Habitat International 69 (2017) 48–57

Contents lists available at ScienceDirect

Habitat International

journal homepage: www.elsevier.com/locate/habitatint

Urban growth in Indian cities: Are the driving forces really changing?

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ARTICLE INFO

Article history:
Received 11 January 2017
Received in revised form
12 May 2017
Accepted 5 August 2017
Available online 9 September 2017

Keywords:
Indian city
Population growth
Capital city bias
Urban agglomeration
Stepwise regression
Amenities

ABSTRACT

Urbanization in India is happening at a rapid pace since past three decades. This paper examines the factors affecting the growth of Indian cities for three consecutive censuses. A database on Indian cities is constructed for the analysis. Eight variables are considered from classical economics and economic geography perspective to observe their effect on *population size* and *growth*. Regression analysis has been carried out for the same, and the results suggest that *initial population* and capital *city status* have a strong positive impact on city growth; proximity to cities causes nearby cities to be larger; these results are consistent throughout three years. The notable observation of our study is that there is a growing need for better policies for healthcare and infrastructure development for a sustainable growth of Indian urban agglomerations.

1. Introduction

The world's urban population crossed 50% mark in the year 2007 and is projected to cross 70% level by 2050. It is estimated that by 2050, 2.5 billion more people will be added to world's urban population, a major part of this will happen in developing countries (United Nations, 2014). Thus, it is projected that 404 million inhabitants will be added to India's urban population during the same time span, which would be the highest among all countries. According to World Urbanization Prospects Report (United Nations, 2014), sustainable development challenges due to the high pace of urbanization will be felt more in cities, particularly in lower middle-income countries like India.

A well-managed urbanization fosters social and economic advancement; continuing urbanization will lead to the reduction in poverty, and hunger and increase in prosperity (UN-Habitat, 2016). For the year 2009–10 contribution of urban areas towards India's GDP has been 63 percentage (GOI, 2010) and this share is predicted to reach 75 percentage by 2030 (McKinsey and Company, 2010). Across the urban systems, there is a backlog in infrastructure, policy implementation as well as accommodating further urban growth (Nandi & Gamkhar, 2013). A report by McKinsey and Company (2010) warns if Indian cities continue to follow current policies it could lead to urban gridlock. To devise proper plan for cities, it is important to know which factors stimulate city growth in India, how and why they change over the time and what factors are of recent interest. Some cities grow better than their contemporaries, and the question arises, why so? What are the factors that attract people to a city? Is this 'growth' due to factors beyond the city's control such as national level devolution of power, location, or do policies and politics of individual city influence growth? Integrated sustainable policies to improve people's standard of living require identification of factors of urbanization. It is important to decipher the relative contribution of external factors and local efforts in stimulating the growth of cities across the national urban system.

There is no universal definition of town; it changes from country to country and within a country over time. To fulfil India's urban definition, the area has to simultaneously satisfy two conditions; a threshold population size and economic criteria. According to Census India 2011 report, an area is defined as urban/town if it falls under any of these; "*All places with a municipality, corporation, cantonment board or notified town area committee or all other places which satisfy the following criteria: a) Minimum population of 5000; b) At least 75 percentage of male working population engaged in non-agricultural pursuits; and c) A density of population of at least 400* per *sq. km*" (ORGI, 2011a). Throughout this paper, we follow this definition. The term "city" refers to all towns having population above 100,000 (ORGI, 2011c), and is focus of our study. Recent studies on determinants of Indian city growth is done by Tripathi (2013) &

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http://dx.doi.org/10.1016/j.habitatint.2017.08.002
0197-3975/

Sridhar (2010). Tripathi (2013) focused his study on large Indian cities (Population above 750,000) taking up state and city specific determinants. Sridhar (2010) estimated the determinants of town growth and output at district and town levels analyzing 1991–2001 period data. While our study focuses on determinants of city growth owing to 30-year time, checks whether the determinants changes over time, and finds the policy implication of each driving forces. To our knowledge, this paper beginning to consider urban agglomeration; and a UA database is developed for the first time using Census India town directories data.

Urbanization studies have three inter-related dimensions: changes in the size distribution of cities, growth in individual city population size and the increase in city numbers (Henderson & Wang, 2007). Our study focuses on the second dimension. According to Cohen (2004), Indian urban definition is very much restrictive that it does not count the urban growth happening just outside its municipal boundary. To overcome this restriction and fairly represent a city population, adjoining outgrowths are integrated into the analysis. However, Sridhar (2007) has pointed out that India's UA (Urban Agglomeration) criteria is not foolproof as it has been found that many outgrowths shown as a part of UA have political and speculative overtones. This is a caveat of the study. Since UA database is not available in India from any authentic agency, we create a database of Indian cities from 1991 to 2011 accounting urbanization occurring just outside city boundary. Typically, urban growth occurs due to increase in market potential (Da Mata, Deichmann, Henderson, Lall, & Wang, 2007; Mulligan & Crampton, 2005). Amenities, both natural and human-made (Mulligan & Crampton, 2005), and access to the natural resource have positive impact on population growth of cities (Beeson, DeJong, & Troesken, 2001).

In this study, we estimate the factors influencing city population and growth, and check whether these factors change with time. Population growth is represented by increase in population per 10,000 population as in Lu, Wu, Shen, and Wang (2013), instead of population growth rate. We confine our analysis to population growth experienced by Indian cities and its urban agglomerations for last three decades (1991–2011). We have selected factors from urban growth literature, and accordingly, the database of Indian cities is created. Most of these factors are derived directly, or appropriate proxies are chosen in case data is not available. To explore the relationship between selected growth factors and population and its growth multiple regression models are created for each census data. Stepwise regression is applied to address multicollinearity issue among independent variables if any. The outcome of this study will help urban planners to understand determinants of city growth and its changes with the passage of time. Eventually, this will assist them in devising strategic policies for urban growth sustainability. Our work is strongly influenced by Lu et al. (2013); studies driving force of urban growth in a province of China. Indian and Chinese urban definition and governance are quite different, making the study on Indian cities a potential research issue. Technique wise present study differs with the previous study in four ways. First, instead of a province, the study covers entire size distribution of Indian cities. Secondly, the model integrated the factors such as influence of *political favoritism in capital cities* and *amenities*. Thirdly, analysis of whether driving forces are changing with time is studied and finally, instead of restricting the study to city municipal boundary, the out growths too are considered. We contribute to the body of literature by creating a UA based database for three consecutive censuses. Determinants of Indian city growth could help better understand the urban growth process and have implication for urban management in developing countries. The study also suggests policy recommendations for major driving forces.

The rest of the paper is organized as follows. Section 2 provides literature review of empirical analysis on determinants of growth in world cities and country wise cities. Section 3 deals with research hypothesis. Section 4 and 5, deals with findings from empirical analysis and identifying the main determinants of city growth. Discussion on determinants and observations are given in Section 6. Section 7 checks whether urban growth factors changes over time? Section 8 concludes the paper.

2. Literature review

Urban population growth is defined as “relative or absolute increase in number of people who live in cities” (UNISEF, 2012). Urban population grows due to following three mechanisms: first, natural birth and death, second, net migration and immigration, and third, reclassification of rural land and extension of city boundaries. Among these, rural – urban migration is the dominant mechanism for urban growth in developing countries (Kahl, 2008; United Nations, 2009). While for India (1981–2001) natural birth and death account for 60% of urban population growth, 20% is due to rural to urban migration and rest (20%) is due to the reclassification of city boundaries (Vaidya, 2009). According to 2011 Census data, natural increase share has declined to 44%, while migration and reclassification of the urban area share have improved by 24% and 32% respectively (IIHS, 2011). All these suggests the effect of migration in urban growth is lesser in Indian context compared to world statistics (Bhagat & Mohanty, 2009) throughout three decades (1981–2001). All these data point to the disparity in factors affecting urban growth within developing countries.

The New Economic Geography (NEG) literature suggests that population growth occurs due to market potential or market access (Christensen & Mccord, 2016; Da Mata et al., 2007; Mulligan & Crampton, 2005). An increase in transportation cost drives people to the periphery of the city, as explained in Core - Periphery model (Krugman, 1991). The importance of commuting in the creation of urban sprawl is mentioned in Vaz (2014). Amenities, both natural and man-made, such as climate, port, rainfall affects urban growth (Mulligan & Crampton, 2005). Moreover, access to natural resource has a positive impact on population growth of cities (Beeson et al., 2001). Adding to it, people move towards warmer, low rainfall, and coastal region (Glaeser & Shapiro, 2001). While Christensen and Mccord (2016) reported conflicting results on port access on Chinese cities in the western and eastern region.

Human capital points to the knowledge and skills possessed by individuals that enable them to create economic value and are the determinants in long-term “success” of a nation (World Economic Forum, 2016). In many studies, human capital has shown positive impact on population growth of cities (Bhagat & Mohanty, 2009; Da Mata et al., 2007; Mulligan & Crampton, 2005). Henderson and Wang (2007) argues that technological advancement fosters population growth of cities; knowledge spillover boosts scale economies or better management through the innovative solution to urban issues.

The importance of initial schooling in economic growth is evident in the empirical analysis of city growth literature (Beeson et al., 2001; Black & Henderson, 1999, 2003; Deliktas, Önder, & Karadag, 2012). Spatial geographic models have incorporated location factors on the growth of individual cities; the longer is the distance of a city from a bigger city better is the chances of population growth (Becker, Mills, & Williamson, 1986; Deliktas et al., 2012).

Industrialization or dominant industry type in the city stimulates population growth (Alves, Barreira, Guimarães, & Panagopoulos, 2016; Chen, Chang, Karacsonyi, & Zhang, 2014). Decrease in fertility is a common phenomenon in cities around the