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Rural-to-urban migration, human capital, and agglomeration

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Abstract

A new general-equilibrium model that links together rural-to-urban migration, the externality effect of the average level of human capital, and agglomeration economies shows that in developing countries, unrestricted rural-to-urban migration reduces the average income of both rural and urban dwellers in equilibrium. Various measures aimed at curtailing rural-to-urban migration by unskilled workers can lead to a Pareto improvement for both the urban and rural dwellers. In addition, the government can raise social welfare by reducing the migration of skilled workers to the city. Moreover, without a restriction on rural-to-urban migration, a government's efforts to increase educational expenditure and thereby the number of skilled workers may not increase wage rates in the rural or urban areas.

1. Introduction

In this paper, a new model of rural-to-urban migration is developed, with an emphasis on the role of human capital in both urban and rural economic activities. Notable exceptions notwithstanding, a substantial literature on rural-to-urban migration has taken its cue from the dual economy model of Harris and Todaro (1970). Their model assumes that the urban sector produces manufactured goods using (homogeneous) labor and physical capital as factors of production, and that the rural sector produces agricultural goods using (homogeneous) labor and land as factors of production. The model has been widely used as a basic analytical framework for studying rural-to-urban migration in developing countries and as a platform for policy formation.

However, since the Harris and Todaro model ignores human capital as a factor of production, it appears to have become increasingly less applicable to many developing countries in modern times. For example, due to continuing structural changes in recent decades, cities in the developing world have become more oriented toward service and

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(relatively) high-tech industries. Also, with a growing share of manufactured goods becoming standardized, these goods can be produced anywhere that offers basic infrastructure such as piped water and reliable electricity. Consequently, the production of manufactured goods increasingly takes place in the rural areas of developing countries.[1] This realignment enhances the importance of human capital in the rural areas. For example, Taylor and Yunez-Naude (2000) find that in rural Mexico, the returns from schooling are high both in crop and noncrop activities; as schooling levels increase, the returns from schooling arise from activities other than crop production. In China, the township and village enterprises (TVEs) have played a significant role in the country's economic growth since the early eighties. In 2000, for example, TVEs accounted for 47 percent of the total industrial output in China (Fu and Balasubramanyam, 2003), and the output value of TVEs has been far greater than the output value of agriculture. Yang and An (2002), and Yang (2004) show that education not only increases productivity in the nonagricultural sector in rural China, but that it also facilitates and encourages the relocation of productive inputs from agricultural to nonagricultural pursuits. Jonasson (2007) finds that in rural Peru, nonagricultural rural employment is a prerequisite for positive returns to education, and that education is rewarded by rural-based nonagricultural work. A perception that the rural areas in developing countries are an exclusive domain of uneducated peasants who apply physical labor to eke out a living had better be discarded.

In this paper we develop a new policy-yielding model of migration in which human capital is important in both the urban and rural areas. In line with considerable research in urban economics and economic growth, agglomeration economies in the cities are built into the model.[2] In a simple general-equilibrium framework, our model interlinks three key factors: the process of migration from the rural area to the urban area, the externality effect of the average level of human capital, and agglomeration economies.[3]

We postulate that a city's productivity is determined by its average level of human capital and by the size of its labor force. The productivity of the rural area is determined by its average level of human capital. Right at the outset, the analysis yields a rather surprising implication: in developing countries, unrestricted rural-to-urban migration reduces the average income of both rural and urban dwellers in equilibrium. This result implies that although a city attracts all the skilled individuals and enjoys the benefit of agglomeration economies (which the rural areas do not), with free labor mobility, the city's productivity is still very low in equilibrium. The intuition underlying this result is quite simple: since the returns to skills are higher in the urban areas than in the rural areas, as is typically the case in developing countries, skilled workers are likely to concentrate in the cities. Consequently, the wage rate of the unskilled workers in the rural areas will be low, which in turn will induce a large number of unskilled rural workers to leave for the cities. With free labor mobility, the rural-to-urban migration process will come to a halt when the urban and rural wages for unskilled workers are equalized: the urban wage will decline continuously with the in-migration of unskilled workers which, in turn, will reduce the average level of human capital in the city. In other words, unrestricted rural-to-urban migration results in a lower wage for unskilled workers in both the urban and rural areas. Furthermore, since the wages of skilled and unskilled workers in the urban area are affected by common productivity factors, the wage for the skilled workers will be driven to a low level by the unrestricted rural-to-urban migration. Thus, our model explains the *negative* consequences of rural-to-urban migration in the developing world, as is amply highlighted, for example, in nearly every leading development economics textbook (cf. Gillis et al., 1996; Ray, 1998; Todaro, 2000).[4]

In essence, our results arise from the difference between the private human capital and the social returns to human capital, a difference that implies that free labor mobility leads to an equilibrium that is not socially optimal. In all

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[1] For surveys on the importance in recent decades of the rural non-farm sector for the economies of developing countries see Lanjouw and Lanjouw (2001) and Reardon et al. (2001).

[2] Several interesting studies that incorporate agglomeration economies into models of rural-to-urban migration (for example, the survey by Abdel-Rahman and Anas, 2004) tend to abstract from the unique characteristics of developing countries.

[3] The agglomeration economies of a city have been studied extensively in the urban economics literature and, lately, in the economic growth literature (Black and Henderson, 1999a,b; Henderson, 2003). There is also a growing awareness of late of the importance of the (positive) externality effect of the average level of human capital for a city's productivity (Black and Henderson, 1999b; Lucas, 2001; Glaeser and Saiz, 2004; Moretti, 2004). However, to the best of our knowledge, no attempt has been made thus far to examine systematically the combined repercussions of rural-to-urban migration, human capital spillovers, and agglomeration effects. Shukla and Stark (1990) analyze several policy implications of agglomeration economies in the city for rural-to-urban migration. They assume homogeneous workers and do not attend to human capital considerations. Bertinelli and Black (2004) investigate a model of rural-to-urban migration with congestion costs in the city. They abstract from the consideration of agglomeration economies and the contemporaneous externality effect of the average level of human capital.

[4] Moreover, our model applies not only to migration from rural areas to urban areas, but also to migration from towns and counties to cities, or even from small cities to large cities.