, which span the years 1951 to 2017. Five-Year Plans were not produced from 1966 to 1969, however, due to three one-year plan holidays when the Government of India reassessed its planning procedures. There was also a break in Five-Year Plans from 1990 to 1992 when India issued annual plans as the country attempted to stabilize its economy amidst an economic crisis and subsequent financial reforms. All of these plans contain chapters that cover housing, either as a primary subject or as part of chapters related to urban development. Details of the relationship of the context in which housing is discussed is covered in the initial phase of the following analysis. These housing sections form the corpus of text corpus that is studied in this chapter.

3.4 Methodology

The corpus of all twelve Five-Year Plans are subject two rounds of analysis using different methods for each round. First, an initial deep reading of the housing section of these plans using principles from discourse analysis generates a storyline of India's thinking and

[51] Note that in 2014, Prime Minister Narendra Modi dissolved the Government of India's Planning Commission and replaced it with the National Institution for Transforming India Commission (NITI Aayog). The dissolution of the Planning Commission was an effort to transform economic planning from the centralized, top-down approach carried out since independence into a more "bottom-up," decentralized endeavor. Recent press reports indicate this will likely result in the abolition of Five-Year Plans.[51] However, at this time it is unclear what will take its place. Until then, the Twelfth Five-Year Plan remains in effect through 2017, the end of the plan period.

policymaking about housing. Next, a text analysis using computational methods provides a finer comb with which to tease out word and term frequency, the collocation of words as well as quantifiable trends over time. Computational text analysis allows for the detection of word use patterns and the context in which words are used over the course of the Five-Year Plans. Since the focus here is on changing frames used to discuss low-income housing and its influence on policymaking, the latter method focuses on testing hypotheses related to how the term slum is used to describe low-income housing, as well as the changing roles of the State and the market in housing as described in the Chapter 1.

All of the plans were accessed online through the Planning Commission's archived website. The First through Ninth Plans are available as text embedded in hyper-text markup language (HTML). As a result, the text is copied directly from the Planning Commission's website, except the Eighth and Ninth Plans where the text was available as separate, downloadable files. The remaining Plans are available in Portable Document Format (PDF) where images of characters are converted into text using optical character recognition (OCR) software. Because the methods in this chapter require both a close read of the Plans as well as an electronic analysis, any errors in the OCR conversion are corrected by hand during the course of a close read. There is no reason to believe that the small number of undetected and uncorrected errors will affect the results of the analysis. Tabular data and figures are removed from the text after the close read to allow for computational processing. While these tables and figures provide additional context for the close read of the plans, they are not essential to the text analysis and their format introduces errors in computation methods.

3.4.1 Critical Readings

A critical reading of the Five-Year Plans provide the initial identification of themes and housing policies affected. The goal is to orient housing in terms of national priorities and to elicit elements that act as policy signals which indicate how the Government of India intends to address low-income housing. Elements are selected with the understanding that Five-Year Plans are both public documents of record to be read and interpreted by India's citizens, but also for outsiders that have a vested interest in the policy direction of housing in India (e.g. international donors or investors). Specifically, elements are selected that comply with the naming and framing approach as well as those elements that reveal the context of the frames. As a result, the three critical elements of the Five-Year Plans are presented and examined as they relate to the housing sections: 1) the very first sentence of the section; 2) themes that emerge over the course of the chapter; and 3) key housing events covered by the plan period, including schemes introduced or altered and housing-related institutions formed.

Each of these elements provides a first look at the organizing logic of the Five-Year Plan's housing sections, which allows an analysis of how low-income housing is discussed and what issues are prioritized. The topic sentence guides the reader through the main thrust of the section and acts as a narrative hook by naming the core housing priority. Themes demarcate how the respective plan identifies stakeholders and those responsible for implementing housing policies, the perception of low-income housing, and the types of messaging that reflects narrative frames in global housing policy efforts (see Introduction and Chapter 2). In order to provide context and key outcomes for each plan, I note the institutional development milestones as well as housing schemes or guiding policy documents created during each plan.

These elements could not be identified after reading one or two documents, but only after a close reading of the entire corpus. This generalization of element identification reflects both the consistency of India's planning documents as well as the ability to draw comparable elements across all twelve plans. This does not, however, mean that there are no inconsistent documents in the corpus. In the case of India's Five-Year Plans, the Fifth Plan is abbreviated in length, and the sector discussions are not as comprehensive or nuanced as other plan years. Sectoral discussions are instead bundled under "Programmes of Development" and focus on budget outlays and identifying implementing agencies. In particular, this plan's housing section emphasizes the role of State Governments and their relationships with state housing boards to develop housing colonies. Because the structure of the Fifth Plan does not reflect the general pattern, the content analysis falls short. This issue also arises in the second stage of the analysis which focuses on computational analysis of the texts and finds that the Fifth Plan to contain the least amount of data.

3.4.2 Computational Text Analysis

The electronic format of India's Five-Year Plans allows me to apply computational methods to bolster the qualitative frame analysis described above. Like the above content analysis focused on the structural features of each plan, the first step in text analysis relies on deductive methods to classify patterns in the plans' text. In contrast to the close reading, computational methods allow far greater speed and accuracy than hand coding and counting instances of patterns in text. They also overcome reader or analyst biases that may be introduced from reading and drawing conclusions from the text. Using the Python programming language and its Natural Language Toolkit (NLTK) [52] platform to implement computational text analysis, I follow three steps to answer the research question of how low-income housing policy in India has changed over time. The three steps include 1) preparing text for analysis; 2) counting words over time and tracing similarity; and 3) difference of proportions and other inductive methods. These three steps will be described in turn.

3.4.2.1 Preparing Text for Computation Analysis

While the corpus of the housing-related chapters for India's Five-Year Plans are in an electronic format, they are considered raw text and must be prepared for further analysis. Raw text saved in plain text format is read as a string data type and tends to include text features that are not essential to the text analysis, such as punctuation, common "stop" words, upper and lower case letters, and white space between words. One of the first steps is to reduce the raw text to the features that are important for the analysis. In the case of Five-Year Plans, I first remove non-ASCII[53] characters so that Python does not return an error based on its default encoding. Common non-ASCII characters in these plans include bullet points and long dashes. I also discard punctuation and capitalization. Removing punctuation means that individual punctuation is not counted in the total number of elements, or tokens—as they are referred to in text analysis—so we do not over-count the total number of tokens in a given

[52] As noted the computation text analysis methods from this chapter rely heavily on methods developed using the Python programming language (version 2) and the Natural Language Toolkit (NLTK) platform. The accompanying book provides a valuable resource for these methods (see Bird, Klein, and Loper (2009)).
[53] ASCII stands for American Standard Code for Information Interchange and generally includes most alphanumeric characters and some common symbols.

document. By removing capitalization there are no missing terms resulting from excluding cases simply because lower case and upper case letters are treated as two separate characters. These exercises are fairly straightforward in preparing text for analysis, and there are a number of other methods that can help aid the automated process. I use two other methods to further refine the text.

The first is that I remove "stop" words, or words that occur commonly in texts but do not change the meaning of the content. Using NLTK's corpus of stop words, I filter out the ones that appear in the documents. Stop words in this corpus include parts of speech such as pronouns, prepositions, and conjunctions.[54] By removing punctuation and stop words, each plan is reduced in length by 33 to 43 percent. The second step in refining the text is using a tool in computational linguistics known as lemmatization. The process reduces words to their root, or "lemmas." In the case of our corpora, the words "slum" and "slums" may both appear, but will be counted as different words despite the fact that they represent the same thing. Variations of verbs provide another example of words that are essentially the same but carry different inflections; a document might contain the words "talking," talked," "talks," and "talk" but counting them as a single term is preferable. In NLTK, the lemmatizer implements Princeton University's WordNet database of encoded relations between words.[55] WordNet identifies common lemmas and is able to group words with similar bases or variations through inflections. Once stop word removal and lemmatizing are complete, the data is ready for analysis.

3.4.2.2 Word Frequency and Similarity

Using procedures for word counts and frequency I examine both the most common words in each documents, count the number of words of interest that appear, and examine where they appear in the document. This first step validates or elucidates what the Government of India frequently names or refers to in the plan and associates this with the most emphasized terms. The most common words, thus, illustrate the focus of a particular plan, and when viewed over time can show how the focus shifts over time. These common words also offer an indication of keywords to examine in more detail. The keywords examined will be discussed in the findings below. Additionally certain words such as "housing" and "slum" are matched to words that share a common context and noted as lists of similar words. Finally, I examine the collocation of bi-grams, or two words, that commonly appear together in the text. These word frequencies and patterns of word occurrences reveal a considerable amount about how the content of particular plans is categorized.

I perform additional processes to develop more insight into the changes in plans over time. For example, select keywords are graphed over the course of each document to indicate where they appear and where word use occurs within each document. Such graphs display the lexical dispersion of certain keywords over the course of an individual document to reveal how a document is organized and show where certain keywords tend to overlap. Viewed as a matrix, these graphs provide visual checks to word patterns over multiple documents as well

[54] Examples of pronouns that are excluded are "me," "our," and "their." Examples of prepositions that are excluded are "before," "from," and "during." Examples of conjunction that are excluded are "if," "and," and "but."

[55] For more information, see WordNet's homepage: http://wordnet.princeton.edu/

as how the text itself is organized with respect to sections, etc. Corpus-wide methods are a way to measure differences across documents over an entire set of documents.

3.4.2.3 Difference of Proportions

I implement a simple difference of proportions between Five-Year Plans over time, with attention to how the words "public" and "private" are used[56]. This difference is of particular interest since changes in the roles of the public and private sectors in low-income housing development and delivery implicitly hold value, reflecting both global housing paradigms as well as India's perception of its own resources. In each document I calculate the number of instances in which each word appears over the total number of terms in the documents, as follows:

$$(f_{public}/n_i) - (f_{private}/n_i)$$

where f is the frequency of a given term and n is the total number of terms in document i. Subtracting the proportion of the use of "private" from "public" and graphing them across all documents provides a clear visual shift in the use of these terms across all twelve plans. In the descriptive analysis, I examine term frequency. While the frequency of words is helpful in understanding how often they are used, this number is not always a strong reflection of its relative frequency in a document. For example, since we are examining the housing chapter of Five-Year Plans we expect to see the word "housing" used frequently in each plan. We would also expect to see the word "housing" appear more often the longer a particular plan is. So while "housing" may be more frequent in particular plans, we want to make sure this is not only because the plan itself is longer.[57]

The two methods used here, a close reading and computational content analysis, provide a set of mutually reinforcing mixed-methods that depict the Government of India's framing of low-income housing over the course of the Five-Year Plans.

3.5 Findings

Analysis of India's Five-Year Plans exemplifies how low-income housing is conceptualized and prioritized over time. These plans are set against a number of proximate, macro and global contexts including the general development of India's ability to craft budgets and governance structures, India's macroeconomic climate, and geopolitical events. The evolution of sectoral policy over the course of India's Five-Year Plans also brings to light the shifting discourse of housing over 60 years. Housing is both a sector and issue that also has strong linkages with other sectors of the economy; it spans both rural and urban areas and affects all segments of the population. As a result, it is not surprising that the plans, in setting the course of half-decade increments of India's development, uncover the ways in which the

[56] These words are chosen based on their dichotomous relationship to one another, but also because they are also used in tandem once India begins to embrace more market-based policies (e.g. "public-private partnerships"). While there are a number of synonyms for both "public" (e.g. "government") and "private" (e.g. "market"), these terms are broader and more encompassing and are more likely to occur as perfectly distinct from the other.

[57] Another way to do this for large vector of words and a large number of documents is to calculate a term frequency—inverse document frequency (TF-IDF) statistic that measures a particular term's importance in a document relative to its frequency across the entire corpus. In Python this is implemented as part of the scikit-learn package. For text, the `feature_extraction.text` module contains classes such as Tfidfvectorizer to calculate and construct the TF-IDF matrix.

State views housing in terms of priorities, the its relationship to market mechanisms for housing, the difference between slums and housing writ large, and the rise of the concept of affordable housing.

3.5.1 Housing Policy Themes and Framing Slums—A Close Reading India's Five-Year Plans

The first step to inspecting India's Five-Year Plans entails a close read of each plan and tabulating critical features. Table 2 summarizes the key elements of the Five-Year Plans as described in the Methodology section above. After recording the plan number and years it spans, Table 2 notes the headlining sections or chapters in which the each Five-Year Plan discusses housing. The purpose of listing the chapter headings is to note the proximate context of housing, i.e. which sectors or policy programs the Government of India views as related to housing. Additionally, this heading notes what other topics are covered in the plan's chapter; this is important to keep in mind when the analysis turns to the computational text portion.

In the First and Second Plans housing occupies its own chapter, in the Third Plan it becomes linked to urban and rural planning, and in the Fourth Plan housing is part of a more encompassing section that also includes regional planning and water supply. Thereafter housing is largely paired with urban development or urban infrastructure for the remaining Five-Year Plans. In the Tenth and Twelfth Plans, housing is not named in the chapter heading at all, instead it is completely subsumed under "Urban Development." When housing is included in the same section as urban infrastructure, the infrastructure focus tends to be water and sanitation; the close linkages between these two sectors are not lost on the Government of India. The 1970s mark the first apparent delineation of housing issues between rural and urban contexts. This compartmentalization of types of housing, particularly the focus on urban housing, coincides with the advent of international slum policies established to address the rising growth of slums and the beginning of shelter lending to India from the World Bank, as described in Chapter 2. Noting what is covered in each plan also helps to provide guideposts for the computational text analysis that follows. Water, for example, is a frequent word in plans that lump discussions of housing with water and sanitation.

3.5.1.1 Introductory Sentences

The introductory sentences of each Five-Year Plans' housing sections situate the main housing priorities and explicitly announce where the focus of interventions lie. From the very first Five-Year Plan, housing is named as a "problem," particularly around industrializing areas where shortages have begun to surface for workers. Importantly, the First Plan clearly established a link between housing and well-being, underscoring that the topic deserves attending to in the planning process. The early plans, up until the Fourth Plan, appear to be focused on contextualizing housing into the broader themes of economic growth and program development. Starting in the 1960s, around the same time that development agencies first began intervening into housing policy, these introductory sentences focused on whom housing programs were meant to assist. These populations transformed from "industrial workers and low income groups" (Third Plan) to "backward sections of society" (Fifth Plan) and reflected those that necessitated state support. This focus on, naming of, and selecting beneficiaries extended into the early 1980s, spanning roughly the same time as slum clearance and self-help housing paradigms when the thrust of low-income housing policy encouraged self-determination of those receiving housing assistance.

Table 2. Synopsis of Themes in India's Five-Year Plans, 1951 to 2017

No.	Years	Chapter Title	First Sentence Related to Housing	Themes	Key Events
1	1951-1956	"Housing"	"The housing problem has become acute in most industrial regions…There is increasing recognition everywhere of the close relation between housing and the health and well-being of the people."	• Carving out role for state: private enterprise "incapable of meeting the needs" • Emergence of entities funded by Central Government • Recipients of gov't intervention are Pakistani refugees; gov't employees • Slums are seen as "disgrace" to the country and "regret" for government • Slum Clearance central to housing policy, slum dwellers to live in 240^2 ft.	• Bombay, first Housing Board set up in 1949 • Identification of the role of Improvement Trusts in carrying out housing schemes • National Building Organization (NBO)
2	1956-1961	"Housing"	"The period of the first five year plan witnessed the first steps in a national housing programme which will assume growing importance in future plans."	• Focus on housing industrial workers • Full subsidy for very poor (₹250/mo. in Bombay) • Slum seen as "serious concern"—clearance and demolition only options • Private development to focus on higher end, more expensive housing	• Low Income housing scheme introduced in 1954 for those earning less than ₹6k/yr. • Passage of the Slum Areas (Improvement and Clearance) Act, 1956 • First instance setting housing targets (no. of dwelling units)
3	1961-1966	"Housing and Urban and Rural Planning"	"The housing programme which had its beginning in the First Five Year Plan was directed mainly towards housing for industrial workers and low income groups. The programme was considerably expanded during the Second Five Year Plan with the introduction of schemes of slum clearance and slum improvement…"	• Housing policies are mentioned in the same breath as economic development and industrialization • The notion of affordability emerges • Discouragement of luxury housing in order to focus on greater volume of modest housing	• Call for the formation of Town Planning Organizations • Greater focus on economically weaker sections, rather than sector specific laborers • Expansion of slum scheme to include slum improvement and not just clearance

4	1969-1974[58]	"Regional Development, Housing and Water Supply"	"In the field of housing Government has been giving assistance for the benefit of selected sections of the community and providing accommodation to its employees."	• Recognition that slum clearance schemes can lead to creation of new slums or cause further deterioration of old ones • Public sector only able to address the "fringe" of the housing problem because of limited resources and the high unit cost of public housing • Urges state and local authorities to play a role in the production of cheaper housing • Adequate supply of housing encouraged "through proper planning and land policy" • Assigns responsibility of standardizing building materials and manufacturing process to the private sector	• Maharashtra Slum Areas (Improvement, Clearance, and Redevelopment) Act of 1971 passed and put into effect: declares slum areas and details Slum Rehabilitation Scheme
5	1974-1979	"Urban Development, Housing and Water Supply"	"The main thrust of the programmes of the Fifth Plan is directed towards ameliorating the conditions of the backward sections of the society."	• Emphasis empowering State Housing Boards to provide housing through the construction of public housing colonies • Strong decentralization focus, identifying State governments as agents	• Gearing up HUDCO to meet increasing demand for housing • Reform of State Housing Boards to address housing for the poor
6	1980-1985	"Housing, Urban Development and Water Supply"	"Housing is an activity that is typically labour intensive and, therefore, fits in well with the pattern of development envisaged in this Plan. The provision of shelter is a basic need which must be met. Housing construction also creates much-needed employment for the unskilled and, therefore, income for the relatively poor."	• Explicit encouragement of private sector to take a more active role in construction of housing for low and middle income groups • Shelter identified as a basic need • First mention of housing as an economic multiplier in terms of construction providing employment for the unskilled and poor	• First long-term plan (20 years) was devised for housing; covers current shortfall and plans for population increases • Highlights regulatory inefficiencies like the Urban Land Ceiling Act

[58] The years 1966 to 1969 appear as a gap in the Five-Year Plans, but actually served as three one-year plan holidays. These were implemented on the heels of what was seen as a disappointing plan period, which precipitated a food shortage and agricultural crisis. These three years allowed the economy to recover before drafting and implementing the next Five-Year Plan.

				• Restricts public sector to slum improvement (advocates sites and services; criticizes slum relocation)	
7	1985-1990	"Housing, Urban Development, Water Supply and Sanitation"	"In fulfilling the basic needs of the population, housing ranks next only to food and clothing in importance. A certain minimum standard of housing is essential for healthy and civilized existence."	• Strong human rights/rights-based discourse in the case for housing • Housing takes on a more holistic view that includes social equity and the economy • The term "social housing" emerges as does "self-help" • Public sector role further circumscribed to working on slum improvement, providing housing for the EWS and supporting housing finance institutions • Private sector charged with having a "major role" in developing urban housing • Municipal bodies in a weak state	• Formation of plans for a National Housing Policy, taking cue from UN Global Shelter Strategy • Formation of the National Housing Bank (NHB)
8	1992-1997[59]	"Housing, Water Supply and Sanitation"	"The dimension and problems of housing need to be viewed in the overall environment of human settlement. The physical dwelling unit is not the sole element of housing…Further, the type and location of housing is inextricably linked to the employment and affordability of the occupant."	• Reinforcement of housing as a self-help activity • State intervention in housing previously viewed as a welfare activity, now a "social and economic imperative" • Motivation for home ownership mentioned • Legal and regulatory framework and housing finance become acute, separate areas of focus • Little mention of the word 'slum' • Core strategy focuses on providing stimulus through housing finance,	• First post-economic reforms plan

[59] From 1990 to 1992, the free market reforms of the period marked a period of uncertainty and instability. As a result the government of India only drafted annual plans. These plans are not reviewed in this analysis because they act as placeholders for future plans. In the 1991-92 Planning Commission's Annual Report, the Government of India noted that 1991 in India "began with an economic crisis of unprecedented dimensions and marked the beginning of a new era in planning…increasingly freed from government control and that planning in India should become more and more indicative and supportive in nature"(1). This plan set the date for the commencement of the Eighth Plan to begin on April 1, 1992.

				carving out role for private developers, and creating links between formal and informal credit networks	
9	1997-2002	"Housing, Urban Development, Water Supply and Civic Amenities"	"The dimension and problems of housing need to be viewed in the overall environment of human settlements. Housing has been primarily a self-help activity. The housing policies and programmes…has to recognize that State intervention is necessary to meet the housing requirements of the vulnerable sections and create an enabling in accomplishing the goals of 'shelter for all' in a self-sustainable basis."	• State intervention needed for vulnerable population and to "create an enabling environment in accomplishing the goals of 'shelter for all'" • Public housing now regarded as "social housing" • Enablement fully embraced, but recognition of the need of a policy shift, government to act in role of facilitator, focus on laborers, women, and slum dwellers	• National Housing Policy (1998) launched during 8th Five Year Plan and aligned with Habitat II, which had a theme of "Shelter for All" • Establishment of *Nirmirti Kendra* (building centers) through HUDCO • Draft National Slum Policy released in 1999, never implemented
10	2002-2007	"Urban Development"	"Housing is a basic necessity as well as an important economic activity, in that it is part of the construction industry."	• Focus on housing investment's impact on GDP (study shows it as 3rd highest ranking sector, of 14) • Facilitating role of government reinforced • Now that FDI allowed in sector, emphasis for government will be on private sector • Promotion of rental housing highlighted • Questions the possibility of "Cities without Slums" • Need to address a comprehensive framework around policy implementation for slums	• 2000 Gujarat earthquake points to need to focus on disaster housing and those vulnerable • Working Group on Housing formed for the 10th Plan • "Impact of Investment in the Housing Sector on GDP and Employment in the Indian Economy" report released in 2000 influences economic multiplier arguments in this plan
11	2007-2012	"Urban Infrastructure, Housing, Basic Services and Poverty Alleviation"	"Housing, besides being a very basic requirement for the urban settlers, also hold the key to accelerate the pace of development."	• Larger emphasis on government as facilitator with specific role for State Governments and Urban Local Bodies • "Urban poverty alleviation, slum upgrading and basic services for the urban poor to remain as functions belonging to the public domain" (395)	• JNNURM launched in 2005, seen as instrument of "integrated development of cities" • National Habitat and Housing Policy, 2007 replaces 1998 version, now focuses on

				• Agglomeration economies inhibited by inefficiencies, triggered by urban poor	development of civic amenities and establishing strong PPPs
12	2012-2017	"Urban Development"	"Given the huge investment required to bridge the gap between demand for affordable housing and its availability, all the costs cannot be borne by the Government and hence the key would be to attract private investment and to enable the beneficiary to increase his/her contribution."	• Affordable housing "problem" framed as a demand-supply gap • Mention government-led schemes to increase affordability such as increasing FSI and lowering land prices through Land Readjustment	• Affordable Housing in Partnership launched under RAY • High Powered Expert Committee (HPEC) estimates requirement of Rs. 4.1 lakh crores over 20 years for purposes of slum habilitation • RAY Phase I launched in 2010 as a pilot project before the becoming a full mission • RAY Phase II adds schemes that lead to the creation of rental housing, slum upgrading

By the 1980s, the discussion of housing was marked by a stronger link between housing development and economic development, namely through employment rather than a stand-alone sector. The Sixth Plan asserts that housing construction "creates much-needed employment for the unskilled and…income for the relatively poor." By the Eighth Plan, the relationship between housing and employment connects through a different link by drawing on issues related to spatial equity and location: "the type and location of housing is inextricably linked to the employment and affordability of housing." Although it is difficult to glean from the plan alone, this emphasis on location appears to reflect the literature on location choice and the spatial mismatch between jobs and housing that dominated housing and urban economics from the mid-1970s to the early 1990s, particularly in the United States.[60] By establishing these connections, housing is thus viewed as a critical link to economic and livelihood opportunities for India's urban citizens. The orientation of housing within broader themes of economic production in cities and the inequality between location choices underscores the Five-Year Plans of the 1980s and 1990s.

The importance of housing was elevated to a "basic necessity" (Tenth Plan) and in a related turn, the idea of "shelter for all" (Ninth Plan) became a mantra for the Government of India in the early 2000s. The conspicuous international influence of this phrase emerged out of the theme for the 1996 United Nations Habitat II conference in Istanbul, which called for "Adequate Shelter for All." The Tenth and Eleventh Plans go further in unifying the two themes of housing as a basic human right as well as housing as a critical sector for economic development. The connection between these two aspects of housing secures it within India's policy discourse by simultaneously addressing the country's two key concerns—economic and social development. The latest plan signifies a clear shift that showcases the full embrace of market fundamentals to advocate for greater participation by the private sector, claiming that the government alone cannot provide sufficient resources to "bridge the gap between demand for affordable housing and its availability" (Twelfth Plan). These introduction sentences provide a snapshot of the main messages conveying India's stance on housing policy which alternatively names and selects beneficiaries of low-income housing policies, articulates the connection between housing and economic development, and identifies the role of the State and the private sector in housing development and provision.

While the introductory sentences help to frame the core issues around housing, a number of tangible themes also emerge from the body of the housing-related chapters. These themes are identified through repeated language cues in the terms of phrases or adjectives used to describe housing, changing definitions of slums and low-income housing, the perception of affordable housing provision, and how the Government of India envisions its role in the housing sector. These themes also provide a temporal barometer of the ways in which the perception of housing and the State's role in its provision has transformed over time, paving the way for further research on what has influenced India's shifting housing priorities.

[60] Seminal work in the urban economics literature include Muth (1969) and Mills (1972), who presented an early model to examine varying amenities across location in cities. Anas (1982), McFadden (1978), and Evans (1973) provide methods to model the interactions between housing and commutes to work. Critical research on spatial mismatch, which argues that marginalized groups such as low-income minorities suffer from worse labor market outcomes because they reside farther from better job opportunities. This theory was first articulated by Kain (1968) who highlighted the difficultly of inner-city residents to access jobs that were relocating to the suburbs. Since then, numerous studies have been conducted to further examine the effect of spatial mismatch, policies to correct it, and who suffers the most in terms of job accessibility.

3.5.1.2 Themes and Key Events

The first few Five-Year Plans clearly reflect efforts of the state to carve out its own role in housing provision, much as it was repositioning its role in a number of planning and governance endeavors post-Independence. While the country was in its infancy, slums were specifically and immediately recognized as sources of "disgrace" and "regret" (First Plan) for the government. The situation was such that the state of slums and the tools of slum clearance and demolition warranted "serious concern" (Second Plan). At the same time, state intervention was seen as augmenting the resources of the private sector. In the First Plan, the private sector was seen as "incapable of meeting the needs" of low-income housing, meanwhile the Second Plan assigned the private sector to the domain of luxury housing. By the Third Plan, the State shows an understanding that the public and private sectors must work in concert with one another to address the unmet supply of affordable housing. In the Third Plan, for example, luxury housing was explicitly discouraged giving way to the concept of housing affordability, demarcating a sharp turn away from the message of the Second Plan. By the Fourth Plan, the limitations of the State in single-handedly providing affordable housing are fully realized. Admitting that the public sector can only address the "fringe" of the housing problem due to limited resources and high costs of housing provision refocuses the State's role in determining its best course of intervention.

By the late 1960s, at the time the Fourth Plan was formulated, the state was beginning to witness the ineffectiveness of slum clearance schemes which pointed to an inefficient allocation of public resources to support low-income housing. This is also corroborated in the previous chapter's examination of World Bank shelter lending to India, which critiqued slum clearance schemes as resource-heavy and ineffective at stemming the proliferation of slums. This spelled a shift towards localized efforts that focused on slum upgrading and sites and services, and in doing so incorporates the beneficiaries in the slum redevelopment process through monetary contribution and community engagement. At the same time, the Fourth Plan marks the first time that the state began to delineate roles for the state and local authorities in housing production, land policy, and planning, while the private sector is tasked with standardizing building materials and manufacturing processes for housing. As the Five-Year Plans progress, the public sector's role is increasingly sharpened, particularly when it was to work in tandem private sector efforts in housing. In the Sixth Five-Year Plan, the state is in the middle of a significant commitment to its role in slum improvement, mainly through sites and services. In the next plan, the State's mandate is even clearer as its efforts expand to encompass the Economically Weaker Sections (EWS) housing and supporting housing finance institutions.[61] At the same time, the private sector's mandate increases substantially and is charged with having a "major" role in developing urban housing—a status that remains until today.

The link to housing and economic development also emerges around this time as was noted in the reading of the introductory sentences of each plan's housing section, and ushers in noticeable vacillations on perceptions of slums. The connections to economic development bolsters the case for the State to reimagine the housing sector, which had previously been seen as a welfare activity, into a "social and economic imperative" by the Eighth Plan of the early- to mid-1990s. The Eighth Plan also distinguishes itself since the word "slum" is rarely mentioned, which may be a result of the simultaneous encouragement of the private sector to take a much

[61] Note that in 1988, well within the range of the Seventh Five-Year Plan, the Government of India sets up the National Housing Bank as a refinancer and regulator of housing finance institutions.

stronger role through enticing policy reforms that would increase the reach of housing finance and address regulatory barriers around land and planning. As noted previously, the overarching concept of "shelter for all" surfaces by the Ninth Plan, a nod the Habitat II Istanbul declaration and the continually outward facing mandate of India's housing policy.

The market-orientated shift takes full grasp of the housing agenda by the Tenth Plan as the imperative around housing becomes synonymous with increasing GDP and encouraging foreign investment. The term slum returns, but instead of a neutral description of a housing type, it symbolizes the impediment to growth that must be eradicated. By the Tenth Plan, the Government of India begins to critically question the possibility of "Cities without Slums," a concept launched through the Cities Alliance—a global consortium then housed at the World Bank—in 1999. However, the Twelfth Plan re-embraces the idea of eradicating slums by launching Rajiv Awas Yojana (RAY), whose slogan is "Slum-Free City Planning," hearkening back to the same language used in "Cities without Slums."

These post-1991 plans are the most problematic in terms of consistency on how to address slums. They also coincide with rising institutional support for the development of private institutions to fund housing. UN-Habitat (2008) corroborates that this major shift towards the private sector in providing housing came in the Seventh Plan when the private sector is tasked with a "major" role in supporting housing development. During this plan, the National Housing Bank (NHB), the government's housing finance regulator, was established. The Eighth Plan continues to encourage the development of the housing finance sector in India. However, it refocuses state efforts by assigning their role to address low-income groups. The Ninth and Tenth Plans focus wholly on the government's role as a facilitator, lifting this language directly from the World Bank's *Housing: Enabling Markets to Work* (1993) policy paper. While the impetus to imbue housing policy with a market logic is made clear from the Eighth Plan onwards, the Government of India appears to struggle with fitting slums into this framework. In my reading of the Eighth Plan, the word slum is conspicuously scarce, suggesting that this shift of focusing on low-income housing as a welfare activity to an economic one maintains that slums fit neatly into the "vulnerable sections" for which the State still plays a role. The next section, which examines lexical patterns in more detail, teases out the nuances of this argument and provides additional evidence that the efforts of the State are a product of its own evolution in understanding how to address low-income housing paired with the task of balancing external pressures to conform to global declarations as well as offering investment appeal.

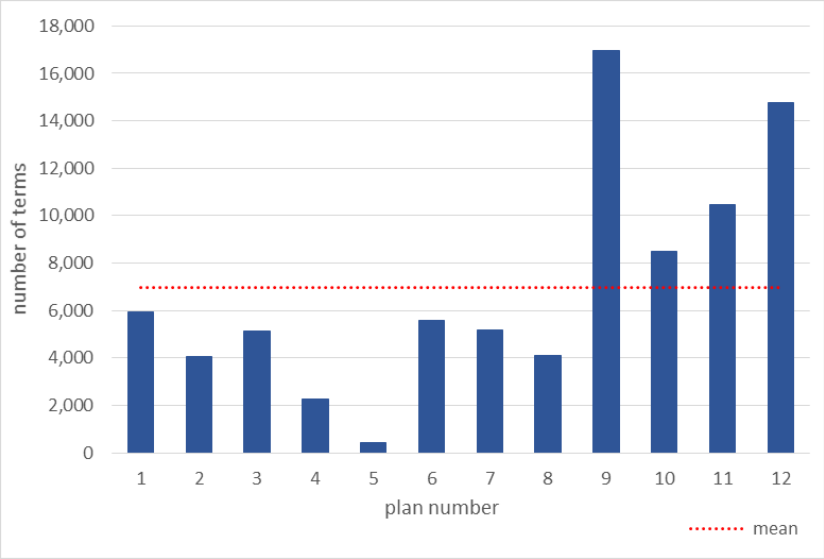
3.5.2 Computational Text Analysis of India's Five-Year Plans

A close reading of the Five-Year Plans reveals shifts in frames in low-income housing policy, particularly in terms of what public and private sector are tasked with and the handling of slums. Text analysis can help confirm whether these shifts are related to changing patterns in language and terminology. An examination of basic descriptive characteristics of the housing sections of Five-Year Plans show that they vary in length and lexical richness over time.[62] As indicated previously, the Fifth Plan is extremely short while the Ninth Plan is the longest. Figure

[62] Recall that these texts include the entire chapter in which housing falls. Often this encompasses subjects such as urban development or other sectors such as water and sanitation. This choice was born out of the fact that there is no systematic way to clip housing sections across plans since they often overlap or are interwoven with other sections. Moreover, the complete chapter analysis yields rich information on how the State establishes the proximate context of housing.

6 shows the number of terms, excluding stop words, in each plan. The average number of terms across plans is just shy of 7,000. After the Eighth Plan, the remaining plans are much longer than previous plans, and in many cases are a multiple of the length of the previously longest plan; for example, the Ninth Plan is nearly three times longer than the First Plan. The final four plans notably constitute all the plans that sit above the mean word length.

Figure 6. Number of Terms in Housing Sections of Each Five-Year Plan



While the more terms a document has seems to suggest that there is more "data" this may not necessarily yield more information. To get a sense of the relationship between document length and amount of information contained in the document, Figure 7 displays the lexical richness, or ratio of unique words to total words (excluding stop words), in each document. Each circular marker represents a Five-Year Plan. This graph finds a negative relationship between lexical richness and length of the document, and indicates that the length of the document does not necessarily determine its relative importance.

Figure 7. Lexical Richness of Housing Section of Five-Year Plans

Focusing on keywords is a means of zeroing in on the critical aspects of text documents. To inspect the frequency of keywords over the course of all twelve plans, I normalize the keyword count by the total number of words, using the basic premise that the frequency of certain words are positively correlated with their importance. The keywords are deliberately selected to include a mix of terms that arise when discussing housing policy but do not necessarily reflect the most common words found in each plan (see Appendix C for the five most common terms of each plan). As a baseline, the word "housing" is chosen as a keyword since the term is used in every plan and is likely to reflect the total number of terms in the documents. For the graph that includes "housing" as well as the total number of terms in each plan, see Appendix D, Figure D-1, which displays raw frequencies of each word. As noted, "housing" trends closely with the total amount of words until the Twelfth Plan, albeit at a different order of magnitude.

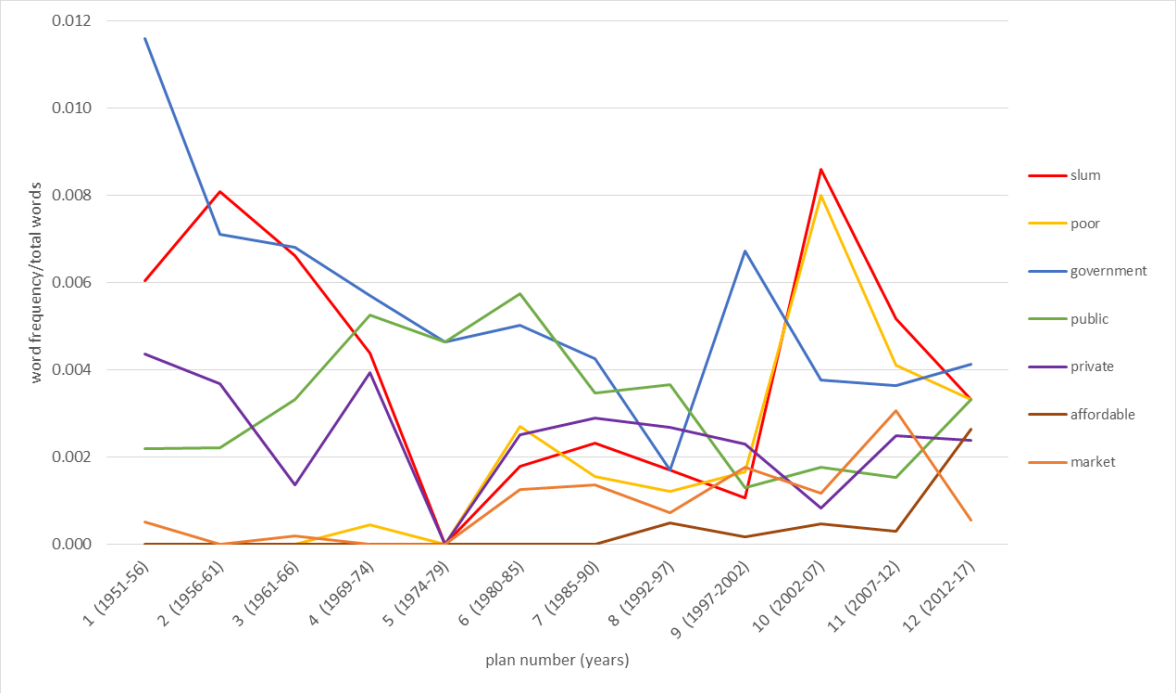
The remaining keywords include the term "slum" since this term is used to describe low-income housing and features prominently in early global housing policy paradigms, and as discussed previously is regularly wielded as a means of framing discourse around housing the urban poor. Slum is a common term in the Indian vernacular; while the term has a fixed definition in terms of the Census it is also used a as catch-all phrase to denote informal settlements. As discussed in the literature section, slums are also frequently associated with poverty and the urban poor. I choose the word "poor" over "poverty" since the characterization of the urban poor tends to be more closely linked to discussion of housing than poverty.

Throughout the discussion of the global housing policy paradigms as well as India specific discourse on shifts in housing policies, a couple of relationship pairs represent critical inflexion points that can shift frames depending on which term is favored. In particular, the use of the terms "government" and "market" as agents of housing development features prominently, particularly since late 1980s and the era of the Washington Consensus. Because these two terms occupy different roles in housing provision, the relationship between the terms provides an opportunity for comparative analysis. A related set of terms is "public" and "private," which more specifically names the flow of resources into housing. Term frequency analysis allows for a comparison between these paired words as well as how seemingly similar terms, e.g. "government" and "public" are related. Finally, I include the word "affordable" because it marries both of both the "market" and the "government" by putting forward the idea that low-income households share a responsibility in their own housing provision through an ability to pay, and that government must intervene to ensure that the price of housing is not distorted due to excessive regulations. Both the World Bank shelter lending portfolio analysis in Chapter 2 and the close reading in this chapter notes the rise of affordable housing development in the later plans.

In order to see where certain words appear across each plan Appendix E displays a matrix of lexical dispersion of keywords "housing," "slum," "poor," "government," "public," and "private." Of the keywords included above, the terms "market" and "affordable" are left out since they appear the least number of times cumulatively over the course of the plans. These dispersion graphs allow for a quick visual assessment of the occurrence of terms over the course of each document, including how spread out the term is over the document, how clustered, and how much certain terms overlap with others. Clustering of a certain term tends to indicate that there are dedicated sections to this particular topic, and overlaps can help in identifying relationships between words if they appear simultaneously. These graphs are not interpreted directly in this chapter, but were referenced when choosing keywords and word pairs to compare later.

Figure 8 displays the ratio of keywords to the total number of words in each plan and reveals several patterns across plans. Across all plans, "government," is in the top three most common keywords except for in the final plan. Interestingly, "government" does not track closely with the term "public" for much of the course of the twelve plans, except perhaps the Fifth to the Seventh Plans. After a long downwards trend, "government" appears more frequently after the Eighth Plan. The terms "affordable," "poor," and "market" are all but non-existent until the Fifth Plan, after which "poor" begins to move closely with "slum" through the final plan. The terms "poor" and "slum" spike together precipitously in the Tenth Plan before declining at nearly the same rate in the final two plans. The terms "market" and "private" also show parallel trends after the Fifth Plan while "public" does not mimic any other trend line. The term "public" tracks continuously downwards from the Sixth to the Ninth Plan, and is the only keyword see a decline in at least three consecutive plans after the Sixth Plan. While comparing specific keywords to one another and observing keyword shifts over time is revealing, large divergences in trends may be of the most interest in identifying policy shifts.

Figure 8. Keyword Frequency by Five-Year Plan



Two periods signify large visual shifts in word use patterns; the first is the period after the Eighth Plan and the other is a convergence of all terms except for "market" in the Twelfth Plan.[63] The Eighth Plan coincided with the new post-1991 financial reforms and was the first full plan to emerge after the economy stabilized in the wake of these reforms. From the Eighth Plan onwards there is a perceptible change in word frequency that appears more erratic than past plans. With spikes in "government," slum," and "poor" in the two consecutive plans, the

[63] As we note previously, the Fifth Plan is anomalous in its brevity and focus on budget outlays over a contextual discussion of the housing. As a result, sharp changes in keyword frequency around the Fifth Plan should be met with caution.

frequency of these words also fluctuate considerably after the Eighth Plan. The spike in "government" at the same time "poor" and "slum" usage is low is attributed to Government of India's full embrace of the World Bank's enabling policies. In this regard, the government reemerges as an enabler of the market and private actors to develop a sector-wide approach to improving housing. Slums and the poor were not critical in the enabling discussion, rather it focused on ensuring the government play a role in ensuring that the regulatory environment was less distortionary for housing. There is an abrupt shift in the discourse from the Ninth to the Tenth Plan as the conversation embraces the plight of the poor and how to address slums once again. Two key events push the Government of India's stance to be more conciliatory towards advocates of slum dwellers. As a result, the Tenth Plan attempts to balance the tension between the role of housing as an engine of economic growth with rampant urban poverty,

First, the message of "shelter for all" from Habitat II Istanbul is formally adopted in the National Housing and Habitat Policy of 1998. Second, the following year, the draft National Slum Policy was released and circulated, but never finalized. According to the Tenth Plan, the role of the importance of a national policy "is of great significance given the degree of wrong perception regarding the nature and extent of the slum problem," where the policy's role would "bring an attitudinal change among the authorities and the people at large…and make our cities free from the worst features of slums." This statement recognizes the damaging effects that framing slums in a pejorative light has had on making effective inroads into slum policy. This tacit admission also suggests that the solution to dispelling any wrong perceptions is through formalizing a policy that spells out what can actually be done to address slums. As discussed in the close reading of the plans, the wavering between whether or not "cities without slums"—a notion with the good intention of addressing poor living conditions, but in practice meant slum eradication—was possible and deserved the government's support as an explicit policy is featured in this measure of word frequency. This debate is also apparent over the course of the final four plans as the term "slum" alternately increases and decreases in frequency from plan to plan.

The Eleventh to Twelfth Plan period is characterized by a general convergence of keyword frequency, except for the term "market" which drops precipitously to pre-Sixth Plan levels. The nearly exact convergence of word frequency between "public" along with "slum" and "poor" is without precedent, however. These terms were last proximate in frequency in the Ninth Plan when they also all appeared far less frequently. The directional divergence between "market" and "government" is intuitively not surprising, but these two terms had been moving in the same direction from the Seventh Plan to the Tenth Plan, so divergence signifies a change in their relationship over the Eleventh to Twelfth Plan period. The Eleventh Plan focused heavily on further articulating the role of government as facilitator, which it formalized through the 2007 update of the 1998 National Urban Housing and Habitat Policy. Specifically, public-private partnerships (PPPs) are named as the financing and implementation tools of choice to achieve the stated goal of constructing "two million dwelling units each year." Given this, the rise of the term "private" in the Eleventh Plan is expected.

The decline in the frequency of the term "market" at the same time that "affordable" sees a large increase is largely explained by the fact that from the Eleventh Plan to the Twelfth Plan the focus appeared to shift from an appeal to outside investors and stakeholder to one that sharply laid out internal responsibilities for ensuring economic growth and addressing low-income housing. The exuberance for market determinism during the creation of the Eleventh

Plan was fueled by GDP growth that hovered just under 10 percent from 2005 to 2007 and the coincident litany of global management consulting firms marketing India as the next Asian tiger.

This groundswell of activity around affordable housing development during the formulation of the Eleventh Plan was largely spear-headed by the private sector. This was fueled by India's double-digit growth and the realization that Indian cities could serve as beacons for foreign investment. The global management consulting firm McKinsey and Company authored a report along with Bombay First that outlined a path for Mumbai to achieve world-class city status, much like nearby Shanghai. In *Vision Mumbai: Transforming Mumbai into a World-Class City* (McKinsey & Co. 2003), the report urges the city to reduce the slums population from the currently level of 50 to 60 percent Mumbai down to 10 to 20 percent in order for the city to attract investment and compete on a global level. Soon after in 2006, the Monitor Group launched Monitor Inclusive Markets (MIM) whose first foray was into low-income housing. MIM's mission was "use market-based solutions to create social change" (Monitor Deloitte 2013). Monitor's efforts helped catalyze the affordable housing market drawing private banks, private developers, and entrepreneurs into the development of housing for low-income groups.

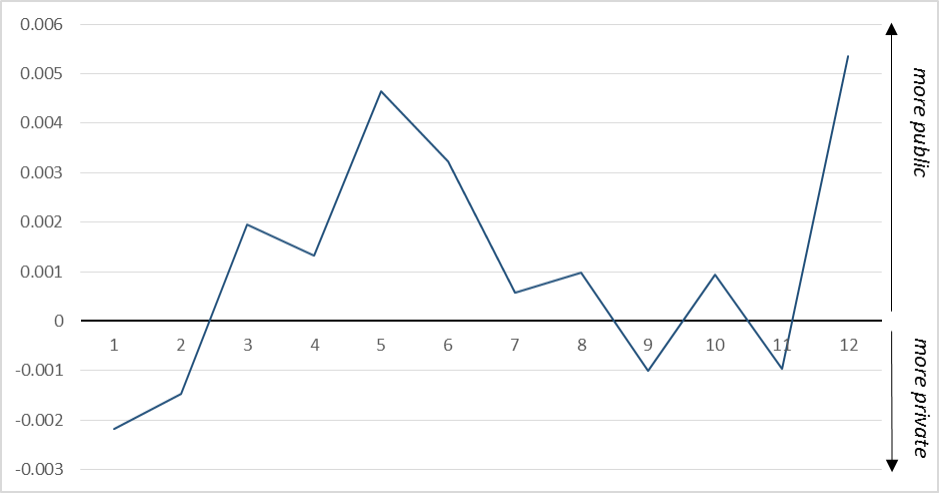
It is no wonder, then, that the use of the word "affordable" spikes. At the same time, it is as if the term "market" is no longer needed—affordability appeals to both sides of the market: low-income households understand this term as housing that is priced within their ability to pay and developers see the affordable housing opportunity as down-market, but still profitable. In comparison, the Twelfth Plan sees India weather the global financial crisis and reevaluates the ability of the government to ensure that India's urban areas are drivers economic growth in the face of stagnating growth. These reflections on the transition from the Eleventh to the Twelfth Plan are capitulated in the Planning Commission's approach paper (2011) in preparation for the Twelfth Five-Year Plan, where the framing of inclusive growth repeats as a mantra by the Government of India and is suffused in the strategies of all of its economic sectors.

As a result, "slum" also sees an aggressive re-emergence in the Twelfth Plan, where the term peaks at its largest share over any of the previous plans, likely because of RAY and the commitment of the Government of India to tackle slums in a more integrated, inclusive approach. The Twelfth Plan also presents the clearest strategy to address the heterogeneity of the housing needs across the low-income housing segment; affordable housing targets upwardly mobile low-income households that are seeking homeownership opportunities, while the Government of India develops a more comprehensive set of schemes to address slums and those not yet falling into a segment that can be served by market-based solutions. Separating these two low-income segments in terms of responsibilities for housing provision enables the Government of India to provide a much clearer message about how to address low-income housing. The muddling of responsibilities and beneficiaries sent mixed messages about more recalcitrant issues in housing such as slums. Consequently, aberrant word patterns after the Eighth Plan result in the framing of low-income housing that disrupts continuity by contradicting, reneging, or dispelling adjacent plans.

Another way to expose erratic word patterns is through scrutinizing the changes in the relationship between two terms by comparing the difference in the proportion of times they appear in the text. Figure 9 examines the difference in proportions between the terms "public" and "private." These two terms were chosen among the dichotomous pairs since they are associated with specific roles and actors in low-income housing. "Public" is a term that is assumed to occur frequently in Five-Year Plans because the documents themselves delineate the role of the government or public sector. The insertion of private, however, is conceived as a

ceding of responsibility, either because of resource constraints or because of other advantages proffered by such a partnership. These two terms are sometimes seen together, such as in reference to a public-private partnership. In choosing this pair over others, such as "government" and "market," "public" and "private" can both oppose one another or coexist. Additionally, unlike other pairings, both terms appeared in all plans except that "private" does not appear in the Fifth Plan. Figure 9 displays the differences between the use of these two terms over the plan periods. The line graph is centered around a y-axis where the differences equals zero; positive differences mean that public appears more frequently than private, whereas negative differences mean that "private" appears more frequently in a given plan.

Figure 9. Difference of Proportions between "public" and "private"



The difference in proportions portrayed in Figure 9 between "public" and "private" provides a crisp identification of the relationship between this pair of words. In the first two plans, the term "private" dominated over "public," but from the Third to the Eighth Plans "public" appeared more frequently than "private." Note that "private" was not mentioned at all in the Fifth Plan, so the difference of proportions data point for that plan should be interpreted with caution. After the Eighth Plan, the terms "public" and "private" swap places in terms of which occupies a greater proportion of the text. Interestingly, from the Eighth to Eleventh Plans, the difference of proportions alternates above and below the y-axis in nearly equal proportions (±0.001). These changes in proportions recall the same erratic behavior of the keyword frequency graph (Figure 6) that we witnessed after the Eighth Plan. By the Twelfth Plan, the difference in proportions is the largest favoring the term "public" across all plans when it exceeds 0.005; this is the largest divergence between the two terms when both appear in a document. This pattern also illustrates the uneasy sense the Government of India has toward private solutions to low-income housing, which becomes particularly pronounced in the final four plans.

3.6 Conclusion

The chapter has shown how the Government of India's motivation, conceptions, and operating environment manifests in the framing of how to best manage low-income housing. Instead of peering into a singular low-income housing policy or program, this analysis explicates the evolution of the Government of India's public discourse on low-income housing. This

discourse exposes attitudes that are relational over time, and in the end contradictory. In many senses, the housing chapters of Five-Year Plans amount to a version of the Government of India's thinking-out-loud about how to handle issues in low-income housing. The language itself switches from prescriptive and urgent in the early years to almost existential and morally conflicted in the final plans. Government of India's viewpoints on slums mirror the literature on framing slums throughout history and across continents. At times the Government of India has taken on the voice that has advocated for the eradication of slums, but at other times it has argued in defense of slums. The wicked nature of low-income housing globally assures a rich backdrop for analysis. The texts of the Five-Year Plans are especially revealing because they are changeable and organic in their messages.

The two methods of frame analysis take advantage of the Government of India's mutable stance on housing. On their own each method provides evidence of how low-income housing issues are framed. A close read reveals the storyline of low-income housing for the Government of India, where themes are laid out and content is revealed. The framing of low-income housing for each plan is easily argued through a close read. However, in order to establish inter-plan adjustments, text analysis lends credence to differences and shifts in the narrative frames. Together these two methods offer a fuller picture of the framing of individual plans set against the consideration of proximate and macro contexts pertaining to India's economic policies as well as against global contexts that are set against global housing policy paradigms.

By following the narrative through keyword patterns, the Government of India exposes where it has the most difficulty in presenting a unified message concerning housing. As the analysis bears, this is evident in the final four plans; framing is most difficult when the Government of India is tasked with assigning a role to the private sector. This discomfort and incoherent response on the part of the State is attributed to what Mukhija (2001) calls the "policy paradox" of the enabling framework for housing that reimagines the State's role rather than ceding it to the private sector. Confused or ambivalent policy frames unmask how the Government of India wends its way through policy contradictions, such as the balance of public and private efforts in low-income housing. Compared to more straightforward efforts of selecting and naming beneficiaries throughout the Five-Year Plans, the dynamic process undertaken by the State to negotiate its role in the enabling process led to frames that changed from plan to plan. Bhan (2009) asserts that post-1991 the Government shifted from the "dominant ethical model of contemporary India"(137) which were based on nationalist ideals and a focus on welfare. The internal struggle of the State in this transition are seen in the ways in which it frames the debates around how best to address low-income housing.

Frames present a tractable way for the State to articulate its own understanding of a problem and how best to act on it. At the same time that the Government of India was grappling with its role in addressing how to incorporate the private sector into development, it also launched some of the country's largest and most ambitious public-sector led plans to tackle housing and basic services for the urban poor. In 2005, the Government of India launched the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), a national program slated to distribute over US$20 billion over seven years to invest in India's 65 largest cities. The two sub-missions were 1) to upgrade and provide critical infrastructure to these cities and 2) to provide basic services for the urban poor. Then, in the Twelfth Plan, the Government of India earmarked over US$4.8 billion for RAY to reach 1 million slum dwellers. Despite the fact that these large-scale programs with large amounts of funding appeared to unequivocally represent the

Government of India's intent in addressing low-income housing, the variation in frames in these final plans is surprising.

The pernicious issue of low-income housing serves as the ideal setting through which to analyze the Government of India's policy frames over the years, but leave us with little information about the relative success or effectiveness of policies. The disconnect between these steadfast financial and policy commitments in JNNURM and RAY and the fluctuating frames do not necessarily seem to impact the implementation of the policies themselves. However, the plans show that the Government of India is still figuring out its position with respect to how to best address low-income housing given the increasing participation of the private sector. Frame analysis using the Five-Year Plans, I have shown, reveals more than what policies are set forth and uncovers the inner-workings of the Government of India's psyche and makes sense of its role in addressing low-income housing deficiencies. With the 2014 dissolution of the Planning Commission and the likely fact that the Twelfth Plan will be the last in the series of Five-Year Plans, it remains to be seen what can shed this degree of light on the Government of India's policy discourse in the future.

Chapter 4: Estimating Housing Demand in India's Slums

4.1 Introduction

The challenge of providing adequate housing for low-income households in India has confounded policy-makers since booming textile mills drew workers to urban areas in the early 1900s. Since then, rising slum populations have become visual symbols of the intractability of decent quality housing provision in urban India, despite a number of policy efforts over the years to curb slum growth. As outlined in the previous chapter, the current housing policy agenda in India, which conflates market-rate affordable housing development and the alleviation of slum growth, is emblematic of the current shift in housing policy towards solutions that rely on private sector resources and solutions. Critical to successful market solutions for low-income housing is a clear understanding of housing demand. Not only is an understanding of housing demand essential for crafting and targeting housing policies, but it also ensures these solutions meet market actors' fundamental incentives of profitability. As described in Chapter 2, the promotion of private actors in international affordable housing policy through market "enabling" (World Bank 1993) efforts were a reaction to low levels of cost recovery as well as the inability to reach enough scale to impact mounting housing needs in the urban areas of developing countries. Despite this shift in housing policy to encourage market-led affordable housing development across lower income segments, the research and literature analyzing and quantifying housing demand in developing countries, particularly that of low-income households, remains shallow.

An unclear understanding of affordable housing demand may lead to ineffective policies and diminished welfare for low-income households. This points to an apparent contradiction in market-led housing policies. Market economics dictate that in order to maximize profits, suppliers should adhere to the guiding principle of "effective demand"—a combination of consumers' willingness and ability to pay. Ignoring effective demand in housing policy for low income households creates what Mayo et al. refer to as "arbitrary normative standards"(1986: 185). These standard are put into place absent an analysis of needs, budgets, and priorities of low-income households, relying primarily on assumptions and policy-makers' biases.

Researchers have drawn further attention to this gap in the economic literature, pointing to housing behavior among low-income households that market fundamentals cannot explain: "There is much more to be learned about informal settlements, including the reasons households opt for this housing solution even when they have affordable options in the formal market"(Smolka and Biderman 2012: 830). Growing evidence shows that slum dwellers pay more per square meter than their formal market counterparts (Gulyani and Talukdar 2008), perplexing those that view slums as simply poor quality, low-amenity housing. Moreover, across income levels in the same city recent research finds that the poorest households routinely pay more per square meter of housing than higher income quintiles (Marx, Stoker, and Suri 2013). The high willingness to pay per square foot for low quality housing is explained through the theory in urban economics which finds that low-income households optimize housing location decisions by minimizing the sum of housing and commuting costs. In order to do this, households live close to the city center, but consume far less housing and at lower quality, despite the per unit cost.

However, this simple explanation is challenged by new findings that suggest low-income and slum households may attach value to non-market factors in their housing consumption and location patterns. For example, neighborhood amenities, particularly ethnic composition of

neighborhoods, can partially compensate for commuting distance in a slum dweller's welfare calculus (Kapoor et al. 2004; Takeuchi, Cropper, and Bento 2008). In the context of Mumbai's redevelopment schemes that pitted high rise, formal slum redevelopment against the low-rise vernacular of existing slums, Echanove and Srivastava (2012) describe the perceptions that low-income households have, which run counter to assumptions about formal housing as a monolithic idea. They observe that whereas high rise development "implies…the provision of basic infrastructure, maybe access to capital, low-rise slum development means economic opportunity, social networks…freedom to develop one's own habitat"(799). In light of these inquiries calling for a better understanding of housing demand of low-income households, as well as a deep foundation of literature that supports methods to tease out housing demand in formal, developed housing markets, few studies have quantified the demand for housing in urban slums.

The purpose of this chapter is to extend the literature on the determinants of housing demand in developing countries, and in particular demand by low-incomes households, focusing on two Indian cities. While the previous two chapters examined low-income housing policy in India on global and national scales, respectively, this chapter uses microdata to tease out the modalities of India's housing policy at an urban household level. Principally two research questions are addressed: 1) What does housing demand look like for slum dwellers, and is it different than housing demand for non-slum dwellers?; and 2) What aspects of housing do slum dwellers value, and how does that challenge India's prevailing low-income housing policy? This chapter begins with an overview of literature on housing demand, with a focus on methodological techniques and the challenges of assessing housing demand in developing countries. It then goes on to introduce the theoretical framework behind hedonic models and the methods of extracting implicit prices in housing markets, explaining why this technique is used here. This is followed by a discussion of the data used in the hedonic analysis, a presentation of findings, and on how the findings open up possibilities for further research.

Results of empirical analysis on the housing demand of low-income households in developing countries have broad implications in the fields of urban planning and housing policy. Not only does it illuminate the ways in which the public and private sectors craft housing solutions for low-income households, but it also has the potential to materially address the housing supply and demand gap plaguing many developing country cities. More broadly, a better understanding of what low-income households value in housing may impact where affordable housing is developed and how it shapes urbanization patterns in developing countries.[64] In Mexico, for example, housing finance reform led to the proliferation of small, tract homes located on the outskirts of cities (Monkkonen 2011; Guerra 2013). Later, when the global housing crisis struck Mexico, rampant vacancies amounting to one-seventh of the country's housing stock (OECD 2015) created a housing and urban planning crisis in peri-urban areas as well as the urban core due to poorly located developments and the too-easy availability of housing finance (Monkkonen 2014). Likewise, mass suburbanization from land reform that relocated the urban poor from valuable inner-city land and housing development on the periphery led to rising urban rents in China (Day and Cervero 2010), which contributed to higher levels of urban poverty and the ill effects of longer commute times into the center city. These examples of the impacts of housing sector policies seemingly disregard the actual housing needs and desires of the low-income households. The provision and consumption of low-income

[64] For a comprehensive review on the empirical relationship between urbanization and housing provision see Brueckner and Lall, 2014.

housing therefore, affects the planning, infrastructure provision, and spatial management of developing country cities. Understanding the demand from low-income households can help to elucidate how to develop housing policies that lead to a complementary planning agenda for cities.

4.2 Housing Demand in Developing Countries—A Review of the Literature

As developing countries continue to urbanize and the pressure on cities to house its growing number of inhabitants increases, insights regarding housing demand are critical to ensuring that these cities successfully accommodate urban growth. Most of the research on housing demand in developing country cities relies on empirical methods developed in the United States and the United Kingdom (Whitehead 1999). The literature and research on housing demand in the United States, in particular, benefited from government-sponsored programs such as the Housing Allowance Experiment and the Annual Housing Survey. These programs generated large data sets that were scrutinized by researchers who were able to develop models and test econometric techniques that furthered the understanding of housing markets in the United States (Malpezzi and Mayo 1987a; Whitehead 1999; Green 2003). These methods have slowly been adopted by policymakers and academics in developing countries where more a nuanced understanding of housing demand has the potential to significantly address the widening demand and supply gap in housing as well as the proliferation of slums.

One of the most tractable methods of understanding housing demand treats housing as a single composite good to be compared against all other goods that a household consumes. The abstract notion of a composite good allows analysts to test consumers' budget trade-offs between housing and other goods. These studies focus on income and price elasticities of demand for housing and were one of the earliest models used to estimate housing demand in the United States (Muth 1969; Mills 1967). These same studies have been applied to developing country context as well (Follain, et al. 1980; Mayo, Malpezzi, and Gross 1986; Malpezzi and Mayo 1987b), but rely on a different set of assumptions such as the fact that elastic long-run supply of housing cannot be taken as a given, and that institutional impacts in developing country housing markets are still poorly understood (Malpezzi and Mayo 1987a). The primary limitations of composite good demand analysis is that it does not allow for factors of that good to be disaggregated and analyzed separately.

Income elasticity analysis, however, has the ability to focus on singular housing factors by creating sub-samples within the universe of households sampled. For example, income elasticities of housing for renters versus owners isolates tenure as an explanation for differences in spending (Malpezzi and Mayo 1987a). Such findings show that housing demand can be summed up by three characteristics of demand elasticities in developing country cities: 1) owners have positive income elasticities that are typically less than unity; 2) renters have income elasticities that are slightly less than those of owners; and 3) price elasticities are negative and close to one. Research on housing markets in Indian cities of Ahmedabad (Mehta and Mehta 1990), Mumbai (Tiwari, et al. 1999), and Delhi (Ahmad, et al. 2013) corroborates this finding. While these demand studies offer a broad understanding of how housing markets respond to aggregate household income and expenditure, and price changes, they offer little insight into the micro-level decision making process of households given specific housing characteristics.

Discrete choice models have also been used to examine housing demand behaviors in developing countries, but in more limited ways than in developed countries' housing markets.

Discrete choice analysis utilizes random utility models, making them especially attractive to researchers interested in measuring welfare impacts of particular policies that alter housing and location attributes. Additionally, discrete choice models of housing are commonly used to simulate behavior when testing policy treatments or in predicting future growth. These models do not calculate willingness to pay, but offer probabilities that a household will choose a discrete set of housing characteristics that maximize utility. Empirical researchers initially developed discrete choice methods to analyze housing choice given data on transportation and commuting choices (McFadden 1977; Anas 1982), neighborhood characteristics (Quigley 1985), and local public services (McGuire 1974). This early literature laid the methodological foundation for numerous discrete choice studies of housing that followed, the bulk of which were used to analyze well-developed housing markets in developed countries like the United States. Readily available, large datasets enabled the extension of these models to incorporate more complex issues such as racial and ethnic sorting (Farley, Fielding, and Krysan 1997; Bayer, McMillan, and Rueben 2004; Bajari and Kahn 2005) into discrete choice specifications.

The use of discrete choice models to examine housing demand in developing countries is scarce. The lack of reliable microdata is an oft cited reason for the dearth of such studies (Malpezzi and Mayo 1987a). However, Misra (1992) undertook a comprehensive study of Rio de Janeiro's *favelas*, focusing on housing choice based on physical characteristics of housing using a standard discrete choice model. Another, more recent study, utilizes a multinomial logit model to examine housing tenure choice across Brazil, segmenting markets by urbanized areas of a city or village, non-urbanized areas of a city or village, and isolated urbanized areas (Morais and Cruz 2009). Recently, the use of residential choice models emerged as a way to examine the welfare impacts of policy interventions targeted at slums, taking advantage of available household surveys in India (Kapoor et al. 2004; Takeuchi et al. 2008). Residential choice models are also seeing a reemergence of interest in developing country studies as spatial economics and economic geography theories are increasingly integrated into research on urbanization and urban poverty.[65] These studies are premised on the fact that location and physical proximity to services and economic opportunities shape urban development and economic growth in developing country cities.

Another approach to estimating housing demand uncovers the relative demand for individual housing characteristics. This is the analytical model used in this chapter and it is derived from Rosen's (1974) two-step model to estimate implicit prices for various housing attributes.[66] Rosen defined hedonic prices as implicit prices that are revealed through the study of a market comprised of a single good with differing characteristics. Empirical analysis reveals implicit prices by determining how much households pay for the good given its composition of characteristics. Households make decisions based on their utility function, which also consists of other goods consumed, subject to a budget constraint. Rosen applies bid-rent functions to examine how much a consumer is willing to pay for alternative values of the composite good given a utility index and income. The hedonic model allows the flexibility of considering housing as a set of characteristics, rather than a composite good, enabling the discovery of which aspects of housing households value the most. This method also attempts to overcome the

[65] The World Bank's 2009 World Development Report "Reshaping Economic Geography"(World Bank 2009) popularized the use of spatial methods to understand growth, methods that have been adopted by the urban research department in World Bank.

[66] For a more recent review of the applications, methodological shortcomings, particularly those applied to developed housing markets, see Malpezzi (2008).

empirical challenges in bundling housing traits together. Household preferences for specific housing traits vary and treating housing as a composite commodity would also bundle the price errors for all commodities, biasing results.

Analysis of housing markets in developing countries face a number of limitations, pointing to the need for more carefully specified analyses. One oft cited reason is the limitation of underlying data, which are either insufficient or unreliable for meaningful estimation or are inconsistent across markets, preventing comparative study (Malpezzi and Mayo 1987a; Arimah 1992; Crane, Daniere, and Harwood 1997). As a result, such studies are confined to specific cities that have conducted detailed household surveys. Another confounding factor is the questionable application of micro-economic models to housing markets that appear to be heavily influenced by political and social or cultural institutions, which are not readily accounted for in earlier models (Megbolugbe 1986; Arimah 1992). Likewise, low-income housing markets are often viewed as non-equilibrium markets because of short supplies of land in developing country cities and the demand pressures of increasing urbanization, which prevent market clearing. However, Megbolugbe (1991) as well as Crane et al. (1997) suggest that the interactions of producers and consumers in large scale of housing transactions simulate the implied equilibrium in hedonic models. Thus analyzing low-income housing markets using hedonic methods is sufficiently appropriate and can yield valuable information on willingness to pay and overall housing values in spite of these land market anomalies.

The notion of cost recovery for programs aimed at slum rehabilitation catalyzed a wave of willingness to pay studies focusing on household preferences for various housing characteristics, particularly public services. The international housing policy thrust around improving informal settlements centered though slum upgrading and sites and services programs, forced municipalities and local policy makers to prioritize resources for the provision of public services (Sanyal 1987; Kaufmann and Quigley 1987; Pugh 2001; Buckley and Kalarickal 2006). As a result, a series of studies examined willingness to pay for specific housing attributes that policy makers felt were critical to achieving poverty reduction and ameliorating poor housing conditions in developing country cities. One of the first studies to estimate the value of informal settlements was Jimenez's (1982) estimation of informal housing prices in the Philippines which gave credence to the notion that slums had explicit value and that the costs of housing policies could be estimated. This study and subsequent findings reflected peculiarities of particular housing markets: for example, Quigley's (1982) analysis of Santa Ana, El Salvador finds that low income households benefiting from subsidy programs attach significant value to piped water; Jimenez's analysis of Manila slums found households value water and sanitation; however, his analysis of low-income housing in Davao, Philippines revealed that owner households attached a negative value to piped water (Jimenez 1984); finally, Daniere's (1994) estimates of households' willingness to pay for housing attributes in Manila and Cairo found that low-income households highly value access to water and homes located near jobs and transit. These insights both reveal the variation in terms of willingness to pay for particular housing amenities across cities and provide valuable information for crafting locally appropriate housing policies.

Megbolugbe (1986) recognizes the variation in housing markets in different cities, but asserts that hedonic analysis is appropriate, and in fact critical, to understanding housing markets in developing country cities. He introduces a "Third World specification" for the hedonic price model, which recognizes the shortcomings in classic assumptions used in hedonic analysis, but still considers them valid even though Third World housing markets are often perceived as

distorted by public sector interventions such as public housing and rent control. He argues that these assumptions concerning the distortionary effects of public sector interventions are largely overblown, pointing to the evidence that there is very little public sector housing in Nigeria (less than 5 percent) and public sector institutions are largely ineffective at influencing market transactions. He maintains, however, that the lack of understanding of market behavior in developing countries can exacerbate any market inefficiencies, which is why applying hedonic models is essential. Lodhi and Pasha (1991) make a similar case in their estimates of housing demand parameters in Karachi, Pakistan. They argue that while the Third World housing markets may in fact be affected by institutional and local peculiarities, this can only be disclosed to additional empirical studies of housing demand in more developing country settings.

Since the 1980s and 1990s, hedonic analyses were overshadowed by efforts to encourage housing investment as a means of mainstreaming the urban poor into the formal financial market. Instead of understanding broad demand studies, the shift focused on cultivating demand instruments such as housing finance for low-income households. As discussed in the Chapter 1, the 1990s and 2000s saw a focus on low-income housing literature overwhelmingly investigating the demand and repayment capacity for housing finance and housing microfinance through the enabling housing policies paradigm (Buckley 1994; Okpala 1994; Patel and Burra 1994; Pugh 1994a; Baken and Smets 1999; Smets 1999; Datta and Jones 1999; Smets 2006). In terms of specific housing attributes, tenure security remained a focus of housing demand, particularly as secure title and its function as collateral provided a pathway to accessing housing finance (Besley 1995; de Soto 2000; Field 2005). This focus was formally recognized by UN Habitat's 2005 Global Report on Human Settlements—"Financing Urban Shelter"(2005), which demonstrated the appeal of titling to international donors and policy makers as a means of unlocking capital among low income communities in the developing world.

Recently, the low-income housing literature returned to fundamental questions around demand. In part due to the resurgence of interest around urbanization and spatial growth patterns mentioned in the discussion of discrete choice models, but also because the fundamentals of low income housing demand still begs an explanation of what housing policies are best suited for alleviating the growth of slums. Newly collected datasets encouraged a spate of studies employing hedonic methods, such as Lall and Lundberg's (2008) inquiry into the willingness to pay for public services in Pune between poor and non-poor households. They find that in absolute terms, the value of public services accrue to higher income households, but the relative value—as expressed in terms of the rental value of the home—overwhelmingly shows that the value of public services accumulates to a greater degree for poor households. Meanwhile, Anselin et al. (2010) apply novel spatial techniques to hedonic methods concerning the value of improved access to water in Bangalore to uncover the effect on location specific housing values. Newer questions around what types of households are willing to pay for which housing attributes prompted Brueckner's (2013) hedonic examination of slums in Indonesia. A recent study by the Inter-American Development Bank (Piza et al. 2011) revisits the differences in housing demand between renters and owners in Brazil using a carefully specified hedonic model and new national household survey data. They find that renters have higher elasticities of demand and use these findings to argue for a renewed focus on rental housing policies.

The evolution of housing demand studies pertaining to developing country housing markets shows that their adoption of standard methods originating from studies in the Global North has empirical applicability to low-income housing market and slums. However, many questions about how generalizable these results are remain unanswered, providing wide scope

for further studies on housing demand in developing countries. Chief among these questions is whether there is a difference in factors that affect housing demand between slum and non-slum households. While considerable research uncovers differences in housing demand by tenure, and between owners and renters, scant attention has been placed on the population that is the most vexing for housing policy to address. What has also emerged is that when comparing disaggregate housing demand among sub-populations, particularly willingness to pay, hedonic methods are the workhorse analytical tool in this regard. While they pose challenges in econometric specification, hedonic methods have the potential to inform housing policies addressing slums by providing novel empirical insights that have been overlooked in the literature and among policy makers.

4.3 Theoretical Framework—An Introduction to the Hedonic Model

Given the potential of hedonic analysis to uncover housing demand through willingness to pay for housing amenities among sub-populations, this method is applied to slum and non-slum households for the remainder of this chapter. Using datasets from two cities in India, the empirical analysis adapts Rosen's (1974) two-step model to estimate the demand for housing characteristics. The general model conceives of housing as constituted by a bundle of attributes consumed by a given household. This vector of attributes is denoted as:

$$\boldsymbol{Z} = (Z_1, Z_2, \dots, Z_n) \qquad \textbf{(1)}$$

Each household's consumption is represented by the utility function represented as:

$$U = U(\boldsymbol{X}, Z_1, Z_2, \dots, Z_n) \qquad \textbf{(2)}$$

The household's utility function is maximized subject to the following budget constraint:

$$Y = \boldsymbol{X} + P(\boldsymbol{Z}) \qquad \textbf{(3)}$$

where Y is a measure of income, $\boldsymbol{X}$ is the vector of all other goods consumed by the household, and $P(\boldsymbol{Z})$ is the hedonic price function.

The first stage hedonic model estimation begins with estimating the hedonic price function, $P(\boldsymbol{Z})$. This begins with identifying the coefficients for housing attributes by regressing a measure of price on the full set of housing characteristics. The results reveal the marginal implicit prices for each housing characteristic. From there, the willingness-to-pay for each characteristic is determined by taking the partial derivatives of $P(\boldsymbol{Z})$ with respect to each housing characteristic.

The best functional form of hedonic price functions is heavily debated in the literature, and estimation results can be highly sensitive to functional form (Blomquist and Worley 1981). Cropper et al. (1993) and Diewert (2003) demonstrate that linear hedonic price functions produce the largest errors. Rosen (1974) and Harrison and Rubenfeld (1978) explain that the hedonic function is likely non-linear through a more intuitive understanding of the ways in which housing attributes relate to one another and thus cannot be unbundled and estimated through linear methods. Arimah (1992) uses a double-log functional form to estimate the hedonic price function. His choice rests on a variety of factors, including the interpretation of the relationship, level of explanatory power (R^2), significance and stability of coefficients, and what the implicit prices will be used for (643).

The second stage estimates the demand functions for individual housing characteristics by employing the marginal implicit prices derived from the hedonic price function as well as exogenous quantity and price vectors. Demand for each housing characteristic is thus specified as:

$$Z_i = f(Y, P_i, \boldsymbol{P}, \boldsymbol{T}) \qquad \textbf{(4)}$$

where Z_i is the quantity of the ith attribute consumed, Y is the measure of household income, P_i is the price of the ith attribute, $\boldsymbol{P}$ is the price vector of substitutes and complements, and $\boldsymbol{T}$ is the vector of taste-determining variables. This specification is widely used in hedonic analysis, however, methodological issues arise from Rosen's method, both of which are much debated in the literature.

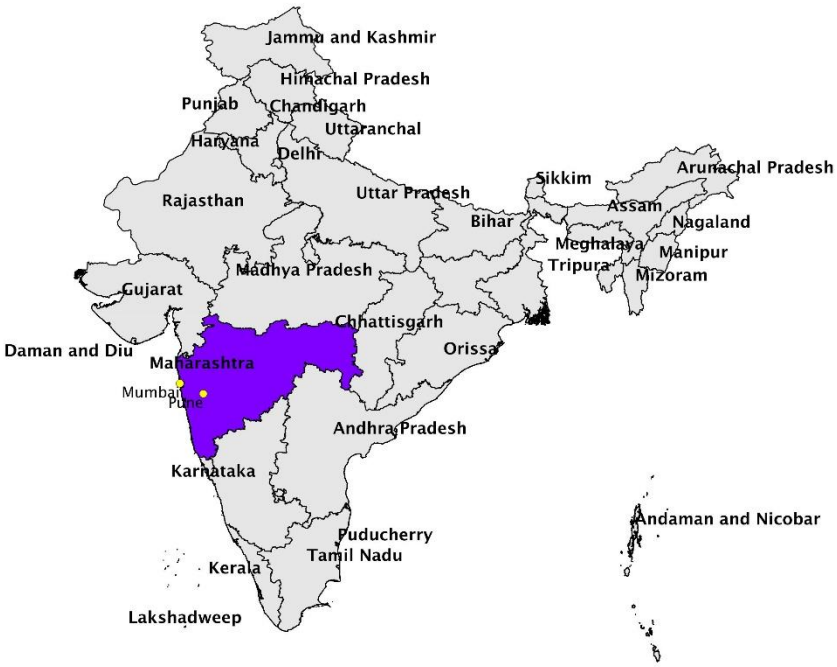
The primary issue with the model is simultaneity bias. Under circumstances of simultaneity bias, ordinary least squares (OLS) estimation will yield biased and inconsistent parameters. Specifically, marginal prices are endogenous to demand for attributes because they are contingent on the quantity of attributes consumed. This issue manifests in two ways. The first is that it poses an identification problem because of this relationship. The second is that marginal prices will be biased (i.e. the gradient of the hedonic price function will be estimated with error) (Cropper et al. 1993). One such correction for simultaneity bias is by instrumenting for marginal prices, which are not correlated with the error term (Linneman 1980; Quigley 1982; Follain and Jimenez 1985; Crane et al. 1997). Crane et al. (1997) use current income, permanent income, and household size as instrumental variables. Cropper et al. (1993) observe that instrumental variable estimation is difficult with data from a single market. Arimah (1992) points out that the literature suggests using statistical tests such as the Hausman test to evaluate the estimator may not be conclusive to detect simultaneity bias. The use of instrumental variables, in general, suffers from the more pervasive issue of selecting good instruments. These issues related to functional form and specification used in this chapter will be addressed in the section 4.5 Findings and Discussion.

4.4 Description of Data

This analysis focuses on the cities of Mumbai and Pune in the western state of Maharashtra (see Figure 10). This research is situated in two cities in the same state to control for state level development control regulations, which shape the zoning and land use criteria for urban areas. In this case they fall under the Maharashtra Town and Country Planning Act of 1966. Slum policy in Maharashtra is governed by the Maharashtra Slum Areas (Improvement, Clearance, and Redevelopment) Act, 1971. This allows me hold variation in local planning peculiarities that affect housing markets and slum policy constant, focusing instead on the housing consumption behavior of households. However, the demographics of the cities differ substantially. Mumbai is the most populous city in India with nearly 12.5 million people, while Pune is the ninth most populous city in India with over 3 million inhabitants.[67] In the spirit of increasing the number of empirical case studies of housing demand in developing country cities, examining two cities in India where data are available can uncover differences in housing market conditions between slums and non-slums.

[67] Census of India, 2011.

Figure 10. Map of India and Case Study Cities

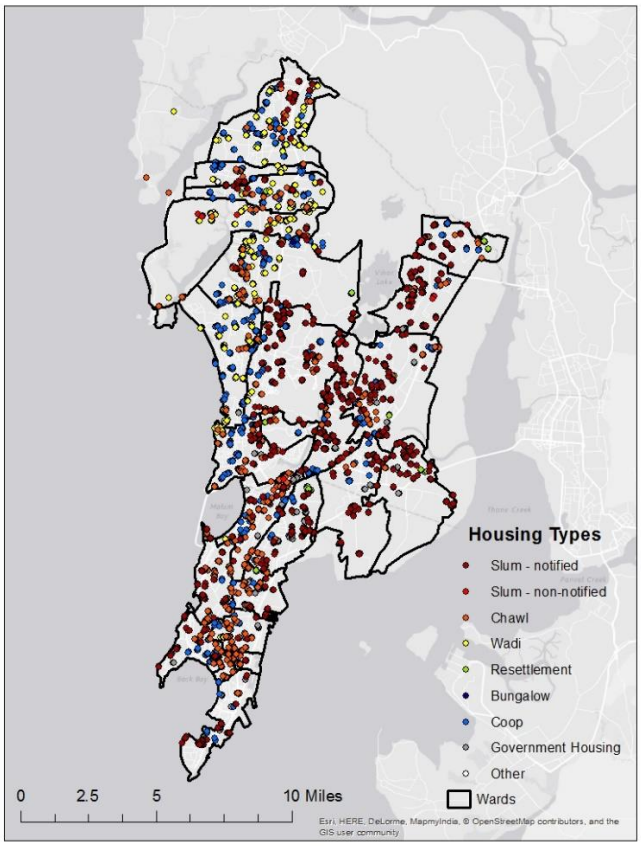


The state of Maharashtra is also an ideal site of analysis to examine the housing dynamics of slums as it contains the largest volume of slum dwellers of any state in India according to the 2011 Slum Census of India. Slum populations comprise more 35 percent of the population in Pune and more than 50 percent in Mumbai.[68] As a result, these cities have been the sites of extensive planning efforts around slums, which have produced a rich array of data for analysis. Slum Rehabilitation Agencies (SRA) in Mumbai and Pune are the state agencies that keep records of slum areas and administer the Slum Rehabilitation Scheme (SRS). Maharashtra is unique in that the SRS is one of the only slum-specific schemes that involve the private sector directly. SRS allows private developers to build on slum areas if they re-house slum dwellers affected by the development project in new housing developments.[69] In many cases, private developers also receive development bonuses to participate in slum redevelopment and many high-profile luxury developments in prime locations in Mumbai were made possible because developers built on slum sites.[70] This program is particularly successful in Mumbai due to the limited supply of land in the island city and the associated high cost of developable property. In addition to one-off luxury projects, the incentive for private developers to participate in slum redevelopment also resulted in large-scale plans. In 2004, for example, American-trained architect Mukesh Mehta's Dharavi—India's largest contiguous slum, located in the heart of

[68] The Pune estimate comes from a study conducted by the NGO Mashal http://timesofindia.indiatimes.com/city/pune/32-5-population-of-city-lives-in-slums/articleshow/7315211.cms, and the Mumbai estimate is reported by the Slum Census of India, 2011.
[69] For more details on the mechanisms and politics of the slum redevelopment scheme in Mumbai, see Singh and Das (1995), Mukhija (2001, 2003), and Nijman (2008).
[70] See the case of Imperial Towers mentioned in Chapter 2.

India's financial capital—redevelopment plan was officially adopted by the Government of Maharashtra (GoM), and Metha is appointed as an advisor to GoM. Mehta's plan entails subdividing Dharavi into sectors whose redevelopment would be handled by the highest bidders, culled from a variety of international development firms.

Figure 11. Map of Mumbai, Location of Surveyed Households



Source: Census of India, 2001; World Bank, 2004

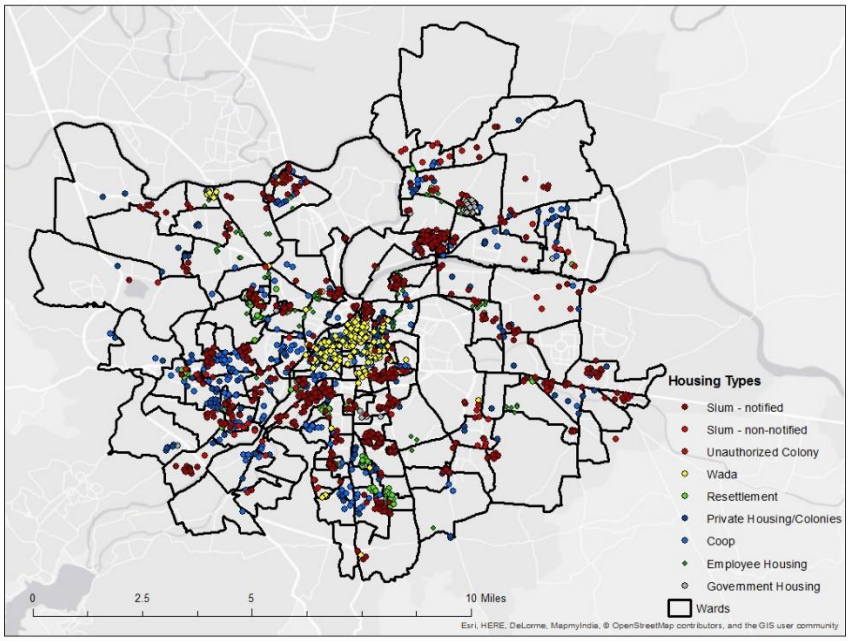
The primary data used here are two geocoded[71] household surveys from Mumbai and Pune (see Figures 11 and 12) along with ward-level Census geodata. Both household surveys contain large housing components and use a citywide representative sampling frame. These data were collected just before the push for market-led affordable housing development aimed at reducing slum populations as discussed in the previous chapter. The World Bank and the Society for Development (SDS) collected the Pune data as part of a four-city survey to identify critical issues in urban management. SDS staff and field enumerators collected data from 2,849 households (33 percent of those households lived in slums) within the bounds of the Pune Municipal Corporation (PMC) from September to October 2002.

The World Bank administered surveys to 5,024 households (over 37 percent of those households lived in slums) within the Mumbai City and Suburban districts from October 2003 to

[71] The location data (longitude and latitude coordinates) have been jittered so that households are randomly scattered within a 150 meter buffer of their actual location. This is to protect the identities of the surveyed households, while minimizing errors from jittered distances.

February 2004. The purpose of the Mumbai survey was to examine the travel and residential location behavior of households. Representative household survey data are rare in developing country cities due to the cost and time needed to collect a large sample. In India, house-listing microdata from the national Census is not available without special permission. Thus, these unique household survey data offer an opportunity to conduct comparative research on housing markets across two cities.

Figure 12. Map of Pune, Location of Surveyed Households



Source: Census of India, 2001; World Bank, 2003

The 2001 Census data available at the ward level contains limited socio-demographic information such as population count, caste, and literacy rate. These variables will be used as environmental amenities, focusing on the relative similarity of the share of neighboring households in terms of demographic composition. While wards in each city are quite large in terms of geographic areas as well as population, this is the smallest geographical unit available in the Census. The introduction of these non-market variables into analysis also allows us to control for ward-level characteristics that may be correlated with price, but are otherwise difficult to measure. In the case of Mumbai, I am able to match the variables with the wards defined in the survey. Specifically, I include variables for population density, percent of scheduled caste/tribes (the lowest caste in India), and percent illiterate. I hypothesize that these variables are correlated (negatively to hedonic prices) but are not otherwise captured in the housing amenities. In addition to these main Census variables, I include the slum population of each ward in Mumbai. Mumbai is the only city in which slum population by ward is readily available. For Pune, however, the wards in the survey do not correspond with those in the 2001 Census. As a result, I use ward-level fixed effects to control for ward-level amenities that could not be identified in the data. Table 3 describes the market variables used in the Pune and Mumbai datasets, which represent housing attributes of interest. The non-market variables apply only to Mumbai.

Table 3. Variables of Interest Used in Hedonic Analysis

Market Variables			
Variable	*Type*	*Description*	*Source*
Imputed Rent	Continuous	Market rent in rupees, monthly (for owners)	Household survey
Actual Rent	Continuous	Actual rent in rupees, monthly (for renters)	Household survey
Size	Continuous	Size of living space in ft.^{2}	Household survey
Rooms	Continuous	Number of habitable rooms	Household survey
Floor	Dummy	Floor made of permanent materials (e.g. concrete, tiles)	Household survey
Walls	Dummy	Walls made of permanent materials (e.g. concrete, fired bricks)	Household survey
Roof	Dummy	Roof made of permanent materials (e.g. brick, stone, concrete)	Household survey
Kitchen	Dummy	Kitchen is separate	Household survey
Toilet	Dummy	Toilet in house	Household survey
Bathroom	Dummy	Bathroom is separate	Household survey
Water	Dummy	Piped water in house	Household survey
Non-Market Variables (Mumbai only)			
Density	Continuous	Population per square kilometer in ward	Census
Slum pop.	Continuous	Percentage of slum population in ward	Census
Caste	Continuous	Percentage of population in scheduled caste/tribe in ward	Census
Illiterate	Continuous	Percent of population that is illiterate in ward	Census

4.5 Findings and Discussion

4.5.1 Descriptive Analysis

Initial descriptive analysis using the Mumbai and Pune data shows a conspicuous difference between household characteristics, housing characteristics, and the quality of housing facing slum and non-slum households.

Household characteristics for Mumbai households (Table 4) covered in the survey differ between both renters and owners as well as between slum and non-slum residents. Household size was on average higher for owners than for their renter counterparts. The percentage of female household heads was also higher for owners—for those in slums this was more than double the percentage of renters, but the percentage of those married was higher for renters than their owner counterparts. Owners across slums and non-slums tended to be more educated. While over 90 percent of household heads across the sample categories were employed, renters fared slightly better than owners and slum owners were more likely to be employed than slum renters. Unsurprisingly, renters are much more mobile, with around half of slum and non-slum renter households having lived in the same place for more than 10 years; this percentage exceeds 80 for slum and non-slum owners. Income by sub-groups differentiates itself across slum and non-slum household lines. Over 90 percent of both slum owner and renter groups earned ₹10,000 or less a month compared no more than 74 percent of non-slum owner and renter households.

Table 4. Mumbai Household Characteristics (Household Head)

Variable	*All Households*	*Owners*		*Renters*	
		Slum	Non-Slum	Slum	Non-slum
Total observations	5,024	1,596	2,115	350	920
Age (mean years)	40.44	39.41	42.26	35.47	39.89
Household size (mean)	4.37	4.71	4.25	4.13	4.10
Female (%)	4.51	5.64	4.82	1.71	2.93
Married (%)	90.83	89.16	90.17	93.71	94.02
Some high school or higher (%)	65.16	54.57	77.54	42.86	63.15
Employed (%)	95.44	96.74	92.91	97.71	98.15
Lived in same place >10 years (%)	75.81	85.28	81.56	46.00	56.30
Income[72] <₹10,000/mo. (%)	75.13	90.36	63.20	96.28	73.48

Household characteristics for Pune (Table 5) also review differences between owners and renters and slum and non-slum households. Average household size was larger for owners than their renter counterparts, but were not systematically different between slum and non-slum households. Renter household size might also be biased upwards based on the fact that renters might share their housing units with others who are unrelated to them but still be counted as a household since sampling was performed at the housing unit level. Owners tended to be older than their renter counterparts and were more likely to be married. While more non-slum household heads for both renters and owners had at least some high school education—for owners the percentage for non-slum dwellers was nearly three times the percentage of slum dwellers—more slum dwellers were employed than non-slum dwellers. A far greater percentage of household heads surveyed in Pune had lived in the same place for more than 10 years than Mumbai households. In terms of owners, over 97 percent of slum and non-slum household heads have resided in the same place for over a decade, while the percentage hovered in the high 80s for both sub-groups of renters. In the Pune sample, consumption is used as a proxy for income; this choice will be discussed further later in this chapter.

Table 5. Pune Household Characteristics (Household Head)

Variable	*All Households*	*Owners*		*Renters*	
		Slum	Non-Slum	Slum	Non-slum
Total observations	2,849	932	1,067	128	722
Age (mean years)	48.86	46.46	52.22	43.25	47.73
Household size (mean)	5.05	5.48	4.94	4.66	4.72
Female (%)	11.56	12.27	10.18	11.82	12.86
Married (%)	85.39	86.19	86.26	82.73	83.04
Some high school or higher (%)	46.27	22.87	65.81	30.00	51.96
Employed (%)	72.28	76.46	66.40	81.82	74.29
Lived in same place >10 years (%)	95.09	97.35	97.34	87.28	88.93
Consumption < ₹10,000/mo. (%)	81.05	90.45	66.92	95.31	87.26

[72] In November 2003, while the data was being collected, ₹10,000 equaled US$221.

Housing characteristic descriptive statistics (Tables 6 and 7) are consistent with prevailing assumptions about slums: slum housing is smaller—both in terms of average number of habitable rooms as well as average square feet, is less likely to be constructed of permanent materials, and is less likely to have in-house amenities such as a toilet or piped water. Some of the most glaring differences arise in terms of housing quality or available amenities. For example, only 12 percent of slum households in Mumbai have a permanent roof, while nearly 61 percent of non-slum household do. In Pune, over 53 percent of non-slum households having a permanent roof compared to 15 percent of slum households. A scant 5.4 percent of slum households in Mumbai have a toilet in their house, whereas 49 percent of non-slum households have one. The difference is slightly less stark in Pune, but the gap between those with in-house toilets and those without are apparent between slum and non-slum households.

Table 6. Select Housing Characteristics in Mumbai by Slum and Non-Slum Households

Variable	*All households*	*Slum households*	*Non-slum households*
Average number of rooms (median)	1.5 (1)	1.2 (1)	1.6 (1)
Average size, sq. ft. (median)	258.3 (200)	172.6 (150)	313.3 (250)
Permanent floor (% of households)	96.5	97.5	95.9
Permanent walls (% of households)	95.9	92.3	98.3
Permanent roof (% of households)	41.6	12.1	60.6
Separate kitchen (% of households)	54.4	36.8	65.7
Toilet in house (% of households)	32.0	5.4	49.0
Separate bathroom (% of households)	61.1	38.3	75.7
Piped water in house (% of households)	69.0	49.4	81.6
Own home (% of households)	74.5	82.0	69.7
Road accessible (% of households)	81.3	78.6	83.0
Footpath accessible (% of households)	30.3	20.8	36.3
Walk to work (primary mode)	72.2	80.2	67.1
Average commute time in minutes (median)	24.9 (15)	24.5 (15)	25.0 (15)
Average monthly market rent in rupees (median)	2,799.2 (1,200)	1,729.7 (1,000)	3,484 (2,000)
Average actual monthly rent in rupees (median)	807.60 (240)	498.49 (500)	925.32 (220)
Price/sq. ft. (market rent/size of unit)	15.64	10.85	18.64
Price/sq. ft. (actual rent/size of unit)	4.06	4.53	3.87

These findings are not atypical, but are used to show the relative difference between slum and non-slum housing. Surprisingly, the majority of households in Mumbai are homeowners, and an exceptionally high 82 percent of slum dwellers also consider themselves owners. This is likely the result of the status of their squatter settlements, where the households no longer fear eviction, but do not hold legal title (Baker et al. 2005). This is consistent with the findings from Pune, where nearly 88 percent of slum households claim to own.[73] Despite the high percentage of slum dwellers who claim they own their dwelling units in both Mumbai and Pune, a deeper look at the data reveals that few actually have legal title. The Pune data contains a variable that asks about title type. A look at this variable finds that 577 (88.9 percent) of the 649 slum households that claim to own their homes do not possess legal title. Of the 72 that do possess

[73] Note that ownership here is simply a binary answer of "yes" or "no" and does not capture the continuum of tenure security, which can contribute to how a home is valued. See Nakamura's (2014) case study on Pune slums and the role of political intervention in shaping slum dweller's perceptions about housing tenure.

legal title, only five have full legal title and most (63.9 percent) have what is termed as *khaata*, which in Hindi and Marathi translates to "account." Technically, this is a form of ownership that can be claimed by those who hold and pay into municipal property tax account. While it does not confer legal title, *khaata* is widely recognized as a *de facto* form of ownership in many parts of India. Among non-slum dwellers in Pune, however, over 67 percent of all owners have full legal title.

Table 7. Select Housing Characteristics in Pune by Slum and Non-Slum Households

Variable	*All households*	*Slum households*	*Non-slum households*
Average number of rooms (median)	2.1 (2)	1.7 (2)	2.3 (2)
Average size, sq. ft. (median)	420.1 (280)	249.5 (200)	521.2 (400)
Permanent floor (% of households)	72.6	67.3	75.7
Permanent walls (% of households)	87.2	76.0	93.9
Permanent roof (% of households)	39.2	15.0	53.5
Separate kitchen (% of households)	47.0	25.8	59.7
Toilet in house (% of households)	43.4	16.4	59.6
Separate bathroom (% of households)	63.1	48.1	72.1
Piped water in house (% of households)	55.4	60.8	52.2
Own home (% of households)	70.4	87.9	59.9
Walk to work (primary mode)	30.7	36.7	26.9
Average commute time in minutes (median)	23.9 (20)	25.7 (20)	22.8 (15)
Average monthly market rent in rupees (median)	2,118.43 (1,000)	887.32 (1,000)	2,913.34 (1,500)
Average actual monthly rent in rupees (median)	456.43 (200)	383.18 (300)	470.08 (150)
Price/sq. ft. (market rent/size of unit)	5.62	4.01	6.66
Price/sq. ft. (actual rent/size of unit)	2.05	2.74	1.92

In general, the imputed market rent reported by owners is much lower for slum households whereas slum dwellers pay more per square foot than non-slum dwellers. Appendix F, Tables F-1 and F-2 provides full breakdowns of housing characteristics, and for a discussion and analysis of the reliability of using self-reported home values, see Appendix G. In terms of imputed market rent, slum housing is valued at almost 42 percent less than non-slum housing in Mumbai and 40 percent less in Pune, suggesting that slum dwellers do not see inherent value in living in slums, despite paying more per square foot than higher quality housing in the market.[74] The variable used here responds to the question: Can you tell me what a house (apartment) like yours in this neighborhood would rent for each month?[75] This suggests that *prima facie*, slums as a housing type are not highly valued. However, by calculating actual rent paid by renter households per square foot the amount of rent slum dwellers pay is significantly more than their non-slum counterparts. This difference amounts to Mumbai slum dwellers paying 17 percent more in actual rent per square foot, and in Pune this premium is nearly 43 percent higher for

[74] Note that the discrepancy between the per square foot rent in terms of actual and imputed rent can be attributed to a number of factors. First, those that pay actual rent (non-owners) may only have access to an entirely different housing stock. Moreover, imputed rents may be inflated due to aspirational premiums attached to how much a household hopes that their owned unit would rent for, accounting for possible overestimates in housing value.

[75] While it may seem redundant to use "imputed rents" to estimate hedonic prices, the idea here was to test whether assumptions about what is valued in the market are consistent between slum and non-slum households. Rental data exists for those who do not own their homes, but imputed, or "market" rents are available for the full sample. See Appendix G for a full discussion of this issue.

slums. This is consistent with two other studies in Nairobi that found slum dwellers spend a disproportionate amount in rent per square foot, much more than other higher income residents in the city (Gulyani and Talukdar 2008; Marx, et al. 2013). Despite long standing arguments that slums provide a critical affordable housing solution in the face of market failures that prevent an adequate supply of housing (in India, see Gandhi 2012), the high cost per square foot for rent in slums remains a startling finding.

While examining the descriptive differences between slums and non-slum households provides a broad sense of the kind of housing characteristics these two groups face, a more nuanced analysis further separates them by renters and owners (see Appendix F). This helps to isolate the different price terms, both imputed and actual rents, and offers a detailed look at how ownership breaks down across slum and non-slum households. In Mumbai, slum owners enjoy only a few housing characteristics more than their renter counterparts. A greater percentage has permanent walls, a separate kitchen, and more square footage. However, more slum renters have a permanent roof and enjoy greater accessibility to roads and footpaths. Otherwise they are rather similar in other housing characteristic measures. Among non-slum households, a similar pattern holds. A higher percentage of non-slum renters have a permanent roof and enjoy greater accessibility to roads and footpaths than their slum counterparts.

The data from Pune show greater differences between owners and renters across housing amenities. Worth noting, however, is that the sub-sample of slum renters is far smaller than any other group; just 128 households in the Pune sample rent in slums. Again, owners from each sub-group have larger homes in terms of square feet than their renter counterparts. More slum owners have higher quality, permanent housing characteristics across all variables than slum renters. This is also true of non-slum owners versus non-slum renters. The Pune data contrasts with Mumbai's since Mumbai households have more parity between renters and owners among both slum dwellers and non-slum dwellers.

4.5.2 First-Stage Hedonic Regression

As the first stage in examining the relationship between various housing characteristics, neighborhood characteristics, and amenities to price, I employ a log-log regression (see Appendix H for an explanation of the choice of functional form). The price term used here depends on whether or not households own or rent and separate regressions are run as a result. For owners the price term is the imputed rent, the only variable that captures price for owners. For renters, the price term used as the regressand is actual rent. For a full examination of the price term used in the Mumbai and Pune samples, see Appendix G. The following is a general equation for the multivariate regression used to extract coefficients for Mumbai:

$$\ln(P) = \beta_0 + \beta_1(\ln(A)) + \beta_2(R) + \beta_3(\boldsymbol{X}) + \beta_4(D) + \beta_5(C) + \beta_6(L) + \beta_7(S) + \varepsilon \qquad (5)$$

Where:

P = price

A = area of habitable space in home

R = number of habitable rooms

$\boldsymbol{X}$ = vector of housing and neighborhood amenity dummies

D = population density in each ward

C = share of scheduled caste/tribe in ward

L = share of illiterate population in ward

S = slum population in ward

The specification for Pune's hedonic regression is slightly different since in the absence of ward specific amenities, such as those present in the Mumbai data, it employs a fixed effects estimator to correct for omitted variable bias. As a result, instead of ward specific variables, ward fixed effects are included in order to account for unobserved neighborhood amenities not captured by the survey data. Wards are included in the regression as a dummy variables for each ward. In the regression this is formally represented by vector $\boldsymbol{F}_w$ which turns on the dummy variable using the indicator variable **1** for unit i for its jth element.

$$\ln(P) = \beta_0 + \beta_1(R) + \beta_2(\boldsymbol{X}) + c\boldsymbol{F}_w + \varepsilon \qquad (6)$$

Where $\boldsymbol{F}_{w,j}$ = **1**($i = j$) and:

P = price

R = number of habitable rooms

$\boldsymbol{X}$ = vector of housing amenity dummies

$\boldsymbol{F}_w$ = vector of ward fixed effects

c = ward effects

The purpose here is to identify the variables that drive both imputed and actual rents and how they differ across slum and non-slum households. Tables 8 and 9 present the results from four regressions: column (1) reports results from slum owners; column (2) reports results for non-slum owners; column (3) reports the results for slum renters, and column (4) reports the results of non-slum renters. The variables are entered as described in Table 3. For regression results for the full sample and aggregated slum and non-slum samples see Appendix I.

Table 8. Regression Estimates for Hedonic Price in Mumbai—Adjusted Model (dependent variable: log market rent for owner; log actual rent for renters)[76]

Variable	(1) Slum owner	(2) Non-slum owner	(3) Slum renter	(4) Non-slum renter
Size of housing unit (log sq. ft.)	0.269*** (0.040)	0.270*** (0.033)	0.042 (0.061)	-0.096 (0.112)
Number of rooms	0.070* (0.032)	0.132*** (0.025)	-0.016* (0.006)	0.248** (0.082)
Permanent floor	0.131 (0.082)	-0.065 (0.063)	0.500*** (0.128)	-0.173 (0.280)
Permanent walls	0.404*** (0.053)	0.289* (0.113)	0.126 (0.068)	0.862*** (0.260)
Permanent roof	0.129** (0.046)	0.493*** (0.037)	-0.028 (0.051)	0.076 (0.102)
Separate kitchen	0.004 (0.034)	0.054 (0.040)	0.225*** (0.062)	0.442*** (0.110)
Toilet in house	0.344*** (0.062)	0.296*** (0.041)	-0.158 (0.086)	0.374*** (0.101)
Separate bathroom	0.173*** (0.033)	0.101* (0.041)	0.169*** (0.048)	0.011 (0.114)
Piped water in house	0.094*** (0.023)	0.106* (0.041)	0.059 (0.040)	0.126 (0.132)
Percent of slums in ward	-0.520*** (0.094)	-0.138 (0.078)	-0.581*** (0.128)	1.122*** (0.195)
Percent illiterate in ward	0.917* (0.394)	0.128 (0.633)	1.860** (0.609)	-4.679*** (1.291)
Percent scheduled caste/tribe in ward	-0.048 (0.540)	-0.746 (0.694)	1.096 (1.030)	-23.38*** (1.679)
Pop. density of ward (people/km^2)	0.000* (0.000)	0.000* (0.000)	-0.000 (0.000)	-0.000*** (0.000)
Group 1	-	-	-2.159*** (0.062)	-
Intercept	4.786*** (0.226)	5.142*** (0.233)	5.623*** (0.340)	7.774*** (0.614)
R^2	0.260	0.506	0.927	0.438
Observations	1,575	2,091	321	877

Standard errors in parentheses

Asterisks denote *p <0.05; **p<0.01; ***p<0.001

The results from the first-stage regression show the significant influence of housing size, quality, and amenities on price across all regressions, particularly for Mumbai's owners. In particular, for Mumbai slum owners the size of living space, having permanent walls, a separate kitchen, an in-house toilet, a separate bathroom, and piped water are characteristics that positively influence the price of the house in a highly statistically significant manner. The coefficients of these variables for non-slum owners also all carry statistical significance, but to varying degrees; all of these significant coefficients are also positive, as expected. When I first used the specification from equation (5) regression (3) resulted surprising coefficient estimates for slum renters. For example, the coefficient for house size was highly significant and negative.

[76] See Appendix J for the results for regression (3) using the specification in equation (5). This appendix explains the model used that includes Group 1 to correct for omitted variable bias.

An explanation for this negative relationship between size and price could be that larger slum renter housing could be in less desirable or precarious locations that allow for larger units but are otherwise less desirable, pointing to a case of omitted variable bias. Appendix J shows the results for regression (3) based on the original specification (Table J-1), explores the data in detail, and finds that bias is introduced in the model. The Appendix goes on to identify the cause of this bias and correct for it; Table 8 represents the updated regression (3). From this point forward any other calculations that rely on the point estimates from the first-stage hedonic regression will use the model correcting for omitted variable bias outlined in Appendix J and whose results appear in Table 8.

Table 9. Regression Estimates for Rent in Pune (dependent variable: log market rent; log actual rent for renters)

Variable	(1) Slum owner	(2) Non-slum owner	(3) Slum renter	(4) Non-slum renter
Size of living space (log sq. ft.)	0.372***	0.563***	-0.053	0.265*
	(0.040)	(0.036)	(0.354)	(0.109)
Number of rooms	0.027	0.083***	-0.059	0.005
	(0.014)	(0.023)	(0.099)	(0.044)
Permanent floor	0.038	-0.136*	0.022	0.088
	(0.040)	(0.064)	(0.291)	(0.117)
Permanent walls	0.155***	0.134	0.147	0.277
	(0.046)	(0.101)	(0.334)	(0.196)
Permanent roof	0.214***	0.199***	0.346	0.473***
	(0.055)	(0.054)	(0.585)	(0.138)
Separate kitchen	0.035	0.157**	0.216	0.237
	(0.047)	(0.059)	(0.414)	(0.143)
Toilet in house	0.333***	0.280***	0.706	0.506**
	(0.056)	(0.063)	(0.619)	(0.167)
Separate bathroom	0.083	-0.052	0.081	0.159
	(0.043)	(0.073)	(0.339)	(0.142)
Piped water in house	0.061	0.026	0.166	0.038
	(0.041)	(0.049)	(0.322)	(0.146)
Intercept	4.069***	3.367***	5.537**	3.050***
	(0.193)	(0.209)	(1.673)	(0.570)
Ward fixed effects	Yes	Yes	Yes	Yes
F-statistic	2.02	5.38	1.69	5.95
R^2	0.378	0.462	0.059	0.168
Observations	907	1,019	127	713

Standard errors in parentheses

Asterisks denote *p <0.05; **p<0.01; ***p<0.001

In Pune, there are fewer variables that hold statistical significance, but more similarities between the owner sub-groups. Both slum and non-slum owner regressions reported significant, positive coefficients for size of living space, permanent roof, and having a toilet in home. The slum renter regression did not yield any statistically significant estimates. The small sample size might mean that this regression has little explanatory power and should be used with caution moving ahead in the hedonic analysis. The results for regression (4) shows non-slum renters reporting the same significant variables as owners but lower significance levels for size of living space and having a toilet in the home. Likewise, the value of piped water in the house is highly significant and negative. Findings on the influence of housing characteristics in developing

country cities are reflected in Gulyani et al.'s (2008) study of slums in Nairobi, Megbolugbe's (1986) study of housing traits in Jos, Nigeria, and Crane et al.'s (1997) study of Bangkok and Jakarta, where housing characteristics were particularly influential for house prices among renters.

In Mumbai, the presence of ward characteristic variables shows that characteristics that are traditionally seen as negative tend to systematically correlate negatively with price, particularly for renters. Coefficients for population density and the percent of a ward that is illiterate or low caste is negatively correlated with price and statistically significant for both groups of renters. Surprisingly, the coefficient for percentage of slums in a ward is highly significant, large, and positive for non-slum renters. For slum renters, the significance drops off for percent of slums in ward and percent illiterate. This is likely attributed to the fact that the likelihood of a household living in a slum is likely dependent on the slum make-up in a ward. Interestingly, the percent of slum in ward variable is negative and highly significant for slum owners. This might be also explained by the fact that slum owners who estimated their own house rent were sensitive to the fact that the concentration of slums in the geographic area would impact price.

4.5.3 Marginal Implicit Prices

Using the results from the first stage regression, marginal implicit prices, which will be used in the second stage analysis, were calculated for each household. The predicted values were first transformed[77] so that the prices can be read in rupees, rather than logarithms and the marginal implicit prices were determined by taking the partial derivative of the hedonic price function with respect to a given housing characteristic Z as follows:

$$P_{Z_i} = \partial P_i / \partial Z_i \qquad \textbf{(7)}$$

The sample means of the marginal implicit prices for Mumbai and Pune are reported in Tables 10 and 11. Marginal prices represent the household's willingness to pay for each additional unit of a particular housing or neighborhood amenity. They are derived here to be used in the second stage of the hedonic model where marginal prices will be used as endogenous price and quantity vector in estimating housing demand.

Table 10. Mean Marginal Implicit Prices, Mumbai

	Marginal Implicit Price (rupees)			
	Owners		*Renters*	
Variable	*Slum*	*Non-Slum*	*Slum*	*Non-Slum*
Size (sq. ft.)	0.82 (0.25)*	0.90 (1.14)*	0.11 (0.04)	-0.67 (0.44)
Rooms	78.78 (27.42)*	419.17 (244.89)*	-9.08 (6.25)*	260.88 (264.65)*
Floor	147.45 (51.32)	-206.41 (120.59)	283.87 (195.60)	-181.98 (184.62)
Walls	454.72 (158.27)*	917.74 (536.16)*	71.54 (49.29)	906.75 (919.89)*
Roof	145.19 (50.54)*	1,565.55 (914.63)*	-15.90 (10.95)	79.95 (81.10)
Kitchen	4.50 (1.57)	171.48 (100.18)	127.74 (88.02)*	464.94 (471.68)*
Toilet	387.18 (134.76)*	939.96 (549.15)*	-89.70 (61.81)	393.42 (399.12)*
Bathroom	194.72 (67.77)*	320.73 (187.38)*	95.95 (66.11)*	11.57 (11.74)
Water	105.80 (36.82)*	333.43 (194.80)*	33.50 (23.08)	132.54 (134.46)
Slum pop	-5.85 (2.03)*	-4.38 (2.56)	-3.29 (2.27)*	11.80 (11.97)*

[77] To correctly exponentiate the predicted values, the standard transformation adjustment of $exp(\sigma^2/2)$ is used.

Density	0.002 (0.001)*	0.005 (0.003)*	0.0003 (0.0002)	-0.020 (0.020)*
Illiterate	10.32 (3.59)*	4.03 (2.35)	10.06 (7.27)*	-49.22 (49.94)*
Scheduled Tribe/ Caste	-0.054 (0.18)	-23.68 (13.84)	6.22 (4.28)	-245.93 (249.50)*

The asterisk denotes that the coefficient on this variable was significant with a p-value < 0.05 in the first stage hedonic regression. Standard deviations in parentheses.

While the mean implicit prices shown in Tables 10 and 11 are representative of household's marginal willingness to pay, one should use caution when interpreting them directly. In a number of cases, the coefficients in the first stage regression was not statistically significant, which indicates that that attribute may not be a real predictor of price. In the second stage we will be including only attributes that were significant in the first stage for at least three of the regressions. Also note that the marginal prices in Table 10 for Mumbai include ward characteristics.

Table 11. Mean Marginal Implicit Prices, Pune

	Mean Implicit Price (rupees)			
	Owners		*Renters*	
Variable	*Slum*	*Non-Slum*	*Slum*	*Non-Slum*
Size (sq. ft.)	8.94 (4.12)*	8.62 (1.55)*	-4.63 (3.17)	2.33 (1.17)*
Rooms	22.48 (10.83)	260.70 (140.83)*	-28.38 (10.94)	3.31 (2.48)
Floor	31.63 (15.25)	-427.16 (230.75)*	10.72 (4.19)	58.25 (43.65)
Walls	129.02 (62.19)*	420.88 (227.36)	71.67 (27.72)	183.35 (137.41)
Roof	178.14 (85.86)*	625.04 (337.65)*	168.20 (65.07)	313.09 (234.64)*
Kitchen	29.13 (14.04)	493.12 (266.39)*	105.31 (40.73)	156.88 (117.57)
Toilet	277.20 (133.61)*	879.46 (475.08)*	344.20 (133.15)	334.94 (251.01)*
Bathroom	69.09 (33.30)	-163.33 (88.23)	39.49 (15.28)	104.25 (78.87)
Water	50.78 (24.47)	81.66 (44.11)	80.93 (31.31)	25.15 (19.85)

The asterisk denotes that the coefficient on this variable was significant with a p-value < 0.05 in the first stage hedonic regression. Standard deviations in parentheses.

4.5.4 Second-Stage Hedonic Analysis – Demand Equations

The second stage hedonic analysis estimates income elasticity of demand for housing in general, and also explores the demand elasticity of house size by using the marginal implicit prices derived from the previous section along with the household characteristics as instruments. These provide a basic understanding of how housing demand differs between slum and non-slum households in two different cities in India. Given the data quality, the methodological techniques are not novel, but instead point to the both the challenges and potentialities that a better understanding of housing demand among sub-groups can offer policy makers. The various challenges and findings are discussed in this section.

The introduction of income to equation (4) raises methodological concerns for the Mumbai and Pune datasets. Reported income is often difficult to capture in survey data from developing countries (Mukherjee et al. 2013), and this is no different in the case of these two datasets. In the case of the Mumbai data, income is collected as a categorical variable[78] and in the case of Pune, income is not collected at all. To overcome these issues, the Mumbai data

[78] In the case of the Mumbai data categories for household income are as follows: 1) less than 5,000 rupees; 2) 5,001 to 7,500 rupees; 3) 7,501 to 10,000 rupees; 4) 10,001 to 15,000 rupees; 5) 15,001 to 20,000 rupees; 6) 20,001 to 25,000 rupees; 7) 25,001 to 50,000 rupees; 8) 50,001 to 75,000 rupees; and 9) more than 75,000 rupees.

retains the use of income categories.[79] The income variable in Mumbai uses midpoints of each income category. For income less than ₹5,000 (the lowest category), the income is set at ₹2,500, and for income over 75,000 the income is set to ₹87,501.

In the case of Pune, household consumption is used as a proxy for income. Consumption is derived from the survey's consumption module, which captures food and non-food expenditures by household at various intervals (e.g. expenditures on grain is collected fortnightly, outside meals are counted as weekly subtotals, and clothing is an annualized expenditure. All items are totaled and calculated as monthly totals (see Appendix K for distributions of monthly consumption variable). Many studies tend to favor using permanent income to estimate housing demand. In developing countries, the variation in income and employment could exacerbate bias since a single snapshot afforded by current income does not appropriately correspond to consumption behavior for a durable good such as housing (Follain and Jimenez 1985). However, estimating permanent income in developing countries can prove to be problematic since time series or panel data of households is difficult to come by. As a result, Malpezzi and Mayo (1987b) suggest substituting total consumption as a proxy for permanent income since consumption is correlated with the unobserved aspects of permanent income. While Pune survey contains a detailed consumption module, including durable goods which can be used in the calculation of permanent income, the Mumbai data captures only current income. Given the comparison of the distribution of current income in the Mumbai data and the current consumption—i.e. total consumption minus durable goods—in the Pune data, the use of current income or consumption are chosen since they provide the best chance of comparing income elasticities across the two cities.

Table 12. Income Elasticity of Demand for Housing

	(1)	(2)	(3)	(4)
Mumbai	Slum own	Non-slum own	Slum rent	Non slum rent
Income (log)	**0.308*****	**0.674*****	0.198	**0.621*****
	(0.023)	(0.020)	(0.111)	(0.0712)
Household size	-0.091***	-0.129***	-0.567***	-0.485***
	(0.026)	(0.031)	(0.122)	(0.101)
Household size	0.006**	0.003	0.043***	0.029**
(squared)	(0.002)	(0.003)	(0.012)	(0.010)
Intercept	4.493***	2.095***	5.643***	1.895**
	(0.207)	(0.195)	(0.941)	(0.652)
R^2	0.104	0.357	0.082	0.106
N	1,574	2,086	321	876

	(1)	(2)	(3)	(4)
Pune	Slum own	Non-slum own	Slum rent	Non slum rent
Consumption	**0.636*****	**0.786*****	-0.218	**0.477*****
(log)	(0.040)	(0.041)	(0.260)	(0.130)

[79] Estimation bias from using midpoints may arise, however this method is chosen because the income category distribution is lognormal as expected. Given that the results of elasticities are consistent with previous findings there is no concern for large amounts of bias. However, as noted in the paper, imprecise estimates of elasticity can increase cost and efficiency of policy program. If this were an evaluation of a specific policy, this censored income variable would not be sufficient. In the literature, Hsiao and Mountain (1985) found that where the demand is estimated using income as a dependent variable, the midpoint of the income category is used with little bias, but where income is used as an explanatory variable, they choose to employ a two-stage estimation procedure offers consistent unbiased results. Such methods should be considered in future research.

Household size	-0.166***	-0.217***	0.135	-0.205
	(0.039)	(0.042)	(0.235)	(0.114)
Household size	0.011***	0.011***	-0.021	0.001
(squared)	(0.003)	(0.003)	(0.019)	(0.010)
Intercept	1.628***	1.395***	7.097**	2.162*
	(0.329)	(0.373)	(2.129)	(1.062)
R^2	0.237	0.269	0.046	0.045
N	907	1,019	127	713

Standard errors in parentheses

Asterisks denote *p <0.05; **p<0.01; ***p<0.001

The point estimates from the simple model of income elasticity for both Mumbai and Pune as depicted in Table 12 are consistent with previous findings from studies on housing demand in developing countries. In a multi-country analysis that includes cities in Korea, Egypt, El Salvador, Ghana, India, Korea, the Philippines, and select cities in the United States, Malpezzi and Mayo (1987b) found that most income elasticities fell between 0.4 and 0.6 for both renters and owners with a slightly lower median for owners than renters (0.46 to 0.49, respectively). As with previous studies, demand is relatively inelastic since they never reach one, but the sign of the coefficients appear are as expected. The coefficient for income for slum renters in both Mumbai and Pune is not significant, likely because of the small sample size. The point estimates in these cases is not considered a robust reflection of income elasticity for this renter group. The results here attempt to go one step further beyond separating renters from owners, and attempt to also examine differences in housing income elasticities between slum dwellers and non-slum dwellers.

Studies of income elasticities, while providing a broad snapshot of the relationship between income and housing consumption, have previously provided sufficient evidence to craft and implement specific housing policies (Jimenez and Keare 1984). However, the welfare impact of low-income housing policies are particularly sensitive to slight changes in income elasticity. Mayo and Malpezzi (1987b) demonstrate, through a stylized model of a housing subsidy, that a 0.4 difference in income elasticity would result in a more than 70 percent increase in cost of a program and four times the deadweight loss (711). For purposes of this examination, the sensitivity of the elasticity point estimates are not meant to translate to a particular housing policy's efficiencies or costs, but rather shed light on how to utilize household survey data in particular cities to inform the broader policy directions discussed in previous chapters.

In addition to income elasticity, price elasticities for housing attributes are also useful measures to understand household responsiveness to specific prices of housing amenities. Including the marginal implicit prices of a permanent roof and using housing size as a dependent variable allows us to examine cross-price elasticities of housing attributes and present a fuller model of housing demand. For Mumbai and Pune the size of home is examined, which allows us to retain the double log form of the demand function while investigating cross-elasticities. The marginal price of a permanent roof was included because it was statistically significant in at least three first-stage hedonic regression for each city did not introduce issues of collinearity. Household characteristics were also included here to examine the relationship between socio-economic factors on demand for housing. Tables 13 and 14 present the results of the full demand estimates.

Table 13. Demand for Housing in Mumbai

Dependent variable: House size (log)	(1) Slum own	(2) Non-slum own	(3) Slum rent	(4) Non-slum rent
Income (log)	0.014**	0.113***	0.022*	0.119***
	(0.005)	(0.012)	(0.009)	(0.014)
House size (log marginal price)	-1.508***	-0.236***	-8.856***	0.921***
	(0.013)	(0.007)	(0.004)	(0.020)
Roof (log marginal price)	0.153***	0.578***	-	0.071***
	(0.011)	(0.016)	(-)	(0.011)
Density (log)	-0.015**	-0.120***	-0.007	0.005
	(0.005)	(0.013)	(0.008)	(0.016)
Education (log)	-0.009	0.044*	0.001	0.109***
	(0.006)	(0.022)	(0.011)	(0.021)
Household size (log)	0.001	-0.011	-0.018	0.004
	(0.007)	(0.020)	(0.012)	(0.022)
Married	-0.002	0.020	-0.016	-0.010
	(0.009)	(0.028)	(0.022)	(0.034)
Female	-0.005	0.028	0.039	0.028
	(0.012)	(0.037)	(0.037)	(0.047)
Age (log)	0.001	0.071*	0.043	0.104**
	(0.012)	(0.030)	(0.025)	(0.033)
Intercept	5.615***	1.561***	5.669***	4.171***
	(0.086)	(0.181)	(0.139)	(0.245)
N	1,593	2,105	348	918
R^2	0.948	0.762	0.945	0.840

Standard errors in parentheses
Asterisks denote *p <0.05; **p<0.01; ***p<0.001

For Mumbai (Table 13), the effect of income on demand for housing size is as expected, however, for a number of other variables, the effect was mixed. Across the sub-samples, elasticity estimates for income were positive and inelastic, and they were smaller for slum households than non-slum households. This may be related to the fact that slum dwellers have lower incomes overall, as indicated in Table 4 which shows that more than 90 percent of slum owners and renters earned less than ₹10,000. Accordingly, consuming more housing may not be a priority for lower income, slum households driving elasticity close to zero. Demand for housing given an increase in the marginal price of housing is negative for owners, and both negative and highly elastic for slum renters. However, these elasticity estimates are positive and significant non-slum renters, reaching almost unity for non-slum renters. While a negative elasticity is expected, the positive estimate among non-slum renters requires further investigation into the rental market itself, especially for non-slum renters. The marginal price of having a permanent roof is positive for all sub-groups, except for slum renters. In this case the estimate is omitted since the marginal price was negative and could not be log transformed. Considering the significance of these roof elasticity estimates and the direction of the sign for the three remaining sub-groups, the anomalous nature of the negative marginal price in first-stage hedonic regression for slum renters may be indicative of what amenities slum renters value compared to other sub-groups. Finally, a change in ward density results in negative and significant housing demand elasticities for both sub-groups of owners, hinting at the influence of neighborhood amenities or

conditions on demand for those that are either investing in property or planning to stay somewhere longer term. Overall we witness differences in demand between owners and renters, as well as differences in degrees of elasticity between slums and non-slums.

Table 14. Demand for Housing in Pune

Dependent variable: House size (log)	(1) Slum own	(2) Non-slum own	(3) Slum rent	(4) Non-slum rent
Consumption (log)	0.007	-0.034*	0.063	0.248***
	(0.022)	(0.015)	(0.082)	(0.034)
House size (log marginal price)	-0.003	0.064***	0.038**	-0.049***
	(0.002)	(0.005)	(0.011)	(0.014)
Permanent roof (log marginal price)	1.192***	1.273***	0.392**	0.612***
	(0.029)	(0.016)	(0.125)	(0.026)
Education (log)	0.021	-0.052***	0.049	0.049
	(0.016)	(0.014)	(0.060)	(0.028)
Household size (log)	0.152***	0.120***	0.023	0.038
	(0.028)	(0.018)	(0.096)	(0.040)
Married	0.033	0.006	-0.159	-0.076
	(0.042)	(0.027)	(0.109)	(0.054)
Female	0.049	0.024	0.066	-0.074
	(0.044)	(0.030)	(0.126)	(0.062)
Age (log)	0.037	0.020	0.324*	0.173**
	(0.038)	(0.028)	(0.130)	(0.054)
Intercept	-1.206***	-2.178***	1.495	-0.663*
	(0.206)	(0.159)	(0.845)	(0.320)
N	932	1,067	127	722
R^2	0.748	0.903	0.215	0.619

Standard errors in parentheses
Asterisks denote *p <0.05; **p<0.01; ***p<0.001

In terms of demand for housing in Pune, there are fewer consistently significant elasticity estimates. The effect of consumption (i.e. income) on housing demand is significant for both non-slum sub-groups, but negative for owners and positive for renters. The effect of the marginal price for house size, where we expect negative elasticity estimates, it is only negative and significant for non-slum owners. The other two sub-groups that have statistically significant elasticity estimates for the marginal price of house size are non-slum owners and slum renters where the elasticities are positive. The effect of having a permanent roof yields positive and statistically significant elasticities across all sub-groups. For both groups of owners, the relationship is elastic since the estimates are greater than one. One explanation for this is that since so few households in the overall sample (less than 40 percent as presented in Table 7) have permanent roofs those that do may also enjoy the some of the highest housing quality and similarly have larger homes to accompany better homes amenities overall. Finally the effect of household size is significant and positive for both groups of owners. Although the estimates are quite inelastic, this signifies that owners are more likely to consume more housing given larger households. Overall, this demand model illustrates some differences between owners and renters. The differences in demand between slum and non-slum households is more difficult to parse here. As with Mumbai, slum renters are a difficult group to understand. In the Pune survey, the sample size is exceedingly small, and as can be seen from the least amount of significant

estimates and the lowest R^2 of any of the sub-groups, the housing demand model fit was likely too poor to elucidate slum renter demand.

4.6 Conclusion

The chapter set out to better understand housing demand between slum dwellers and non-slum dwellers in two Indian cities in order to inform housing policy makers on ways to better craft targeted housing interventions. The motivation for this analysis was driven by the increasing number of slums in developing country cities and an apparent disconnect between the literature on housing economics and the persistence of slums. Past literature has examined the differences in housing demand between renters and owners, but very few have investigated the differences between slum and non-slum households and none through a comparative case study research design. The initial conclusions indicate that given the descriptive data comparing slum and non-slum households in Mumbai and Pune, these households diverged across housing quality indicators as well as household characteristics. Using a hedonic model to delve into the components of housing demand by sub-group, however, did yield slight differences in demand, particularly in terms of the degree of demand elasticity between slum and non-slum dweller. The analysis also served to highlight the myriad challenges endemic to empirical studies of housing demand using data from representative household surveys from developing country cities.

Household surveys in developing country cities are time consuming and resource intensive undertakings, but provide opportunities to exploit microdata to estimate a number of economic phenomena. In this spirit, household surveys from Mumbai and Pune, two cities in the same state located less than 100 miles road distance apart, provide the backdrop for the investigation of housing demand. Although the cities differ in size and economic prowess, their household surveys were conducted within a year of one another and both contained detailed housing modules. In terms of housing, variation between housing quality and household characteristics between slum and non-slum households allowed us to exploit these differences in order to understand housing demand in these two sub-groups. Moreover, the distribution of rents across the cities suggested that, at the outset, a first stage hedonic regression on the price term could reveal relationships of interest.

The Mumbai data seemed to be better for exploring the sub-groups of renters and owners, and slum and non-slum households simply because of the sheer sample size and the true representation of slums in the city and the sample. However, curious finding from the first stage hedonic regression revealed significant omitted variable bias that was impacting the size and direction of an estimate that was unexpected. Despite a lengthy investigation as to what caused this bias, I could not identify the two apparent groups that constituted the discontinuity in the data that arose when plotting the logged price term and the log size of the housing unit. The bimodal distribution of price for slum renters is something that could only explained by those who conducted the survey, particularly if human error played a part.

Two differences in data collection methods also introduced challenges to comparing the two cities. The first was the fact the way in which income information was collected. In Mumbai, current income was noted as a categorical variable, whereas in Pune, income itself was not collected at all. Instead, the Pune data established a detailed consumption module to understand household consumption; this technique is often used in developing countries since it provides a better measure of welfare than current income. This difference was handled by transforming the categorical current income variable in Mumbai to continuous using midpoints, and in Pune,

consumption minus durable goods was used as a proxy for current income. The second difference was the fact that neighborhood amenities, often critical influencers of price, were missing from both datasets. In an effort to control for these unobservable explanatory factors, I use ward level characteristics in Mumbai. Despite the fact that wards in Mumbai are quite large, data from the Indian Census helped to explain some variation in location. In Pune, matching ward Census data was not possible due to the different categorization of wards between the survey and the Census. To overcome this, I employed a ward fixed effects model, whose intent was to remove some of the variation between households within wards. These challenges meant that each city was given different estimation strategies even within the same model.

In spite of these issues, a basic estimate of demand yielded income elasticities in line with previous literature except for slum renters in both Mumbai and Pune. The difficulty of estimating parameters for the sub-groups of slum renters in both cities is unfortunate, since these are likely the least understood group of households when it comes to housing. In estimating a fuller model of housing demand, the results were less consistent but did reveal some differences between owners and renters generally, but very little between slum and non-slum households. Part of the issue was that the entire slum renter sub-group, particularly for Pune, already showed that these models were a poor fit to estimate anything from this sample.

Given issues in the data that yielded insufficiently sized sub-samples and estimation issues such as omitted variable bias, the following are recommendations to ensure data used for econometric models to study housing markets are properly collected and documented. The data used in this chapter exposed the limits of working with data that was collected for a specific project. Since the focus of the Mumbai data was on transportation and the focus on the Pune data was on infrastructure, the housing module did not contain a full set of ideal variables for estimating the hedonic model. Neighborhood level data, for example, would have provided more insight into how location and neighborhood amenities plays a role in shaping housing demand. While I was able to generate proxies—in Mumbai I used ward-level data from the Indian census and in Pune I employed a ward-level fixed effects model—the wards were often much larger than what would be considered neighborhoods. In Mumbai, for example, some wards housed over 100,000 people, according to the 2011 Indian Census.

Other examples of potentially problematic data issues include house price and income data. Housing market research also relies heavily on an accurate price term. When actual rent was not available, I relied on households' estimation of house price. Developing countries often lack real property prices because of undeveloped appraisal systems and poor record keeping of real estate transactions. As noted previously, given the literature on this issue, the price variables available the survey data were reasonable for the internal validity of these case studies. Mumbai and Pune provided promising case studies for this chapter, but differences in the ways in which data were collected compromised direct comparisons. As described, the issues of income presented particularly a challenge since in Mumbai households reported their income whereas in Pune, current income was derived through a detailed consumption module. These differences limited the comparisons that could be made across case study cities that would otherwise make for compelling comparative findings.

The fact that this data was already collected and released to the public several years ex-post highlights the issues stemming from project-specific data that may not be constructed for analysis by the public. In Mumbai, I was equipped with a short explanatory text file and the full survey attached to initial, descriptive findings from the survey data. For Pune, I also had the full survey but had to rely on descriptions of the data through reports or publications that had used

the dataset in order to glean additional information on how and why certain data were collected. The absence of metadata for both of these datasets was conspicuous. In order to mitigate issue with data not specifically collected to for public use and to ensure that these data are transparent in their survey methodology, lessons should be drawn from the growing practice and call for open data in development.

Since this data is sourced from the World Bank, it is worth highlighting the World Bank's efforts in open data, which began with a call for more open knowledge and open data practices in 2010. The World Bank's Open Data Initiative provides free and open access to all of the statistical programs maintained and collected by the World Bank, supports statistical capacity of developing countries to improve data quality, and ensures statistics adhere to published standards.[80] While the field of open data covers everything from specific technology solutions (Anokwa et al. 2009) to aid in data collection to institutional challenges in sharing data (Janssen et al. 2012), it is still very much a burgeoning area of study. The challenges encountered in this chapter expose gaps between project-level survey data and the value of a given dataset to an outside researcher. The benefits of open data in developing countries, as was the goal of this chapter, are to support research that allow policymakers to make informed decisions. As institutions like the World Bank continue to expand their efforts in data sharing, the hope is that there will be a greater convergence between the collection of data to support both internal learning and that which is required by researchers to apply standard statistical models.

In sum, efforts in this chapter revealed less about differences in housing demand between slum and non-slum households and more about the challenges in working with developing country data to estimate what is considered a workhorse model in developed countries. Unfortunately, the results do not provide digestible and actionable estimates for policy makers, but they do provide researchers with a way forward. The onus on future research on housing demand for slum households is to specifically design surveys and data collection methods to ensure that the sample of slum renters holds enough power, income measures are precise, and that neighborhood amenities are well captured or easily joined with existing data.

[80] World Bank Open Data Initiative Overview, April 30, 2010. http://unstats.un.org/unsd/accsub/2010docs-CDQIO/Ses1-WorldBank.pdf

5. Conclusions and Implications for Future Research and Policies

As history has shown, the more India continues to urbanize, the greater the low-income housing challenges it will face. Recognizing the challenge ahead requires reflecting on the experiences of past housing policymakers. This dissertation provides a form of review aimed at exposing who has influenced housing policy in India, how the State uses frames to support policy actions, and what can be learned from a better understanding of urban housing behavior. The scaled analytics of global, national, and local demonstrate both the complex dynamic of housing policy formation, but also provides an opportunity to examine each scale's perspective in turn. What has been shown is that insights into the shaping of low-income housing policy can be gleaned from a mega, resource-rich development bank to a slum household residing in one of India's teeming cities. The constant across these scales, however, is the Government of India and its policymakers, who are in a position to negotiate with development partners, guide the discourse on housing, and study the housing behavior of its urban citizens.

The analysis of the global scale of housing questioned whether the mechanism of lending and funding flows amounted to coercive policy diffusion by the World Bank to India. The World Bank's comprehensive document log of project appraisal documents provided the evidence through which its relationship with Indian housing developed. What this dissertation discovered was that policy makers were most susceptible to coercion when there was resistance to World Bank policy interventions. These instances were most prevalent when the government had a greater role to play in housing, such as when the responsibility of low-income housing supply fell largely to government funding and action. In such cases, as was mentioned in terms of sites and services, the World Bank's provisos that regulations be relaxed in order for projects to achieve cost recovery provided clear instances where the promise of resources were enough for policies to bend and shift. When profit opportunities presented themselves, such as the private sector's activity in affordable housing in the mid-2000s, the World Bank Group's private sector arm took notice and engaged with India several investments housing.

In the future, the concern for the Government of India is the cost of bending to another's policy coercion. For example, what effect did relaxing building regulations have on the market for housing in terms of the quality of construction? Future research, and policymaking, should examine the trade-offs between accepting aid and altering or implementing policies that the State would not otherwise choose. Moreover, it is unclear from this study how much leeway the Government of India had to push back or broker a compromise that took into account its own priorities. The World Bank is also one actor, albeit one whose influence is widely scrutinized, among many who has the ability to influence India's housing policy through bargain.

At the national scale frames analysis present a tractable way for the State to articulate its own understanding of a problem and how best to act on it. By the tracing the housing policy narrative through uncovering themes and keyword patterns, the Government of India exposes where it has had the most difficulty in presenting a unified message concerning housing. As the analysis bears, this is evident in the final four plans; framing is most difficult when the Government of India is tasked with assigning a role to the private sector. The implications of this are not examined in this chapter, but questions arise as to how ambivalence affects the State's ability to govern when it comes to low-income housing.

The pernicious issue of low-income housing serves as the ideal setting through which to analyze the Government of India's policy frames over the years, but leaves us with little information about the relative success or effectiveness of policies. During the final few plans, it appears that the massive and steadfast financial and policy commitments to JNNURM and RAY are not swayed by fluctuating frames. Long-term commitments may present a site of analysis that questions the incongruity between current policy frames, particularly if they are shifting, and a solution that is tied to an anachronistic policy frame. Future research should be dedicated to the relationship between policy frames for low-income housing and policy effectiveness.

The local scale of analysis honed in on housing behavior of the Maharashtrian cities of Mumbai and Pune to better understand why slums persist. The initial conclusions indicate that given the descriptive data comparing slum and non-slum households in Mumbai and Pune, these households diverged across housing quality indicators as well as household characteristics. Using a hedonic model to delve into the components of housing demand by sub-group, however, did yield slight differences in demand, particularly in terms of the degree of demand elasticity between slum and non-slum dweller. The analysis also served to highlight the myriad challenges endemic to empirical studies of housing demand using data from representative household surveys from developing country cities.

Going forward, a key methodological challenge that deserves attention is applying hedonic models to developing country cities. The first is that using pre-collected data and applying the findings to two comparative case study cities may compromise external validity. Although the data were collected at roughly the same time, the survey design differed enough so key variables were not consistent across the two surveys. Moreover, choosing to examine sub-samples that were exclusive of the ways in which the data were sampled led to small sample sizes and low levels of confidence making policy decisions based on the results.

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Appendix A. Foreign Aid to India

While India has received aid from a number of donor types since its independence from Britain in the late 1940s, the focus of this chapter's analysis explicitly focuses on funding from the World Bank for a number of reasons. This Appendix delves into foreign aid data to bolster the case of focusing on the World Bank's actions and lending.

The first reason is outlined in the chapter's discussion on housing policy paradigms. In my meta-analysis on external factors influencing India's housing policy, the discussions around multilateral agencies and IFIs were the richest. Multilateral aid institutions served as primary lenders, but also informed their aid decisions with research, policy papers, and annual reports that reinforced their position on a number of issues facing developing countries. Among multilaterals with the most presence in terms of publications concerning the issue of urban housing, which includes slums and affordable housing, were the World Bank and United Nations (particularly through UN-Habitat). For each paradigm shift, both of these institutions held conspicuous policy stances that are consistent with the characteristics of the policy paradigms. However, as a lender the World Bank was consistently associated with prevailing policy paradigms that tied aid dollars with policies, especially with respect to sites and services, structural adjustment, and enabling policies. Further analysis of aid data flows shows that the UN drops off considerably in terms of the financial influence on India.

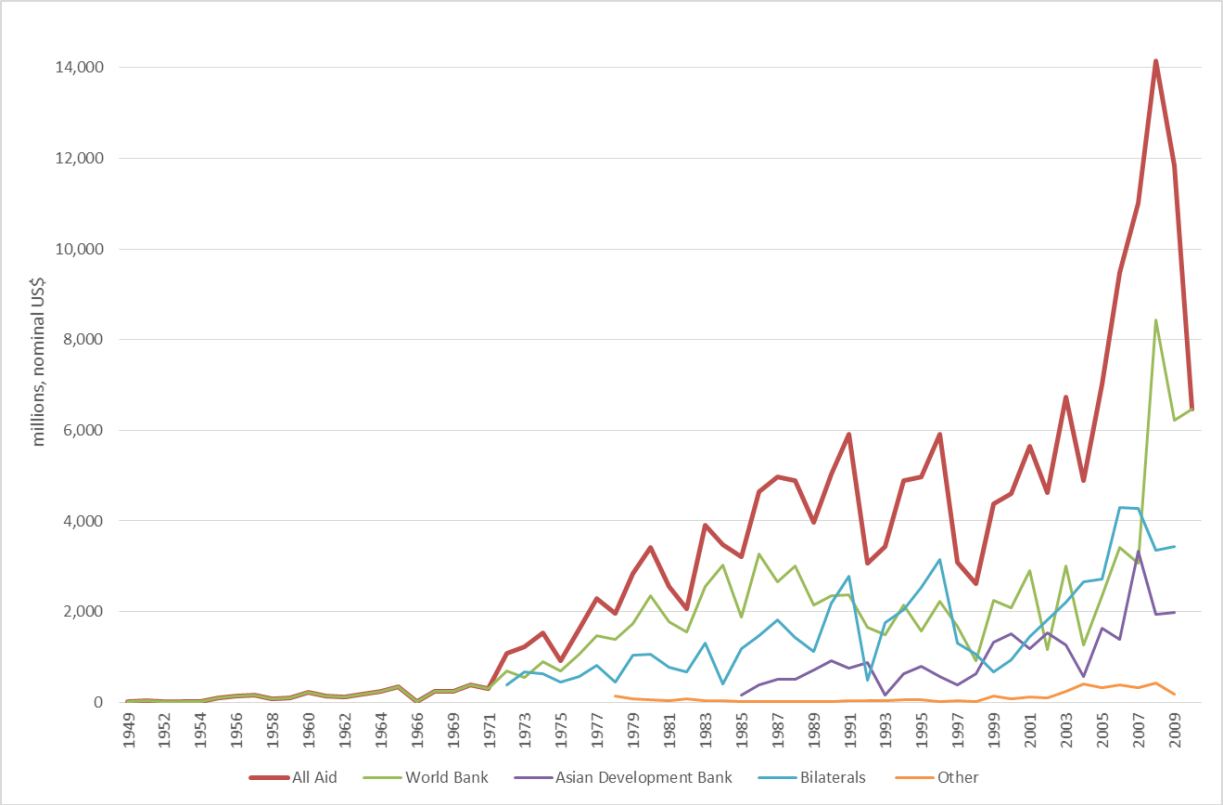
Second, using data from AidData.org, a comprehensive dataset of foreign assistance,[81] I track aid flows to India and find that the World Bank's trend in aid flows has tracked most closely to overall aid flows than aid from other donors or lenders. These figures account for all aid to India from 1949 to 2009, rather than a subset of funding for urban housing. I examine all aid because it offers a better sense of the volume of aid to India across a number of donor types—urban housing projects comprise only a small percentage of total lending and are extremely difficult to fully identify in this dataset based on AidData.org's categorization. AidData.org identifies a total of 20,279 projects funded by aid to India, providing a rich dataset of aid flows. In Figure A I compare multilateral World Bank aid to multilateral Asian Development Bank aid, funding from bilateral agencies, and other donors, including the United Nations as well as private foundation dollars.[82] The figure shows two notable trends: 1) the World Bank was the only foreign aid donor to India until 1971; 2) with the exception of a few years in the 1990s and the mid-2000s (note that the sharp rise in bilateral funding in the mid-2000s may be partially explained by aid going to the 2004 Indian Ocean Tsunami relief efforts), World Bank funding exceeded other categories of donors. Figure A offers compelling evidence for me to focus on the World Bank as a primary external factor to India's development policies. Additionally, as I outline in the chapter's

[81] Tracking aid flows to countries has historically been a cumbersome feat. Not only are aid flows hard to follow over time, the disparate sources of aid are often difficult to aggregate since centralized databases may not exist. For more information on AidData.org and the issues with aid data see Tierney et al. (2011).

[82] Figure A uses nominal US$ since I am simply comparing aid dollars across major donors by year. Bilateral donors that did not have records of US$ denominated funds were excluded from the bilateral donor group. There were 30 such projects (out of a total 20,279 records for India) spanning from 1976 to 2010, most of which were funded in Saudi Arabian riyal, Kuwaiti dinar, and Czech koruna. For more than half of these I was unable to obtain historical conversion rates since 1995 earliest year I could find in conversion rate tables. This leads me to believe that this missing data do not bias the representation of aid flows for Figure A.

methodology section, the ability to investigate the subset of lending flows going towards urban housing is was feasible in the case of the World Bank.

Figure A-1. Foreign Aid to India by Donor Type, 1949 – 2009



Source: AidData.org

Appendix B: The World Bank Group's Shelter Lending Portfolio to India

The following tables represents all of the World Bank Group's projects I was able to identify and include in my analysis in this chapter.

Table B-1. World Bank Housing Project Commitments

Project ID	Approval Year	Project Name	Total Commitment Amount* (Agency)	Project Type**
P009688	1973	Calcutta Urban Development Project	35 (IDA)	Slum Upgrading; Sites and Services
P009724	1977	Urban Development Project – Madras	24 (IDA)	Sites and Services; Slum Upgrading; Housing Policy
P009741	1977	Urban Development Calcutta Project (02)	87 (IDA)	Slum Upgrading; Sites and Services
P009783	1980	Urban Development Project – Madras (02)	42 (IDA)	Sites and Services; Slum Upgrading
P009795	1981	Kanpur Urban Development Project	25 (IDA)	Sites and Services; Slum Upgrading
P009808	1983	Urban Development Calcutta Project (03)	147 (IDA)	Slum Upgrading; Sites and Services
P009809	1983	Urban Development Project—Madhya Pradesh	24.1 (IBRD)	Slum Upgrading; Housing Policy
P009841	1985	Urban Development—Bombay Project	138 (IDA)	Sites and Services; Slum Upgrading
P009856	1985	Urban Development Project—Gujarat	62 (IDA)	Sites and Services; Slum Upgrading; Housing Policy
P009857	1986	Water Supply and Sewerage—Bombay Project (03)	185 (IDA; IBRD)	Slum Upgrading
P009873	1987	Urban Development Uttar Pradesh Project	150 (IDA; IBRD)	Sites and Services; Slum Upgrading
P009976	1988	Housing Finance Project	250 (IDA)	Housing Finance
P009872	1988	Urban Development Project—Tamil Nadu	300.2 (IDA)	Sites and Services; Slum Upgrading

P009963	1992	Family Welfare (Urban Slums) Project	79 (IDA)	Slum Upgrading
P034162	1994	Maharashtra Emergency Earthquake Reconstruction Project	246 (IDA)	Disaster Relief
P050637	1998	Tamil Nadu Urban Development Project (02)	105 (IBRD)	Housing Policy
P074018	2002	Gujarat Emergency Earthquake Reconstruction Project	442.8 (IDA)	Disaster Relief
P050668	2002	Mumbai Urban Transport Project	542 (IDA; IBRD)	Sites and Services
P094513	2005	India: Emergency Tsunami Reconstruction Project	465 (IDA)	Disaster Relief
P083780	2005	Third Tamil Nadu Urban Development Project	200 (IBRD)	Housing Policy
P079675	2006	Karnataka Municipal Reform Project	216 (IBRD)	Slum Upgrading; Housing Policy
P071250	2009	Andhra Pradesh & Telangana Municipal Development Project	300 (IBRD)	Housing Policy
P105990	2010	West Bengal PRI	200 (IDA)	Housing Policy
P122096	2010	Bihar Kosi Flood Recovery Project	220 (IDA)	Disaster Relief
P099979	2011	Capacity Building for Urban Development Projects	60 (IDA)	Housing Policy
P119039	2013	India Low-Income Housing Finance	100 (IDA)	Housing Finance
P146653	2013	Uttarakhand Disaster Recovery Project	250 (IDA)	Disaster Relief
P143382	2013	Tamil Nadu & Puducherry Coastal Disaster Risk Reduction Project	236 (IDA)	Disaster Relief
P148868	2014	Odisha Disaster Recovery Project	153 (IDA)	Disaster Relief

*Nominal US$ (millions); these amounts reflect the total project commitments, some of which may extend beyond housing-related costs.
**Project types listed in descending order of percentage of total project costs.

Table B-2. IFC Housing Projects

Year Disclosed	Project Number	Project Name	IFC Investment Amount*	Project Type
1999	9772	Sundaram Home Finance Ltd.	12	Housing Finance
2001	10442	Sundaram Home Finance Ltd.	10.42	Housing Finance
2002	11755	Dewan Housing Finance Corporation Ltd.	12.56	Housing Finance
2003	11762	Birla Home Finance	20.63	Housing Finance
2003	10784	HDFC – Loan	150	Housing Finance
2006	25444	HDFC Bank UT2	100	Housing Finance
2010	29358	Dewan LIS HFC	4.45	Housing Finance
2010	29593	Lok II	15	Housing Finance
2011	29300	IMGC India	8.6	Housing Finance
2012	30205	Au Housing	4.5	Housing Finance
2012	32284	Equitas	5.8773	Housing Finance
2012	31630	Dakshin	15	Housing Finance
2012	596967	Grameen Koota Housing Microfinance	0.44	Housing Finance
2012	587787	Aadhar Resp Fin	0.47	Housing Finance
2012	586208	Housing Regional	0.07	Housing Policy
2012	597987	Ujjivan Microfinance	0.885	Housing Finance
2012	28392	Value and Budget Housing Corporation	11.06	Housing Development
2013	32564	Smart Value Homes Limited	25	Housing Development
2013	33320	DHFL Loan	70	Housing Finance
2013	599587	Housing Finance SEWA Grih Rin	0.145	Housing Finance
2013	593087	Bhubaneswar Affordable Housing	0.66073	Housing Development
2014	34476	AU NCD	30	Housing Finance
2014	35226	PNB HFL	85	Housing Finance
2014	34628	SPAH	34.44	Housing Development
2014	34782	Axis Bank III	37.5	Housing Finance

*Nominal US$ (millions)

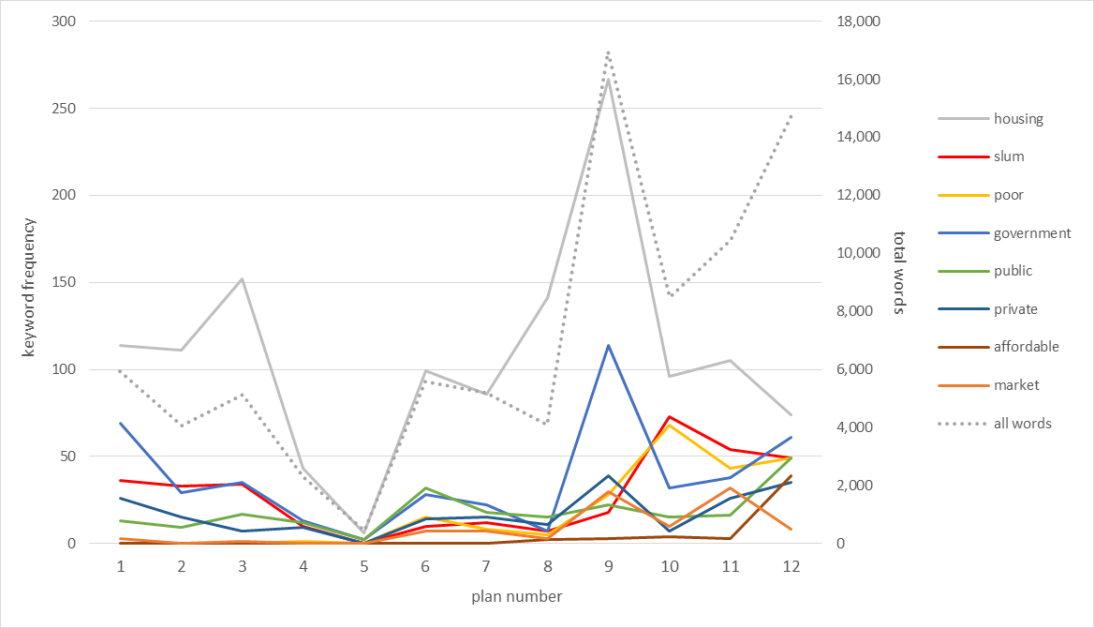
Appendix C. Common Terms from Each Plan

Table C-1. Top Five Most Common Terms in Each Five-Year Plan

Plan		Plan	
1	housing (114) building (88) house (77) government (69) state (62)	7	plan (106) housing (86) water (84) urban (75) sector (64)
2	housing (111) house (52) scheme (49) plan (42) programme (41)/development (41)	8	housing (141) plan (55) rural (52) scheme (50) urban (48)
3	housing (152) plan (78) village (62) scheme (61) land (60)	9	housing (267) plan (255) urban (254) rural (182) water (176)
4	housing (43) scheme (42) water (29)/plan (29) urban (23)/development (23) land (22)	10	urban (233) housing (96) need (87) development (73)/state (73) slum (73)
5	plan (13) crore (12) water (9)/supply (9)/urban (9)/development (9) fifth (8)/provision(8)	11	urban (240) development (106) housing (105) city (104) plan (93)
6	water (99)/housing (99) urban (78) plan (74) supply (68) area (61)	12	urban (344) city (209) water (162) plan (140) project (115)

Appendix D: Additional Graph from Descriptive Computational Text Analysis

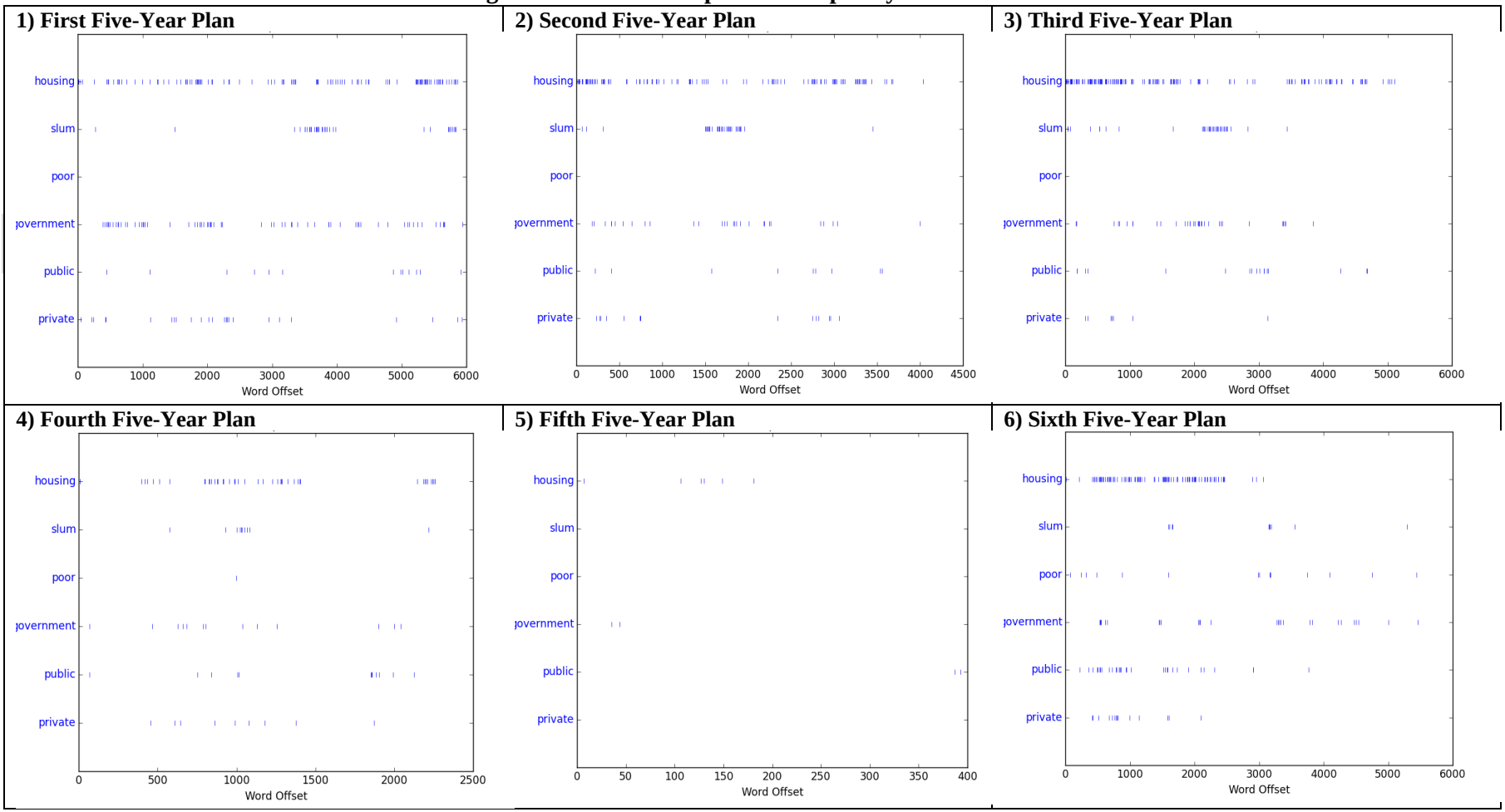
Figure D-1. Keyword Frequency by Five-Year Plan (including "housing" and all words)



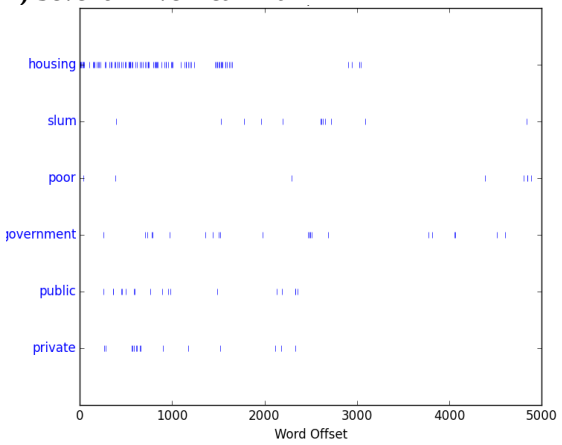
Appendix E: Lexical Dispersion Graphs

The following graph matrix displays the dispersion of keywords across each Five-Year Plan. Each blue line marks an instance when the word appears in the document. Note that the Fifth Plan contains very sparse incidences of keywords. This plan was particularly short and focused on the decentralization of government and addressing plan outlays rather than the context of housing.

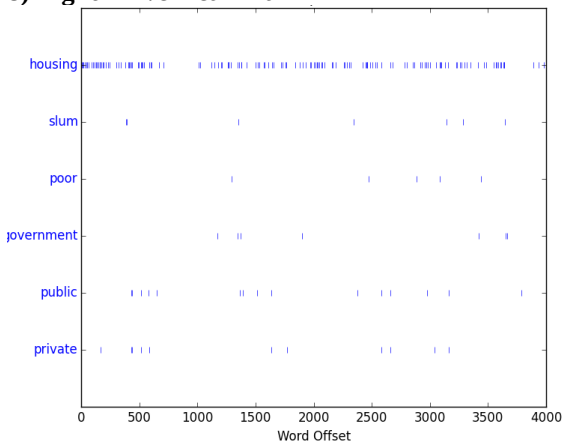
Figure E-1. Lexical Dispersion Graphs by Five Year Plan



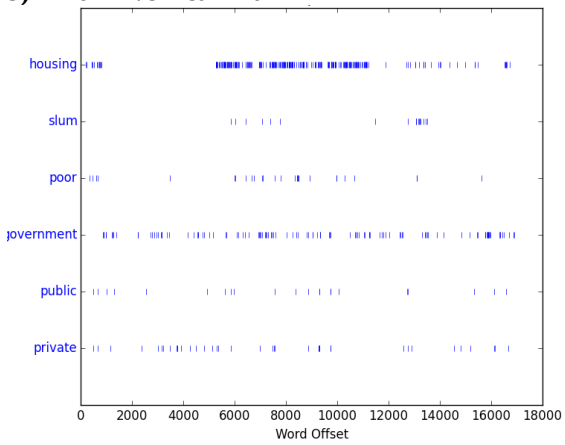
7) Seventh Five-Year Plan



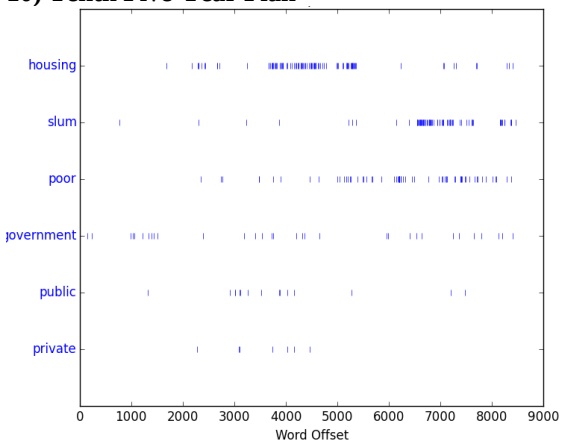
8) Eighth Five-Year Plan



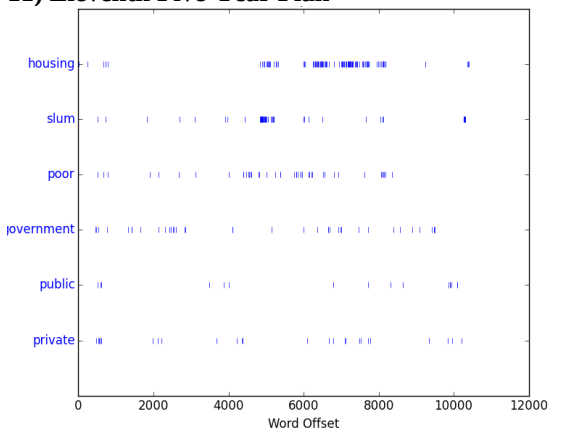
9) Ninth Five-Year Plan



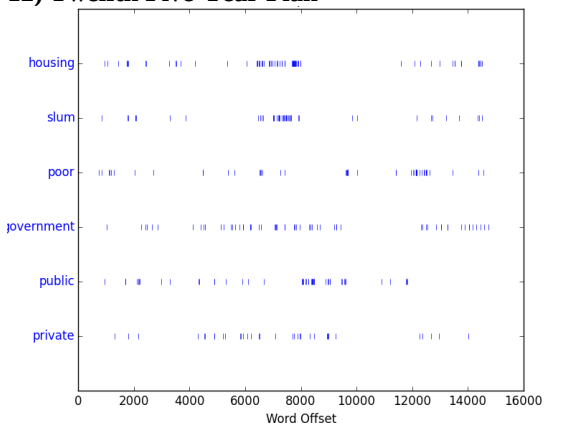
10) Tenth Five-Year Plan



11) Eleventh Five-Year Plan



12) Twelfth Five-Year Plan



Note: The total words included in the offset are all non-stop words

Appendix F: Housing Characteristics by Owners and Renters, Slum and Non-Slum

Table F-1. Housing Characteristics in Mumbai by Slum and Non-Slum Owners and Renters

Variable	*All households*	*Owners*		*Renters*	
		Slum	Non-Slum	Slum	Non-Slum
Mean number of rooms (median)	1.5 (1)	1.2 (1)	1.7 (2)	1.2 (1)	1.4 (1)
Mean size, sq. ft. (median)	258.3 (200)	178.2 (150)	329.0 (260)	146.9 (150)	277.3 (240)
Permanent floor	96.5%	97.5%	95.1%	97.4%	97.8%
Permanent walls	95.9%	93.2%	98.5%	88.3%	97.6%
Permanent roof	41.6%	9.9%	55.7%	22.0%	71.7%
Separate kitchen	54.4%	41.7%	68.6%	14.6%	59.2%
Toilet in house	32.0%	5.0%	50.5%	7.4%	45.5%
Separate bathroom	61.1%	38.4%	73.7%	37.7%	80.3%
Piped water in house	69.0%	49.6%	79.7%	48.6%	86.0%
Own home	74.5%	100%	100%	0%	0%
Road accessible	81.3%	76.9%	78.3%	86.0%	93.8%
Footpath accessible	30.3%	17.1%	28.2%	37.1%	55.2%
Walk to work (primary mode)	72.2%	81.5%	71.1%	74.0%	58.5%
Average commute time in minutes (median)	24.9 (15)	25.6 (20)	27.3 (20)	24.5 (15)	19.9 (15)
Average monthly market rent in rupees (median)	2,799.2 (1,200)	1,637.3 (1,000)	4,009.1 (2,000)	2,155.6 (1,000)	2,278.1 (2,000)
Average actual monthly rent in rupees (median)	807.60 (240)	-	-	498.49 (500)	925.32 (220)
Price/sq. ft. (market rent/size of unit)	15.64	9.25	22.70	17.38	8.69
Price/sq. ft. (actual rent/size of unit)	4.06	-	-	4.16	3.70
Observations	4,453	1,594	2,110	350	919

Table F-2. Housing Characteristics in Pune by Slum and Non-Slum Owners and Renters

Variable	*All households*	*Owners*		*Renters*	
		Slum	Non-Slum	Slum	Non-Slum
Average number of rooms (median)	2.1 (2)	1.7 (2)	2.7 (2)	1.2 (1)	1.7 (2)
Average size, sq. ft. (median)	420.1 (280)	251.4 (200)	649.6 (530)	153.7 (130)	286.3 (200)
Permanent floor	72.6%	68.9%	85.6%	59.0%	58.6%
Permanent walls	87.2%	76.7%	95.4%	72.3%	91.9%
Permanent roof	39.2%	15.1%	67.2%	9.6%	35.9%
Separate kitchen	47.0%	27.0%	75.0%	10.8%	37.6%
Toilet in house	43.4%	16.5%	77.8%	4.8%	34.1%
Separate bathroom	63.1%	49.5%	86.1%	32.5%	53.3%
Piped water in house	55.4%	64.4%	75.3%	20.5%	13.9%
Own home	70.4%	100%	100%	0%	0%
Walk to work (primary mode)	30.7%	37.3%	21.2%	31.3%	32.8%
Average commute time in minutes (median)	23.9 (20)	25.2 (20)	23.7 (20)	30.5 (20)	22.4 (15)
Average monthly market rent (median rupees)	2118.43 (1,000)	862.00 (600)	3,488.47 (2,000)	674.70 (500)	561.00 (400)
Average actual monthly rent (median rupees)	456.43 (200)	-	-	397.36 (400)	1,662.54 (1,000)
Price/sq. ft. (market rent/size of unit)	5.62	3.77	6.00	4.84	6.88
Price/sq. ft. (actual rent/size of unit)	2.05	-	-	2.88	2.24
Observations	2,849	932	1,067	128	722

Appendix G. Examination of Self-Reported Home Values and Outliers in the Price Term

Issues with Self-Reported Home Values

Self-reported home values appear frequently in studies on housing. Overestimation of home values is well-documented in the literature, particularly in developed country contexts where appraisal or valuation data are more widely available. Kain and Quigley (1972), for example, note that the errors in estimates are correlated with socioeconomic characteristics, which enables researchers to address existing biases based on what is known about household characteristics. Agarwal (2007) exploits the overestimation in home values by owners (+3.1%) to explain differences in home loan repayment behavior. In a developing country context, Jimenez's (1982) examines the difference between owner-estimated values and appraised values and finds no statistical difference.

Concern over these biases still are valid in the developing country context. Gonzalez-Navarro and Quintana-Domeque's (2009) analysis of potential bias in self-reported home values in Mexico suggest that the length of tenure, or the length of time an owner has occupied his/her home, has a positive and significant effect on overestimation of value. This finding is large in magnitude than similar findings from studies focused on the U.S. including Kain and Quigley (1972). Contrary to Kain and Quigley, the authors find that socioeconomic characteristics have no effect on mis-estimation of home values. In this analysis we do not have appraised values against which we can compare the self-reported values. Instead, the only means of comparison is between the imputed rent of renters and the actual rent, which will automatically factor in an *a priori* understanding of home value since renters already pay actual rent. Moreover, the Indian context may yield other explanations than those found in Mexico. The following examines differences amongst renters' imputed and actual rent and acknowledges that only a comparison of owner reported value and appraised value can reveal biases in self-reported values in these data.

Mumbai

The price term used in this analysis is the imputed price for owners and actual rent for renters. Imputed rent answers the question "What would an apartment like yours rent for each month?" and since it is collected for both renters and owners can be compared to understand differences in imputed versus actual rent. These estimates are the only consistent price term and are examined for both renters and owners. The majority of renters reported a higher imputed rent than actual rent. Just 38 households report an imputed rent that is less than actual rent, while 321 households report imputed rent to be the same as actual rent. The remaining 71.1 percent of renter households reported imputed rents that are greater than actual rents. The minimum and maximum range of this rent difference is ₹4,400 and ₹249,200, respectively. Among slum households who rent, nine households report imputed rents to be less than actual rent, while 123 households report imputed and actual rents to be equal. The remaining 62.3 percent of households report imputed rents to be higher than actual rent.

Two outliers report rents over ₹15,000 with a wide disparity between actual and reported rents. These two appear to be data entry errors. The imputed rents reported by the household heads are

₹250,000 and ₹150,000. They both reside in notified slums and their monthly incomes are only ₹1,000 to 5,000. The first household head reports actual rent to be ₹800, while the other household reported pays just one rupee for monthly rent. I eliminate these outliers based on the fact that their imputed rent appears to be unreliable given their incomes, actual rents, and the fact that they reside in a slum.

Pune

As with Mumbai, the differential between actual rent and imputed rent tends to be greater than zero. Among all renters, 20 households report a lower imputed rent than actual rent, while 110 households report actual rent equaling imputed rent. The remaining 72.9 percent of renter households report that imputed rent as higher than actual rent. Among slum renters in Pune three observations state that the imputed rent is less than the actual rent. Meanwhile, 36 observations have the actual and current rent equally the same amount. Forty-four (or 53 percent of the total number of renter households in Pune) report an imputed rent higher than the actual rent. The divergence between actual and imputed rent in Pune is considerably lower than in Mumbai, with fewer extreme outliers. The maximum imputed rent is ₹3,000 per month, while the maximum rent is ₹2,250. The greatest differential between imputed and actual rent is ₹2,910.

Appendix H. Choice of Functional Form in the First-Stage Hedonic Regression

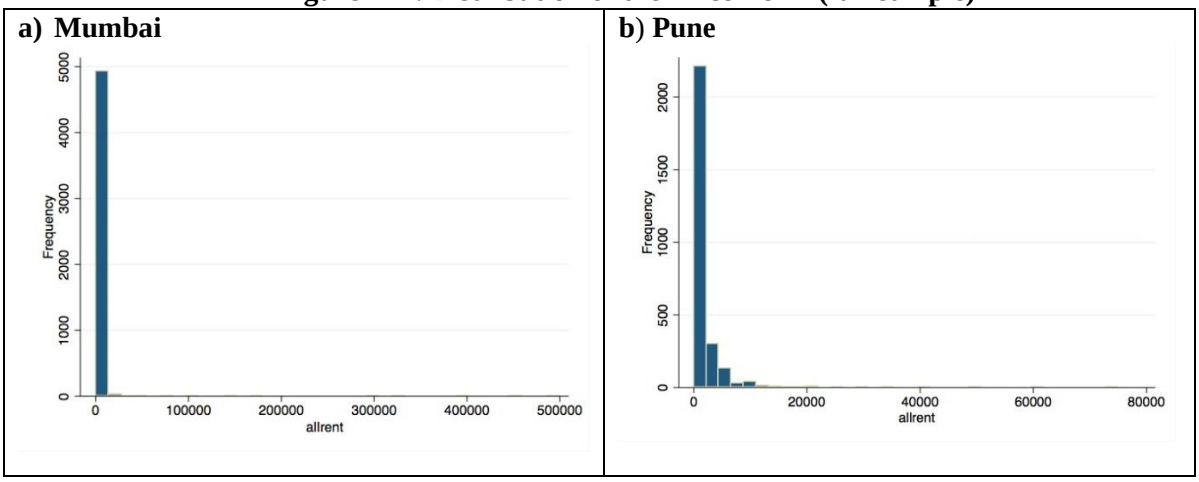
Given the perennial debates on functional form for hedonic price functions in the literature, this Appendix serves to make a case for the best functional form for the specific analysis undertaken in Chapter 4. This analysis is roughly based on the same criteria used by Arimah (1992). The following three factors are considered in the choosing the best functional form: 1) the distribution of the price term; 2) goodness of fit; and 3) visual tests for non-linearity and heteroskedasticity. A first check on the "reasonableness" of the regression results was simply checking the signs and magnitude of the coefficients; those full results are not included here. Three functional forms are tested here, including a linear regression, a semi-log (log-linear) regression, and a log-log regression. The linear regression shows the large variation in error terms, while the log transformed functions show how much error terms are reduced.

The first step in examining functional form is looking at the distribution of the dependent variable—in this case this is the price term for rent expressed in Indian rupees. In Chapter X the analysis focuses on the full sample of households as well as the sub-samples of slum and non-slum households. This analysis will focus on the full sample for simplicity sake. The sub-sample analysis was also completed and it is consistent with the full sample findings, and does not conflict with ultimate choice of functional form derived from the full sample analysis.

Distribution of Price Term

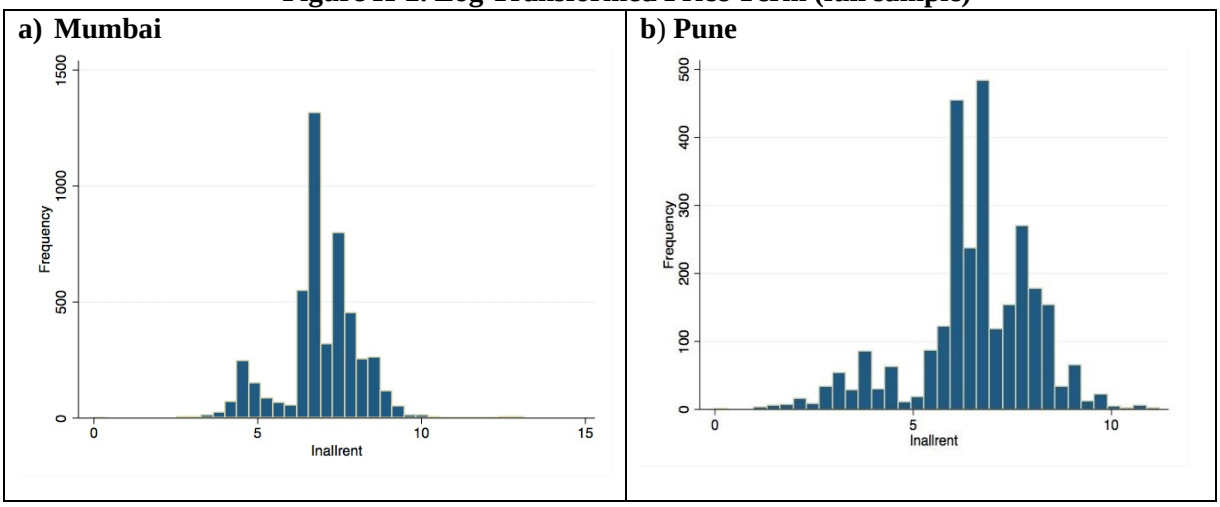
The distribution of continuous variables often produces distributions with long tails, suggesting that a log-transformation would reduce the error term resulting from predicting the price. A look at the distribution of the linear price term shows that indeed, the price term contains a long tail and that there are a large number of zeros. This is because this counts only market rent and thus all housing that is owned, with no rent paid, will record a zero in the price term. Figure H-1 depicts the distribution of the price term for both Mumbai and Pune.

Figure H-1. Distribution of the Price Term (full sample)



Log transforming this price term normalizes the distribution of the price term, as seen in Figure H-2. This transformation suggests that other forms of analysis, such as goodness of fit measures and residual variance will benefit greatly from a non-linear specification.

Figure H-2. Log Transformed Price Term (full sample)



Level of Explanatory Power

An examination of the coefficient of determination—R^2—provides insight into how much variance is explained through the statistical models used. Since the functional form is the only part of the regression that is adjusted in the analysis, differences in R^2 are attributed to functional form rather than other aspects of the model. In general, semi-log and double-log models are clear improvements in goodness-of-fit over the linear model, with the double-log model offering a slight edge over the semi-log model for all sub-samples in Mumbai and Pune. The stark difference between the R^2 values for linear and non-linear models is not surprising given the distribution of the linear price function.

Table H-1. R^2 Values for Various Sub-Samples and Functional Form

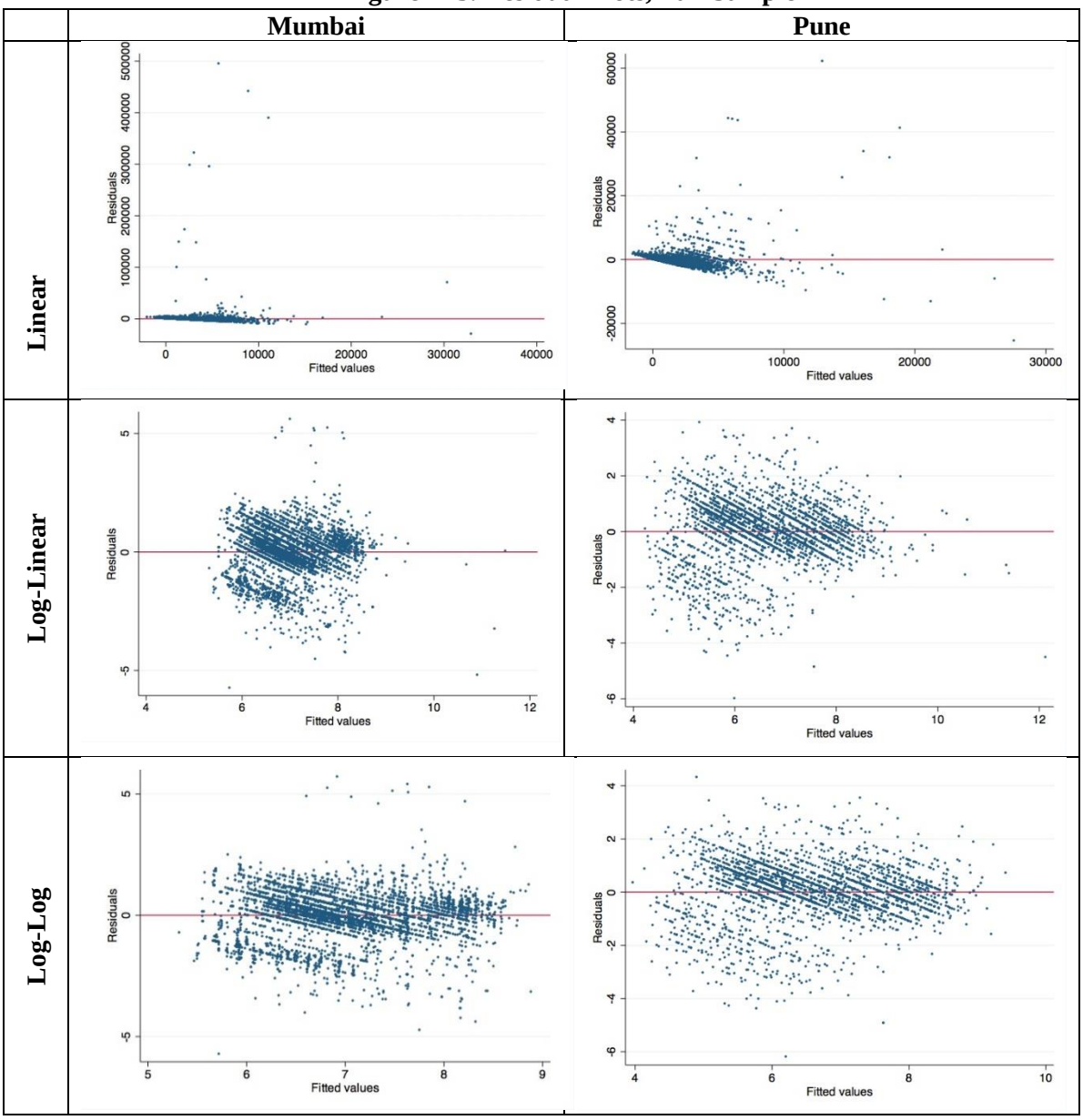
	Sample Segment	**Linear**	**Log-linear**	**Log-log**
Mumbai	All	0.025	0.325	0.336
	Slum	0.010	0.237	0.240
	Non-slum	0.027	0.351	0.352
Pune	All	0.165	0.438	0.459
	Slum	0.159	0.315	0.353
	Non-slum	0.168	0.496	0.515

Analysis of Residuals

The differences in the distribution of the price terms as well as the differences in R^2 alludes to another fundamental question in model fit—residual variance. Using visual tests for heteroskedasticity in error variance, Figure H-3 contains scatterplots that show the difference between the various functional forms of the estimation equations. The residual plot for the linear equations show a number of outliers with very large values. The dispersion is reduced in the log

models and show the most consistency in the double log form. Note that a popular functional form used in hedonic regressions is a Box-Cox power transformation to normalize values. However, the double log form is sufficient for our purposes of estimating a hedonic model that explores the differences between slum and non-slum household.

Figure H-3. Residual Plots, Full Sample



Appendix I. First Stage Regression Results for Full Sample

Table I-1. Regression Estimates for Market Rent in Mumbai (dependent variable: log rent)

Variable	(1) All households	(2) Non-slum households	(3) Slum households
Size of housing unit (log sq. ft.)	0.220***	-0.005	0.178***
	(0.034)	(0.050)	(0.048)
Number of rooms	0.116***	0.438***	0.007
	(0.016)	(0.038)	(0.014)
Permanent floor	0.041	-0.134	0.327**
	(0.077)	(0.103)	(0.107)
Permanent walls	0.396***	0.414**	0.505***
	(0.076)	(0.156)	(0.067)
Permanent roof	0.206***	0.327***	0.041
	(0.039)	(0.054)	(0.056)
Separate kitchen	0.365***	0.459***	0.303***
	(0.039)	(0.058)	(0.045)
Toilet in house	0.410***	0.263***	0.224**
	(0.044)	(0.058)	(0.080)
Separate bathroom	-0.175***	-0.080	-0.136**
	(0.039)	(0.060)	(0.042)
Piped water in house	0.092*	0.094	0.168***
	(0.037)	(0.063)	(0.037)
Percent slums in ward	0.710***	1.046***	-0.363**
	(0.080)	(0.108)	(0.119)
Percent illiterate in ward	-2.343***	-4.150***	0.479
	(0.471)	(0.822)	(0.514)
Percent scheduled tribe/caste in ward	-7.602***	-11.72***	-3.171***
	(0.635)	(0.955)	(0.727)
Population density in ward (people/km.^{2})	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)
Intercept	5.936***	7.107***	5.527***
	(0.214)	(0.328)	(0.282)
R^2	0.319	0.351	0.236
Observations	4,845	2,968	1,897

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table I-2. Regression Estimates for Market Rent in Pune (dependent variable: log market rent)

Variable	(1) All households	(2) All households	(3) Non-slum households	(4) Non-slum households	(5) Slum households	(6) Slum households
Size of living area (log)	0.559*** (0.041)	0.553*** (0.042)	0.620*** (0.056)	0.549*** (0.056)	0.387*** (0.050)	0.450*** (0.051)
Number of rooms	0.030 (0.018)	0.030 (0.018)	0.0345 (0.029)	0.0540 (0.029)	0.056** (0.017)	0.027 (0.017)
Permanent floor	0.228*** (0.052)	0.123* (0.052)	0.272*** (0.0793)	0.131 (0.079)	0.022 (0.051)	0.065 (0.051)
Permanent walls	-0.130 (0.070)	-0.076 (0.068)	0.048 (0.134)	-0.058 (0.131)	0.093 (0.056)	0.170** (0.058)
Permanent roof	0.297*** (0.059)	0.328*** (0.058)	0.382*** (0.080)	0.366*** (0.080)	0.203** (0.072)	0.188** (0.072)
Separate kitchen	0.099 (0.060)	0.130* (0.058)	0.120 (0.086)	0.168 (0.086)	0.091 (0.061)	0.090 (0.061)
Toilet in house	0.529*** (0.066)	0.480*** (0.065)	0.682*** (0.096)	0.533*** (0.095)	0.385*** (0.073)	0.322*** (0.075)
Separate bathroom	0.197*** (0.060)	0.173** (0.058)	0.244* (0.095)	0.271** (0.094)	0.0825 (0.054)	0.069 (0.055)
Piped water in house	0.555*** (0.046)	0.582*** (0.046)	0.655*** (0.067)	0.739*** (0.068)	0.156** (0.050)	0.195*** (0.052)
Intercept	2.416*** (0.209)	2.475*** (0.206)	1.475*** (0.304)	2.021*** (0.304)	3.759*** (0.244)	3.435*** (0.246)
Ward fixed effects	No	Yes	No	Yes	No	Yes
R^2	0.419	0.413	0.476	0.429	0.282	0.305
Observations	2,766	2,766	1,732	1,732	1,034	1,034

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix J: Omitted Variable Bias in Mumbai's First Stage Hedonic Regression

Using the specification in formula (5) yielded surprising results for slum renters in Mumbai (regression (3)). The coefficient on the log size of the housing unit was negative, large in magnitude, and highly significant (Table J-1).

Table J-1. Regression Estimates for Hedonic Price in Mumbai – Standard Model (dependent variable: log market rent for owner; log actual rent for renters)

Variable	(1) Slum owner	(2) Non-slum owner	**(3) Slum renter**	(4) Non-slum renter
Size of housing unit (log sq. ft.)	0.269***	0.270***	-0.698***	-0.096
	(0.040)	(0.033)	(0.136)	(0.112)
Number of rooms	0.070*	0.132***	-0.024	0.248**
	(0.032)	(0.025)	(0.015)	(0.082)
Permanent floor	0.131	-0.065	0.738*	-0.173
	(0.082)	(0.063)	(0.304)	(0.280)
Permanent walls	0.404***	0.289*	0.774***	0.862***
	(0.053)	(0.113)	(0.154)	(0.260)
Permanent roof	0.129**	0.493***	-0.272*	0.076
	(0.046)	(0.037)	(0.119)	(0.102)
Separate kitchen	0.004	0.054	0.818***	0.442***
	(0.034)	(0.040)	(0.141)	(0.110)
Toilet in house	0.344***	0.296***	0.0419	0.374***
	(0.062)	(0.041)	(0.203)	(0.101)
Separate bathroom	0.173***	0.101*	-0.501***	0.011
	(0.033)	(0.041)	(0.106)	(0.114)
Piped water in house	0.094***	0.106*	0.095	0.126
	(0.023)	(0.041)	(0.096)	(0.132)
Percent of slums in ward	-0.520***	-0.138	0.151	1.122***
	(0.094)	(0.078)	(0.301)	(0.195)
Percent illiterate in ward	0.917*	0.128	-0.249	-4.679***
	(0.394)	(0.633)	(1.440)	(1.291)
Percent scheduled caste/tribe in ward	-0.048	-0.746	-10.87***	-23.38***
	(0.540)	(0.694)	(2.310)	(1.679)
Pop. density of ward (people/km^2)	0.000*	0.000*	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Intercept	4.786***	5.142***	9.672***	7.774***
	(0.226)	(0.233)	(0.760)	(0.614)
R^2	0.260	0.506	0.619	0.438
Observations	1,575	2,091	321	877

Standard errors in parentheses
Asterisks denote *p <0.05; **p<0.01; ***p<0.001

The reasons for this was not immediately known, but suspicions concerning limited variation in the dependent variable for this sub-groups or bias introduced through an omitted variable. Omitted variable bias arises when the variable of interest X is correlated with other unobserved variables, or the error term u. Strictly speaking $E[X_i|u_i] \neq 0$, which violates the first assumption of the ordinary least squares model. In order to examine what might explain this unexpected estimate, I first conduct visual checks by graphing the log of the price variable

against the log of the size of the housing unit (the variable of interest) for various cuts of the sample.

Figure J-1. Scatterplot Graphs of Interest

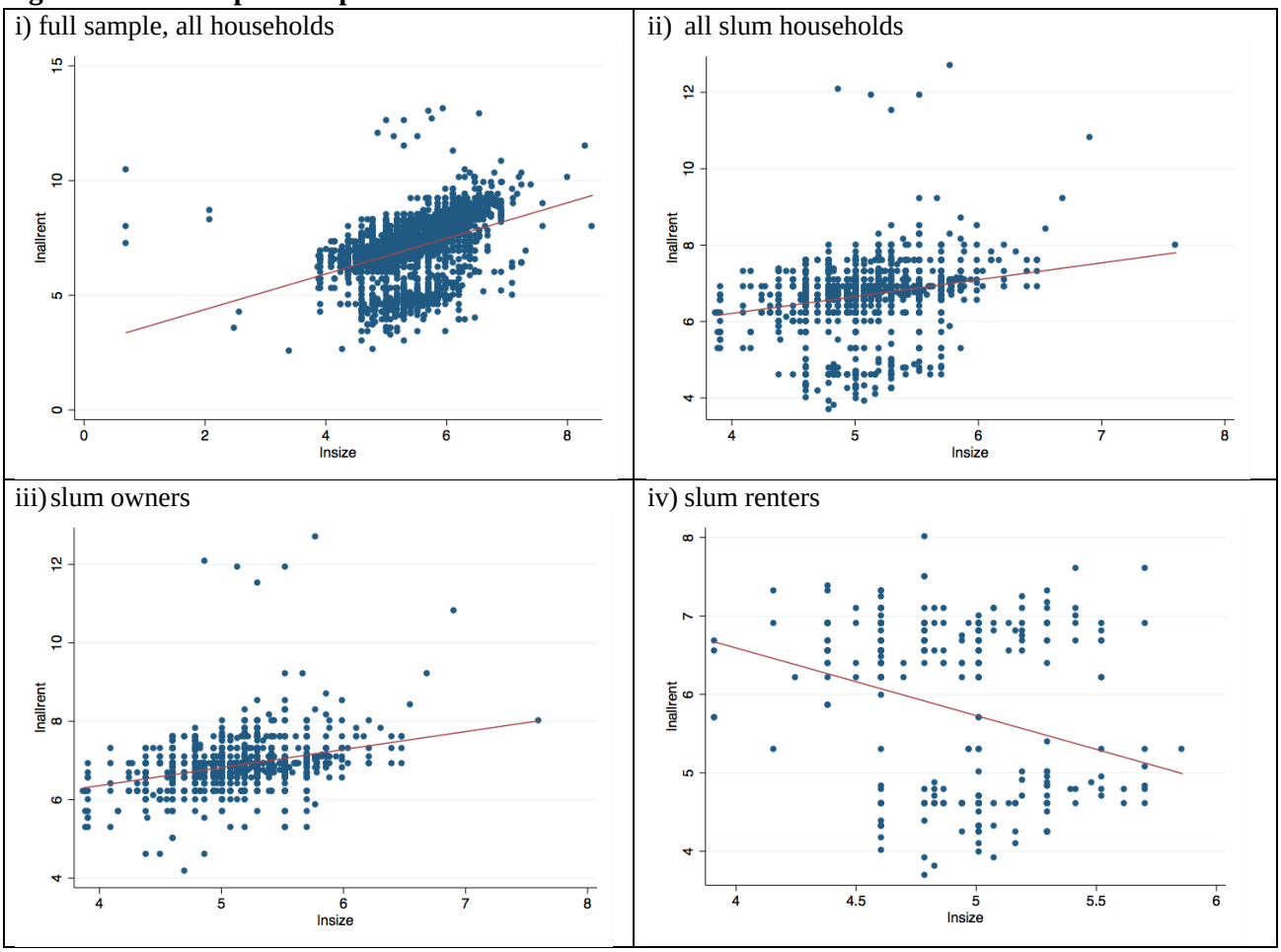


Figure J-1 shows four graphs of the data by various sample cuts. The first three graphs, i) to iii) display the full sample, all slums households, and slum owners, respectively. The fit lines for these three graphs clearly indicate the positive relationship that price has with house size. However, the last graph iv) slum renters, shows a negative relationship between the two variables and reflect the unexpected finding from the coefficient estimate for the size variable for this sub-sample. What is also apparent from this visual check is that there appear to be two groups within this sub-sample, one that falls above and one that falls below a log rent value of roughly 5.5. These two groups allow us to stratify the sample in order to run a check on whether there is omitted variable bias.

Figure J-2. Stratified Groups in Scatterplot

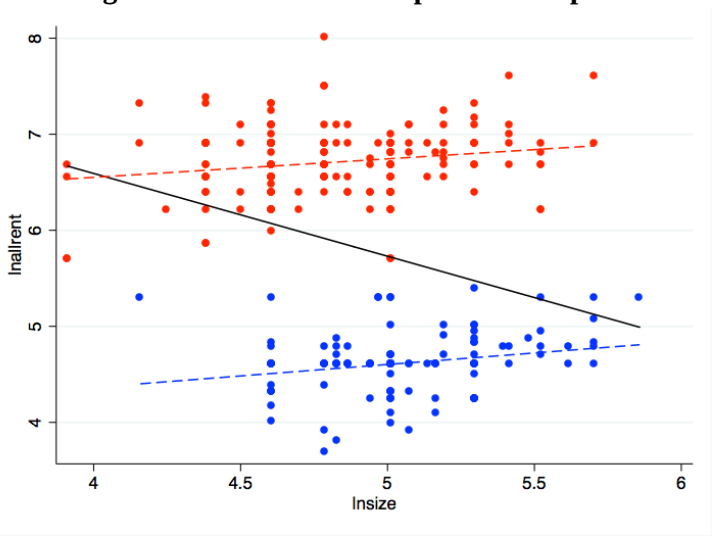


Figure J-2 yields alarming results. The groups above and below the 5.5 log rent cut off have fit lines that look extremely similar in slope. From this graph alone is appears that the red group is simply shifted up from the blue by the omitted variable. I correlated all the remaining variables in our observed data with the red group and could find no direct correlation, leaving open the question as to what the omitted variable could be. I ran a battery of other tests including grouping wards in the island city versus the suburbs together and could not obtain a non-negative coefficient on housing size. I re-specified the regression from equation (5), but instead added two dummy variables, one that indicated whether the observation fell into the red group (>5.5), called Group 1 hereafter, and another that indicated whether the observation fell into the blue group (<5.5), now called Group 2. The purpose of this is to hold one of these groups constant since they appear to be distinct. This new regression will drop one of the groups since the dummies are correlated, and the results yield a much less surprising finding.

Table J-2. Revised First-Stage Hedonic Regression, Stratified Groups in Slum Renters

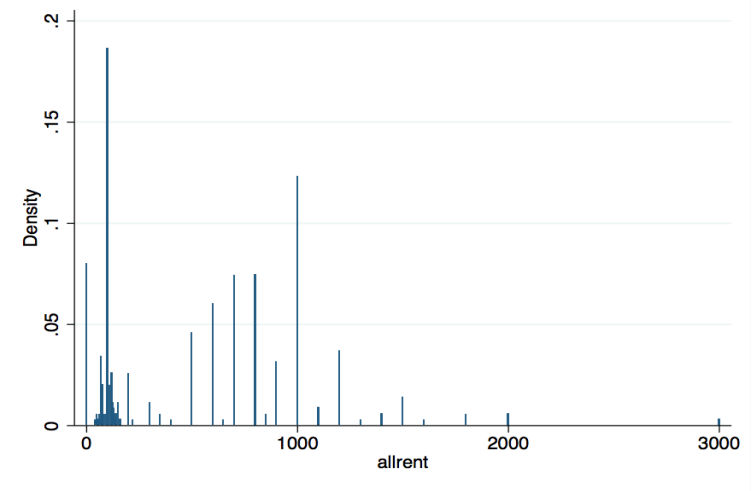
Variable	(1) Slum owner	(2) Non-slum owner	(3) Slum renter	(4) Non-slum renter
Size of housing unit (log sq. ft.)	0.269***	0.270***	0.042	-0.096
	(0.040)	(0.033)	(0.061)	(0.112)
Number of rooms	0.070*	0.132***	-0.016*	0.248**
	(0.032)	(0.025)	(0.006)	(0.082)
Permanent floor	0.131	-0.065	0.500***	-0.173
	(0.082)	(0.063)	(0.128)	(0.280)
Permanent walls	0.404***	0.289*	0.126	0.862***
	(0.053)	(0.113)	(0.068)	(0.260)
Permanent roof	0.129**	0.493***	-0.028	0.076
	(0.046)	(0.037)	(0.051)	(0.102)
Separate kitchen	0.004	0.054	0.225***	0.442***

	(0.034)	(0.040)	(0.062)	(0.110)
Toilet in house	0.344***	0.296***	-0.158	0.374***
	(0.062)	(0.041)	(0.086)	(0.101)
Separate bathroom	0.173***	0.101*	0.169***	0.011
	(0.033)	(0.041)	(0.048)	(0.114)
Piped water in house	0.094***	0.106*	0.059	0.126
	(0.023)	(0.041)	(0.040)	(0.132)
Percent of slums in ward	-0.520***	-0.138	-0.581***	1.122***
	(0.094)	(0.078)	(0.128)	(0.195)
Percent illiterate in ward	0.917*	0.128	1.860**	-4.679***
	(0.394)	(0.633)	(0.609)	(1.291)
Percent scheduled caste/tribe in ward	-0.048	-0.746	1.096	-23.38***
	(0.540)	(0.694)	(1.030)	(1.679)
Pop. density of ward (people/km^2)	0.000*	0.000*	-0.000	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Group 1	-	-	-2.159***	-
			(0.062)	
Intercept	4.786***	5.142***	5.623***	7.774***
	(0.226)	(0.233)	(0.340)	(0.614)
R^2	0.260	0.506	0.927	0.438
Observations	1,575	2,091	321	877

Standard errors in parentheses
Asterisks denote *p <0.05; **p<0.01; ***p<0.001

Table J-2 yields a positive, but not significant coefficient for house size. Having a permanent roof is still positive, but no longer significant and having a separate bathroom is now positive and highly significant. The coefficient for the number of rooms is still negative, but now statistically significant and smaller in magnitude. The high R^2 shows that over 92 percent of the variation is explained through this model, which is not surprising considering what we could observe with the naked eye in Figure J-1, iv. However, this still does not identify the issue related to the omitted variable. I hypothesize that an issue in the price variable may be at play here due to what appears to be a large and sharp break between the two groups. I revisit the non-logged rent data and spot two clear spikes in the data.

Figure J-3. Discrete Distribution of Non-logged Rent Data for Slum Renters



Two spikes in the histogram stand out. The first is that that nearly 20 percent of the observations have a rent value of zero, with quite a number of observations clustered around this value. However, the next highest frequency value occurs at 1,000. There are two reasons why this might be problematic. The first is that the two highest frequency values are a magnitude apart from one another. One could imagine that some of these values could be entered in erroneously as an extra zero or one less zero separates these two numbers. The second is that separation between these two modal values suggest a bimodal market which could ostensibly be reflected in Group 1 and Group 2. Although we did not find anything in the observed data to explain this bimodality, this provides an invaluable lesson in both data quality as well as provocative questions regarding slum renter sub-markets. The remainder of this paper will rely on the omitted variable correction model which is shown in Table J-2, regression (3).

Appendix K: Distribution of Pune Consumption Variable

Figure K-1. Pune Monthly Consumption