Foreign capital, public infrastructure, and wage inequality in developing countries

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ABSTRACT

We establish four-sector general equilibrium models to investigate how an inflow of foreign capital influences the skilled–unskilled wage inequality in the presence of the endogenous public infrastructure provision. In the situation of the pure public infrastructure provision, the change of the skilled–unskilled wage inequality is determined by the comparison of the capital distributive shares in urban sectors. In the case of the semi-public infrastructure provision, the change of the skilled–unskilled wage gap is determined by the factor substitution elasticities in urban sectors. A potential extension is also given and it confirms the robustness of the obtained results.

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1. Introduction

Along with the process of globalization, trade liberalization will reduce the skilled–unskilled wage inequality in developing countries, as suggested by neoclassical trade theories. However, an enormous number of empirical studies contend that the contemporary developing countries have suffered from the widening skilled–unskilled wage gaps during the last decades. The related empirical literature can be referred to Feenstra and Hanson (1996), Alarcon and Mckinley (1997), Wood (1997), Beyer, Rojas, and Vergara (1999), Feenstra and Hanson (2003), Kijima (2006), Horgos (2009), Lam and Liu (2011), Mehta and Hasan (2012), and Kamal, Lovely, and Ouyang (2012), which strongly shows that such phenomenon has widely prevailed in some Asian and Latin American countries.

The increasing skilled–unskilled wage inequality in developing countries arouses the great interest of many economic theorists. International factor mobility (e.g., foreign capital inflow, skilled and unskilled labor migration), resulting from the trade and economic liberalization, has captured lots of attention and becomes one of the most important viewpoints in explaining such issues. The related works can be attributed to Wu (2001), Das (2002), Marjit and Kar (2005), Anwar (2006), Chaudhuri and Yabuuchi (2007), Yabuuchi and Chaudhuri (2007), Beladi, Chaudhuri, and Yabuuchi (2008), Anwar (2008a, 2008b, 2008c), and Jones (2008). Later on, scholars extend the existing theoretical models by accommodating the production of non-traded goods and the endogenous skill formation process of unskilled labor to investigate the impact of international factor mobility on the skilled–unskilled wage gap. Typically, Marjit and Acharyya (2003), Gupta and Dutta (2010), and Oladi, Gilbert, and Beladi (2011) theoretically analyze the impact of international

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factor mobility on the skilled–unskilled wage inequality with the consideration of the production of non-traded goods. On the other hand, Kar and Beladi (2004), Kar and Guha-Khasnobis (2006), Gupta and Dutta (2010), and Beladi, Marjit, and Broll (2011) integrate the endogenous supply of skilled labor into theoretical models to analyze how international factor mobility influences the skilled–unskilled wage inequality.

Among the above-mentioned studies, Wu (2001), Das (2002), Chaudhuri and Yabuuchi (2007), Beladi et al. (2008), Jones (2008), and Oladi et al. (2011) especially highlight the impact exerted by an inflow of foreign capital on the skilled–unskilled wage inequality. However, the impact generated by an inflow of foreign capital in the presence of the endogenous public infrastructure provision on the skilled–unskilled wage gap in developing countries is largely ignored. The existent studies exploring the relation between international factor mobility (especially the foreign capital inflow) and skilled–unskilled wage gap leave the government's endogenous public infrastructure provision aside and at the same time neglect to discuss the different features of the public infrastructure. In the real world, it is common to see that different sectors, as well as different production factors, have diverse dependences on the public infrastructure (Lin, 2011). The growing provision of public infrastructure increases the marginal productivity of different production factors at different levels. But at the same time, different sectors will benefit from the public infrastructure in different degrees, leading to the reallocation of production factors among sectors. Therefore, it is necessary for us to investigate how an inflow of foreign capital in the presence of the endogenous public infrastructure provision influences the skilled–unskilled wage gap prevailing in developing countries.

In order to fill the theoretical research gap, this paper establishes four-sector general equilibrium models to investigate how an inflow of foreign capital influences the skilled–unskilled wage inequality in two different situations, namely endogenous provisions of the pure infrastructure and the semi-public infrastructure separately. In addition, in order to fit in with the reality of developing countries, this paper also takes the rural–urban migration and the urban unemployment into consideration. The main findings obtained by this paper are as follows. In the situation of the pure public infrastructure provision, an inflow of foreign capital will increase the wage rate of unskilled labor, and the change of the skilled–unskilled wage inequality is determined by the comparison of the capital distributive shares in urban sectors. However, in the case of the semi-public infrastructure provision, an inflow of foreign capital will raise the wage rate of skilled labor, and the change of the skilled–unskilled wage gap is determined by the factor substitution elasticities in urban sectors. The above results are based on the unskilled labor intensive public infrastructure provision. When we extend the established theoretical model to consider the skilled labor intensive public infrastructure provision, it also confirms the robustness of the above results. Therefore, one of the main contributions of this paper is that we try to investigate the relation between the foreign capital inflow and the skilled–unskilled wage inequality by accommodating the endogenous provision of public infrastructure. Our perspective is largely ignored by the current theoretical research. Besides, this paper also contributes a unified theoretical framework embedded with different features of public infrastructure. By choosing different policy variables (e.g., trade policies and price subsidies), our analytical framework can also be employed to investigate their impacts on the skilled–unskilled wage inequality in the presence of public infrastructure with different properties.

It is worth mentioning that Anwar (2006, 2008b, 2008c) also analyzes the impacts generated by international factor mobility (e.g., the skilled and unskilled immigration) on the skilled–unskilled wage inequality with the consideration of public infrastructure. The main differences between this paper and Anwar's are reflected in the following aspects. First, this paper considers the endogenous public infrastructure provision and divides the public infrastructure into two categories, namely the pure public infrastructure and semi-public infrastructure. These are neglected by Anwar (2006, 2008b, 2008c) and others. What's more, this paper and Anwar (2006, 2008b, 2008c) differ greatly in the forms of introducing public infrastructure to productive activities. Second, this paper takes the rural–urban migration and the urban unemployment into consideration, which are the typical features of developing countries, just as pointed out by Basu (1997), Ray (1998), and Beladi, Chakrabarti, and Marjit (2010). However, the consideration of the urban unemployment is excluded by Anwar (2006, 2008b, 2008c), which instead makes our paper closer to the reality of contemporary developing countries. Third, the denotations of economic structures in our paper are quite different from those in Anwar (2006, 2008b, 2008c). This paper focuses primarily on the independent production sectors rather than the vertical or horizontal linkages among production sectors.

The rest parts of this paper are organized as follows. The basic setup is given in Section 2. In Section 3, we establish theoretical models to discuss the impacts exerted by an inflow of foreign capital on the skilled–unskilled wage gap in the presence of both the pure public infrastructure provision and the semi-public infrastructure provision. In Section 4, we give a potential extension of the established models. Concluding remarks are made in Section 5.

2. The basic setup

Consider a small open economy consisting of four sectors, an urban high-skill sector, an urban low-skill sector, a rural agricultural sector and a public sector operated by the government. The urban high-skill sector employs skilled labor and domestic capital (or foreign capital) as factors of production to produce a high-skill exportable good. The urban low-skill sector uses unskilled labor and domestic capital (or foreign capital) to produce a low-skill import-competing product. The rural agricultural sector uses unskilled labor and land to produce an exportable good. The settings of production sectors and their factors employment in developing economies prevail in the existent literature (e.g., Chaudhuri & Yabuuchi, 2007; Yabuuchi & Chaudhuri, 2007). We further assume that the productions of the urban high-skill and low-skill sectors also depend on the provision of the non-traded public infrastructure, which is the output of the public sector. The public sector uses only unskilled labor and domestic capital as the factors of production, whose output can be exemplified by highways and logistic centers and so on. Here, it should be noted that we will consider the case that the public sector employs skilled labor and capital as the production factors in Section 4, and doing so can help us achieve the