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Spatial segregation, inequality, and opportunity bias in the slums of Bengaluru

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ABSTRACT

The existence of slums or informal settlements is common to most cities of developing countries. In India, slums contain a wealth of diversity that is masked by a high level of poverty and rather insufficient access to resources. Recent studies have identified that the conventional perception of slums as distinctive homogeneous settlements is incorrect, rather slums are diverse and complex systems that cannot be addressed through one-size fits all approaches. In this paper we investigate Tilly's theory on group segregation and how it reproduces or reinforces inequality within the slums of Bengaluru. We apply statistical techniques (correspondence analysis and regression) to novel field data from 37 slums in Bengaluru. First, we find high levels of spatial and group segregation by religion across the slums of Bengaluru. Second, we find that segregation leads to opportunity bias among slum dwellers, which inhibits equitable access to jobs in the labour market. Finally, the results show that insufficient access to resources constrain the income generation and leads to emerging coping strategies. The results indicate that group identity is key to addressing disparity and how solving inequality can drastically impact group identity. Our results show that targeting *horizontal inequality* (as compared to *vertical inequality*) may increase the rate of successful interventions for each of the segregated groups of slum dwellers.

1. Introduction

The existence of slums or informal settlements is common to most cities of developing countries. In India, the National Sample Survey (NSS) reported that 1 out of 7 urban residents live in slums (NSSO, 2014). According to the Census of India, the urban slum population resides in distinct habitats, socially isolated from the rest of the city, primarily characterized by inadequate shelter, poor access to basic services such as water and sanitation, insufficient access to healthcare and in general a low quality of life (COI, 2011; Roy, Lees, Palavalli, Pfeffer, & Sloot, 2014). The growth and emergence of slums are largely attributed to increased urbanisation and economic development in the cities of developing countries. However, in this era of high economic growth, the challenge is to distribute the benefits of growth evenly over the diverse Indian socio-cultural and economic fabric (Kundu, 2013). In India, religion, language and caste have long been alluded as a source of inequality and segregation. Poverty has not declined at the same pace for some religious groups, including for example Muslims. Previous studies indicate that the socio-economic situation of individuals is inescapably correlated with their living environment, leading to disparity in job prospects, healthcare and literacy (Dubey, 2011). Therefore, in this paper we move away from the conventional perception of slums as a distinctive homogeneous settlement, and identify slums as a diverse system that cannot be addressed through one-size fits all approaches. We analyse slums based on several group identities and examine the diversity of slum settlements. The findings from this paper provide insights on how segregation have shaped current conditions in the slums.

Several quantitative studies on segregation in cities of India confirm the existence of a high degree of segregation for the urban poor (slum dwellers) based on economic status, language, caste, and religion (Chaplin, 2011; Vithayathil & Singh, 2012). Therefore, within such isolated diverse settlements there are further dissociations based on religion, caste, language and occupation which can lead to a hierarchy of spatial patterns in slums (Dupont, 2004; Jayapalan, 2002). With respect to religion, Hindus dominate many slum areas as they are the majority. Muslims being the minority, segregate from other religious groups, while the population of Christians is usually small (Jayapalan,

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2002). Besides religion, there are broad groupings based on caste, occupation and language. Thus, slums themselves have varying degree of segregation based on various group identities and isolating each group from the other. As a result, in-group connections are stronger and the socio-cultural interaction is limited between the groups. It has been well established that spatial relations indicate the social distance between various groups and is one of the key channels of communication across individuals and social groups (Vithayathil & Singh, 2012). The association between socio-economic status and residential choice has been studied extensively in the past, especially in the context of developed countries. Furthermore, a number of previous studies show that contextual differentiation for various types of slum settlements is based on infrastructure, access to basic public services and tenability (Lall, Lundberg, & Shalizi, 2008; Nijman, 2008; O'Hare, Abbott, & Barke, 1998; Ram & Needham, 2017). However, these studies mainly focus on physical attributes and do not include the underlying spatial and socio-economic segregation of slum dwellers within each city.

In order to improve the living conditions of slum dwellers, the spatial, social and economic characteristics of slums and the factors that shape them must be clearly understood. In this paper we focus on getting a better understanding of the heterogeneity of slums. We examine the associations between groups of slum dwellers (based on religion, caste, language, income and occupation) to gain insight into how inequality and segregation are produced in slums. Spatial separation of these groups may fuel socio-economically bounded communities and in this way sustain categorical inequality (Van Eijk, 2010). Tilly (1999) calls this "opportunity hoarding" or "opportunity bias", a mechanism through which "members of a categorically bounded group acquire access to a resource that is valuable, reusable, subject to monopoly, supportive of group activities, and enhanced by the group's modus operandi". Therefore, the objective of this paper is to understand how social and economic segregation reproduces, or reinforces inequality and opportunity bias within the slums of Bengaluru, an Indian city which has experienced high levels of urbanisation and rural-urban migration in the last decade.

This paper draws on a field survey of 37 slums in Bengaluru using a random stratified sampling with a target sample of 1100 households. The survey consisted of structured and open questions. Applying quantitative methods to the survey data (described in Section 2.3), the paper produces three key insights with respect to the social and spatial segregation within the slums of Bengaluru. First, this paper finds high levels of social and spatial segregation by religion and occupation in the slums of Bengaluru. In each of these slums, residential segregation by religion is more prominent than the level of separation by socio-economic status. Second, we find that there is a high degree of inequality and opportunity bias towards certain sections of the society within the slums of Bengaluru, which inhibits equitable access to jobs in the labour market. Finally, the results show that solving *horizontal inequality*[1] (as compared to *vertical inequality*[2]) may increase the rate of successful interventions for each of the segregated groups of slum dwellers. The paper is organized as follows: Section 2 provides a description of the methodology and the data. Section 3 presents the empirical analysis, based on the survey data, on occupations, income and religion. In Section 4 we offer a detailed explanation for the observed differences in the level of spatial and economic segregation by religion and occupation. Finally, Section 5 concludes with a discussion of the results and a way forward.

2. Methodology

In this section we elaborate the context of the case study, theoretical framework, data and the quantitative methods employed to examine the segregation and *horizontal inequality* within slums of Bengaluru.

[1] Inequality among various group identities.

[2] Observes rankings of individuals households.

2.1. Case study

Bengaluru was chosen as a case for the research, because it is representative of a society in a developing country characterized by multiple religions, caste and languages. Bengaluru is the capital of the state of Karnataka, and one of the fastest growing cities in India. Bengaluru is the fifth largest city and third most populous city in India, located on the Deccan plateau in the south-east part of Karnataka (COI, 2011). It is a multi-cultural city permeating class, religion and language. The city of Bengaluru has 21.5% of the total slum population in the state of Karnataka, and every fifth person within the city limits lives in a slum. The population living in the slums of Bengaluru has doubled in a decade and this poses a serious challenge to urban planners and policy makers (COI, 2011). This rapid increase in slum population in Bengaluru has been attributed to high rate of rural-urban migration in the past three decades coupled with high fertility (Krishna, 2013; Krishna, Sriram, & Prakash, 2014; Schenk, 2001). These studies highlight the diversity in the slums of Bengaluru but do not analyse segregation and its impact on socio-economic well-being of the slum dwellers. According to the Karnataka Slum Development Board, the city has around 597 slums. However, the Association for Promoting Social Action estimates that the city has over 1500 slums which are not counted by the government, illustrating the importance of the issue. Similar discrepancies in slum counts have been observed in other cities of India (Patel, Koizumi, & Crooks, 2014).

2.2. Theoretical framework

In this section, we describe the application of Tilly's theory of "durable inequality" (Tilly, 1999) to the survey dataset in order to gain insights into segregation and inequality across the slums in Bengaluru. Tilly's theory identifies group segregation as the fulcrum of categorical inequality which further leads to opportunity hoarding. According to Charles Tilly linking exterior categories, like men and women, to interior categories, like religion and race creates durable inequalities. He argues that categorisation into "we and them" is a central mechanism involved in processes leading to exclusion, segregation, and inequality. Tilly shows that the same mechanisms generate and sustain group inequality, regardless of the content of group identities — whether these are defined by race, gender, religion, ethnicity, citizenship, tribe, caste, or class. According to the social closure theory opportunity hoarding confines access to valuable resources and can be controlled via licensing, certification, and referral networks (Tilly, 1999). Therefore, understanding this mechanism in the context of slums in Bengaluru may help in specific policy interventions that can reduce inequality and segregation.

In order to apply Tilly's theory in the context of Bengaluru slums, we follow the following three steps. First, we use the Index of Dissimilarity to determine the key socio-economic categories (religion, language, gender, income and occupation) that lead to *spatial* and *role* segregation among the slums in Bengaluru. Spatial segregation is analysed by the processes that assign groups to different social or physical spaces across the city. Role segregation is analysed by the processes that assign groups to different social roles (such as different occupations). Second, to determine these processes for spatial and role segregation, we find association between the key social categories using Correspondence Analysis. Finally, we use Regression Analysis to show that the spatial and role segregation leads to socio-economic inequality and differentiated behaviour (such as fertility rates and gender preference) among various groups in slums of Bengaluru.

2.3. Data

The survey employed in this paper was conducted in the year 2010, by Fields of View (FoV), a non-profit organisation based in Bengaluru, India. The aim of the survey was to investigate the issues of living

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