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**Estimating economic value of regularizing land tenure to the urban poor – Evidence from India**

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## **Estimating economic value of regularizing land tenure to the urban poor – Evidence from India**

### **Abstract**

Across the world, governments of developing countries have adopted land titling as a policy tool to address issues of urban poverty and informal urban settlements. There are extensive publications by researchers, explaining how giving property rights to slum dwellers results in increased labour participation, better credit access as well as improvement in their education and health. In India, many land titling and regularization programmes have been implemented since the 70's; and new large scale programmes have been announced recently in Odisha and Delhi. In this paper, we attempt to provide the Indian government with an economic rationale for providing property rights to slum dwellers. Through our study of 619 slum households in Mumbai and Bangalore, we quantify the socio-economic benefits to the government (via increased taxes and reduced subsidies). The results of our cross-sectional studies show that giving property rights does not result in significantly improved outcomes for slum inhabitants with respect to income, expenditure, financial savings, education, house improvement and credit access. Therefore, there are no significant resultant economic benefits to the government in the form of additional taxes or reduced subsidies. Our findings question the efficacy of using property titling as a blunt instrument to address the issues facing the informal urban settlements; and suggest that further longitudinal study of other endogenous and exogenous factors is required to understand the long-term impacts.

### **Keywords:**

Land titling, property rights, regularization, indirect economic benefits

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## 1. Introduction

Today, nearly 54% of the world's population lives in cities and by 2050 the global urbanization rate is expected to reach 66%<sup>1</sup>. Cities also account for 80% of the global GDP<sup>2</sup> attracting the rural population, especially the lower income groups, in search of better employment opportunities. This large scale migration, coupled with the government's inability to cater to the housing requirement of low-income groups, has resulted in the proliferation of slums. Slums are the market response to demand for low-income housing in cities<sup>3</sup>.

The UN-Habitat Slum Almanac 2015-2016 estimates that one in eight people in the world live in slums. An estimated 6 million people are added to the slum population every year, globally. The problem is more pronounced in developing countries where 30% of the urban population lives in slums or informal settlements<sup>4</sup>. In India, 65 million people live in slums; which translates to 17.4% of the urban Indian households<sup>5</sup>.

Policy makers are grappling with solutions to improve the quality of life of the urban poor. The idea of building alternative subsidised, low-cost housing has been tried in India, but there are two problems to this approach. The first is the massive scale of the urban housing shortage in India, which is estimated at 18.76 million units<sup>6</sup>. The second issue is land availability in proximity to economic centres. In order to address both these issues, the government has been experimenting with "in situ" improvements, including "land titling".

The role of land titling in reducing urban poverty was popularised by the Peruvian economist Hernando de Soto, whose works claimed that formal property rights unlocked the 'dead-capital' in informal settlements and legally empowered the poor. The benefits of secure land title in improving the socio-economic conditions of the urban poor have been widely advocated by the World Bank, the United Nations and several international donor agencies as well. Their policies are based on the argument that formal property rights result in an increase in income, easy access to mortgages and credit, and improvement in health

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<sup>1</sup> World Cities Report 2016, UN-Habitat

<sup>2</sup> World Cities Report 2016, UN-Habitat

<sup>3</sup> Annez, P., Bertaud, A., Patel, B., Phatak, V.K., 2010, "Working with the market: a new approach to reducing urban slums in India, Policy Research Working Paper no. WPS5475, Washington DC, World Bank

<sup>4</sup> UN-Habitat Slum Almanac 2015-2016

<sup>5</sup> Census of India, 2011

<sup>6</sup> KPMG-NAREDCO, 2012, "Bridging the Urban Housing Shortage in India"

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and education. The result is an increased investment by slum dwellers towards improving their shelter conditions both in terms of structure and the willingness to pay for basic infrastructure.

However, research by leading urban economists around the developing world since 1970s have shown mixed results. Empirical evidences have not always supported the claim of economic benefits such as increase in income, easy access to credit, and increased investment in land and housing.

Barring a few exceptions, the Indian government has been slow to implement the giving of secure title. In the recent past, the states of Odisha and Delhi have announced formal land titles to informal settlers in urban areas. Land is a valuable resource and giving away title to squatters represents significant loss to the state in terms of land value as well as the administrative cost of titling. On one hand, the proponents of land rights argue that giving away land title result in benefits to the government in the form of property taxes, utility charges, higher income taxes due to increased income and increased GST and reduction of subsidies due to improved standard of living. On the other hand, people against it, argue that condoning illegal occupation of government/private land with legal titles creates a moral hazard by encouraging further squatting; and will undermine the urban planning process<sup>7</sup>.

It is therefore essential to establish empirical evidence supporting the impact of land title and to quantitatively measure the indirect benefits arising out of their improved socio-economic conditions. It would help if policy makers understood the costs v/s benefit trade-off better. Having an economic rationale to go with the social argument would make it easier for governments to decide if formalizing property rights is the most suitable policy approach in tackling the urban housing shortage.

Through our study, we provide the government with a better picture of the trade-offs involved in formalizing property rights i.e., we estimate the economic benefits and costs to the state from providing secure title to slum dwellers.

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<sup>7</sup> Jain, V., Chennuri, S., Karamchandani, A., 2016, "Informal Housing, Inadequate Property Rights: Understanding the Needs of India's Informal Housing Dwellers", FSG.

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We conducted a latitudinal survey of 619 households in slums across Mumbai (267) and Bangalore (352). We have compared households with and without property rights at a given point in time.

The results of our cross-sectional study do not show evidence of property titling resulting in increased income, expenditure, financial savings, house improvement, education or credit access for the beneficiary households; thereby not resulting in any indirect benefit to the government in the form of increased taxes and reduced subsidies. This is contrary to our hypothesis that economic benefits significantly lower the cost of the government of regularizing land titles. We therefore recommend that a more detailed longitudinal study be conducted to fully understand the impacts of other endogenous and exogenous factors influencing the long term impacts of land titling.

## 2. Literature Review

### 2.1. Security of tenure in informal urban settlements

Land tenure is the relationship that individuals or groups have with regard to land and related resources<sup>8</sup>. It is a set of legal or customary rules that define the way in which property rights such as the right to occupy, to use, to develop, to inherit, and to transfer land are allocated within societies. Land tenure indicates people's level of security in the use of land, whereas property rights indicate defensible legal ownership<sup>9</sup>.

In a rapidly urbanizing world, there is immense pressure on urban land and infrastructure. Due to a limited supply of affordable, developed urban land, the poor and the marginalized often, illegally encroach upon public, private or hazardous urban lands and hence have weak property rights. While these informal settlements give them quick access to urban lands at low costs<sup>10</sup>, they also result in serious disadvantages such as constant threat of eviction by the State or original owners of the land, lack of recognition by governance

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<sup>8</sup> <https://www.land-links.org; www.fao.org> referred on 27/05/2019

<sup>9</sup> Mahadevia, D., 2011, "Tenure Security and Urban Social Protection in India", Centre for Social Protection Research Report 05.

<sup>10</sup> Durand-Lasserve, A., Selod, H., 2007, "The formalisation of urban land use in developing countries"

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frameworks, poor access to basic infrastructure and livelihood<sup>11</sup> resulting in legal, political and economic exclusion of the urban poor<sup>8</sup>.

Security of tenure is the perception by people that their rights to land will be recognized by others as legitimate and protected in the event of specific challenges<sup>12</sup>. In case of informal settlements, it provides protection against forced eviction by the State from one's land or dwelling unit and is recognised as one of the key entitlements under the right to adequate housing<sup>13</sup>. Informal settlements have different types of tenure security ranging from totally illegal to a range of legitimacy of occupation such as no eviction guarantees, titles with strong restrictions on sale to individual property titles.

## 2.2. Addressing urban housing shortage through tenure formalization

Slums are the result of land contestation over location in central cities and urban peripheries<sup>14</sup>. Urban housing policies in countries around the world have undergone a paradigm shift with the recognition of self-built housing in urban informal settlements. According to a policy brief published by the Indian Institute of Human Settlements<sup>15</sup>, neither the government nor the private sector can build enough units to address the urban housing shortage, especially in cities where a significant percentage of the urban population lives in slums. The participation of the slum dwellers in developing self-built housing is essential to address this housing shortage. These housing units also have the advantage of location where the key concerns of affordability, economic opportunities and travel time have been addressed. However, most of these units are built on encroached land and hence lack tenure security. Formalization of tenure<sup>16</sup> is thus, considered as a key step in addressing urban housing shortage along with upgradation of the built unit and provision of basic urban infrastructure. Formalization of tenure could either be de-facto where the slum dweller's rights are recognized through an administrative process. In this case, there are certain restrictions on the use and transfer of land and is usually for a shorter period of time, but is

<sup>11</sup> Slum Almanac 2015-20 16

<sup>12</sup> <https://www.land-links.org/>

<sup>13</sup> UN-Habitat/OHCHR

<sup>14</sup> Benjamin S., & Raman, B., 2011, Claiming land: Rights, contestations and the urban poor in globalized times. Urban policies and the right to the city in India: Rights, responsibilities and citizenship (pp. 63-75). New Delhi: UNESCO and Centre de Sciences Humaines

<sup>15</sup> Indian Institute for Human Settlements, Policy Brief #4, "Housing for All by 2022", published in 2015-16

<sup>16</sup> Tenure formalization is the process of legitimizing informal tenure by integrating it into a system recognised by public authorities.

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renewable. The other form of formalization is de-jure formalization where public policy interventions give slum dwellers legal rights to their property. Usually the process of tenure security goes through a process from completely illegal in case of squatters to quasi-legal/de-facto tenure security to de-jure property titles.

### **2.3. Impact of tenure formalization on socio-economic indicators**

There have been several international studies discussing the economic benefits of secure land titling, from both a theoretical and descriptive approach as well as through a rigorous quantitative analysis.

- The results of international research on the impact of property rights on household income are mixed. Several economists have illustrated how capital flourishes when property rights are protected (Turner, 1977; De Soto, 2000; Deininger, 2003). While studies by Field in Peru show that there is an increase in labour participation, and the number of hours of work by the primary wage earner, there is no clear evidence that increased work hours resulted in higher household income. Galiani and Shargrodsky (2010) through their studies in Argentina, have argued that titling did not result in an increase in total household income.
- A study by Erica Field (2005) of slums in Peru indicated that strengthening property rights in urban slums has a significant positive effect on residential investment. The rate of housing renovation increased, and the bulk of the increase was financed without the use of credit, suggesting that lower threat of eviction increases the incentive for a slum dweller to invest in housing.
- Nakamura (2015) analyzed how providing residents even with formal land tenure but not land titles has affected housing improvement trends in Pune, India. He estimates that slum residents were willing to pay as much as 19% premium for secure land title.
- Literature review does not establish a strong correlation between property title and credit access to the urban poor. A study by Panariti (2002) in Peru, shows that there was an increase in the number of households with newly acquired titles, soliciting credit with their properties as collateral. However, this study cannot be used to establish greater credit access for households with secure tenure as there was no actual data on the number of loans approved. Several other studies showed that

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property titles did not translate into loan approvals by Private Banks. Mitchell (2006), Ho and Spoor (2006) and Field (2006) have shown that using land/property as collateral for credit by poor households who have no other social security except their land/property could not easily access credit. The reason for this is attributed to the risks these households face in case of foreclosures due to defaults in loan repayment.

- Studies by Mitchell (2006) and Payne (2002) have shown that formal titles increase property prices at least by 25%. Further research has also shown that an increase in property values especially in core cities results in expensive and unaffordable housing leading to a market induced displacement of the urban poor. This ultimately leads to the creation of more informal settlements.

Literature review shows quantitative evidence that property titling results in improvement in social indicators such as gender, education, health and social integration. The long term effects on social indicators such as increase in income have not been studied in detail so far.

- Studies by Galiani (2004) in Beunos Aires has shown that land titling improved child health and education statistics with better child nutrition, lesser grade repetition and lower teenage pregnancy rates.
- Women own less than 20% of the land globally<sup>17</sup>. In some countries like India, women have equal rights to land ownership legally; however, there are social impediments to land ownership. Policy interventions are on in several countries around the world to improve female land ownership statistics.
- Also, studies have not captured the impact of increased income on education and health care.

#### **2.4. Property Rights in Indian Slums**

Nearly one in every six urban Indian residents lives in a slum. According to Census 2011, 65 million Indians live in slums, representing 17.4% of the urban Indian households. In the decade between 2001 and 2011, slum households grew by 25.1%.

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<sup>17</sup> [www.weforum.org](http://www.weforum.org) referred in May 2019

There have been several Slum rehabilitation programs in India, some of which include recognition of property rights, and others which do not grant secure title. The table below shows a summary:

**Table 1: Types of Slum improvement programs and their approaches to property rights**

Type	Name	Description	Approach to property rights
<b>Basic Services Programmes</b>	Environmental Improvement of Urban Slums (EIUS)/Slum Improvement Programme (SIP)	<p>EIUS was launched in 1972 under the Indian government's Fourth Five Year Plan (1969-1974). It included physical improvement of slums "in situ" through grants from central government. During Fifth Plan (1974-1979), the scheme was transferred to the state under Minimum Needs Programme.</p> <p>SIP was launched in 1972 in Bombay and then extended to other big cities. It is similar to EIUS, but some SIPs were done through provision of loan to the slum dwellers, and through funding assistance from World Bank.</p> <p>In both EIUS and SIP the amounts per family were very low.</p>	<p>Restricted to authorized/notified slums.</p> <p>EIUS did not grant property rights to individual slum dwellers.</p> <p>SIP did not grant property rights to individual slum dwellers but slum dwellers who took loans had lower chance of being displaced in future.</p>
<b>Basic Services Programmes</b>	Urban Basic Services for the Poor (UBSP)	<p>It was originally started in 1976 as Urban Basic Services (UBS) with financial participation from state and central government. In the Eighth Five Year Plan, UBSP was launched with central and state sharing the costs. It included health and nutrition, education for women and children, water supply and sanitation, training of community workers and development of community organisations in the slums. Programme costs were shared by the users. The scheme achieved coverage of 700,000 beneficiaries and was implemented in 350 towns.</p>	<p>Did not focus on granting property rights or tenure regularization.</p>
<b>Basic Services Programmes</b>	Urban Community Development (UCD)	<p>Launched in 1966 as a centrally sponsored scheme; transferred to the states in 1969. Discontinued now. Involved the community in development of slum and provision of housing.</p> <p>Successful implementation in Hyderabad, where it was done in slums on government or quasi-government lands.</p>	<p>Granted patta (regularization).</p>
<b>Basic Services Programmes</b>	Low Cost Sanitation (LCS)	<p>Started in the 80's; at the end of the UN Decade for Water Supply and Sanitation. Provision of sanitation facilities, with support from HUDCO.</p>	<p>Did not focus on granting property rights or tenure regularization.</p>
<b>Shelter cum Services Programmes</b>	Sites and Services Schemes (S&S)	<p>Introduced in Fifth Plan. Makes serviced urban land in small lots available to the poor. Funded by HUDCO, World Bank, Central Government. Sites located usually away from the city.</p>	<p>Gave houses with clear titles, at affordable costs. Benefited the better off among the low-income</p>

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Type	Name	Description	Approach to property rights
		Successful implementations in Chennai and other towns in TN, Mumbai, Indore, Kanpur, and several cities in Gujarat.	groups.
<b>Shelter cum Services Programmes</b>	Slum Upgradation Schemes (SUP)	Started in Fifth Plan at the instance of the World Bank. Implemented in Chennai and Mumbai, and also other cities in TN. Upgradation projects only taken up in areas which are within zoning regulations of city development plan. Excludes slums close to a nullah, on land which can get water-logged, near high tension power lines, railway tracks, airports, sensitive defence establishments and on hill slopes	Gave land patta on a freehold or leasehold basis.
<b>Shelter cum Services Programmes</b>	Giving of Pattas / Tenure Regularization (other than the schemes listed above)	<p><b>Mumbai</b></p> <p>1985 – Supreme Court decision on Olga Tellis v/s Bombay Municipal Corporation recognized rights to resettlement for residents who had Census cards from 1976. Also recognized that slums in existence for more than 20 years cannot be demolished without resettlement.</p> <p>1985 – The Prime Minister’s Grant Project (PMGP) for Dharavi in Mumbai gave tenure with subsidized loans to individual slum dwellers. Groups of slum dwellers could also come together and use their combined tenure rights, to build residential complexes via the state housing authority.</p> <p>1991 – The Slum Redevelopment Scheme (SRD) extended the scheme beyond Dharavi to all slums, to those who had lived in the slum for a decade or more. Involved private developers but capped profits to 25%. Slum dwellers were given a renewable 30-year lease to their new homes, non-transferable for 10 years.</p> <p>1995 – Scheme extended to all slum dwellers in Mumbai, including those on pavements, who were present on the electoral rolls in 1995. No other eligibility criteria. Free of cost. No cap on private builder profit. Transfer of Development Rights allowed, in order to transfer to other locations. Relocations under this scheme are still ongoing.</p> <p><b>Delhi</b></p> <p>The primary method is eviction and resettlement. Resettlement programmes implemented starting in 1961, with titles given in the new location (located on outskirts/periphery).</p> <p>1990-91 – new policy for relocation, ratified by DDA in 2002, on the basis of 1990 ration card, again to new locations on outskirts.</p>	A lot has happened in big metros like Mumbai. Not many states have taken it up. Madhya Pradesh and Odisha are exceptions. The Ashraya scheme in Karnataka provided a Hakku patra/ title deed in the name of the wife of the applicant.

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Type	Name	Description	Approach to property rights
		<p>Although policy includes in situ improvement, very little done. 2000 – extension of ration card-based eligibility to 1998, settlement colonies even further away.</p> <p><u>Madhya Pradesh</u> 1984 - Madhya Pradesh government passed legislation to confer tenurial rights for 30 years on leasehold basis to households squatting on public land. Covered 43% of Bhopal slums.</p> <p><u>Bangalore</u> Slums formed on government land are notified through a process as per the Karnataka Slum Area Improvement and Clearance Act. Notified slum residents may be issued possession certificates, to lease-cum-ownership papers to a hakku patra or a title deed.</p> <p><u>Odisha</u><sup>18</sup> 2017 – Odisha is the first state to confer land rights to urban poor, for residential use and for mortgage. A certificate of land right is provided which is non-transferable, heritable and mortgageable .</p> <p><u>Delhi</u> 2019: 1,797 unauthorised colonies in Delhi to be regularized. However, unauthorized colonies in areas with high land values have been left out. The residents will be provided ownership rights<sup>19</sup> for a nominal fee reported to be in the range of 1%-2% of the circle rates.</p>	
<b>City/Town Size Based Programmes</b>	Integrated Development of Small and Medium Towns (IDSMT)	1979 - Provision of basic facilities to the poor in small towns, to prevent migration to larger towns	No focus on property rights for slum dwellers
<b>City/Town Size Based Programmes</b>	Mega City Scheme	1994 - Sponsored centrally, to meet needs of 5 mega cities: Mumbai, Calcutta, Chennai, Bangalore and Hyderabad.	No focus on property rights for slum dwellers
<b>City/Town Size Based Programmes</b>	Accelerated Urban Water Supply Programme	Sponsored centrally in Eighth Plan, for towns with less than 20,000 people	No focus on property rights for slum dwellers
<b>Housing for</b>	In-Situ Slum	Upgradation of all notified slums with	Focus on property

<sup>18</sup> Pichel,F., Dash,S.R., Mathivathanan,G., Srivastava,S., 2019, “Odisha Liveable Habitat Mission: The process and tools behind the world’s largest slum titling project, Paper presented at 2019 World Bank Conference on Land and Poverty, Washington D.C.

<sup>19</sup> PressReader.com, Residents of Illegal Colonies to get Ownership Rights: CM, published on 19 July 2019, Times of India (New Delhi Edition). Details about the bundle of rights is not clear as we have only been able to access media reports available in public domain. We have not been able to access the detailed report submitted to the Ministry of Housing and Urban Affairs.

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Type	Name	Description	Approach to property rights
All Mission	Upgradation	private participation; using land as a resource to cross subsidize the project.  States/UTs may decide whether the houses constructed will be allotted on ownership rights or on renewable, mortgageable and inheritable leasehold rights.	rights, albeit only for notified slums

(Source: adapted from Mahadevia 2002, Dupont 2008, Jagdale 2014)

From the table above, it appears that until the 1990's, the granting of secure title/property rights was not considered a core strategic aspect of India's slum rehabilitation programs. Instead the focus was on upgradation of facilities and resettlement in alternative locations. In recent years the trend is changing and there is more focus on using a rights-based approach towards slum rehabilitation, particularly in large metro cities. There is still a need to debate and formulate policy on what type of property rights would be the most beneficial for all stakeholders, including the land-holders, residents of slums, and the rest of the city.

### 3. Objective

Literature review shows that studies on slum property rights have focused primarily on the gains to slum residents from granting secure title. However, there have been no studies focusing on the economic value to the government (typically the largest landholder involved) from regularizing land titles for those who are encroached on its land. Our study seeks to address that gap.

Through our study, we seek to provide the government with a better picture of the trade-offs involved in formalizing property rights i.e., we propose to estimate the economic benefits and costs to the state from providing secure title to slum dwellers.

By comparing benefits and costs, we aim to show that the economic benefits may significantly lower the perceived high cost of regularizing land titles to the government. The quantification of economic impact is of much importance to policy makers, as it would facilitate governments to rationalize a situation that would free up its resources and focus on improving the quality of life for its poor. The economic benefits to the government could result from the following:

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### 3.1. Direct benefits

- **Initial fees:** A one-time subsidized fee to be paid by the beneficiary either at the time of obtaining the title or when the leasehold/lock-in period expires.
- **Property taxes:** Taxes can be collected once squatters become rightful owners of the land
- **Services and provision of basic amenities can be charged:** Government expenditure on subsidized provision of electricity, water and ration might gradually come down as more and more households are pulled above the poverty line.

### 3.2. Indirect benefits

- **Generation of income and employment:** As the fear of being evicted from their houses is lifted, we hypothesize that investments in better upkeep and construction of infrastructure will generate more income and employment in the economy.
- **Reduction in government expenditure on health and education:** Literature suggests that secure land title improves health and increases private investment in child education; both of which can reduce government expenditure.
- **More income taxes:** With better education and health, the earning potential of these households should gradually improve and more individuals start coming under the income tax bracket.
- **Increase in indirect taxes from consumption expenditure:** As house-hold earnings and living conditions improve, taxable consumption expenses will increase.
- **More capital formation:** Capital is formed since these households can access formal capital markets by using their property titles as collateral or by using other assets (gold, inherited land which these families might be holding on to for future contingencies) which get freed up when these secure titles are given.

### 3.3. Costs

The direct costs to the government associated with granting secure title to slums are:

- Cost of the land on which squatters have encroached
- Administrative Cost of identifying rights and implementing the grant of title

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## 4. Methodology

We base our methodology on the hypothesis that economic benefits significantly lower the perceived high cost of regularizing land title to the government. This is only possible when indirect economic benefits accrue to the government in the form of increased taxes and reduced subsidies. Hence, we start our analysis by estimating the indirect benefits.

### 4.1. Estimation of Indirect Benefits

In order to measure the indirect benefits, the first step is to establish the impact of land titling on the socio-economic conditions such as income, savings, consumption, education, healthcare and credit access. Upon establishing that land titling has a positive impact on the above aspects, we quantify them so as to put an economic value to the net benefits to the government through these channels.

We use baseline regression method to arrive at the coefficients to estimate the additional income and expenditure of households without titles. With these estimates we calculate the additional taxes generated on this future growth in income and expenditure.

Although indirect benefits such as improvements in future income (through betterment of health and education) are known to arise from secure land titles, we do not intend to study them as it requires a longitudinal study over a long period. As a first step we establish the impact of property titling on income, health, education, expenditure, financial savings and credit access.

#### 4.1.1. Primary Survey Methodology

Data for the study has been collected from slums in Bangalore and Mumbai<sup>20</sup>. While Mumbai has the largest slum population in India at 6.5 million inhabitants<sup>21</sup>, Bangalore is one of the fastest growing cities in the country and has witnessed the slum population grow from a mere 8% in 2001 to about 25% in 2015<sup>22</sup>.

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<sup>20</sup> Surveys were conducted in the year 2016

<sup>21</sup> Census of India, 2011

<sup>22</sup> <https://borgenproject.org/tag/slums-in-bangalore/> referred on 19/06/2019

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In order to obtain authentic and relevant data from the slum households the research team partnered with Non-Governmental Organizations (NGOs) that were actively involved in improving service delivery in some of the slums in these cities. The partner organizations were Citizens' Voluntary Initiative for the City (CIVIC) in Bangalore and Abhyudaya in Mumbai.

Surveys were conducted across 619 households in Mumbai (267) and Bangalore (352) through random sampling, maintaining the distribution of varied title holders i.e., from no title to full legal title. The slums are so selected that some of the families have held titles for more than 10 years, so as to study the long term impact of titles. Personal data on demographic, social and economic attributes including the individual income, education, assets, as well as data on infrastructure availability and quality were collected. Households renting units in these slums have not been included.

#### 4.1.2. Data

To assess the economic rationale for granting titling rights to urban slums, we use survey data consisting of 619 households in slums across Mumbai (267) and Bangalore (352). Ours is a latitudinal study comparing households with and without property rights at a given point in time. The range of documents in possession of households to establish their rights to the property are as follows:

**Table 2: Establishing rights based on documents possessed by the surveyed households**

City	No Rights	With Rights	
		High Rights	Low rights
Bangalore	No documents	Khata, Sale Deed, Hakku Patra, Patta	Affidavit, Purchase Agreement
Mumbai	No Documents	Title Deed/ Sale Deed, Government issued possession certificate or occupancy rights certificate	Affidavit, Government Issued Owner ID Card, Purchase Agreement

- We divide our sample into two groups: 1) Households with property rights and 2) Households with no rights. The property rights dummy takes value '1' if households possess property rights and '0' if it has 'no' property rights.

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- Households with rights are further divided into households with High Rights and households with Low Rights based on the legal bearing of the documents held. Households with High Rights take value '1' and Low Rights are given the value '0'.

Tables 3 and 4 below show the composition of the surveyed group, having different degrees of rights:

**Table 3: distribution of slum households based on strength of title**

	Bangalore	Mumbai	Total
High Rights	157	209	366
Low/ No Rights	195	58	253
Total	352	267	619

**Table 4: Distribution of slum households based on property rights**

	Bangalore	Mumbai	Total
No Rights	193	11	204
Rights	159	256	415
Total	352	267	619

The tables below give a demographic summary<sup>23</sup> of the sample in Mumbai and Bangalore.

**Table 5: Demographic Summary**

	Bangalore		Mumbai	
	High Rights	Low Rights	High Rights	Low Rights
Average household size	4.52	4.36	4.24	4.45
Adults	3.36	3.16	2.92	3.03
Children	1.16	1.19	1.36	1.4
Male	2.10	2.10	2.10	2.14
Female	2.46	2.32	2.12	2.26
No. of earning members	1.94	1.88	1.74	1.67

<sup>23</sup> All summaries presented are for winsorised data

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**Table 6: Number of households with highest education level**

	Bangalore		Mumbai	
	High Rights	Low Rights	High Rights	Low Rights
Illiterate	12	9	1	0
Classes 1-5	14	8	4	1
Classes 6-8	31	36	12	4
Classes 9-12	81	116	104	30
Graduate	19	26	88	23
<b>Total</b>	<b>157</b>	<b>195</b>	<b>209</b>	<b>58</b>

#### 4.1.3. Measurement Metrics for indirect benefits

To test our hypotheses that households with rights are better off in terms of health, education and have higher levels of income and expenditure, we compare households with High Rights and Low Rights as the baseline analysis and we compare households with 'Rights' and 'No Rights' as a robustness test. We describe below the metrics used to measure impact on health, education, income and expenditure.

##### a. Measuring impact on income

Household income is constructed by adding the income of all earning members in the household from both primary and secondary jobs. To the total earned income, we add other sources of income such as rental income (from other properties or by letting out part of their properties) and direct transfers from the government to get the total household income. Income levels are expected to be higher for households with rights<sup>24</sup>.

<sup>24</sup> Since the relationship between title and income may be non-linear we take the log value of household income as the dependent variable.

**b. Measuring impact on consumption expenditure**

Total expenditure of a household comprises of consumption expenses (on food, water, electricity, entertainment) and taxes paid to the government in case of households with titles. We expect that households with property titles would have higher expenditures, indicating better standards of living. For the regression analysis we take consumption expenditure as a percentage of income.

**c. Measuring impact on health**

For assessing whether property titles are correlated with better health, we use 1) number of visits to the hospital and 2) medical expenditure incurred by the household as our variables. We hypothesize that households with property rights would have fewer trips to the doctor and their medical expenses expressed as a percentage of total household income would be significantly lower than households with low rights.

**d. Measuring impact on education**

We expect households with property rights to have higher level of education at the household level and greater expenditure on education as percentage of total household income. We use the highest education level in the household and expenditure on children's education as our variables to capture the relationship between title and education.

**e. Measuring impact on financial savings**

Total financial savings by a household is considered to test the impact of title on savings. It is expected that households with rights will have higher savings.

**f. Measuring impact on access to loans**

The number of loans per household, weighted by the amount of loans outstanding, will be our variable of interest. We expect that households with rights have better access to loans.

## 4.2. Estimation of Direct Benefit

Direct benefits are measured using secondary information on property taxes rates (unit rates as per zones) and unit rates of water and electricity. Also a one-time benefit in the form of stamp duty and registration charges is calculated based on the rates in each state<sup>25</sup>.

## 4.3. Estimation of Cost

To estimate direct costs, we seek to use a hedonic land price model to estimate the value of land that is being given away by the government. The model will be based on locational and infrastructure attributes that define the land. For this study we have considered the government guidance value.

## 5. Estimating indirect economic benefits of property rights

The following methodology has been adopted to estimate the indirect economic benefits of land rights:

- Assess impact of titling on outcome variables using baseline regression
- Using the coefficients of strength of title/rights dummy estimate the expenditures of the No Rights households
- We compute the additional tax revenue generated by giving property rights, using tax rates on income, consumption expenditure, construction expenditure
- Translate improvement in education levels into higher income

### 5.1. Regression Analysis Setup

We have used the strength of title – High Rights and Low Rights binary data as the variable of interest for the baseline regression as the sample is evenly distributed across this variable. We have used the Rights Binary Data (Rights and No Rights) for a robustness test.

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<sup>25</sup> In some cases as in Delhi, the initial fee of registering the property may not be at the same rate as registering other residential properties. The government has fixed a nominal fee and the same will be applicable for the calculations.

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Control variables used include:

**Table 7: Control Variables used in the regression analysis**

Control Variables	Description
Age of title	>10 years==1, <=10 years==0
City	Mumbai==1, Bangalore==0
Number of children	Winsorised continuous data
Number of earning members	Winsorised continuous data
Highest Education Level	Illiterate ==0
	Class 1-5==1
	Class 6-8==2
	Class9-12==3
	Graduate and above==4

Interaction variables include

- Strength of title/Rights\* City
- Strength of title/Rights\*Age of title

## 5.2. Measuring impact of land titling

### 5.2.1. Measuring impact of land titling on Income

Our cross-sectional study does not establish a relationship between property rights and household income. However, our data shows a significant dependence of income on the age of title, suggesting that households that have held property title for longer (more than 10 years) have better income than households with title for < 10 years. The patta or Hakku patra documents in Bangalore and flats allotted under the SRS scheme in Mumbai confer leasehold or a delayed freehold right to the occupant household usually with a lock-in period of 10-15 years. Only after the completion of this lock-in period is the property transferable, thereby giving access to the credit market. Further investigation is needed to understand the long term impacts on income through a detailed longitudinal study.

The relationship between age of title and income signifies that income increases over time. As families establish themselves in the informal settlements and educate the next generation, better employment opportunities open up for them, thereby increasing

income. This is also supported by the results showing significant dependence of income on education. The dependence of income on education needs further investigation.

**Table 8: Impact of property title on Income**

<b>Baseline Regression</b> Variable of Interest: High/ Low Rights		<b>Robustness Test</b> Variable of Interest: Rights/ No Rights	
Independent Variables	Dependent Variable	Independent Variables	Dependent Variable
	<b>Log (Annual Household Income)</b>		<b>Log (Annual Household Income)</b>
Strength of title	0.041 (0.073)	Rights Dummy	0.019 0.0678
Age of title	0.164** (0.075)	Age of title	0.191* (0.109)
City	0.314*** (0.067)	City	0.157* (0.084)
Number of children	0.002 (0.0143)	Number of children	0.003 (0.014)
Number of earning members	0.317*** (0.0177)	Number of earning members	0.316*** (0.0177)
Highest Education level		Highest Education level	
Class 1-5	0.208 (0.152)	Class 1-5	0.205 (0.151)
Class 6-8	0.471*** (0.115)	Class 6-8	0.473*** (0.116)
Class 9-12	0.547*** (0.109)	Class 9-12	0.547*** (0.110)
Graduate	0.649*** (0.114)	Graduate	0.647*** (0.114)
Strength of title*City	0.056 (0.081)	Rights*City	0.227** (0.0944)
Strength of title*Age of title	-0.1389 (0.1)	Rights*Age of Title	-0.152 (0.124)
Constant	10.707*** (0.114)	Constant	10.71*** (0.1156)
R-Squared	0.4746	R-Squared	0.4766

Note:

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

All continuous data used for the analysis is winsorised to 99th percentile

Standard errors mentioned in the table are robust standard errors

The results also show that in Mumbai, any right is significant. Property rights need not necessarily be freehold titles, but any perceived security through de-facto means such as an affidavit are also valuable due to the presence of an active grey market where these rights are transacted informally.

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## 5.2.2. Measuring impact on consumption expenditure

Table 9: Impact of Property Title on Consumption Expenditure

<b>Baseline Regression</b> Variable of Interest: High/ Low Rights		<b>Robustness Test</b> Variable of Interest: Rights/ No Rights	
Independent Variables	Dependent Variable	Independent Variables	Dependent Variable
	<b>Consumption Expenditure (% of income)</b>		<b>Consumption Expenditure (% of income)</b>
Strength of title	-0.0299 (0.048)	Rights Dummy	-0.017 (0.448)
Age of title	0.0015 (0.051)	Age of title	-0.026 (0.085)
City	-0.012 (0.044)	City	-0.004 (0.076)
Number of children	0.013 (0.0086)	Number of children	0.013 (0.008)
Number of earning members	-0.072*** (0.0105)	Number of earning members	-0.072*** (0.0106)
Highest Education level		Highest Education level	
Class 1-5	0.080 (0.115)	Class 1-5	0.079 (0.115)
Class 6-8	-0.081 (0.080)	Class 6-8	-0.082 (0.080)
Class 9-12	-0.077 (0.076)	Class 9-12	-0.077 (0.076)
Graduate	-0.112 (0.077)	Graduate	-0.112 (0.077)
Strength of title*City	0.012 (0.052)	Rights*City	0.001 (0.0809)
Strength of title*Age of title	-0.020 (0.066)	Rights*Age of Title	-0.039 (0.093)
Constant	0.709*** (0.079)	Constant	0.707*** (0.079)
R-Squared	0.0891	R-Squared	0.0887

Note:

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

All continuous data used for the analysis is winsorised to 99th percentile

Standard errors mentioned in the table are robust standard errors

The regression result does not show any significant dependence of Consumption expenditure on property title. Since we are looking at a sample at the lower income level, there is no significant per capita increase in income to actually result in higher household consumption expenditure.

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### 5.2.3. Measuring impact on Healthcare

Table 10: Impact of Property Title on Medical Expenditure

Baseline Regression Variable of Interest: High/ Low Rights		Robustness Test Variable of Interest: Rights/ No Rights	
Independent Variables	Dependent Variable Medical Expenditure (% of income)	Independent Variables	Dependent Variable Medical Expenditure (% of income)
Strength of title	0.032** (0.016)	Rights Dummy	0.0315** (0.015)
Age of title	0.0011 (0.015)	Age of title	0.337 (0.043)
City	-0.015 (0.013)	City	-0.018 (0.0175)
Number of children	-0.002 (0.003)	Number of children	-0.0026 (0.003)
Number of earning members	-0.008** (0.003)	Number of earning members	-0.008** (0.003)
Highest Education level		Highest Education level	
Class 1-5	-0.014 (0.038)	Class 1-5	-0.013 (0.039)
Class 6-8	-0.043 (0.027)	Class 6-8	-0.042 (0.028)
Class 9-12	-0.042 (0.027)	Class 9-12	-0.041 (0.027)
Graduate	-0.045 (0.028)	Graduate	-0.044 (0.028)
Strength of title*City	-0.014 (0.016)	Rights*City	0.011 (0.02)
Strength of title*Age of title	-0.024 (0.020)	Rights*Age of Title	-0.055 (0.045)
Constant	0.113*** (0.027)	Constant	0.11*** (0.028)
R-Squared	0.0469	R-Squared	0.0480

Note:

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

All continuous data used for the analysis is winsorised to 99th percentile

Standard errors mentioned in the table are robust standard errors

Medical expenditure (as a percentage of income) is significantly dependent on the strength of title which is matching with our hypothesis. This could be due to households with stronger rights choosing private health practitioners and buying medicines from pharmacies over government hospitals and subsidised medicines.

Table 11: Impact of Property Title on number of doctor's visits

<b>Baseline Regression</b> Variable of Interest: High/ Low Rights		<b>Robustness Test</b> Variable of Interest: Rights/ No Rights	
Independent Variables	Dependent Variable	Independent Variables	Dependent Variable
	<b>No. of Doc's Visits</b>		<b>No. of Doc's Visits (% of income)</b>
Strength of title	0.202 (2.15)	Rights Dummy	0.194 (2.08)
Age of title	-6.60** (2.73)	Age of title	-10.43*** (1.425)
City	-5.87** (2.94)	City	2.16 (5.52)
Number of children	0.009 (0.040)	Number of children	-0.024 (0.410)
Number of earning members	-0.332** (0.536)	Number of earning members	0.329 (0.532)
Highest Education level		Highest Education level	
Class 1-5	0.141 (4.24)	Class 1-5	0.22 (4.24)
Class 6-8	1.69 (3.71)	Class 6-8	1.45 (3.72)
Class 9-12	1.92 (3.47)	Class 9-12	1.82 (3.49)
Graduate	0.70 (3.51)	Graduate	0.661 (3.52)
Strength of title*City	-6.48** (3.16)	Rights*City	-14.45** (5.61)
Strength of title*Age of title	5.50* (3.16)	Rights*Age of Title	9.38*** (1.96)
Constant	20.02*** (3.53)	Constant	20.18*** (3.57)
R-Squared	0.2310	R-Squared	0.2436

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

All continuous data used for the analysis is winsorised to 99th percentile

Standard errors mentioned in the table are robust standard errors

The number of visits to the doctor reduces with age of title. This could be due to the improved basic infrastructure conditions such as in-house water supply, individual toilets and solid waste management over the years making the surroundings healthier.

## 5.2.4. Measuring impact on education expenditure

Table 12: Impact of Property Title on Education Expense

Baseline Regression Variable of Interest: High/ Low Rights		Robustness Test Variable of Interest: Rights/ No Rights	
Independent Variables	Dependent Variable	Independent Variables	Dependent Variable
	Education Expense (% of income)		Education Expense (% of income)
Strength of title	-0.007 (0.034)	Rights Dummy	-0.006 (0.03)
Age of title	-0.0016 (0.021)	Age of title	0.035 (0.058)
City	-0.066*** (0.021)	City	-0.079*** (0.023)
Number of children	0.022*** (0.005)	Number of children	0.022*** (0.005)
Number of earning members	-0.024*** (0.006)	Number of earning members	-0.024*** (0.006)
Highest Education level		Highest Education level	
Class 1-5	0.077 (0.048)	Class 1-5	0.07 0.048
Class 6-8	0.028** (0.015)	Class 6-8	0.03** (0.015)
Class 9-12	0.058*** (0.014)	Class 9-12	0.058*** (0.014)
Graduate	0.111*** (0.020)	Graduate	0.111*** 0.020
Strength of title*City	0.044* (0.025)	Rights*City	0.054** (0.026)
Strength of title*Age of title	-0.019 (0.033)	Rights*Age of Title	-0.053 (0.062)
Constant	0.054*** (0.017)	Constant	0.053*** (0.018)
R-Squared	0.0866	R-Squared	0.0858

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

All continuous data used for the analysis is winsorised to 99th percentile

Standard errors mentioned in the table are robust standard errors

The above regression result shows that expense on education is not dependent on the property title. India has adopted a rights based approach to 'free and compulsory education' to children in the age group of 6-14 years. Data also shows that more than 80% of the children in the age group of 6-14 years are enrolled in schools in the sample. Hence expenditure on education does not show significant dependence for the first 2

categories of education level. Only in case of households with higher education is the education expenditure significantly dependent.

### 5.2.5. Measuring impact on House Improvement

Table 13: Impact of Property Title on House Improvement

Baseline Regression Variable of Interest: High/ Low Rights		Robustness Test Variable of Interest: Rights/ No Rights	
Independent Variables	Dependent Variable	Independent Variables	Dependent Variable
	Construction expense (% of income)		Construction expense (% of income)
Strength of title	0.013 (0.204)	Rights Dummy	0.132 (0.198)
Age of title	0.022 (0.33)	Age of title	0.61 (1.13)
City	-0.427 (0.283)	City	-0.81 (0.109)
Number of children	-0.0164 (0.043)	Number of children	-0.013 (0.043)
Number of earning members	-0.185*** (0.053)	Number of earning members	-0.184*** (0.053)
Highest Education level		Highest Education level	
Class 1-5	-0.24 (0.47)	Class 1-5	-0.237 (0.478)
Class 6-8	-0.39 (0.37)	Class 6-8	-0.38 (0.374)
Class 9-12	-0.09 (0.37)	Class 9-12	-0.086 (0.37)
Graduate	-0.122 (0.37)	Graduate	-0.121 0.38
Strength of title*City	0.298 (0.323)	Rights*City	0.65 (0.171)
Strength of title*Age of title	-0.194 (0.373)	Rights*Age of Title	-0.592 (1.15)
Constant	1.30*** (0.378)	Constant	1.28*** (0.386)
R-Squared	0.0349	R-Squared	0.0371

Note:

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

All continuous data used for the analysis is winsorised to 99th percentile

Standard errors mentioned in the table are robust standard errors

Construction expenditure (an incremental but lumpsum investment on improving the housing structure and infrastructure) does not show any significant dependence on the rights, strength of title or the age of title. Literature shows that incremental construction

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is carried out by both households with rights and without rights. It is also believed that upgrading from a temporary structure (kutcha) to a permanent structure (pucca) increases tenure security, as permanent structures are less likely to be demolished by the authorities fearing political ramifications. However, the size of construction expenditure is low as most of these households depend on savings and informal loans to carry out incremental construction. Also, due to the conditional nature of the title/patta provided by the government, banks and micro-finance institutions are barred from providing mortgage loans to houses that do not have formal approvals.

### 5.2.6. Measuring impact on financial savings

Table 14: Impact of Property Title on Financial Savings

Baseline Regression Variable of Interest: High/ Low Rights		Robustness Test Variable of Interest: Rights/ No Rights	
Independent Variables	Dependent Variable	Independent Variables	Dependent Variable
	Financial Savings (% of income)		Financial Savings (% of income)
Strength of title	-0.009 (0.063)	Rights Dummy	0.006 (0.060)
Age of title	-0.016 (0.053)	Age of title	-0.098 (0.219)
City	-0.157** (0.063)	City	-0.236*** (0.061)
Number of children	0.0198** (0.0098)	Number of children	0.02** (0.009)
Number of earning members	-0.028** (0.011)	Number of earning members	-0.027** (0.011)
Highest Education level		Highest Education level	
Class 1-5	-0.376** (0.18)	Class 1-5	-0.399* (0.228)
Class 6-8	-0.121 (0.186)	Class 6-8	-0.147 (0.232)
Class 9-12	-0.204 (0.181)	Class 9-12	-0.228 (0.228)
Graduate	-0.168 (0.183)	Graduate	-0.192 (0.229)
Strength of title*City	-0.0008 (0.0727)	Rights*City	0.075 (0.070)
Strength of title*Age of title	0.0181 (0.063)	Rights*Age of Title	0.088 (0.221)
Constant	0.55*** (0.170)	Constant	0.57*** (0.22)

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R-Squared	0.1906	R-Squared	0.1941
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Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

All continuous data used for the analysis is winsorised to 99th percentile

Standard errors mentioned in the table are robust standard errors

Financial savings as a percentage of income is neither dependent on property rights nor strength of the title. However, this variable shows a negative coefficient for the highest education levels. This needs further investigation.

### 5.2.7. Measuring impact on credit access

Table 15: Impact of Property Title on Credit Access

Baseline Regression		Robustness Test	
Variable of Interest: High/ Low Rights		Variable of Interest: Rights/ No Rights	
Independent Variables	Dependent Variable	Independent Variables	Dependent Variable
	Loan Outstanding (% of income)		Loan Outstanding (% of income)
Strength of title	0.251* (0.144)	Rights Dummy	0.218* (0.132)
Age of title	-0.194** (0.085)	Age of title	-0.594*** (0.084)
City	-0.33*** (0.093)	City	-0.388*** (0.141)
Number of children	0.012 (0.027)	Number of children	0.012** (0.027)
Number of earning members	-0.112*** (0.029)	Number of earning members	-0.114*** (0.03)
Highest Education level		Highest Education level	
Class 1-5	0.013 (0.284)	Class 1-5	-0.003 (0.285)
Class 6-8	0.021 (0.224)	Class 6-8	0.004 (0.225)
Class 9-12	0.130 (0.215)	Class 9-12	0.114 (0.216)
Graduate	0.114 (0.214)	Graduate	0.095 (0.215)
Strength of title*City	-0.136 (0.127)	Rights*City	-0.087 (0.164)
Strength of title*Age of title	-0.023 (0.141)	Rights*Age of Title	0.402*** (0.131)
Constant	0.64*** (0.219)	Constant	0.668*** (0.22)
R-Squared	0.0901	R-Squared	0.0910

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

All continuous data used for the analysis is winsorised to 99th percentile

Standard errors mentioned in the table are robust standard errors

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Loan Outstanding (as a multiple of income) shows only a 10% significance on the strength of title, however shows a strong dependence on age of title. Contrary to our hypothesis, the negative coefficient of the age of title shows that even after the completion of the lock-in periods households with property rights have not opted for larger loans with their properties as collateral. The reason could be that with limited income, formal sources of credit do not extend loans due to low repayment capacity.

At low income levels, house is a main source of security. In the absence of old age pensions or any form of state protection, house is used as a lever to ensure care by children in their old age. Hence it is not used as collateral to secure large loans. Instead other form of collateral such as gold is used for smaller loans.

Also, the concept of social capital in certain entrepreneurial communities help the younger generations secure larger loans without using house as collateral.

## 6. Conclusion

Based on the results of our cross-sectional study we conclude that provision of property rights does not show any significant outcomes for the slum households across variables such as income, expenditure, education expense, house improvement, financial savings or access to credit. Contrary to our hypothesis that 'economic benefits significantly lower the perceived high cost of regularizing land title to the government', the absence of indirect benefit to the slum households means no indirect economic benefits to the government in the form of additional taxes or reduced subsidies.

The above results raise questions on whether property titling is the most suitable solution to address the issues facing the informal settlements especially in the context of recent land titling and regularization programmes carried out by the states of Odisha and Delhi respectively. While media reports endorse these attempts highlighting the social benefits, it is imperative to base such policy decisions on strong empirical evidence.

There may be several other endogenous and exogenous factors at play that are responsible for the economic impacts of titling. We therefore recommend a more detailed longitudinal investigation to understand the long term impacts.

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