Migration and the wage and unemployment gaps between urban and non-urban sectors: A dynamic general equilibrium reinterpretation of the Harris–Todaro equilibrium

Chul-In Lee *

*53, 3-ga, Myongnyun-dong, Chongno-gu, School of Economics,
SungKyunKwan Univ., Seoul, 110-745, Republic of Korea
University of Michigan, United States*

Abstract

This paper offers a dynamic general equilibrium reinterpretation of the static partial migration equilibrium by Harris and Todaro [Harris, J., Todaro, M., 1970. Migration, unemployment and development; a two-sector analysis. American Economic Review 60, 126–142], under (i) flexible urban and rural wages and (ii) free mobility of workers and free entry of firms. The proposed model accounts for the set of stylized facts in developing countries: rural to urban migration and higher urban wages and unemployment.

The model allows us to view the wage gap as a compensating differential for the negative amenities associated with job destruction and subsequent costly search on the consumption side, which can also be seen as a match-specific premium based on a sectoral productivity differential on the production side. Our model predicts the comovements among urban and non-urban wages and migration flows to the urban sector, an empirical regularity observed over the urbanization process of developing economies. Finally, we also conduct a welfare analysis.
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* Tel.: +82 2 760 0421.
  E-mail address: leeci@skku.edu.

1. Introduction

Three salient stylized facts that characterize the economic development process are: (i) workers migrate from the rural to the urban sector, (ii) wages in the urban sector exceed those in the rural sector, and (iii) urban unemployment exceeds that in the rural sector.[1] While these phenomena are common across developing economies, it has been difficult to obtain a cogent theoretical explanation. The early seminal papers by Harris and Todaro (1970) (henceforth, HT) and Todaro (1969) took some important strides toward providing an explanation. In its simplest form, HT's model postulates that migration proceeds in response to differences in urban and rural "expected" wages, and the HT equilibrium holds when the expected wages are equalized.[2] Nevertheless, a caveat to their approach is that migration is considered in a partial equilibrium setting with urban wages given exogenously. Moreover, the equilibrium is defined based on ex ante expected value calculations. But given the differences in job-finding and -destruction rates in the usual job-matching process entailing costly and time-consuming search, such ex ante HT migration decisions are not supported by the *ex post* decisions in a dynamic general equilibrium setting.[3] This point therefore implies that migratory flows in the traditional HT models are not an ongoing equilibrium phenomenon.

While many important studies have extended or improved the HT migration equilibrium (see the literature survey in footnote 4),[4] what separates this study from previous studies lies in the following three points. First, this paper builds a dynamic general equilibrium model of migratory flows that is consistent with the set of stylized facts. The proposed model provides a coherent framework that permits: (i) both urban and rural wages to be fully flexible, (ii) both labor mobility and firm entry to be free across

[1] A substantial wage gap between urban and non-urban sectors has been widely observed throughout the world. Unskilled full-time nominal city wages are about 41% higher than farm wages in contemporary developing countries; a similar gap of about 51% can also be found among late nineteenth-century industrializers (Hatton and Williamson, 1992). In Lucas's (1985) study of migration in Botswana, he found that unadjusted urban earnings are 68% greater than rural earnings for males, and this wage gap generally becomes smaller when schooling and experience are controlled for. Overall, he shows evidence consistent with that of Todaro and HT. The wage gap still remains in the modern developed economy with a much smaller gap, e.g., around 30% currently in the U.S.

[2] The resulting wage gap in the HT model has long been invoked to explain the migration flows and urban unemployment of developing countries: typical developing countries exhibit large and sustained migration flows from rural areas to cities, while urban unemployment rates are high. In their model, the wage gap arising from institutional reasons (e.g., minimum wage laws) generates high urban unemployment. Unemployment can thus be interpreted as a key pricing instrument allocating scarce resources in an economy in a partial static equilibrium context.

[3] The ex ante migration decision in HT is based on the expected sectoral wage equalization, but once an urban job searcher from the rural sector finds an urban job ex post, his or her next-period set of choices becomes very different from that of a comparable searcher who ends up being unemployed in the dynamic setting. Looked at differently, the payoffs to workers are dependent on "past job search outcomes". So as we will see later, the expected sectoral wage equalization does not hold in the dynamic general equilibrium context.

[4] Many studies have also attempted to extend or improve the original HT migration equilibrium by endogenizing urban wages, which are assumed to be fixed at a level higher than non-urban wages. The first type of these models uses the efficiency wage approach under the assumption that the urban sector gives efficiency wages for incentive reasons (Stiglitz, 1974, 1976; Moene, 1988; Zenou and Smith, 1995; Brueckner and Zenou, 1999; Brueckner and Kim, 2001). The second approach endogenizes urban wages through a bargaining between a trade union and firms (Calvo, 1978; Hazari and Sgro, 1987; Quibria, 1988). The third approach applies search-matching models with migration (Coulson et al., 2001; Ortega, 2000; Laing et al., 2005; Sato, 2004). Earlier papers have introduced search frictions into an HT model with only one side of the market (the workers) (e.g., Fields, 1975, 1989; Banerjee, 1984; Mohtadi, 1989; Vishwanath, 1991). One study also explicitly takes into account the elasticity of urban demand for labor (Stark et al., 1991). While the first two approaches are certainly appealing, this paper belongs to the third group, since it views migration as a forward-looking behavior that involves unemployment due to search frictions that cause externalities. Among a few studies related to ours, Coulson et al. (2001) build a search equilibrium model for a city with central and suburban labor markets and explain the nature of a spatial mismatch problem. Ortega (2000) proposes a search model with two-country international migration and shows that multiple equilibria arise. Laing et al. (2005) develop a search model for China to deal with the effects of the household registration rule, taking into account the specificities of the Chinese labor market and institutions. Finally, Sato (2004) proposes a static search-matching model and deals with welfare-improving policies in the rural–urban setting.