

Growth of the Urban Shadow, Spatial Distribution of Economic Activities, and Commuting by Workers in Rural and Urban India

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Summary. — Unlike migration, scant attention has been paid to the phenomenon of commuting by workers in developing countries. This paper fills this gap by using a nationally representative data set from India to analyze factors that affect the decision of workers to commute across rural and urban areas daily. Our results suggest that regions with large peripheral urban areas or concentration of secondary sector jobs are more likely to have commuting workers. Regional rural and urban unemployment rates and rural–urban wage differentials are important push and pull factors in the decision to commute.
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1. INTRODUCTION

A large numbers of workers in developing countries commute across rural–urban boundaries every day without changing their place of residence. This phenomenon is evident in a diverse group of developing countries including Bangladesh, India, Indonesia, Nigeria, and Tanzania (Bah, Cisse, Diyamett, Diallo, & Lerise, 2007; Baker, 2007; Deichmann, Shilpi, & Vakis, 2009; Douglass, 2007; Lanjouw, Quizon, & Sparrow, 2001). In India, for the year 2009–10, based on a nationwide survey of employment and unemployment conducted by the National Sample Survey Organization (NSSO), we estimate that 12.42 million workers engaged in nonagricultural activities crossed the rural–urban boundary everyday (8.05 million rural–urban commuters and 4.37 million urban–rural commuters). In addition, 12.2 million nonagricultural workers reported not having a fixed place of work. In contrast, in 1993–94 only 6.34 million individuals were crossing the rural–urban boundary every day for work. Considering rural–urban, urban–rural commuters, and those with no fixed place of work, we observe a nearly fourfold increase (from 6.34 to 24.62 million) in the number of two-way commuters between rural and urban areas.

While we do observe millions of workers engaged in two-way commuting between rural and urban areas, this issue is relatively under researched. This lacunae needs to be filled since commuting by workers has implications for outcomes in labor markets. Larger magnitudes of commuters will contribute to the integration of rural and urban labor markets, reduce regional unemployment, and narrow wage differences between rural and urban areas.

One important question of interest relates to the factors that affect commuting by workers. How do labor market conditions, as reflected by the unemployment rate in rural and urban areas and rural–urban wage differentials affect the decision to commute? In the Indian context, labor market conditions are an important determinant given an employment elasticity close to zero (Government of India, 2011a). Further, jobs are not getting created where people reside thereby necessitating commuting. As we point out later, since the beginning of economic reforms in 1991, there has been a redistribution of activity across rural and urban India. This redistribution and the emerging spatial distribution of jobs in primary, secondary

and services sector affects the decision to commute. Finally, regions with a large urban and peri-urban population or what we refer to as the urban shadow are likely to see commuting by workers. In order to address these issues, we use data from a nationally representative survey on employment and unemployment conducted by India's NSSO in 2009–10.

Beyond the issue of outcomes in labor markets, the issue of commuting is also important from a policy perspective for two reasons. First, estimates of size of workforce in rural and urban areas should be generated based on place of work and not place of residence as is the current practice. Second, at a time when many developing countries including India are investing in roads, improved transport connectivity will allow workers to commute from rural areas thereby reducing the pressure on cities to provide migrants with affordable and decent housing.

This paper complements the literature on rural–urban migration, which has been studied in considerable depth. Diversification of the workplace, a phenomenon where individuals commute daily across rural and urban areas without changing their place of residence is under researched. Even from a theoretical perspective, Haas and Osland (2014) point

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out that there exists no coherent theory that models the complex interactions between commuting, migration, housing, and labor markets.

In terms of providing an overall framework for the issues we address, we draw upon different strands in the literature. In the context of globalization and spatial distribution of economic activity, [Krugman and Elizondo \(1996\)](#) developed a theoretical framework to establish that import substituting industrialization policies will lead to the rise of huge central metropolises while open markets discourage them. In the Indian context, the relaxations announced as part of the Industrial Policy of 1991 did lead to dispersal of fresh investments not only across urban areas but also between urban and rural areas ([Chakravorty, 2003](#); [Chakravorty & Lall, 2007](#)). This redistribution of economic activity can spur commuting, an issue we return to later in the paper. One insight from the literature on search theoretic and urban economics models is that if transport facilities are available then high moving costs can encourage commuting and deter migration ([Van Ommeren, Rietveld, & Nijkamp, 1997](#); [Zax, 1994](#)). The literature in the field of economic geography has established how agglomeration and regional concentration of economic activities affect the mobility of workers ([Giuliano & Small, 1991](#)). Drawing a parallel based on the insights of [Pissarides and Wadsworth \(1989\)](#) who sought to understand the relation between unemployment and inter-regional mobility of labor, we can hypothesize that a worker is likely to commute if he or she is unemployed. Further, a region with higher unemployment rate is more likely to have commuting workers. While the above mentioned contributions are from a macro perspective and layout why migration and commuting might be observed, the workhorse model in the literature on commuting examines the location choice of workers in the context of a monocentric city ([Alonso, 1964](#); [Mills, 1967](#); [Muth, 1969](#)). In this model, jobs are located in what is often referred to as the city center or central business district and one-way commuting is observed from residence location in the suburban areas to the central business district. This model has been extended to address the scenario of polycentric cities and multiple job locations in order to explain the phenomenon of two-way commuting of workers from central city to suburban areas and *vice versa* ([Brueckner, Thisse, & Zenou, 1999](#); [White, 1988](#)). These extensions were developed since two-way commuting was observed in reality. These frameworks provide an ideal starting point for understanding a fast growing phenomenon in developing countries i.e., commuting by workers across rural–urban boundaries. The intuition for explaining two-way commuting between the city and the suburbs can be extended to shed light on two-way commuting between rural and urban areas.¹

There are a handful of studies that focus on how the spatial distribution of economic activities, size of urban and peri-urban areas and local labor market conditions affect the decision to commute. [Baker \(2007\)](#) documents that in North-West Tanzania, individuals commute to work from rural to urban areas rather than migrate because of higher cost of living in cities. [Lanjouw et al. \(2001\)](#) suggests that peri-urban areas (in the vicinity of large urban agglomerations such as Dar-es-salaam in Tanzania) provide a nonfarm sector alternative to households and individuals earn more from nonfarm activities in this area. They find that peri-urban areas are important in poverty reduction by providing diverse livelihood alternatives to the households. In south-eastern Nigeria efficient and subsidized transport systems have encouraged commuting to the urban centers of Aba and Port Harcourt ([Bah et al., 2007](#)). They also

document the growth of industries in the peri-urban regions of Aba and Port Harcourt. Based on a field study in Indonesia, [Douglass \(2007\)](#) finds a large number of commuters from villages within the 60-km periphery of industrialized cities. [Deichmann et al. \(2009\)](#) find that household living in the proximity of urban centers in Bangladesh and with better connectivity are more likely to be involved in nonfarm employment. Their paper clearly highlights that access to urban centers is desirable for the growth of the nonfarm sector as well as to provide diversified alternatives for a livelihood strategy. [Fafchamps and Shilpi \(2003\)](#) show that migration and commuting, act as two strategies for diversification of the workplace and increase the income or consumption of households. They argue that people will diversify their economic activities either in the vicinity of the cities where there is growth of the nonfarm sector or in distant or isolated areas where nonfarm production becomes essential for sustainability. In the Indian context, [Kundu, Pradhan, and Subramanian \(2002\)](#) established that wages and income decline as distance from the city increases. The decline in average per capita income of a village is steep up to a distance of 15 km from the city while male and female wages decline sharply up to a distance of 20 km.² Individuals living closer to the city and with transport connectivity will try to take advantage of the wage gradient and miniscule rents in rural areas by commuting to the nearby urban areas. The various initiatives taken by the Indian government to increase rural–urban connectivity through construction of rural roads (under the Prime Minister’s Village Roads Scheme), the Delhi-Mumbai Industrial Corridor, the Golden Quadrilateral (Roads) Project connecting the large metros, offers the option of commuting as an alternative to migration. In the context of workers engaged in nonagricultural activities and commuting across rural–urban boundaries on a daily basis in India, [Mohanan \(2008\)](#) writes, “... movement of rural workers to urban areas is somewhat reinforced by the daily picture of overcrowded trains and buses bringing people to the cities and towns from the surrounding areas, sometimes called the floating population” (p. 61).

The main finding of this paper is that the spatial distribution of economic activity as reflected by the location quotient is an important determinant of decision to commute and can help explain both urban to rural and rural to urban commuting in India. We also find that regions with a large peri-urban population are likely to have more commuting workers. Finally, the unemployment rate is also a significant determinant of the decision to commute.

2. BACKGROUND

As mentioned earlier, over the period 1993–94 and 2009–10, there has been a nearly fourfold increase in the number of two-way commuters between rural and urban areas. Before we address the factors that have contributed to this increase, we need to understand the changing distribution of population and economic activities in rural, urban, and peri-urban India.

During the intercensal period 2001–11 the share of India’s population living in urban areas increased from 27.81% to 31.16%. The urbanization numbers do not reflect the increase in the population living in the urban shadow just beyond the administrative boundary of the cities. These areas act as links between rural and urban settlements and have become centers of economic activities because they share selected characteristics of both rural and urban areas: cheap land, better connectivity, ease of transport, basic amenities, affordable housing

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