



ELSEVIER

www.elsevier.com/locate/worlddev

doi:10.1016/j.worlddev.2008.08.008

# Urban Proximity, Agricultural Potential and Rural Non-farm Employment: Evidence from Bangladesh

UWE DEICHMANN, FORHAD SHILPI and RENOS VAKIS\*  
*The World Bank, Washington, DC, USA*

**Summary.** — This paper presents empirical evidence on the relative importance of farm and urban linkages for rural non-farm employment in Bangladesh. The results suggest that people are more likely to be employed in well-paid wage employment and self-employment in the non-farm sector if they are closer to urban centers. Those who are further away from such centers are even less likely to be in well-paying non-farm jobs if they are living in areas with greater agricultural potential. The empirical results highlight the need for improved connectivity of regions with higher agricultural potential to urban centers for non-farm development in Bangladesh.  
© 2008 Elsevier Ltd. All rights reserved.

*Key words* — inter-linkages, non-farm employment, road infrastructure

## 1. INTRODUCTION

What drives growth in rural non-farm activities? This has been a key concern of policy makers and development economists in recent years (Haggblade, Hazell, & Reardon, 2006; Lanjouw & Feder, 2001; Lanjouw & Lanjouw, 2001). This is not surprising in light of the empirical evidence that non-farm activities have emerged as a major source of income and employment in many developing countries especially for the asset-poor rural population. Various surveys of existing evidence highlight two stylized facts about the pattern of non-farm development in rural areas. First, these activities seem to thrive in areas experiencing higher agricultural growth (Haggblade, Hazell, & Reardon, 2002). Second, a large share of these activities is located in and around towns and cities (Renkow, 2006). The empirical literature on non-farm activities, while recognizing the importance of both farm and urban linkages, has tended to examine them in isolation. Using a simple conceptual framework which combines these separate approaches to examining urban and farm linkages, this paper sheds some light on the relative strength of these two forces in determining employment in different types of non-farm activities.

Because of its focus on both farm and urban linkages, two strands of the literature are directly relevant for the empirical analysis of this paper. Perhaps the most predominant view among development practitioners about non-farm development is that growth of non-farm activities in rural areas is driven primarily by agricultural productivity growth at least at the initial stage (Haggblade, Hazell, & Dorosh, 2006, chap. 7; Johnson, 2000; Mellor, 1976; Ranis & Stuart, 1973). Various production, consumption, and labor market linkages, according to this view, tie the development of non-farm and farm sectors together, leading to multiplier effects of productivity growth in agriculture.

Because of its obvious policy implications, early empirical studies on non-farm activities devoted significant attention to identifying different factors that can strengthen the farm–non-farm inter-linkages (see, Lanjouw & Feder (2001) for a survey). Empirical evidence from this early literature demonstrated the presence of a positive and significant correlation between farm and non-farm income and employment, and highlighted the importance of rural roads in augmenting these

inter-linkages (Hazell & Haggblade, 1990; Hazell, Ramasamy, & Rajagopalan, 1991, chap. 8; Lewis & Thorbecke, 1992).<sup>1</sup> A pair of recent studies by Foster and Rosenzweig (2004a, 2004b), however, raised some doubts about the universality of a positive correlation between farm productivity and non-farm employment/income. Utilizing a rigorous empirical methodology and a panel dataset from India, these studies find that only non-tradeable non-farm activities such as services are positively influenced by agricultural productivity growth. In contrast, tradeable non-farm activities such as small manufacturing move into areas with lower wages implying a negative relationship with agricultural productivity growth.<sup>2</sup> This particular pattern of non-farm growth, according to Foster and Rosenzweig (2004a), had contributed significantly to reducing spatial wage inequality and overall poverty in India. Although these studies mentioned possible influence of rural towns on non-farm activities, none has explored effects of larger urban centers on the location of such activities.

The second insight into the evolution of non-farm activities comes from the literature on urban–rural linkages, particularly from traditional and so-called new economic geography. According to this work, urban demand exerts a distinct influence on the types of activities that take place in rural areas (Fujita, Krugman, & Venables, 1999; Henderson, Shalizi, & Venables, 2001; Renkow, 2006; von Thünen, 1966). The inter-play of agglomeration economies and congestion diseconomies, according to this view, determines location of activities over space resulting in distinct regional patterns centering on large urban centers. These distinct patterns of specialization characterize not only farming but also different types of non-farm activities.

A number of recent studies have demonstrated empirically the presence of such zones of specialization in rural areas. For instance, Fafchamps and Shilpi (2003), using household

\* We would like to acknowledge Alex McCalla for his support and encouragement for this work. Andy Kotikula provided superb research assistance for the empirical analysis of the paper. We would also like to express our thanks to anonymous referees of this journal for their insightful comments. All remaining errors are ours. The views expressed here are those of authors and should not be attributed to World Bank or its affiliates. Final revision accepted: August 6, 2008.

level data from Nepal, found that both wage and self-employment in non-farm activities are heavily concentrated in close proximity to large urban centers and somewhat concentrated around local markets.<sup>3</sup> Fafchamps and Shilpi (2005) reported a significant effect of proximity to cities on rural diversification and specialization along with the presence of some agglomeration economies around the cities. However, none of these studies analyzed the possible feedback from agriculture to non-farm activities.

The main objective of this paper is to examine whether and how the farm and urban linkages jointly shape the spatial pattern of non-farm activities observed in the context of a developing country, Bangladesh. To this end, we develop an empirical framework which combines these two separate approaches to examining urban–rural and farm–non-farm linkages. The use of a comprehensive framework incorporating both types of inter-linkages helps to portray a much richer picture of the effect of infrastructure on non-farm activities. Better infrastructure can lead to a relocation of tradeables to cities and towns, reducing the density of such activities in rural areas.<sup>4</sup> By extending the size of the market, better infrastructure, on the other hand, can facilitate agricultural productivity growth and induce growth of both tradeable and non-tradeable non-farm activities in rural locations. The rural areas may attract more tradeable and non-tradeable non-farm activities as a result of infrastructure improvement if cities or towns are too congested and have higher cost of living.<sup>5</sup> The overall impact of better infrastructure will thus depend on the relative strength and interaction of these inter-linkages.<sup>6</sup>

Our empirical analysis uses individual level employment data from the household expenditure and income survey (HIES, 2000) of Bangladesh. With high incidence of rural poverty and an ever dwindling supply of agricultural land, growth in non-farm activities is immensely important for development in this densely populated country. More than half of Bangladesh's nearly 100 million rural residents still live in poverty. With nearly 1,000 people per square kilometer, population density in Bangladesh is among the highest in the world. Non-farm activities have already assumed an important role in the rural economy, accounting for nearly 42% of total rural employment and more than half of rural household income (World Bank, 2004). Bangladesh lies at the confluence of three of the largest rivers in Asia, Ganges–Brahmaputra–Meghna, which have virtually sliced the country into four distinct and poorly integrated geographic regions. These regions differ considerably in terms of their agricultural potential and infrastructure development, which makes Bangladesh particularly suitable for our analysis.

The empirical analysis in this paper departs from the traditional farm–non-farm linkage literature in several important ways. First, instead of focusing on non-farm income, we analyze the influence of farm and urban linkages on pattern of non-farm employment. The reason is data quality: household level income estimation based on surveys such as HIES is widely known to involve large measurement errors leading to attenuation bias in estimation (Deaton, 1997). In contrast, data on broad classification of employment are much more reliable. As employment data are collected at the individual level, it allows us to control for individual level heterogeneity (e.g., education) in the regression, reducing potential bias in the estimation.<sup>7</sup>

Second, farm linkages are captured in the empirical analysis by a crop suitability index developed by agricultural scientists. The use of this crop suitability index, determined by inherent land and water quality as well as climatic condition of a locality, helps to avoid the potential endogeneity problems that

arise when farm income/productivity/employment is used as a regressor. The empirical tests confirm that the crop suitability index is indeed a good proxy for crop income of a location. As crop potential of a locality does not depend on infrastructure and hence on connectivity of that locality, use of this index in the regression also helps to separate out the effect of infrastructure on non-farm employment.<sup>8</sup> We also check robustness of our empirical results using real *per capita* crop income as an indicator of farm linkages where crop suitability provides an instrument for the crop income.

Third, urban linkage is proxied by an index of access to urban centers, which is measured by the minimum arc distance from the surveyed primary sampling units to either of the two main cities—Dhaka and Chittagong.<sup>9</sup> This distance variable thus represents access to national and international markets (Dhaka being the capital city and main airport, and Chittagong, the second largest city and main port). It should be noted that this distance measure does not depend on the actual placement of transport infrastructure. Use of this access variable in the estimation helps to avoid the potential endogeneity of more commonly utilized urban access regressors such as network travel times.

Finally, because of the heterogeneity of non-farm activities, we also make the distinction between different types of non-farm activities (high- and low-return wage work, self-employment). The motivation for this classification of non-farm activities comes from the fact that not all non-farm activities offer returns higher than agriculture (Haggblade *et al.*, 2006; Lanjouw & Feder, 2001). In almost all developing countries, a substantial fraction of individuals and households are engaged in non-farm activities that earn less than median agriculture wage. Existing literature on non-farm employment examined other classifications of non-farm activities (e.g., tradeable *vs.* non-tradeables, and casual *vs.* regular employment). Our empirical analysis shows that within each category of the classification (e.g., manufacturing), there is a wide variation in the rates of returns encompassing both low- and high-return activities. Growth in the relatively high-return non-farm activities is what is needed for rural income growth and poverty reduction. Thus from a policy point of view, it is important to assess the role of urban and farm linkages in spurring growth in different types of non-farm activities especially the relatively high-return non-farm activities.

The empirical analysis yields three main results. First, proximity to large cities is an important determinant of the nature of non-farm activities in a region. Specifically, we find that the propensity of being employed in high-return wage work and self-employment is lower for people who are residing further away from urban centers. Second, the effect of agricultural potential also depends on how far that village is from the urban centers. People who are further away from urban centers are even less likely to be in well-paying non-farm jobs if they are living in a region with higher agricultural potential. Finally, low-return wage work, which pays less than or equal to the median agricultural wage of a region shows no significant relationship with access to urban centers. These jobs seem to cater to local demand and are distributed almost evenly over geographic space. When crop income is used as the regressor capturing farm linkage, the overall results about the interaction of agricultural productivity and urban proximity remain unchanged. As expected, direct effect of distance becomes less precisely estimated in this formulation. The empirical results thus highlight the need for improved connectivity of regions with higher agricultural potential to urban centers for stimulating growth in high-return wage employment and self-employment in non-farm activities.

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات