Determinants of large city slum incidence in India: A cross-sectional study

Tripathi, Sabyasachi

Indian Council for Research on International Economic Relations

10 July 2014

Determinants of large city slum incidence in India: A cross-sectional study

*Sabyasachi Tripathi**
Indian Council for Research on International Economic Relations
New Delhi, India
Email: sabya.tripathi@gmail.com

Abstract: Roughly 1.37 crore households, or 17.4% of urban Indian households lived in slums in 2011. India's current policies and programmes are not enough to improve slum conditions or stop proliferation of slums. This phenomenon poses serious questions to Indian economic researchers and policy makers. By considering India's 52 large urban agglomerations, this paper investigates the relevant city specific economic determinants of city slum incidence (measured by the ratio of city slum population to total city population). In addition, the paper also tries to identify the cities with the best record in trying to improve the living condition of slum dwellers in India. Besides using city level data, the study uses three rounds of National Sample Survey (NSS) unit level data on consumption expenditure, employment and unemployment, and particulars of slums. Using OLS regression analysis, the empirical results show that the level of urban agglomeration, per capita income, per capita consumption expenditure, level of poverty, employment and unemployment situation negatively impact on city slum incidence. The results of Borda ranking show that Aurangabad, Hyderabad, Jodhpur, Bangalore, and Hubli-Dharwad rank high among other cities in regard to availability of quality of public services and better general conditions in the slum. Finally, the paper suggests that the problem of slum should be analysed in a macro or overall perspective besides micro level as the stage of development of a country has a direct bearing on proliferation of slums.

Key Words: Urban agglomerations, Urban economic Growth, Slums, India

JEL Classification: R1, R58

* Any opinions expressed here are mine and not necessarily those of the institute. The usual disclaimer applies.

I. Introduction

India alone accounts for 17 percent of the world's slum dwellers (UN-HABITAT, 2006)**.** Like other developing countries, India too faces the challenge of making the country slum- free in coming decades. The new millennium development goal of the United Nations, to which India is a signatory, particularly identifies the need to improve the quality of life in the slums. Rapid urbanization in China has lifted several hundred millions of its people out of extreme poverty during the past three decades, but unplanned rapid urbanization in India has forced a large number of city dwellers to take up residence in shanties or slums. As part of the ongoing 12th Five Year Plan (2012-17), a Centrally Sponsored Scheme (CSS), Rajiv Awas Yojana (RAY), is currently under implementation to make India slum-free by the year 2022. The main objective of this programme is to provide housing, basic civic infrastructure, and social amenities to the slum dwellers. [1]

Table 1: Change of broad category of population in India from 2001 to 2011

Indicator		2001	2011
Statutory towns		3799	4041
Slum reported towns		1743	2613
Total population (in Millions)	All India	1029	1210
	Urban	286	377
	Slum	52	65
	slum reported towns	223	292
Decadal Growth Rate of Population	Total	-	17.6
	Rural	-	12.2
	Urban	-	31.8
% of population	Urban population	27.86	31.16
	Urban population lives in Slum	18.3	17.4
	Urban population (slum reported towns)	77.97	77.45

Source: Office of the Registrar General and Census Commission of India, Ministry of Home Affairs, GOI.

Table 1 shows that as of 2011, there were 4011 statutory town slums spread over 2613 towns (65%) against 3799 town slums spread over 1743 towns that existed in 2001(46%). Roughly 13.7 million households or 17.4 % of total urban Indian households lived in slums in 2011 which

[1] Kundu (2013) presents an excellent evaluation of Rajiv Awas Yojana (RAY).

is little lower than the corresponding percentage in 2001 (18.3). Most importantly, 5.2 million households or 38.1 percent of urban Indian households of 46 million plus cities lived in a slum in 2011. The share of urban population in the total increased from 27.86 % in 2001 to 31.16 % in 2011. The percentage share of urban population of 'slum reported towns' in total urban population in India was 77.45 % in 2011. Table 1 also shows that the growth rate of urban population from 2001 to 2011 is much higher than rate of growth of both rural and total population in the country. Among the agglomerations, the percentage share of slum households in total urban households (%) was highest for Greater Visakhapatnam Municipal Corporation at about 44.1 percent in 2011. These figures clearly indicate that a large proportion of India's urban population live in unhygienic environment without basic facilities such as adequate infrastructure, proper drinking water, and sanitary facilities, etc.[2]

It is to be borne in mind that urban India contributes over 50 % of the country's Gross Domestic Product (GDP). The Mid-Term Appraisal of the Eleventh Five Year Plan shows the urban share of GDP at about 63 per cent for 2009-10 and this share is projected to increase to 75 percent by 2030. It is a travesty that when Indian cities and towns act as an engines of national economic growth, such a large proportion of urban dwellers live in such poor conditions. There were several earlier public programmes under taken by Government of India starting from 2nd Five Year Plan Period (1956-1961) to improve the quality of life of slum dwellers and to reduce the slum population. History of notable institutional attempts to improve living conditions in slums dates back to early 1970s. Under Fourth Five Year Plan (1969-1974) a scheme for environmental improvement, i.e., to provide basic services, like, water supply, sewerage, drainage, and street pavements in urban slums was executed during 1972-73. Housing and Urban Development Corporation (HUDCO) also operated the integrated low cost sanitation scheme in 1980-81 to provide proper sanitation in the slums. Later in 1996, the National Slum Development Programme was introduced in for improving the living conditions of the slum dwellers in the

[2] As per the Census of India 2011, the slum areas broadly constitute of:
All specified areas in a town or city notified as 'Slum' by State/Local Government and Union Territories Administration under any Act including a 'Slum Act'. All areas recognized as 'Slum' by State/Local Government and UT Administration, Housing and Slum Boards, which may have not been formally notified as slum under any act. A compact area of at least 300 population or about 60-70 households of poorly built congested tenements, in unhygienic environment usually with inadequate infrastructure and lacking in proper sanitary and drinking water. However, there are different slum definitions adopted by the state government of India (Ministry of Housing and Poverty Alleviation, GOI, 2010).

cities/towns. However, the most significant step in this direction was the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) launched by the GOI in December, 2005 with the objective of providing urban infrastructure for service delivery on a sustainable basis. Under JNNURM, the integrated Housing and Slum Development Programme (IHSDP) was launched to improve the living conditions of the urban slum dwellers covering all the towns except the 63 identified mission cities covered under the programme for Basic Services for the Urban Poor (BSUP).[3] The main objective of the Scheme was to develop the standard of living of the slum dwellers by providing a healthy and enabling environment.

A plentiful number of research papers have addressed the problem of urban slum by considering several case studies and also evaluated the government programmes and policies taken for making India slum-free. The main problems identified by these studies are: a) very little recognition is found accorded to the slum problems in the planning era, b) the policies suffered due to limited funding and implementation bottlenecks, and c) lack of political will to solve the problem of slums. Despite of facing several impediments, government of India has been able to solve the problem of slum dwellers partly. However, due to unplanned urbanization slums have been proliferating exponentially, overtaking the efforts either to stop slum growth or effect environmental improvements of the slums.

In this scenario, the present paper tries to identify the economic factors of slum incidence by analysing currently available data published by Government of India. In other words, we are trying to answer the following questions: what are the relevant economic factors of slum incidence? How these factors can contribute to revise current policies and programmes for the improvement of living standard of slum dwellers? Which are the cities trying utmost improve the living condition of slum dwellers? The results will go a long way in identifying the best policy options to make India slum free. In particular, this paper seeks to fill the research gaps by considering empirical economic research findings and also suggest policy options to overcome the challenges posed by slums in India. This study is a first attempt using a new index of slum incidence at the city level in India.

[3] Sawhney (2013) reviewed all the programmes and policies in more details. This part of discussion is mainly based on Sawhney (2013).

As sample, we have selected 52 large cities (agglomerations) with population of 750,000 or more inhabitants as of 2011 from the records of World Urbanization Prospects (United Nations, 2011).[4] There are several reasons behind the selection of these large agglomerations as units of analysis. First, because of the unavailability of city specific data for a large number of variables used in this study (e.g. city income data), city district (where the sample city in located) is used as a proxy of a city. Larger cities are good proxies for city districts as they cover larger portions of the respective districts than by smaller cities. Third, as India's urbanization (i.e. share of urban population) is mainly based on Class I cities (with a population of more than 100,000), these cities also belong to Class I cities. Fourth, these 52 cities comprise about 39% of India's total slum population as per 2011 Census data. Finally, bigger cities are found to have higher proportion of slum population than smaller cities. For instance, Dharavi in Mumbai is one of the largest slums in the world.

The rest of the paper is organized as follows: Section 2 presents the brief review of literature to find the research gap. Empirical framework and results are presented in Sections 3 and 4, respectively. Finally, major conclusions and implications are given in Section 5.

II. Selected Review of Literature

Marx, Stoker, and Suri (2013) tried to establish the relationship between economic growth, urban growth, and slum growth in the developing world and suggested that housing policy (UN-Habitat, 2012) is not only insufficient for any meaningful for slum development programme but also that there is need for a holistic approach which addresses health and sanitation issues, local governance, private savings and investments, and land market institutions. The paper also suggested that a research agenda on slums should necessarily consist of three distinct sets of methodological and policy areas: first the need for efforts to enumerate slum populations and to track panel respondents over several generations of slum dwellers to understand the intergenerational correlation in incomes and other socioeconomic outcomes. Second, the possible returns from upgrading different type of public service need to be identified so that cost-effective

[4] Total 58 cities listed in the World Urbanization Prospects, 2011. We also consider Bhiwandi city which is not listed in the World Urbanization Prospects 20011 but was listed in World Urbanization prospects 2009. Due to unavailability of data we consider only 52 cities for our analysis.

projects can be more consistently applied for welfare gains of slum dwellers. Third, the 'big push' policy can lift slum dwellers out of poverty.

In the context of India, Kumar's (2010) study found that the slum population grew more slowly than the overall urban population between 1991 and 2001 and also that the incidence of rural-urban and urban-urban migration from groups with low monthly per capita consumption expenditure was low. Kumar and Aggarwal (2003) while trying to determine the extent of poverty in Delhi slums found that migrants have low levels of education, there exist gender disparities in economic status among them, and significant number of slum people belongs to below poverty line category. The study urges for a positive employment generation policy for urban slum dwellers. Sawhney (2013) analyzed the demographic attributes of the slum population in India and evaluated the government policies designed to control growth of slums and the efforts to rehabilitate the slum-dwellers. The paper identifies several policy failures such as poor focus on problems of slums in Plan periods, implementation problem, fund utilization problem, and lack of political will. The paper also suggested several policy options which included public-private partnership mode for delivering public services, improvement of the local government capacity, need for good governance, and institutional framework for slum clearance and rehabilitation of the urban poor and the creation of inclusive cities. Sufaira.C (2013) studied the seven slum areas of Kannur municipality in Kerala and found that the socio economic conditions of the slum dwellers in the notified areas where the IHSDP (Integrated household Slum Development Programme) implemented are better than slums in non notified area. The study also indicated that the living condition of slum dwellers can be improved even at low levels of economic development through appropriate public action for provisioning and redistribution. Bandyopadhyay and Agrawal (2013) examined the living conditions of urban slum in India and suggested several policies such as city development by empowering local authorities, preventing formation of new slums, increasing public investment for providing basic services and infrastructure, etc. for improving living conditions of the slum dwellers.

Most importantly, Edelman and Mitra (2006) analyzed the slum dwellers' access to basic amenities and the ways in which they gain access. The study found that state's share of aggregate slum is positively related with per capita state domestic product (SDP), share of urban population, urban Gini ratio for per capita consumption expenditure, and negatively related to

government spending as a percentage of SDP on health and education. In addition, they indicated that number of slum dwellers in India is very high and the slum conditions have just remained as earlier or deteriorated in the matter of most of the major amenities, like quality of structures, access to tap water, latrines, sewerage facilities, and garbage disposal. Finally, by analysing slum survey data (2004-05), the paper concluded that political contacts has helped slum dwellers to access basic amenities as well as to get relief in matters of land tenure, etc.

III. Empirical framework

3.1 Determinants of city slum incidence

To estimate the economic determinants of the city level slum incidence, our econometric model assumes the following expression:

$$\boldsymbol{CSI = \alpha_0 + \alpha_1 x_1 + \alpha_2 x_2 + \alpha_3 x_3 + \alpha_4 x_4 + \alpha_5 x_5 + \alpha_6 x_6 + \alpha_7 x_7 + \alpha_8 x_8 + e}$$

---------- **(1)**

where CSI is the city slum incidence; $\boldsymbol{x_1}$is the urban agglomeration; $\boldsymbol{x_2}$ is the city level consumption expenditure ;$\boldsymbol{x_3}$is the city level inequality; $\boldsymbol{x_4}$is the city level poverty ; $\boldsymbol{x_5}$ is the city level income; $\boldsymbol{x_6}$is the city level human capital accumulation; $\boldsymbol{x_7}$is the city level employment; $\boldsymbol{x_8}$ is the city level unemployment. The error term is expressed by e and the constant term is $\boldsymbol{\alpha_0}$. The regression model is linear in parameters and is estimated by OLS.

Urban India is experiencing an increasing rate of urbanization; urban economic growth, and urban agglomeration has a significant effect on urban economic growth (Tripathi, 2013a). On the other hand, inequality level of the cities also is increasing (Tripathi, 2013b). This exercise is intended to empirically test the relationship of these variables with city slum incidence. In other words, what is tested herein is the impact of these variables on city slum incidence. City slum incidence is measured as a ratio of city slum population to total city population. [5]

[5] UN-Habitat Global urban observatory was the first to develop the slum incidence index and was presented as a "slum population index" for assisting in monitoring Target 11 of the Millennium Development Goals "By 2020 to have achieved a significant improvement in the lives of at least 100 million slum dwellers". A slum household is defined by UN-Habitat as lacking one or more of the following conditions: access to improved water, access to improved sanitation, sufficient-living area, durability of housing, and security of tenure. The index was compiled from different data sources such as Multiple -Indicator Cluster Survey (MICS), Demographic and Health Surveys (DHS), and Census data. However, in this paper we use the number of factors which reflects the percentage of cities population living in slums, and hence the more insightful phrase "city slum incidence".

Following Tripathi (2013a), the study considers the following three proxy variables to measure urban agglomerations: (i) city population, (ii) growth rate of city population, and (iii) city population density. On the other hand, to measure city level income per capita city income and growth rate of city income are used as proxies.

3.2 Ranking of cities as per the availability of public services for improvement of city slum conditions on the basis of Borda Rule

We have tried in this study to rank the large cities as per the availability and quality of public services that improve the quality of life of slum dwellers or the general condition of the slums in terms of the norms under Borda Rule.[6] Borda Rule provides a method of rank-order scoring, the procedure being to award each alternative (here, city) a point equal to its rank in each criterion of ranking (here, the criteria are given in Table 2), adding each alternative's scores to obtain its aggregate score, and then ranking alternatives on the basis of their aggregate scores. To illustrate, suppose a city has the ranks i, i. k, 1, m and n, respectively, for the six criteria, then its Borda score is i + j + k + 1 + m + n. The rule invariably yields a complete ordering of alternatives.[7]

Table 2 explains the definitions of the 17 variables which are used to measure the Borda Rule and to rank the cities as per the availability of public services. Based on the variable definitions, a lower (or higher) aggregate score indicates a higher (or lower) level of public service provisions of a city.[8]

[6] This approach has been advocated by Dasgupta (1993 and 2001) in the context of international comparisons of well-being and much of the same approach to ranking has been used in the context of gender inequality among Indian state. Noorbakhsh (1998) also used Borda index to examine the components and structure of the UNDP's Human Development Index.

[7] See Dasgupta and Weale (1992) for an excellent explanation of Borda Rule. The strengths and limitations of the Borda Rule have been investigated by Goodman and Markowitz (1952) and Fine and Fine (1974). The Borda score focuses only on ordinal information. Of Arrow's (1963) classic axioms, the Borda Rule violates the one concerning the independence of irrelevant alternatives.

[8] We define variables such a way that it reflects the availability of public service delivery or general condition of slum as much as possible data speaks out. Complete survey questioner (66th Round NSS data in 2008-09 on "Particulars of Slum") can be referred to get more details. Due to availability of only limited information we consider both notified and non-notified slums for our analysis. As our goal is to improve slum conditions, it does not matter whether a slum is notified or not. If an area is notified as slums by the respective municipalities, corporations, local bodies or development authorities such areas are treated as "notified slums"

Table 2: Variable definitions used to calculate the Borda Ranking

Variable	Definition and Measurement
x_1	Ranking (in descending order) of a city by higher distribution of slums by ownership of public land holding (in %).
x_2	Ranking (in descending order) of a city by higher distribution of slums surrounded by residential area (in %).
x_3	Ranking (in descending order) of a city by higher distribution of slums structured by Pucca of the majority of houses: Pucca (in %)
x_4	Ranking (in descending order) of a city by higher distribution of slums by tap is the major source of drinking water (in %).
x_5	Ranking (in descending order) of a city by higher distribution of slums by both street light and household use of electricity connection (in %).
x_6	Ranking (in descending order) of a city by higher distribution of slums by Pucca road/lane/constructed path within the slum (in %).
x_7	Ranking (in descending order) of a city by higher distribution of slums by motorable (Pucca and Katcha) approach road/lane/ constructed path to the slum (in %).
x_8	Ranking (in descending order) of a city by higher distribution of slums by septic tank used for latrine facility by most of the residents of the slum (in %).
x_9	Ranking (in descending order) of a city by higher distribution of slums by availability of underground sewerage system (in %).
x_{10}	Ranking (in descending order) of a city by higher distribution of slums by availability of covered pucca drainage system (in %).
x_{11}	Ranking (in descending order) of a city by higher distribution of slums by arrangement of garbage disposal by municipality/corporation (in %)
x_{12}	Ranking (in descending order) of a city by higher distribution of slums having motorable road by less than 0.5 km distance from nearest motorable road (in %).
x_{13}	Ranking (in descending order) of a city by higher distribution of slums by less than 0.5 km distance from nearest government primary school (in %).
x_{14}	Ranking (in descending order) of a city by higher distribution of slums by distance (0.5-1 km) from nearest govt. hospital/ health centre (in %).
x_{15}	Ranking (in descending order) of a city by higher distribution of slums by not water logged during monsoon (in %)
x_{16}	Ranking (in descending order) of a city by higher distribution of slums by daily collection of garbage by municipality/ corporation (in %).
x_{17}	Ranking (in descending order) of a city by distribution of slums by location of slum in Fringe area (in %).[$]

Note: We consider fringe area as it is a better place to live for slum dwellers than along nallah/drain or along railway line of a city.
Source: Author's compilation

IV. Empirical Results

4.1 Regression results: Determinants of city slum dwellers

4.1.1 Measurement of variables, data sources, and description of data

Appendix I summarizes the descriptions, measurements, and data sources of all of the variables used in estimation of OLS regression equation (1). Table 3 details the means, standard deviations, minimum, maximum, and coefficient of variation (CV) values for the variables used for the regression analysis. Most importantly, the CV aims to describe the dispersion of the variables in a way that does not depend on the variable's measurement unit. The higher value of CV for city population, growth rate of city population, and city poverty ratio variables indicate the greater the dispersion in these variables. On the other hand, lower value of CV for the variables Gini coefficient, upper primary grows enrolment ratio, and average MPCE show the lower dispersion in these variables.

Table 3: Description of data

Variables	Obs.	Mean	Std. Dev.	Min	Max	C.V.
Ratio of city slum population to total population in percentage (CSP)	52	18.75	11.98	0.20	48.56	63.89
City population in 2001 in lakh (CP)	52	16.40	21.39	1.99	119.78	130.45
CAGR of city population from 2001 to 2011 in percentage (CAGRP) in %	52	4.83	3.98	0.87	19.62	82.45
City population density in thousands (CPD)	52	9.88	5.82	0.92	24.96	58.9
Mean MPCE in thousand rupees (MPCE)	52	1.92	0.78	0.76	5.1	40.46
Gini coefficient (GINI)	52	0.37	0.09	0.21	0.68	25.48
City poverty ration in percentage (CPR)	52	19.68	12.89	0.19	66.73	65.47
Per capita city output in thousand (PCCO)	52	21.37	11.73	0.793	66.82	54.91
Growth rate of per capita city output in percentage (GPC)	52	5.08	2.75	0.01	13.29	54.21
Upper primary gross enrolment ratio in percentage (UPGER)	52	77.41	30.83	32.57	212.19	39.82
Usually casual labour employed (UCL)	52	83.15	50.77	7.80	245.90	61.05
Usually unemployed labour (UUL)	52	19.02	14.02	0.00	61.10	73.69

Note: Obs, observation, Std Dev, standard deviation, Min, minimum, Max, maximum, C V, coefficient of variation.
Source: Author

Table 4: Correlation coefficient of determinants of slum incidence

	CSP	CP	CAGRP	CPD	MPCE	GINI	CPR	PCCO	GPC	UPGER	UCL	UUL
CSP	1											
CP	0.00	1										
CAGRP	-0.46	0.02	1									
CPD	0.14	0.54	0.04	1								
MPCE	-0.14	0.25	0.13	0.09	1							
GINI	-0.13	0.09	0.07	-0.19	0.72	1						
CPR	-0.09	-0.30	-0.07	-0.29	-0.60	-0.14	1					
PCCO	-0.18	0.51	0.25	0.38	0.63	0.24	-0.49	1				
GPCCI	-0.22	0.08	0.37	0.07	0.14	0.18	0.02	0.37	1			
UPGER	0.17	0.47	-0.02	0.14	0.12	-0.02	-0.27	0.35	-0.08	1		
UCLE	-0.31	-0.34	0.24	-0.25	-0.25	-0.11	0.35	-0.25	0.12	0.07	1	
UUL	-0.29	0.03	0.43	0.30	0.09	0.00	-0.09	0.19	0.18	0.00	0.06	1

Source: Author

Table 4 shows the raw correlation coefficient. The values of the correlation coefficient (r^2) show that the ratio of city slum population to total population is positively associated with the upper primary gross enrolment ratio (i.e. r^2 is 0.17) and city population density (i.e. r^2 is 0.14). On the other hand, the ratio of city slum population to total population is negatively associated with growth rate of city population (i.e. r^2 is -0.46), usually casual labour employee (i.e. r^2 is -0.31), usually employed labour (i.e. r^2 is -0.29), and per capita city income (i.e. r^2 is -0.18). However, lower values of r^2 do not show any problem of multicollinearity.

4.1.2 Results of estimation

Table 5 presents the results of size models of the potential determinants of city slum incidence in major Indian cities in 2011 based on Equation 1 and using the OLS regression method. The ratio of city wise slum population to total city population, i.e., city slum incidence is used as a dependent variable. Regression 1 shows the estimates of the full model by considering all the independent variables which are discussed in section 3.1. Regression 2 and 3 present the results for a parsimonious model, excluding controls that are not found to be statistically significant in Regression 1. Regression 1-3 report OLS results with robust standard errors (to control for heteroskedasticity) in parentheses taking care of the multicollinearity problem. The significant values of F statistics for Regression 1-3 indicate that the overall model is statistically significant.

The test of normality, i.e., that the residuals are normally distributed is confirmed by Kernel density estimates which are presented in Appendix Figures 1-3. A non-graphical test is also done by considering the Shapiro-Wilk test for normality. The statistically insignificant Z values do not reject the null hypothesis that the distribution of the residuals is normal. The higher values of R^2 indicate that the Regression 1-3 explains a good percentage of total variation in the dependent variable. We also calculate the adjusted R^2 as it adjusts for the number of explanatory terms in a model, i.e., it incorporates the model's degrees of freedom. The multicollinearity problem does not seem to be troublesome as the mean VIF values do not exceed 10.

In Regression 1 we run the full model by considering all the independent variables. The regression explains 46 % of the total variation in the dependent variable. The estimated results show that two proxy variables of urban agglomerations, i.e., size of city population and growth rate of city population exert a negative effect on city slum incidence as of 2011. In particular, 10 % increase in large city population (or growth rate of city population) is associated with 2.4 % (or 6.8 %) decrease in city slum incidence. This result indicates that large cities are experiencing lower level of city slum incidence. The third proxy of urban agglomeration, i.e. city population density which signifies the internal population agglomeration has a positive and significant (at 10 %) effect on city slum incidence. A 10 % increase in city population density increases city slum incidence by 7.9 %. The results establish that size of city population and growth rate of city population reduce city slum incidence but city population density tends to increases the city slum incidence. Log of per capita city income which represents the economic condition of a city has a negative effect on city slum incidence. An increase of 10% in the per capita city income leads to 47.7% decrease in city slum incidence. The human capital accumulation variable which is measured by upper primary gross enrolment ratio is positive and significant at 1% level.[9] This shows that level of education (or human capital accumulation) of a large city tends to increase city slum incidence. The coefficient 0.162 indicates that a 10% increase in human capital accumulation of a large city increases city slum incidence by 1.6 %. The result indicates that higher educational situations of a large city encourages city slum incidence. The employment control variable, that is, casual labour employed, takes a negative coefficient and is significant at

[9] To measure the city wise human capital accumulation or education level, we considered primary, upper primary gross enrollment ratio, and district literacy rate in our regression models. But we get significant results only for the variable of upper primary gross enrollment ratio which is considered here.

Table 5: Determinants of city slum incidence for large agglomeration in India

	Dependent variable: City slum incidence		
	(1)	(2)	(3)
Constant	62.43***	31.21***	69.50***
	(17.43)	(8.56)	(18.28)
City Population in 2001	-0.235**		-0.252***
	(0.088)		(0.083)
Growth rate of city population from 2001 to 2011	-0.675**	-1.29***	
	(0.319)	(0.282)	
City population Density in 2001	0.796**	0.306	0.856***
	(0.303)	(0.289)	(0.288)
Average monthly per capita consumer expenditure in 2009-10	-0.338	-0.559*	
	(0.355)	(0.326)	
Gini coefficient in 2009-10	19.78	20.38	4.05
	(28.06)	(26.17)	(16.59)
Poverty head count ratio in 2009-10	-0.101	-0.251**	
	(0.144)	(0.121)	
Log of per capita city income in 2005	-4.77**		-5.75***
	(1.99)		(1.85)
Growth rate of city income from 2001 to 2005	0.447	-0.195	
	(0.791)	(0.779)	
Upper primary gross enrolment ratio in 2008-09	0.162***		0.172***
	(0.059)		(0.045)
Total number of usually Casual labour employed per 1000 distribution of population of age 15 years and above in 2009-10	-0.091***		-0.102***
	(0.029)		(0.029)
Total number of usually unemployed per 1000 population distribution of age 15 years and above in 2009-10	-0.194		-0.263***
	(0.121)		(0.089)
R-squared	0.458	0.282	0.411
Adj R-squared	0.309	0.186	0.317
F statistics	3.07***	2.94**	10.61***
Mean VIF	2.27	2.22	1.54
Shapiro-Wilk test for normality (Prob>z)	0.857	0.524	0.853
No. of Observation	52	52	52

*Note: Figures in parentheses represent robust standard errors. ***, **, and * indicate statistical significance at 1%, 5%, and 10% level, respectively.*
Source: Estimated using equation (1).

1% level. The coefficient implies that a 10 % increase in casual labour employed decreases city slum incidence by 0.9 %.[10] This indicates that the higher chance of employment reduces city slum incidence. Regression 1 also shows the insignificant effect of average per capita monthly consumer expenditure, Gini coefficient, poverty head count ratio, growth rate of city income, number of usually unemployed, etc. on city slum incidence.

Regression 2 reports estimates with a parsimonious set of controls and explains up to 28% of the sample variance in city slum incidence of the large cities. The consumption expenditure variable (average monthly per capita consumer expenditure) is negative and significant at 10 %. The coefficient -0.559 indicates that a 10 % increase in city average MPCE decreases city slum incidence by 5.6 %. The results suggest that higher average MPCE of a large city reduces city slum incidence. The poverty level of the city measured by city wise poverty head count ratio is negative and significant at 5 %, which implies that with a 10% increase in the city poverty rate decreases city slum incidence by 2.5 %. The result indicates that the higher level of poverty situation in a city lower the city slum incidence. The results also suggest that the significance level of growth rate of city population, improved from 5 % in regression 1 to 1% in regression 2. Interestingly, the significance of city population density variable evaporates in regression 2. However, the coefficient of the city level inequality (i.e., Gini coefficient) and growth rate of city income which is the second proxy variable for measuring economic condition of cities again remain statistically insignificant. The results show that though the city level per capita income has a statistically negative effect on city slum incidence, growth rate of city income does not have any statistically significant effect on the life of city slum dwellers.

In regression 3, the coefficient of total number of usually unemployed labour is negative and significant at 1 %. A 10% increase in total number of usually unemployed labour decreases city slum incidence by 2.6 %. The result shows that unemployment situation of a city reduces city slum incidence. The results also show that the significance level of city population (or city population density or log of per capita city income), improved from 5 % in regression 1 to 1 % regression 3. However, the coefficient of city level inequality again remains statistically

[10] We started our regression analysis by considering different categories of employment classified by National Sample Survey (NSS); self employed, regular wage/salaried employed, casual employed, unemployed, and not in labour force by dividing in to male and female group. However, we obtained significant results only for casual labour employed and unemployed for total (male +female) group which are presented here.

insignificant. This indicates that city level inequality does not seem to have any effect on city level slum incidence. This regression explains 41 percent of the variation in the city slum incidence.

4.2 Result of Borda Ranking

Table 6 presents the taxonomy of cities by their calculated ranks based on Borda Rules. Cities are listed in accordance with their Borda ranks. Borda ranking of the large cities is done by arranging in ascending order of the aggregate ranks of the cities based on 17 variables, which means the lowest value of aggregate ranks got the highest rank (i.e., score of 1) and the highest value of aggregate rank got the lowest rank (i.e., score of 39).[11] The ranking is from the best (score of 1; Aurangabad) to the worst (score 39; Ludhiana). This indicates that the slums in Aurangabad (or Ludhiana) city get best (or worst) quality of public services for the improvement of general condition in the slums. The results also indicate that the 4 highest- ranking cities are Hyderabad, Jodhpur, Bangalore, and Hubli-Dharwad. On the other hand, the 4 lowest ranking cities are Jamshedpur, Asansol, Raipur, and Tiruchirapalli. Most importantly, among the 7 largest cities (as per the size of population in 2011) the 5 highest ranking cities are Bangalore, Chennai, Delhi, Hyderabad, and Kolkata.

Table 6: Ranking of cities as per the availability of quality public services or general condition of slum dwellers for large cities in India

Large cities: 39						Largest cities*: 7	
Top Five		Middle Five		Lowest Five			
Rank	Name of the Cities	Rank	Name of the Cities	Rank	Name of the Cities	Rank	Name of the Cities
1	Aurangabad	18	Lucknow	35	Tiruchirappalli	1	Bangalore
2	Hyderabad	19	Bhopal	36	Raipur	2	Chennai (Madras)
3	Jodhpur	20	Nashik	37	Asansol	3	Delhi
4	Bangalore	21	Visakhapatnam	38	Jamshedpur	4	Hyderabad
5	Hubli-Dharwad	22	Solapur	39	Ludhiana	5	Kolkata (Calcutta)

*Note: *Apart from the 5 listed cities in this column the other two cities Mumbai and Pune are included in the list.*
Source: Author

[11] Though we consider 52 large cities in our regression analysis, due unavailability of adequate information we consider only 39 cities to calculate the Borda ranking.

In order to quantify the relationship between the rank of cities as per the Borda ranking and the individual ranking of each city based on 17 variables, the rank correlation coefficient is estimated. Table 7 provides the calculated correlation coefficients (Spearman). It transpires that the correlation coefficient between the rank of the cities as per the Borda ranking and the rank of cities as per the higher distribution of slums by ownership of public land holding, structured by Pucca of the majority of houses, tap is the major source of drinking water, both street light and household use of electricity connection, Motorable (Pucca and Katcha) approach road/lane/ constructed path to the slum, septic tank used for latrine facility by most of the residents of the slum, availability of underground sewerage system, less than 0.5 km distance from nearest government primary school, and not water logged during monsoon are higher and positive with statistically significant, which indicates that ranking of cities as per these variables are closer to the rank of cities by Borda Rules (or ranking). Therefore, if a city shows higher rank (or performs well) based on these variables, it also shows higher rank as per the Borda ranks.

Table 7: Spearman's rank correlation coefficient

Variable	Borda Ranking	Variable	Borda Ranking
x_1	0.415***	x_{10}	0.1421
x_2	0.09	x_{11}	0.3103
x_3	0.511***	x_{12}	0.1474
x_4	0.351**	x_{13}	0.373**
x_5	0.497***	x_{14}	0.2638
x_6	0.2662	x_{15}	0.443***
x_7	0.398**	x_{16}	0.2603
x_8	0.409***	x_{17}	0.1279
x_9	0.6484***		

Notes:
*1. ***, **, and * indicate statistical significance at 1%, 5%, and 10% level, respectively.*
2. See Table 1 for variable definition
Source: Author

4.3 Economic explanation of the empirical results: Probable reasons for generation of slums in large cities of India

The classic model entitled "A theory of slums" by Stokes (1962) which profiled the probable reasons of slums formation by explaining the case of slums in Caracas, Lima, Buenos Aires, Guayaquil and other cities and made comparisons with what was familiar to the author in

American cities. The author introduced the dichotomy between 'slums of hope' and 'slums of despair'. He argued that slum is the home of the poor and the stranger and not integrated into the life of the city. The strangers get mainly attracted to the city as city offers higher social and economic opportunities but the lack of language abilities, educational attainments and other necessary social, economic resources to get absorbed into the city; as such, there would be more in-migrants then the available jobs opportunities. Such migrants seldom integrate with the city life and consequently live in poor housing facilities and spill over into shanty towns. In short, the paper explains that the slum formation depends on the rate of in-migration as well as on the rate of integration or absorption of the migrants.

The cities and towns in India constitute the world's second largest urban system and create agglomeration economies, offer jobs in service sector and work as engine of economic growth [Tripathi, 2013a]. Higher economic growth and opportunities generate hopes for millions of migrants from rural to urban areas. Tripathi (2013b) found that higher city economic growth and large city population agglomeration are associated with reduction in city poverty and increase in inequality between cities. The urban poverty in 2009-10 was about 20.9 percent which is quite higher than other developing countries such as China. This is because the increasing population pressure in cities has negative consequences and lead to creation of slums which are characterized by housing shortage, overcrowding, higher level of unemployment, unhygienic conditions, and critical inadequacies in public service delivery, etc.

In the following paragraph, we try to explain the probable reasons of slum formation in India's large cities using the argument as explained by Stokes (1962), We are doing so by considering the regression results (presented in Table 5) and by taking into consideration the relevant explanation from an economist's perspective.

Empirical results show that large agglomerations as measured in terms of population and growth rate of city population have lesser incidence of city slums. This is because India's large cities have higher productivity, higher capital per worker, higher wages, greater efficiency benefits, etc which generates higher economic growth (Tripathi, 2013a) and reduces city slum incidence by providing more opportunities to the poor. On the other hand, higher density of the large agglomerations increases city

slum incidence by over concentrating the people.[12] The overconcentration of people forces poor people to live in slums and squatter settlements and increases unemployment, crime, pollution, traffic congestion and social unrest which again negatively impact city economic growth. The results suggest that there is a level of agglomeration which is good for a city for generating economic growth and reduction of city slum incidence, and that beyond this level, agglomeration may not be conducive to economic growth.[13] Higher consumption expenditure (or average per capita income) reduces city slum incidence. This is quite obvious as higher consumption expenditure (or average per capita income) stands as a good proxy of income level of the individual, and it increases with economic development and helps many people to come out of the slum situation. This also indicates that higher economic condition of a city decreases city slum incidence by increasing higher levels of opportunity to earn higher incomes which in turn lifts city slum dwellers out of slum conditions in a large city. Strangely, the results show that higher rate of poverty decreases city slum incidence, which is at variance with our expectation. The probable reason for this result could be that the higher poverty rate in a large city forces slum dwellers to move to small cities or rural areas, which reduces slum incidence in large cities. In fact, in recent times medium cities in India have been experiencing higher population growth rate than large cities. However, the further explanation of this result is beyond the scope of this paper. Higher level of education increases city slum incidence. This has two implications: First, levels of education situation of a city attracts in-migration and due to inability to join in the formal labour force parents choose to live in slum and increases city slum incidence. Second, poor urban families suffer income loss from not sending their children to take up jobs in labour market and sending children instead to school. This increases the expectations the parents but increases city slum incidence as well. The employment variable, i.e., casual labour employment has a negative effect on city slum incidence. This is because higher employment brings higher chances of earning, which makes many urban residents to come out of poverty and slum dwelling. Surprisingly, higher the rate unemployment lower is the rate of city slum incidence. This leads to two inferences: First, unemployed people live not in slums but may be in other places like streets, footpath and areas which are not defined as slum area. If we assume that most of the slum residence work in the informal sector and live in slum then the relationship between city slum

[12] It may be the case that higher population density of small cities may reduce city slum incidence by increasing the city productivity. But this cannot be tested in this study because of data constraints at present.

[13] An attempt has been made by Tripathi (2012) by considering 52 large cities in India to measure the "Williamson hypothesis" that agglomeration increases economic growth only up to certain level of economic development and this threshold level per-capita city income is estimated at about Rs. 37,049 per-capita at 1999-2000 constant prices.

incidence and unemployment rate may not be a good indicator in cross section studies.[14] Thirdly, as the cities have higher unemployment rate, slum residents may leave the cities and result in decline of city slum incidence. Finally, the study has not been able to gauge the impact of city economic growth and city level inequality on city slum incidence. This indicates that higher city economic growth often bypasses a majority of urban residents through unequal distribution of income and has an insignificant effect on reduction of city slum incidence.

v. Conclusions and Policy Implications

The study explores the following two important issues: First, It explores the economic determinants of city slum incidence by using OLS regression method. Second, it indentifies, using Borda Ranking, the cities which are trying the highest to improve the living conditions of slum dwellers by providing quality public services. For this analysis, individual-level data of NSS on consumer expenditure, employment and unemployment in 2009-10 and on particulars of slums in 2008-09 and city (or district) level data from various sources are used. In this study, we consider three proxy variables to measure urban agglomerations which are as follows: (i) city population, (ii) growth rate of city population, and (iii) city population density. On the other hand, to measure city level income we consider per capita city income and growth rate of city income as proxies. Finally, we measure city slum incidence as a ratio of city slum population to total city population.

OLS regression results suggest that the size of urban agglomeration as measured by city population and its growth rate has a negative effect on city slum incidence. But city population density which is used as a third proxy of urban agglomeration has a positive effect on city slum incidence. Per capita average consumption expenditure, level of poverty, per capita city income, employment and employment situation of a city has negative and significant effects on city slum incidence. On the other hand, level of education of a city has a positive effect on city slum incidence. However, growth rate of city income and level of city inequality has no impact on city slum incidence. These results explain the probable positive and negative reasons for formation of slums in large agglomerations in India.

[14] Ghani and Kanbur (2013) found that more than 80 percent of total India's non-agricultural jobs are generated in the informal market in 2008.

On the other hand, calculated Borda ranking suggest that the five highest ranked cities as per the availability of quality of public services and better general conditions of slum were: Aurangabad, Hyderabad, Jodhpur, Bangalore, and Hubli-Dharwad. On the other hand the 5 lowest ranked cities were: Ludhiana, Jamshedpur, Asansol, Raipur, and Tiruchirapalli. Most importantly, among the 7 largest cities (as per the size of population in 2011) the 5 highest ranked cities were: Bangalore, Chennai, Delhi, Hyderabad, and Kolkata. The calculated correlation coefficients (Spearman) show that the correlation between rank of cities as per the Borda ranking and the rank of cities as per the higher distribution of slums by ownership of public land holding, structured by Pucca of the majority of houses, tap is the major source of drinking water, both street light and household use of electricity connection, motorable (Pucca and Katcha) approach road/lane/ constructed path to the slum, septic tank used for latrine facility by most of the residents of the slum, availability of underground sewerage system, less than 0.5 km distance from nearest government primary school, and not water logged during monsoon are higher and positive with statistically significant. The ranking of cities help to evaluate the performance of the cities in delivering the quality of public services for improving the quality of life of the slum dwellers.

It was in the census decade 2001 to 2011 that the absolute increase in urban population rose above increase of rural population for the first time after Independence. It is also projected that in next two decades, urban population will increase to 50% of India's total population, which may lead to an even faster increase slum population which in turn will increase rural urban migration and in-situ population growth. Not taking note of this upcoming growth in slum population can harm the GDP potential of urban areas. Therefore, it is important to formulate regional planning for inclusive growth by taking into account urban poor and informal sector in order to reduce poverty and inequality and city slum incidence. So basically, what we suggest in this study is that if we can govern and manage cities well by improving infrastructure, ensuring proper land use management, improving property rights, creating investment friendly environment, increasing efficiency of the market, considering proper land use and transport planning, city slum incidence will decrease. Also required is improving living condition of the slum by ensuring availability of public and private resources to slum dwellers. This will reduce the transaction cost in several ways for slum dwellers to integrate with formal labour force of a city, or to live in better environment with higher wage in the informal sector. Finally, we suggest that it is very important

to look at slum problems in a macro perspective and in a more meticulous besides micro perspective as slum incidence has a direct bearing on the stage of development of a country. In other words, Rajiv Awas Yojana (RAY) which aims to provide houses with proper land title cannot solve the problem of city slums singularly.

As per our knowledge, this study is the first attempt to identify the relevant economic determinants of city slum incidence at the national level. The study's main objective is not to draw solid conclusions, but rather to advice the policymakers to frame policies by looking not only from micro perspective but also from macro perspective, through analyzing available data with appropriate analytical tools. However, the task of refining these empirical results by considering a different specification, different set of variables and using long term data is left for future research.

Appendix I: Variable sources and definitions

Dependent variable:

City slum incidence in 2011: Ratio of city slum population to total city population. *Source*: Census of India 2011, GOI.

Independent Variables:

Large city population in 2001 and 2011: 52 urban agglomerations with 750,000 or more inhabitants in 2005. *Source*: Census of India, 2001 and 2011.

Growth of large city Population from 2001 to 2011: Growth rate of city population over the period 2001 to 2011.*Source*: Census of India, 2001 and 2011.

City population density in 2001: Ratio of the total city population to total city geographical area (measured by square kilometers) as per 2001 census. *Source:* Census of India 2001, GOI

Average MPCE in 2009-10: The MPCE is measured by the Uniform Recall Period (URP) which refers to consumption expenditure data collected using the 30-day recall or reference period. *Source*: NSSO 66th Round on consumption expenditure of 2009-10.

Gini coefficient in 2009-10: Let $x_{i,}$ the cumulated proportion of the population variable, be a point on the X-axis, for k = 0,...,n, with $x_0 = 0$, $x_n = 1$, whereas, $y_{i,}$ the cumulated proportion of the income variable, is a point on the Y-axis, for k = 0,...,n, with $y_0 = 0$, $y_n = 1$.

Then,

$$Gini = 1 - \sum_{i=1}^{N} \left(x_i - x_{i-1} \right) \left(y_i + y_{i+1} \right)$$

Source: NSSO 66th Round on consumption expenditure of 2009-10.

City wise poverty head count ratio in 2009-10: Head count ratio (HCR) is the proportion of a population that exists, or lives, below the 'poverty line. *Source*: NSSO 66th Round on consumption expenditure of 2009-10.

City output and its growth: Per capita non-primary district domestic product (DDP) is the output in 2004-05 and growth rate of primary DDP over the period 200- 05 at 1999-2000 at constant prices. *Source:* Directorate of Economics and Statistics (DES), various State Governments, GOI.

Human capital accumulation: The effect of education is proxied by upper primary gross enrollment ratio (Grades V- VIII) in 2009-10. *Source:* District Report Cards published by National University of Educational Planning and Administration (NUEPA), New Delhi

Usually casual and unemployed labour (as defined by National sample Survey): The usual activity status refers to the activity status of a person during the reference period of 365 days preceding the date of survey. The activity status on which a person spent relatively long time (i.e., major time criterion) during the 365 days preceding the date of survey is considered as the *usual principal activity status* of the person.

A person whose usual principal status was determined on the basis of the major time criterion could have pursued some economic activity for a shorter time throughout the reference year of 365 days preceding the date of survey or for a minor period, which is not less than 30 days, during the reference year. The status in which such economic activity was pursued was the subsidiary economic activity status of that person.

The usual status, determined on the basis of the usual principal activity and usual subsidiary economic activity of a person taken together, is considered as the usual activity status of the person and is written as *usual status (ps+ss)*. According to the *usual status (ps+ss)*, workers are those who perform some work activity either in the principal status or in the subsidiary status. Thus, a person who is not a worker in the usual principal status is considered as worker according to the *usual status (ps+ss)*, if the person pursues some subsidiary economic activity for 30 days or more during 365 days preceding the date of survey.

Casual labourers are those engaged in public works, in MGNREG works, in other types of works, but did not work owing to sickness though there was work in household enterprise, did not work owing to sickness but had regular wage/ salaried employment, did not work owing to other reasons but had regular wage/ salaried employment.

Unemployed labourers are those who sought work or did not seek but was available for work (for usual status approach), sought work (for current weekly status approach), did not seek but was available for work (for current weekly status approach).

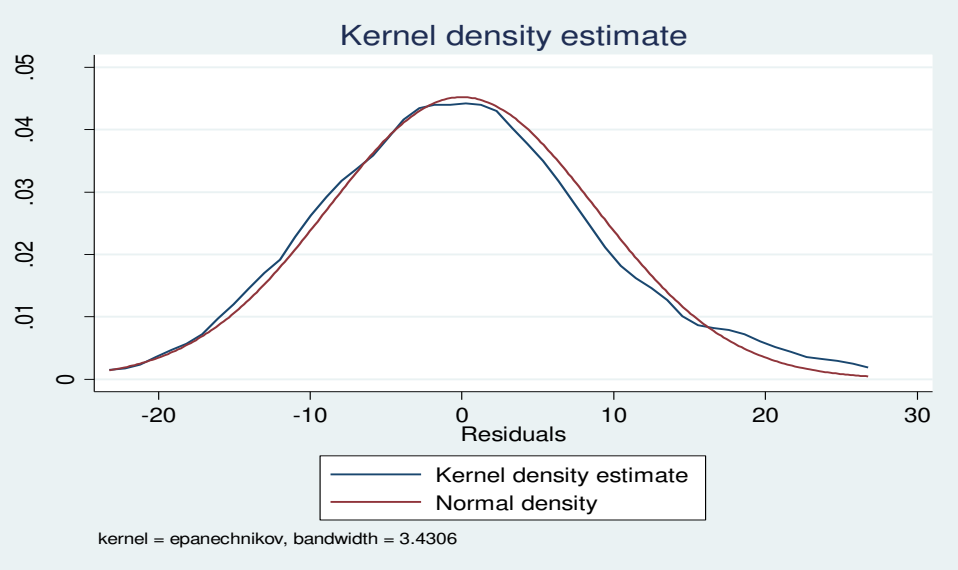
Source: NSSO 66th Round on employment and unemployment of 2009-10.

Appendix Table 1: Name of cities used in regression analysis

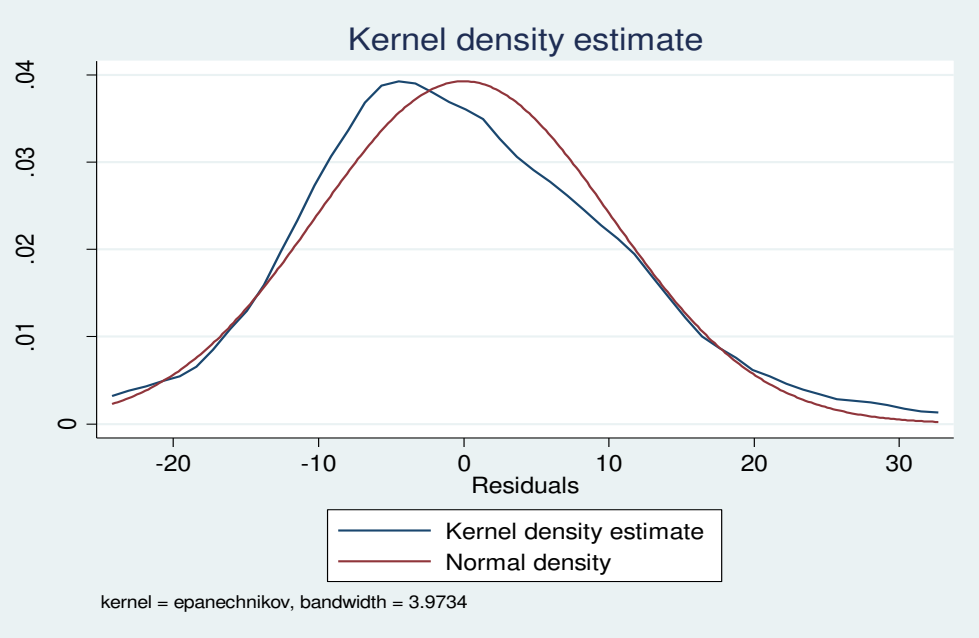
Agra (Agra), Aligarh (Aligarh)*, Allahabad (Allahabad), Amritsar (Amritsar)*, Asansol (Barddhaman), Aurangabad (Aurangabad), Bangalore (Bangalore Urban), Bareilly (Bareilly), Bhiwandi (Thane), Bhopal (Bhopal), Bhubaneswar (Khordha), Chandigarh@, Chennai (Chennai). Coimbatore (Coimbatore), Delhi@, Dhanbad (Dhanbad), Durg-Bhilainagar (Durg), Guwahati (Kamrup)*, Gwalior (Gwalior)*, Hubli-Dharwad (Dharward), Hyderabad (Hyderabad), Indore (Indore), Jabalpur (Jabalpur), Jaipur (Jaipur), Jalandhar (Jalandhar)*, Jamshedpur (Purbi-Singhbhum), Jodhpur (Jodhpur), Kanpur (Kanpur Nagar), Kochi (Eranakulam)*, Kolkata (Kolkata), Kota (Kota), Kozhikode (Kozhikode)*, Lucknow (Lucknow), Ludhiana (Ludhina), Madurai (Madurai)*, Meerut (Meerut)*, Moradabad (Moradabad)*, Mumbai (Mumbai), Mysore (Mysore), Nagpur (Nagpur), Nashik (Nashik), Patna (Patna)*, Pune (Pune), Raipur (Raipur), Ranchi (Ranchi)*, Salem (Salem), Solapur (Solapur), Thiruvananthapuram (Thiruvananthapuram), Tiruchirappalli (Tiruchirappalli), Varanasi (Varanasi)*, Vijayawada (Krishna), Visakhapatnam (Visakhapatnam).

Note: Name in the first bracket indicates the name of the district in which city is located.
@ Delhi and Chandigarh were considered as a whole proxy of a city district.
*Cities are not used to measure Borda index.

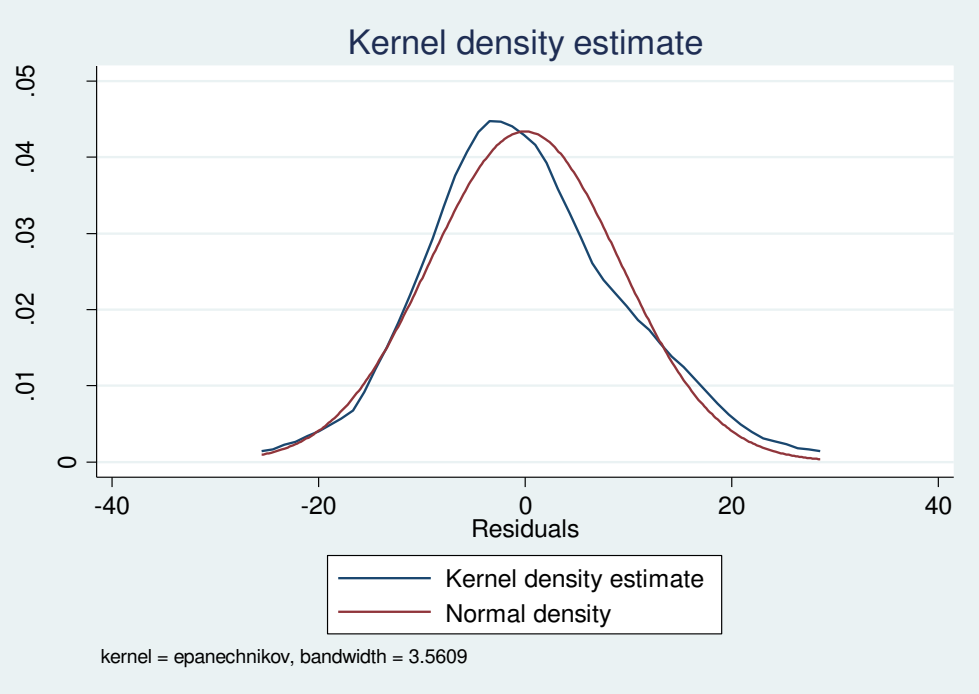
Appendix Figure 1 for Regression 1



Appendix Figure 2 for Regression 2



Appendix Figure 3 for Regression 3



References

Arrow, K. J., 1963. Social Choice and Individual Values, 2nd Edition, John Wiley , New York.

Bandyopadhyay, A., Agrawal, V., 2013, Slums in India: From past to present. International Refereed Journal of Engineering and Science (IRJES) 2 (4), 55-59.

Dasgupta, P., 1993. An Inquiry into Well-Being and Destitution. Oxford University Press,Oxford.

Dasgupta, P., 2001. Human Well-Being and the Natural Environment. Oxford University Press, Oxford.

Dasgupta, P., Martin, W., 1992. On measuring the quality of life. World Development 20 (1), 119-131.

Edelman, B., Mitra, A., 2006. Slum dwellers' access to basic amenities: The role of political contact, its determinants and adverse effects, Review of Urban and Regional Development Studies, 18 (1), 25-40.

Fine, B., Fine, K., 1974. Social choice and individual rankings, II. Review of Economic Studies 41 (4), 459-475.

Ghani, E., Kanbur, R., 2013. Urbanization and (in) formalization. Policy Research Working Paper 6374, The World Bank. Available at: http://kanbur.dyson.cornell.edu/papers/UrbanizationAndInformalization.pdf. Accessed June 20, 2013.

Goodman, L.A., Markowitz, H., 1952. Social welfare functions based on individual rankings. American Journal of Sociology 58 (3), 257-262.

Kumar, P., 2010. Declining number of slums: nature of urban growth. Economic and Political Weekly 45 (41), 75-77.

Kumar, N., Aggarwal, S.C., 2003. Patterns of consumption and poverty in Delhi slums. Economic and Political Weekly 38 (50), 5294-5300.

Kundu, A., 2013. Making Indian cities slum-free :Vision and operationalisation. Economic and Political Weekly 48 (17), 15-18.

Marx, B., Stoker, T., Suri, T., 2013. The economics of slums in the developing world. Journal of Economic Perspectives 27(4),187–210.

Ministry of Housing and Poverty Alleviation, Government of India. 2010. Report of the Committee on Slum Statistics/Census. http://mhupa.gov.in/w_new/slum_report_nbo.pdf.

Noorbakhsh, F., 1998. The human development index: Some technical issues and alternative indices. 10 (5), 589- 605.

Sawhney , U., 2013. Slum population in India: Extent and policy response. International Journal of Research in Business and Social Science 2(1), 47-56.

Stokes, C.J., 1962. A theory of slums. Land Economics 38 (3), 187-197.

Sufaira.C, 2013. Socio economic conditions of urban slum dwellers in Kannur Municipality. IOSR Journal of Humanities and Social Science (IOSR-JHSS) 10 (5), 12-24.

Tripathi, S., 2012. Large agglomerations and economic growth in urban India: An application of Panel Data model, Working Paper No. 303, Institute for Social and Economic Change. Available at: http://www.isec.ac.in/wp.htm#.

Tripathi, S., 2013a. Do large agglomerations lead to economic growth? Evidence from urban India. Review of Urban and Regional Development Studies 25(3), 176-200.

Tripathi, S., 2013b. Does Higher economic growth reduce poverty and increase inequality? Evidence from urban India. Indian Journal of Human Development 7(1), 109-137.

UN-Habitat, 2006. State of the World's Cities 2006/2007. The Millennium Development Goals and Urban Sustainability. London, U.K.

UN-Habitat. 2012. Sustainable Housing for Sustainable Cities: A Policy Framework for Developing Countries. Nairobi: United Nations Human Settlements Programme.

United Nations (UN). 2011. World Population Prospects: The 2010 Revision and World Urbanization Prospects: The 2011 Revision, New York, United Nations, Population Database, Population Division, Department: of Economic and Social Affairs. [Cited 5 January June 2014] Available from URL: http://esa.un.org/unup/unup/p2k0data.asp.