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The Economics of Slums in the Developing World[†]

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Urban populations have skyrocketed globally and today represent more than half of the world's population. In some parts of the developing world, this growth has more-than-proportionately involved rural migration to informal settlements in and around cities, known more commonly as "slums"—densely populated urban areas characterized by poor-quality housing, a lack of adequate living space and public services, and accommodating large numbers of informal residents with generally insecure tenure.[1] Worldwide, at least 860 million people are now living in slums, and the number of slum dwellers grew by six million each year from 2000 to 2010 (UN-Habitat 2012a). In sub-Saharan Africa, slum populations are growing at 4.5 percent per annum, a rate at which populations double every 15 years.

The global expansion of urban slums poses questions for economic research, as well as problems for policymakers. Some economists (Frankenhoff 1967; Turner 1969; World Bank 2009; Glaeser 2011) have suggested a "modernization" theory of

[1] Perhaps not surprisingly, the identification of slum inhabitants suffers from the lack of a consistent terminology—for example, "slums" and "squatter settlements" are used almost interchangeably, although tenure and ownership institutions vary greatly across informal settlements. UN-Habitat (2006) applies the notion of "slum household" to any household lacking access to improved water, improved sanitation, sufficient living area, durable housing, and secure tenure. Slum areas are generally thought of as geographic areas accommodating informal residents that combine several of these characteristics.

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slums: according to this thinking, slums are a transitory phenomenon characteristic of fast-growing economies, and they progressively give way to formal housing as economic growth trickles down and societies approach the later stages of economic development. Even if slum areas appear stable in the short- or medium-term, this argument holds, slum living only represents a transitory phase in the life cycle of rural migrants: the slum dwellers or their children eventually move into formal housing within the city, so that the benefits of migration into the slum get passed along from generation to generation.

But even if urban poverty is preferable to rural poverty, as apparently shown by the revealed preference of migrants, life in a slum is very difficult and often subsistence-level. Moreover, slums do not always seem to be a temporary phenomenon of migration to cities: in many countries slum areas have been growing for decades, and millions of households find themselves trapped in slums for generations. This might suggest that today's slums pose a problem of a different nature: because of multiple market and policy failures, acute governance and coordination problems that hinder investment, and unsanitary living conditions affecting the dwellers' human capital, life in the slum might constitute a form of poverty trap for a majority of their residents.

In this essay, we provide historical and contemporary facts to argue that the type of poverty observed in contemporary slums of the developing world is characteristic of that described in the literature on poverty traps. We document how human capital threshold effects, investment inertia, and a "policy trap" may prevent slum dwellers from seizing economic opportunities offered by geographic proximity to the city. We then discuss whether the basic assumptions of the "modernization" view hold: that is, whether there is a relationship between economic growth, urban growth, and slum growth in the developing world, and whether standards of living of slum dwellers are improving over time, both within slums and across generations. Finally, we discuss why standard policy approaches have often failed to mitigate the expansion of slums in the developing world. Our aim is to stimulate serious academic interest and to inform public debate on the essential issues posed by slums in the developing world.

A Contemporary Perspective on Slums

Slums are not, of course, a new phenomenon. They were a distinctive feature of European and US cities during the Industrial Revolution, and they persisted in some of these cities well into the twentieth century. The well-known slums of the past were often on the outskirts of dynamic economic growth, which both attracted migrants and offered them some access to economic opportunities. For example, the Whitechapel area of East London attracted a vast number of poor rural migrants during the eighteenth and nineteenth century due to the new factories and shops of that part of the city. The Hell's Kitchen area of New York City on the Hudson River side of Manhattan attracted immigrants in large part because of its proximity to docks and railroads, as well as to the growing city nearby. In the past, moderate to radical policy solutions were adopted to address the overcrowding and

Table 1
Two Lists of the Developing World's Largest Slums

UN-Habitat (2003)			***Davis (2006)***		
Name of slum	*City, Country*	*Population estimate*	*Name of slum*	*City, Country*	*Population estimate*
Dharavi	Mumbai, India	Over 500,000	Neza/Chalco/Izta	Mexico City, Mexico	4 million
Orangi	Karachi, Pakistan	Over 500,000	Liberatador	Caracas, Venezuela	2.2 million
Kibera	Nairobi, Kenya	400,000	El Sur/Ciudad Bolivar	Bogota, Columbia	2.0 million
Villa el Salvador	Lima, Peru	300,000	San Juan de Lurigancho	Lima, Peru	1.5 million
Ashaiman	Tema, Ghana	150,000	Cono Sur	Lima, Peru	1.5 million
			Ajegunle	Lagos, Nigera	1.5 million
			Sadr City	Baghdad, Iraq	1.5 million
			Soweto	Gautung, South Africa	1.5 million
			Gaza	Palestine	1.3 million
			Orangi	Karachi, Pakistan	1.2 million

Source: UN-Habitat (2003); Davis (2006).
Notes: UN-Habitat (2003) does not provide a comprehensive list of slums ranked by their population. The numbers given are mentioned in the report as part of individual case studies of slums.

unsanitary conditions in these types of areas. Examples of such policies include Baron Haussman's revamping of Paris in the 1860s–1870s, which involved altering more than half of the city's buildings and creating a sewage system and wide boulevards in lieu of slum neighborhoods. More recently, Singapore's compulsory savings scheme in the 1960s was used to finance the construction of public housing and to enable slum residents to purchase formal housing units at a subsidized rate.

Today, large slum settlements have disappeared in most advanced economies, but it is far from clear how comparable these historical examples are to the situations faced in the developing world. Some of today's slums are in countries experiencing rapid economic growth, such as China, but many slums are located in countries with slow or stagnant growth. The prevalence of slums is highest in sub-Saharan Africa, where slum dwellers represent 62 percent of the urban population (UN-Habitat 2012a): as of 2005, the three countries with the highest fraction of the urban population living in slums—Sierra Leone, Sudan, and the Central African Republic—are also located on that continent. Estimates of actual populations on a slum-by-slum basis across the developing world are few and far between and vary widely across sources. Table 1 displays two lists, giving a sense of the range of measurements that

can occur. The left-hand column lists five of the world's largest slums, with rough population estimates, as provided by UN-Habitat (2003). An unofficial ranking provided in Davis (2006) lists 30 slums with over 500,000 inhabitants, including ten in sub-Saharan Africa and nine in Latin America. The ten slums with largest population by this measure are shown in the right-hand columns of Table 1. Dharavi and Kibera, the first and third slums in the UN-Habitat (2003) list both appear further down in the Davis (2006) ranking with an estimated population of 800,000 each.

Of course, the fact that a lot of the global slum expansion takes place in poor economies does not invalidate a "modernization" or transitory view of slums. Since rural migration continues unabated even in those countries, urban productivity must be rising relative to rural productivity, either because capital accumulation and technological progress are concentrated in cities or because rural productivity is declining. The location decision of slum dwellers also indicates that standards of living in slums are somewhat preferable to those in the rural hinterlands. Glaeser (2011) provided evidence that the urban poor worldwide are on average richer and happier than their rural counterparts, and Chowdhury, Mobarak, and Bryan (2009) showed that seasonal urban migration in Bangladesh can generate welfare improvements for families of migrants.

However, these facts say little about the nature of poverty in slums—and whether it can be escaped via the competitive market forces offered by the city. There has been, in fact, a relative lack of empirical research work conducted in slums of the developing world to test this argument.[2] One reason is that data collection in slums is problematic due to a variety of factors, including safety issues for research fieldworkers, the high mobility and turnover rates of respondents, and the fact that target households are regularly absent from their dwellings. As a result, few studies have tried to document the degree of intergenerational social mobility of slum dwellers in the developing world. Here, we start by illustrating what life is like in slums and what characteristics seem to be common across slums, using recent surveys collected in slums of four countries: Bangladesh, India, Kenya, and Sierra Leone. We rely most heavily on the case of the Kibera slum in Nairobi, Kenya, where we have conducted extensive fieldwork over the past two years. Table 2 provides specific sources of data for these slum areas.

Slums as Poverty Traps

In this paper, we argue that slums may be poverty traps and are therefore neither temporary nor a short stop on the way to greater economic opportunities.

[2] A nonexhaustive list of recent empirical research conducted in slums includes Banerjee, Duflo, Glennerster, and Kinnan (2010) in Hyderabad; Banerjee, Pande, Vaidya, Walton, and Weaver (2011) in Delhi; El-Zanaty and Way (2004) in Cairo; Field (2007) in Peru; Galiani et al. (2013) in slums of three Latin American countries; Gulyani, Bassett, and Talukdar (2012) in Dakar and Nairobi; and Perlman (2010) in Rio de Janeiro. Gupta, Arnold, and Lhungdim (2009) analyze the NFSH-3 dataset on which we also rely.

Table 2
Description of Datasets

Country	*Locations*	*Source*	*Year*	*Number of slum households surveyed*
Bangladesh	Tongi, Jessore	SHAHAR Project/CARE-Bangladesh (Baseline census)	2000	26,830
Bangladesh	Tongi, Jessore	SHAHAR Project/CARE-Bangladesh (Baseline survey)	2000	1,120
India	Delhi, Meerut, Kolkata, Indore, Mumbai, Nagpur, Hyderabad, Chennai	National Family Health Survey (NFHS-3)	2005–2006	8,669
India	Hyderabad	Banerjee, Duflo, Glennerster, and Kinnan (2010)	2005	2,800
Kenya	Kibera (Nairobi)	Kenya National Bureau of Statistics (national census)	1999, 2009	64,588 (approx.)
Kenya	Kibera (Nairobi)	Marx, Stoker, and Suri (2013)	2012	31,765
Kenya	Kibera (Nairobi)	Marx, Stoker, and Suri (2013)	2012	1,093
Sierra Leone	Western Urban Area (Freetown)	UNICEF Sierra Leone SMART Survey	2010	789

Sources: The Bangladesh data is available from http://dvn.iq.harvard.edu/dvn/ and was collected in 2000 as part of the SHAHAR census and baseline surveys. The India data was collected with approximately 8,669 slum households in eight Indian cities as part of the 2005–2006 National Family Health Survey (NFSH-3). It is available from http://www.measuredhs.com/ (India Standard DHS, 2005–06). The Hyderabad dataset (Banerjee, Duflo, Glennerster, and Kinnan 2010) was collected as part of a randomized evaluation on the impact of microfinance. It is publicly available from the data repository of the Jameel Poverty Action Lab (J-PAL) at http://thedata.harvard.edu/dvn/dv/jpal. Our Kenya data come from two different sources. First, we collected one census and one household survey in Kibera, Nairobi's largest slum area. Second, we obtained from the Kenya National Bureau of Statistics (KNBS) two waves of complete micro census data collected in the same area in 1999 and 2009. The Sierra Leone data was collected as part of the 2010 UNICEF SMART Survey and is proprietary from UNICEF. We use these sources throughout unless otherwise indicated.

There is a wide literature on poverty traps, including a theoretical literature highlighting the specific mechanisms leading to poverty traps (for excellent definitions and reviews, useful starting points include Basu 2003, Matsuyama 2005, and Bowles, Durlauf, and Hoff 2006). The literature has also described spatial poverty traps, but mostly in rural settings (Jalan and Ravallion 2002; Golgher 2012). We argue that urban slums present a different challenge to communities and governments administering them, and that the very nature of life in the slums makes it difficult to achieve improvements in standards of living through marginal investments in housing, health, or infrastructure alone. We now discuss some of the mechanisms relevant to slum contexts that may lead to poverty traps.

Human Capital

Despite tremendous variations across slums, issues common to all slum settings are a lack of adequate living space, insufficient public goods provision, and the poor quality of basic amenities, all of which lead to extremely poor health and low levels of human capital.[3] In this section, we focus on the health aspects of human capital. Education, albeit another important component of human capital, is a less relevant metric for our argument given that universal free primary education laws have reduced disparities in access to education between rural and urban settings,[4] and that rural–urban differences in the quality of education are extremely difficult to measure.

In the Kibera area of Kenya, informal households reported in 2009 an average dwelling size of 1.17 habitable rooms (with average household size of 3.15), as opposed to 1.95 for urban households and 2.97 for rural households. For perspective, according to UN-Habitat (2006), a dwelling provides "sufficient living space" if each room is shared by no more than three individuals. In the Zimbabwe slum in Abidjan, population density was reported to be as high as 34,000 inhabitants per square kilometer (UN-Habitat 2003). As a point of comparison, Manhattan's population density was 26,924 per square kilometer in 2010 (US Census Bureau 2013).

Across slum settings, the adverse health effects of overcrowding are aggravated by poor access to water and sanitation facilities. Table 3 shows that the majority of slum dwellers across our datasets have no private latrine, and many use inferior-type latrines (such as an open space or traditional pit that is not connected to a sewage network), no source of private water, and no garbage collection (meaning that garbage is either left in a roadside ditch or burnt next to the household dwelling). These data are corroborated by a range of studies documenting the poor water access and overall hygiene of slum neighborhoods. For example, in Mumbai's Shiva Shakti Nagar slum, community taps are reportedly shared by 100 people on average (World Bank 2009). In a survey of slum dwellers in Delhi, Banerjee et al. (2011) found that the environment of 83 percent of toilet sites was infected with fecal or other waste matter.

Absent or deficient water and sewage systems translate into a broad range of health and sanitation issues, whether through direct exposure to bacterial agents, contaminated drinking water, or other channels. Duflo, Galiani, and Mobarak (2012) described the disease burden arising from the unsanitary living conditions in slums. In the slums of Tongi and Jessore in Bangladesh, 82 percent of respondents report any household member being sick in the past 30 days. In Kibera, 16 percent of our respondent households have at least one member chronically ill in the previous three months. In Sierra Leone, a country whose slums routinely experience cholera

[3] The World Bank (2009) argued that urban areas fare consistently better than rural areas worldwide along a variety of health indicators. In this section, we compare rural areas with slum areas specifically.

[4] Lopez (2007) shows evidence of this trend for Latin America. Hannum, Wang, and Adams (2008) study the case of China, where some urban–rural disparities remain, but the primary enrollment of 7–16 year olds in rural areas is nearly universal. Worldwide, school attendance rates have increased in the majority of low-income countries since 1990, and rural areas were the primary beneficiaries of this trend (World Bank 2009).

Table 3
Public Goods and Basic Amenities across Slums

	No private latrine	*Inferior latrine type*	*No private water source*	*No garbage collection*
Tongi (Dhaka)	70%	34%	81%	64%
Hyderabad	46%	43%	61%	NA
Kibera	NA	63%	92%	73%
Kolkata	75%	46%	57%	NA
Mumbai	78%	8%	12%	NA
All Indian slums NFSH-3	68%	49%	25%	NA

Source: Authors using data from the SHAKAR Project for Bangladesh; Marx, Stoker, and Suri (2013) for Kenya; and the 2005–2006 National Family Heath Survey (NFSH-3) for India.
Notes: In the **first column**, we report the fraction of slum households who share their latrine with other households. In the **second column**, we report the fraction of households using an open space or traditional pit as latrine. To compute this number, we combine "open air" and "septic tank/pit toilet" in Hyderabad; "traditional pit latrine," "bucket," and "bush or river or stream" in Kibera; "flush to septic tank," "flush to pit latrine," "flush to somewhere else," "flush, don't know where," "ventilated improved pit latrine," "pit latrine with slab," "pit latrine without slab/open pit," "no facility/bush/field," "composting toilet," and "dry toilet" in the 2005–2006 National Family Heath Survey (NFSH-3) data (Kolkata, Mumbai and "All Indian slums"). In the **third column**, we report the fraction of households who share their main drinking water source with other households. This combines "share restricted" and "shared unrestricted" in the Bangladesh data, "public tap" and "public water tank" in Kibera, "public tap/standpipe" and "tube well or boreholes outside the dwelling" in the NFSH-3 data. In the **fourth column**, we report the fraction of households whose garbage is not collected by a public or a private company. "NA" means "not available."

outbreaks, slum households exhibit poorer health outcomes than their rural counterparts. The prevalence of underweight, stunting, and wasting (acute malnutrition) is in fact greater in the slum outskirts of the capital Freetown than in rural areas nationwide, as children under five living in slums have significantly lower weight-for-age and weight-for-height indexes than children under five in rural areas.[5] Across cities in the developing world, there is some evidence that life expectancy is lower, and infant mortality higher among the urban poor than among comparable groups in rural and formal urban areas (Bradley, Stephens, Harpham, and Cairncross 1992).

Health and sanitation issues are rendered more problematic by the lack of provision of a social safety net in slums. Slum living involves a wide range of risks: in our Kibera data, 10 percent of households have experienced being evicted from their dwelling, and 4 percent report at least one death in the household in the past six months. In Bangladesh, 56 percent of respondents say they do not meet their basic needs of food, water, shelter, and healthcare; 48 percent do not feel safe in their house during bad weather; and of the households reporting one member being ill in the previous 30 days, 26 percent say that they could not afford to seek medical attention. In Hyderabad slums, where 70 percent of households classify themselves as "poor," only 12 percent report receiving any assistance from the government.

[5] Calculated by the authors using the UNICEF SMART Survey data for Sierra Leone.

A wide literature, both macroeconomic and microeconomic, documents the importance of health for income and of early health investments for longer-term outcomes: good reviews can be found in López-Casanovas, Rivera, and Currais (2005), Bleakley (2010), and Currie and Vogl (2013). In developing economies, there are large returns to health improvements and strong complementarities between investments in child health and child education (Miguel and Kremer 2004). Poor human capital and poor avenues for human capital investment in slum households may therefore lead to a lack of social mobility across generations of slum residents. Thus, this health data seems at odds with the "transitory" hypothesis, making it questionable whether slum inhabitants meet the "critical thresholds" in human capital required for the competitive forces of the labor market to come into play, as described theoretically in Azariadis and Drazen (1990). Slum dwellers may find themselves trapped in a low-skilled, low-income equilibrium as the continuous influx of rural migrants maintains wages at near-subsistence levels, hindering the investments in human capital that would be required to offset the adverse effects of slum living.

Investment Inertia

Slums not only seem trapped in a low-human-capital equilibrium, but they also exhibit dysfunctional institutions, low levels of physical capital, and poor access to developed services. Slums can be thought of as areas of depressed public and private investment where neither government nor broader society has managed to organize in a way that provides for widespread provision and maintenance of public goods (and we are defining "public good" broadly to include clean water, sanitation, garbage collection, a social safety net, and the legal infrastructure of property rights that allows for an effective market in land and housing). In this section, we describe five distinct phenomena that can lead to low investment in slums.

A first factor is the well-known informality of property rights intrinsic to slum areas. Without formal land titles, slum dwellers lack the incentives to improve the quality of their homes and neighborhoods. Informal settlements have typically emerged on vacant government land, which implies that the property rights over the land held by individuals living there are highly illiquid, although they may be enforceable locally. In Dakar and Nairobi, only 19 and 34 percent of owners respectively report that it is easy to transact housing in their area (Gulyani, Basset, and Talukdar 2012). De Soto (2000) popularized this argument, and suggested that a lower risk of eviction and tighter property rights on the land could unlock access to credit markets. More recently, Field (2005) and Galiani and Schargrodsky (2010) showed that formal titling could encourage investments in poor urban areas.

A second factor is the concurrence of overcrowding of slum areas and low marginal returns from small upgrading investments. It may therefore not be rational for slum dwellers to finance investments in housing or infrastructure. In addition, many upgrades may require rather large private investments. For example, Galiani et al. (2013) show how even simple improvements in housing in slums in Mexico, Uruguay, and El Salvador cost as much as $1,000 per household, although such investments do generate improvements in quality of life and safety. This situation

Table 4
Ownership Type of Main Dwelling

	Own	*Rent*	*Occupy*	*Other arrangements*
Tongi (Dhaka)	52%	41%	7%	0%
Hyderabad	68%	28%	3%	1%
Kibera	7%	92%	1%	1%
Kolkata	37%	56%	NA	8%
Mumbai	72%	26%	NA	2%

Source: Authors using data from the SHAKAR Project for Bangladesh; Marx, Stoker, and Suri (2013) for Kenya; and the 2005–2006 National Family Heath Survey (NFSH-3) for India.
Notes: "Occupy" refers to situations where the respondent lives in a dwelling without paying for rent and without holding a title on the land. "Other arrangements" include land given by the government in Hyderabad, land owned by a friend or relative in Kibera, and land obtained as part of an employment or any other arrangement in Mumbai and Kolkata. The "Other arrangements" category may include occupiers in Mumbai and Kolkata, although this is not clear from the survey questionnaire. "NA" means "not available."

stands in stark contrast to some of the problems that characterize rural poverty, where relatively cheap technologies can often lead to substantial improvements in income and welfare (for example, the results of "green revolution" technologies in agriculture). Not only are private investments in housing infrastructure low in slums, but Duflo, Galiani, and Mobarak (2012) have documented a low willingness-to-pay for improved public goods in poor urban areas. A "big push" approach would then seem necessary to address the lack of investment in slums, and to generate aggregate demand spillovers in the area of public goods and basic services—the seminal model described Murphy, Shleifer, and Vishny (1989) would justify this type of intervention.

A third, less well-known cause for low investment levels in slums could be the high rent premiums that dwellers must pay to live in close proximity to the city, and which reduce opportunities for savings accumulation. While slum dwellers are typically thought of as squatters occupying vacant public land, available evidence suggests that a large number of dwellers across slums are in fact rent-paying tenants, as shown in Table 4.

In a survey of city officials in Kibera (Marx, Stoker, and Suri 2013), we found that the two most common causes of landlord–tenant disputes in the slum were the tenant's inability to pay their rent and rent increases asked by the landlord. Looking at amounts paid in rent across different income brackets in Kibera, households in the poorest quantiles do not pay lower rents per square meter occupied (as shown in Table 5). This finding undermines the notion that rural migrants can pay a modest premium to live in close proximity to the city. Although rents for urban poor look rather low in amount (about 12 percent of consumption), most rural households (for example, 90 percent in Kenya) do not pay any rent. In 2008, the average monthly rent for rural households was 266 Kenyan shillings (about $3 US), or 1 percent of household consumption, as opposed to 3,303 Kenyan shillings ($39 US), or 10 percent

Table 5
Rent Prices across Consumption Quintiles in Kibera
(rent per month)

	1st quintile	*2nd quintile*	*3rd quintile*	*4th quintile*	*5th quintile*
Area rented per capita (square meters)	5.3	7.9	10.9	14.1	15.9
Rent per capita (Kenyan shillings)	310.9	435.2	488.6	666.0	1121.4
Rent per square meter (Kenyan shillings)	117.6	107.5	96.8	109.5	127.0

Source: Data from Marx, Stoker, and Suri (2013).
Notes: We trim the top 1 percent of the data for rents and area rented. The exchange rate was $1 = 85 Kenyan shillings. When looking at rents per capita in these data, it is hard to account for economies of scale in housing. Part of housing is a public good to the members of a household, and these rent figures are simply total rent paid divided by household size, not accounting for these economies of scale.

of consumption, for urban households (Jack and Suri forthcoming). In the Kibera slum, where food expenditure represents 61 percent of consumption, housing rents represent in fact almost a third of nonfood expenditure.[6]

A fourth set of factors that can cause low investment involve the extreme coordination failures and "governance gap" intrinsic to slum life. Widespread governance failures work against the prospects for the urban poor to find creative solutions to upgrade the quality of their neighborhoods (as envisioned in Turner and Fichter 1972). A large amount of anecdotal evidence suggests that allocation mechanisms in slums are inefficient and that private actors or bureaucratic entrepreneurs fill the governance space, as opposed to legitimate local governments or community representatives. For example, land and housing markets are often controlled by a handful of powerful or well-connected individuals: landlords, local bureaucrats, or gang members. Davis (2006) reported on the example of Mumbai, where it is claimed that 91 individuals control all vacant land.[7] The slums of Nairobi, where land permits on vacant land have been illegally awarded by the local administration since the 1970s, are a poster case. The Nairobi "slumlords" can often rely on the support of the local administration to settle rent disputes (Joireman 2011), and they may collude with local chiefs to discourage improvements in the housing infrastructure that could lead to more entrenched tenancy rights. In areas where chiefs are not able to enforce their authority, gangs sometimes fill the governance

[6] Across the developing world, poor households tend to spend a large share of their income on food, as discussed in this journal by Banerjee and Duflo (2007).
[7] Owning and renting out structures in slums can be immensely profitable to landowners: in Nairobi, Amis (1984) reported that annual returns on the housing capital stock in slums could be as high as 131 percent.

space to enforce rules of their own, levy taxes, and control expenditure and investments in their neighborhoods (Marx, Stoker, and Suri 2013). In other areas, the formal governance system is entirely absent and has been replaced by these other interests—an example is the role of drug cartels in the *favelas* of Rio de Janeiro (Ferraz and Ottoni 2013).[8]

A fifth potential contributor to low investment traps in slums comes from the well-known Todaro paradox (1976): slum living standards cannot be improved without generating an additional influx of rural migrants, which in turn depresses public and private investments in the existing settlements. This may give little incentive for the public sector to invest in infrastructure and public goods in slums. However, there is little rigorous evidence on the link between these "pull" factors and slum growth in the developing world, while "push" factors (such as overcrowding on the fertile lands and an overall decline in agricultural output) have been better documented. For instance, Lipton (1977) and Bates (1981) argued that the "urban bias" of policy and tax-based income transfers between peasants and city dwellers until the 1990s was a chief cause of rural–urban migration. The seminal model on the issue of rural–urban migration was that of Harris and Todaro (1970), who modeled the rural–urban wage gap as a driving force behind migration decisions. However, this work had little to say about locations decisions of migrants within cities, and we are not aware of any more recent theoretical attempt to model those location choices.[9]

The Policy Trap

In addition to being trapped in low-human-capital and low-investment equilibriums, slum areas are generally places of extreme policy neglect, well beyond the lack of public goods provision discussed above. This "policy trap" stems from political economy factors that are different from the market failures we just discussed.

First, the informal nature of slum neighborhoods implies that these areas are usually considered not eligible for urban planning or public upgrading projects. This may be for purely administrative reasons or because public investments could amount to more entrenched occupancy rights for the slum residents—an outcome that governments generally do not favor (Fox 2013). Over the past two decades, the few countries that made significant advances in the struggle against slum growth were those where political support was widespread for reducing the prevalence of slums and where a genuine political commitment was expressed for curbing slum expansion—for example, in Egypt and Mexico (UN-Habitat 2006).

Second, enumeration problems and the fact that slum populations are often (deliberately or mistakenly) undercounted distorts the weight assigned to slum areas

[8] Ferraz and Ottoni (2013) study the effects of a pacification program in the Rio *favelas* where military interventions were necessary to re-establish a police presence in the slums.

[9] For US cities, one canonical modeling approach to looking at location decisions in urban areas is to think of a city with a central business district and how housing, commerce, and schools are organized relative to that city center, along the lines of Alonso (1964), Muth (1969), and Mills (1972). But these sorts of models do not seem an apt description of the location decisions and outcomes in the cities of low-income countries.

in the political process. For example, Sabry (2010) showed how the undercounting of *ashwa'iyyat* (informal settlement) populations of Greater Cairo led to an undersampling of slum households in household surveys. In India, slum populations were comprehensively enumerated for the first time in 2001, but discrepancies in the state-level definitions of slums and the refusal of some states to validate the slum statistics resulted in "gross under-estimation/under-coverage of slum populations in the country" (Government of India 2011). Lack of representation can have dramatic consequences when issues of eviction are at stake. For example, the Makoko neighborhood in Lagos, Nigeria, one of the oldest slums in the world until its partial demolition in 2012, had not been covered by the country's last national census in 2007 (Babalola 2009). Not having accurate census data on slums is problematic for many reasons. The true population of the slum is unknown—for example, there has been controversy over the population of the Kibera slum, with estimates ranging from about 170,000 to over one million—and policy interventions are impossible to plan without accurate population numbers.[10]

Third, catering to the interests of the silent majority of slum dwellers might not even be in the best interest of the people in charge in the slum. As discussed above, planning or regulatory powers in slums often do not belong to legitimate governance bodies, but are usually split between a galaxy of private actors, landlords, chiefs and bureaucrats, and gangs. Conflicting interests between these actors, and policy conflicts between central government and municipal authorities could explain why "status quo" interests have often prevailed in slums (Fox 2013). In other words, maintaining high transaction costs and opaque governance mechanisms can be very beneficial to a minority of bureaucratic entrepreneurs willing to garner support in slum patronage politics or to extract rents from their informal control over the land (Amis 1984; Marx, Stoker, and Suri 2013). In line with this, Fox (2013) documents how members of Tanzania's ruling *Chama Cha Mapinduzi* (CMM) Party are involved in transactions on slum land markets. Syagga, Mitullah, and Karirah-Gitau (2002) found that 57 percent of landlords in Nairobi slums were public employees.

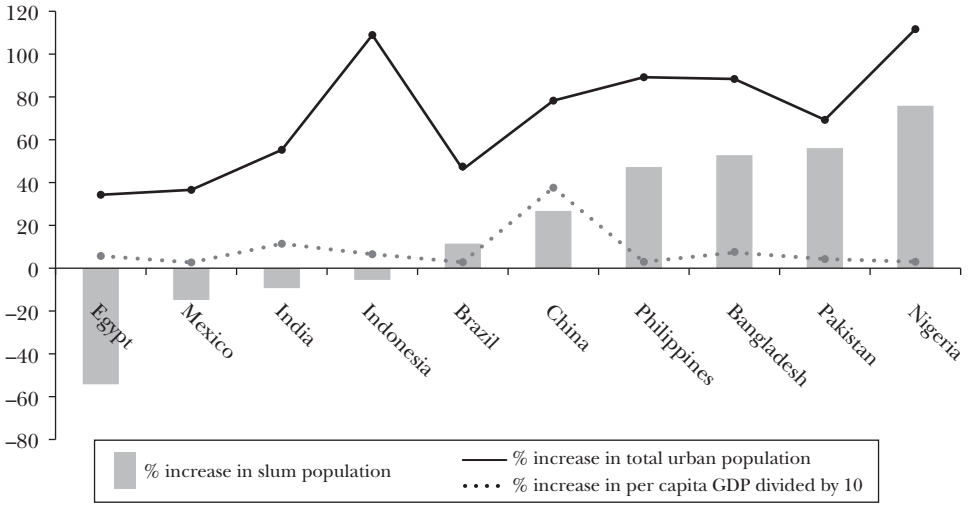
Slums and Economic Development

Slum Growth in a Cross-Country Perspective

The conceptualization of slums as places of poverty traps is at odds with a "modernization" view, which assumes that the prevalence of slums and urban poverty should decrease as markets develop and the forces of economic development come under way. Here we present some simple empirical facts on this hypothesis. In particular, is there a functional relationship between economic growth, urban

[10] Aside from the policy constraints that lack of data poses, the poor census implies that the sampling frame for any survey (national or specifically of the slum) cannot draw a representative random sample. It is therefore much harder to accurately collect socioeconomic indicators of conditions in a slum and understand how these conditions evolve over time.

Figure 1
Patterns in Urban and Slum Growth, 1990–2007



Source: Figure compiled by the authors using data from UN-Habitat's Global Urban Indicators online database (UN-Habitat 2013). The data on GDP per capita come from the World Bank's World Development Indicators online database.
Notes: Figure 1 compares slum growth and urban growth in the ten countries that had more than 10 million slum households in 1990. The countries are ranked by the percentage growth in their slum population from 1990 to 2007, shown by the bars. The dotted line shows for each country in the sequence the percentage increase in GDP per capita from 1990–2007 *divided by 10* (to fit on the same scale).

growth, and the prevalence of slums? Is there evidence that standards of living are improving within slums, and/or across generations of slum dwellers?

Over the past 20 years, countries that experienced fast economic growth are also the ones that achieved the most significant reductions in the proportion of urban households living in slums. In a cross-country regression framework, Arimah (2010) found that the prevalence of slums in any given country was significantly correlated with a variety of aggregate economic indicators, including GDP per capita (negatively), the debt stock and debt service, and inequality measured by the Gini coefficient (positively). However, cross-country correlations overlook widely heterogeneous situations, as rapid urbanization rates in developing countries are often not associated with fast economic growth. In fact, a number of the least developed countries have experienced a rapid growth of their urban population without experiencing much economic growth at all. Extreme rural poverty, natural disasters, and civil wars have been the main drivers of this "urbanization without growth." An example is given by the Democratic Republic of the Congo, where the population of the country's capital Kinshasa more than tripled in size between the beginning of the Mobutu regime (1965) and the end of the Second Congo War (2002).

Figure 1 compares slum growth and urban growth in the ten countries that had more than 10 million slum households in 1990. The countries are ranked

by the percentage growth in their slum population from 1990 to 2007, shown by the bars. These bars can be compared to overall urban population growth, shown by the dark solid line. A few countries experienced explosive urban growth with limited or no slum expansion (for instance, India, Indonesia, and Brazil), whereas in others (Pakistan and Nigeria), slum growth accounts for most of urban growth. The countries where urban population growth outstripped slum population growth have a declining share of urban population living in slums: between 1990 and 2009, this proportion decreased from 55 to 29 percent in India, from 44 to 29 percent in China, and from 51 to 23 percent in Indonesia (UN-Habitat 2012a).

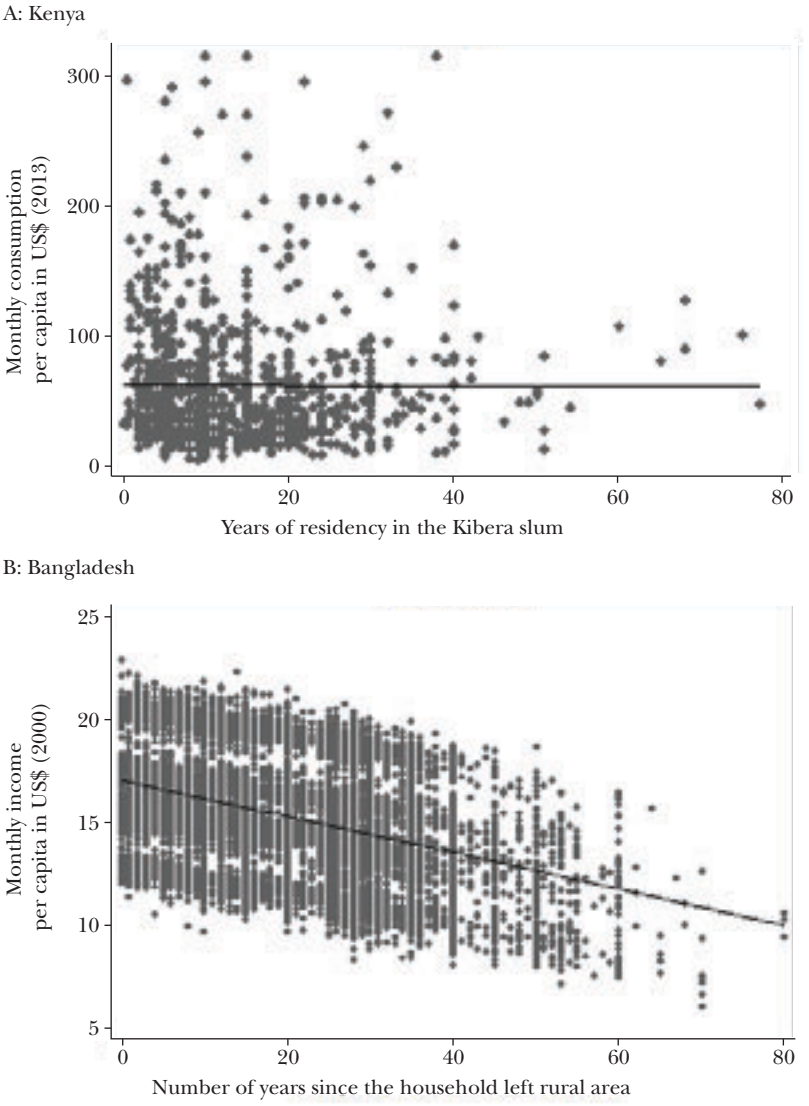
The dotted line in Figure 1 shows for each country in the sequence, the percentage increase in GDP per capita over 1990–2007 *divided by 10* (to fit on the same scale). Very roughly, per capita growth in GDP was similar between the set of countries where slum populations fell (Egypt, Mexico, and Indonesia), and the set of countries where most of urban growth was slum populations (the Philippines, Pakistan, and Nigeria). In fact, it appears that the connection between economic growth and slum growth across countries is quite diverse, without a uniform pattern. Below, we discuss how different policy choices may have contributed to these heterogeneous experiences.

An Intergenerational Perspective

In many slums in low-income countries, living standards do not seem to be improving over time. In Kibera, Kenya, census data suggest that living conditions have either deteriorated or at best stagnated over the 1999–2009 period, a period during which the economy as a whole grew at 3.5 percent per annum. The share of household heads with a primary education fell from 47 to 40 percent over this time; the number of rooms per capita held essentially the same at 0.68 in 1999, and 0.67 in 2009; and the share of those using a pit latrine (rather than the main sewer system) fell only slightly, from 82 percent in 1999 to 77 percent by 2009.

Of course, this simple analysis of living standards over a given period overlooks a fundamental selection problem: households that improved their condition over the period may no longer live in the slum, while other poor households may have migrated into the slum. The available evidence, overall, does not provide *prima facie* evidence of rapid changes in the composition of slums. In our Kibera data, respondent households have lived in the slum for 16 years on average, and incomes do not increase (nor decrease) with the duration of residency, as illustrated in Figure 2 (panel A). In the Bangladeshi settlements studied, income per capita correlates negatively and significantly with the total number of years that that household has spent in the slum and with the number of years since the households first left the countryside (Figure 2, panel B). Similarly, UN-Habitat (2003) reported that 41 percent of Kolkata slum dwellers had lived in slums for over 30 years, and more than 70 percent had lived in slums for over 15 years. In a case study of Bangkok slums, 60 percent of individuals were reportedly born in the same slum (UN-Habitat 2003).

Figure 2
Living Standards and Duration of Residency in Slums of Bangladesh and Kenya



Notes: The first scatterplot shows the result of a single variable regression of monthly consumption per capita on the number of years the household has lived in the slum from our Kibera survey data. The estimated slope is −0.017 (SE 0.15). In this dataset the average monthly consumption is USD 64. The second scatterplot presents the result of a regression of monthly income per capita (defined as the total household income in US$ (non PPP) divided by the household size) on the number of years since the household first left rural areas for Tongi and Jessore slums in Bangladesh, controlling for the age and education of the household head, the number of adults in the household, and district fixed effects. The average monthly consumption is US$15 (US$21 in 2012 equivalent). The slope of the fitted line is the coefficient of interest in that regression, and the estimated value of this coefficient is −0.055 (SE: 0.019). The negative sign of the slope is robust to removing these controls and to the inclusion of more controls.

To our knowledge, Perlman (2010) is one of the few studies to have attempted to address selection issues in surveys of slums by tracing slum respondents and their descendants over an extended period of time: 1969–2001, in the *favelas* of Rio de Janeiro. Her findings were somewhat ambiguous. She reported that a majority of individuals interviewed in 1969 and found again in 2001 were no longer living in the *favelas* (63 percent of the original interviewees, as well as 64 percent of their children and 68 percent of their grandchildren), and that the fraction that had remained in the favelas had better access to public services (including education) as well as improved household amenities. However, only a nonrandom 41 percent of the original sample (307 out of 750) could be accurately relocated, of which 22 percent were still alive and 19 percent were deceased. In addition, from a new random sample of 425 individuals in the same survey areas, she found considerably higher unemployment rates (51 percent, up from 32 percent in 1969) and a higher fraction of respondents with no income (23 percent, up from 17 percent in 1969).

One question that remains is why households that initially migrated to slums but did not experience welfare gains do not return to their province of origin. A dataset on two slums in Nairobi (APHRC 2013)[11] that collects information on where outmigrants go once they leave the slum provides some answers to that question. Between 2003 and 2007, 15 percent of slum residents moved locations. Of these, 26 percent moved to another slum, 4 percent moved to another location in the same slums, 22 percent moved to a nonslum area in Nairobi, and 41 percent moved to rural Kenya. The notion of slums being a poverty trap implies that households do not necessarily move there planning to stay, but instead get caught in a low-level equilibrium. The APHRC data does speak to this—very few slum residents moved, only about 15 percent, and one-third of these stayed in slum areas.

Empirically, little is known about the outside options that slum households have or contemplate at any given time. Although there is a small probability of success (for example, of finding consistent employment), perhaps the expected gains are large enough to make this decision individually rational. A related literature is that on entrepreneurship—many studies find that entrepreneurship does not pay (Hamilton 2000; Moskowitz and Vissing-Jørgensen 2002), but some of this may be due to nonpecuniary benefits of being self-employed (Hamilton 2000) or perhaps to the overconfidence that entrepreneurs have in their own skills (Bernardo and Welch 2001). In the literature on education, researchers also found that information provided to parents on the returns to education can have effects on enrollment rates of their children (Jensen 2010; Nguyen 2008). Issues of overconfidence and misinformation about individual success probabilities may also be at stake in slums—there is room for research on expectations and their role in migration decisions, especially in the context of slum populations.

[11] This data covers two slums, Korogocho and Viwandani, which form a Demographic Surveillance Site in Nairobi. The data is collected by the African Population and Health Research Center. A subset of the data is available at http://www.aphrc.org/.

Limitations of Past Approaches in Slum Policy

Ridding cities of slums may be considered an essential part of the development process; yet this has proved nearly impossible for policymakers in most emerging and developing economies. In a recent testimony of the problems encountered by ambitious slum policy, the government of India announced in 2009 the implementation of the *Rajiv Awas Yojana* (RAY) scheme to make the country "slum-free" within five years. Three months later, the timeframe of the program was extended to seven years (Aggarwal 2009). In 2011, India's Committee on Slum Statistics estimated that the total slum population in the country would still increase by 12 percent between 2011 and 2017 (Government of India 2011). By the end of 2012, the scheme was still in its infancy, and early implementation had been hampered by problems with land records, site selection, and the allocation of land (Kundu 2012). In this section, we discuss what policy approaches towards slums have been taken and why these approaches have been largely unsuccessful.

From "Benign Neglect" to "Aided Self-help"

Historically, outright evictions have been used as a primary policy instrument to reduce slum populations. A highly publicized example of a large-scale slum clearance scheme was "Operation Clean Up" implemented in 2005 in Harare, Zimbabwe, where 700,000 individuals lost their homes (Tibaijuka 2005). While little data has been collected on slum households evicted as part of these policies, it is quite clear that slum clearance does not address the roots of the slum problem. Hence a popular alternative to clearance, widely adopted in the 1960s and 1970s, was the deliberate neglect of expanding slum areas. As part of this approach, there were no policing of squatters, but also no provision of public services in informal settlements. In the "benign" interpretation, policymakers assumed that the market would "take care of it": slums provided much-needed low-cost housing to urban dwellers, who would eventually move into formal housing.

By the 1970s, however, it became clear that neither slum clearance nor "benign neglect" would address the continuous expansion of slums. Slum inhabitants were not being pulled away by improved economic prospects nor being pushed away from the less-desirable aspects of unregulated slum living. A new thinking emerged that the urban poor would find creative solutions to improve their livelihoods as long as basic improvements to the local environment could be performed by the government. Rather than resettling the squatters, governments should focus their efforts on providing basic infrastructure and improving sanitary conditions—like supplying safe water and facilitating waste disposal. Upon completion of these basic improvements, the slum residents would start investing in their own dwellings, and improvements in living standards would follow suit. This "aided self-help" paradigm, inspired by earlier experiences in Europe and the USSR (Harris 1999) and by the influential work of British architect John Turner (Turner and Fichter 1972), convinced the World Bank and other policy planners to reorient their policies towards a "slum upgrading" approach.

Compared to evictions or "benign neglect," slum upgrading seemed at the time to present great advantages. First, it was very cheap: a large upgrading project in Jakarta cost US$38 to US$120 per household, as opposed to the cost of building entirely new housing units for the slum dwellers (Werlin 1999). Second, it would be endorsed by the inhabitants, as local stakeholders and communities would view themselves as receiving an improved standard of living and would be involved in the maintenance of the new infrastructure.

By the early 1980s, slum upgrading had been included in numerous poverty alleviation programs across the developing world. Early evaluation results from upgrading projects conducted in Kolkata, Jakarta, and Manila seemed promising: for instance, mortality caused by waterborne disease was halved among beneficiaries in Kolkata, and investments in home improvements were doubled in Jakarta (Werlin 1999). Upgrading programs also seemed to increase the housing supply and the supply of labor by households (Keare and Parris 1982). However, the early enthusiasm for the upgrading approach began to dwindle by the late 1980s as slum areas continued to expand, and the basic infrastructure improvements appeared to be unsustainable. The maintenance systems of the upgraded public goods collapsed and environmental and health issues were on the rise. In Jakarta, where all slum areas had benefited from the upgrading program, 93 percent of the city's wells were contaminated with feces (Werlin 1999). Overall, even though upgrading programs were rarely submitted to rigorous evaluation,[12] the available evidence suggested that the upgrading projects of an "aided self-help" approach did not seem an adequate policy lever to transform slum conditions in a meaningful way.

The Land Titling Paradigm

The writings of Hernando de Soto (2000), despite some early criticism from the economics profession (Woodruff 2001) were influential in refocusing the slum debate towards issues of land tenure and land rights. De Soto argued that giving the poor property titles over their land would provide collateral for millions of poor urban households across the developing world. In de Soto's argument, property rights were the panacea, and encouraging slum dwellers to invest in improving their homes was still viewed as the Holy Grail of slum policy. The key driver of this encouragement would no longer be the provision of public goods by the government, but rather a reduction in the risk of eviction, resulting from the titling of land occupied by squatters. Thus, home investments would become safer for poor households, and slum households would become able to access credit markets to finance investments to create small businesses and educate their children—the ultimate engines of poverty reduction. Land titling would concomitantly increase the local tax base and enable municipalities to improve the provision of basic public goods.

[12] Slum upgrading programs until now rarely provided a natural experiment framework that could isolate causal effects (Field and Kremer 2006). A recent exception is the work of Galiani et al. (2013), who provide causal estimates of the impact of housing upgrading projects in slums of three Latin American countries.

In the past 20 years, national governments and the World Bank implemented urban land titling projects in more than 18 African, Asian, and Latin American countries (Durand-Lasserve, Fernandes, Payne, and Rakodi 2007).

The positive relationship between tenure security and investments in land has been well documented in the empirical literature for rural settings (for example, Banerjee, Gertler, and Ghatak 2002; Besley 1995; Goldstein and Udry 2008; Hornbeck 2010). However, few academic studies have looked at the impact of urban titling programs on the investment decisions made by households in slums. For urban households in Peru, Field (2005) found that land titling increases the rate of housing renovations (by about two-thirds), and Field (2007) showed that titling increased household labor supply (by 10 to 15 percent) by freeing resources that were previously used to protect household assets. Galiani and Schargrodsky (2010) showed that the allocation of formal land titles in Buenos Aires led to increased investments and education amongst households who benefited from the titling. On the policy side, however, by 2005 concerns began to emerge about how urban land titling programs were being widely promoted without much if any evidence on their effectiveness (Durand-Lasserve, Fernandes, Payne, and Rakodi 2007).

The major limitation of the land titling argument is that it assumes that a lack of formal titles implies weak or nonexistent property rights. However, there is no systematic evidence that land rights are always weakly enforced in slums. As one counterexample, Lanjouw and Levy (2002) have argued that informal rights can effectively substitute for formal titles in slum settlements in Ecuador. In Kibera, where all vacant land was formally reclaimed by the Kenyan government in 1969, the members of one ethnic group still claim land rights based on tenancy permits allocated by the British colonial authorities in the early twentieth century. The fact that most individuals recognized as landlords live outside the slum (Syagga, Mitullah, and Karirah-Gitau 2002) also implies that their informal rights over the renters are strongly enforced.

In a similar vein, analyzing the impact of two titling projects in Senegal and South Africa, Payne, Durand-Lasserve, and Rakodi (2008) found that "residents in most informal settlements in both [Senegal and South Africa] already enjoy *de facto* tenure security." Hence the impact of titling projects on individuals who already enjoy tenure security is, from the start, uncertain: Palmer (1998) pointed out how the effectiveness of land titling programs actually depended on whether they could achieve an increase in the total security that poor households enjoy. Durand-Lasserve, Fernandes, Payne, and Rakodi (2007) reviewed evidence from land titling projects that may have actually *decreased* tenure security (because they allowed for lawfully enforced evictions) in Afghanistan, Cambodia, Egypt, India, and Rwanda. Titling programs alone cannot be expected to lift households out of poverty and to overhaul existing social and economic dynamics within the slum, because existing systems of ownership act to preserve these dynamics. In fact, land titling is more likely to benefit the "slumlords" (whose informal ownership rights are often well-recognized locally) and hurt, at the bottom of the pyramid, the slum renters, either in the form of outright evictions or increased rents in the titled area.

These features have been documented in Senegal, for instance (Payne, Durand-Lasserve, and Rakodi 2008).

Ultimately, individual approaches such as upgrading and formal titling have largely failed to improve livelihoods in slums. Recognizing that the effect of titling projects and conventional land administration systems had been limited, UN-Habitat (2012c) recently advocated a "continuum of land rights" relying on participatory land enumeration and record-keeping to improve tenure security for the urban poor. This would ideally be included in a more holistic approach of slum policy. Countries that managed to curb the growth of slums, such as Brazil or Egypt, indeed appear to be those where slum policy relied on a combination of instruments—including efforts to increase the transparency and efficiency of land markets, to improve local governance, to increase public investments massively, and to increase the supply of cheap housing (UN-Habitat 2010a).

Conclusion

Slums represent a major policy challenge for developing economies in the twenty-first century. Adding migrants to the existing slum populations, UN-Habitat (2012b) estimated that 450 million new housing units would be needed in the next 20 years just to accommodate households in urgent need of housing. Yet the challenge of slums is not simply one of housing policy: a holistic approach is needed to address housing needs for rural migrants, health and sanitation issues, local governance, private savings and investments, and land market institutions. Both formal and informal systems of property rights may be necessary to curb the rapid growth of slum areas worldwide. In the absence of strong policy agendas similar to those adopted in Singapore or, more recently, in Brazil, it seems unlikely that slums will disappear in the foreseeable future, as implicitly assumed by a modernization view of the issue.

Overall, there has been very little theoretical and empirical economic research about how the public policy challenges posed by slums in low-income economies should be addressed. A research agenda on slums could focus on three distinct sets of methodological and policy questions. First, the methodological problems that hamper field research in slums should be addressed. In particular, efforts to enumerate slum populations and to track panel respondents over several generations of slum dwellers could be stepped up, and empirical methods used to deal with survey attrition in other contexts (Fitzgerald, Gottschalk, and Moffitt 1998) should be more consistently applied. This would allow for a better understanding of the most pressing issues faced by slum dwellers and a better integration of these dwellers in national political processes. Relatedly, there has been little effort to systematically study the movements into and out of slums, or to collect data to track the individuals who do move, even if those exiting are few and far between. Similarly, understanding the intergenerational correlation in incomes and other socioeconomic outcomes would be an important contribution.

Second, the returns to upgrading different types of public services should be identified and quantified, so that cost-effective projects and programs that provide discernable welfare gains for slum residents can be more consistently applied. The Abdul Lutif Jameel Poverty Action Lab (J-PAL) Urban Services Initiative (USI) has begun to promote such an agenda (Duflo, Galiani, and Mobarak 2012).

Third, given the stability in slums documented above and the notion that slums may be poverty traps of some sort, perhaps one policy direction would be the "big push." Several programs with mass investments or wholesale relocation of slum households into housing estates appear to have been successful. However, in many current slums in the developing world, this cannot be done without a political willingness to change governance dynamics in slum areas or, in particular, to deal with the actors who have taken over the governance of these areas in the absence of the government. The governance issues may perhaps be the most pressing since these informal actors have a strong presence in the slums and have large rents at stake should there be any change. They have strong incentives to maintain the status quo. Without changes to these institutions and a reversal of the lack of governance, it is unlikely that any attempts at any form of big push or coordinated investment will have the desired effects.

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