



# Institutional quality and skilled–unskilled wage inequality



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## ARTICLE INFO

Article history:  
Accepted 23 July 2013

JEL classification:  
D73  
J31  
O12

Keywords:  
Institutional quality  
Skilled–unskilled wage inequality  
General equilibrium model

## ABSTRACT

This paper establishes two-sector general equilibrium models in the presence of unproductive activities to investigate how an improvement of the institutional quality influences the skilled–unskilled wage inequality. We find that an improvement of the institutional quality will affect the interest rate, and then the interest rate combining with the capital intensity will generate an impact on the skilled–unskilled wage inequality. Specifically, both the interest rate and comparisons of the capital–labor relative distributive shares between two sectors play an important role in determining the skilled–unskilled wage gap in an economy featured with unproductive activities. The above results are robust even when we extend the basic theoretical model in several different ways.

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## 1. Introduction

The last several decades have witnessed economic integration and trade liberalization. Along with the process of globalization, the skilled–unskilled wage gaps in both developed and developing countries have been largely widened. As far as developed countries are concerned, the empirical studies can be typically referred to Katz et al. (1993), Lawrence (1994), Feenstra and Hanson (2003) and others. As for developing countries, the empirical literature (e.g., Banga, 2005; Borjas and Ramey, 1993; Feenstra and Hanson, 1996; Khan, 1998; Wood, 1997) strongly reveals that this phenomenon widely appears in the South Asian and Latin American countries.

The rising skilled–unskilled wage inequality provokes the research interest of many theoretical economists, who try to explain this phenomenon from different angles of view. The related theoretical literature can be mainly divided into four strands. The first strand of literature (e.g., Anwar, 2006; Anwar and Rice, 2009; Beladi et al., 2008; Marjit and Kar, 2005; Pi et al., 2013; Yabuuchi and Chaudhuri, 2007; Zhang, 2012, 2013) tries to investigate the increasing skilled–unskilled wage inequality from the perspective of international factor mobility, most of which contends that such mobility unambiguously or conditionally leads to the growing wage gap. The second strand of literature (e.g., Anwar, 2013; Anwar et al., 2013; Bakhtiari, 2012; Batra and Beladi, 2010; Beladi et al., 2010, 2011; Chakrabarti and Mitra, 2010; Chaudhuri and Yabuuchi, 2007;

Deardorff, 2005; Marjit and Acharyya, 2006; Marjit et al., 2004) stresses the role of trade liberalization, production patterns, and organizational modes playing in widening the skilled–unskilled wage inequality. Some scholars (e.g., Chaudhuri and Yabuuchi, 2008; Gupta and Dutta, 2010; Marjit and Acharyya, 2003; Oladi et al., 2011) in this field also argue that the production of the non-traded good also matters for the increasing wage inequality. The third strand of literature (e.g., Fang et al., 2008; Moore and Ranjan, 2005; Wang et al., 2009) pays attention to the impact exerted by the technical progress on the skilled–unskilled wage gap. Researchers in this direction find that the technical progress and international technical spillovers influence the skilled–unskilled wage gap in both developing and developed countries. The fourth strand of literature (e.g., Chaudhuri and Yabuuchi, 2007; Mandal and Marjit, 2010; Pi and Zhou, 2012) highlights that the institutional change and growing public infrastructure provision will unambiguously or conditionally result in the growing wage gap.

However, the existing theoretical studies neglect the role that the institutional quality plays in determining the skilled–unskilled wage inequality. Most of the above-mentioned studies potentially assume that the discussed economy is characterized with a high institutional quality. That is to say, there exists no unproductive activities in the economy and all the economic resources are fully employed by productive activities. But in reality, the institutional quality cannot be perfect and unproductive activities exist in both developing and developed countries.<sup>2</sup> For example, in some developing countries typically like India,

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<sup>2</sup> Unproductive activities discussed in this paper is in accord with those described by Bhagwati et al. (1998, chapter 34). That is, unproductive activities refer to the activities that are profitable without being directly productive. Economic agents who engage in these activities get incomes by using economic resources. However, their behaviors do not contribute to the outputs that directly or indirectly enter the consumers' utility functions.

when the economic agents conduct the public investment and import activities, they should always acquire licenses. In order to obtain such licenses, some people work for lobbying or bribing other than productive activities (e.g., Bhagwati, 1982; Krueger, 1974). In other situations occurring in developed countries especially like some import-competing ones, the agents transfer some economic resources to lobby for industry protection, or against the foreign import (e.g., Bhagwati, 1982; Moore and Suranovic, 1992; Zhao, 1996). The original works of investigation of unproductive activities can be attributed to Krueger (1974) and Bhagwati (1982). Since the publications of their pioneering studies, unproductive activities have captured much attention of both theoretical and empirical economists. The representative literature can be referred to Lui (1985), Moore and Suranovic (1992), Zhao (1996), Shleifer and Vishny (1993), Bag (1997), Bose (2004), Svensson (2005), Bag and Bac (2006), Marjit et al. (2007) and so on. Moreover, instead of employing the general equilibrium approach, most of the above-mentioned theoretical research uses the game-theoretical or contractual approach to address the relevant issue. Unfortunately, these works neglect to discuss the relation between unproductive activities and skilled–unskilled wage inequality. Corruption, usually taking the form of typical unproductive activities, prevails in both developing and developed countries. Such sort of corrupt activities shift economic resources from productive activities to unproductive activities. The reallocation of the economic resources between productive and unproductive activities must have great impacts on the skilled–unskilled wage inequality. Our intuition can be partially supported by the current empirical literature (see, e.g., Andres and Ramlogan–Dobson, 2011; Chong and Calderon, 2000; Dincer and Gunalp, 2005; Gyimah-Brempong, 2002). These existent empirical findings are controversial and show that these corrupt behaviors may be positively or negatively related to the wage inequality in developing and developed countries. Therefore, all those stated above motivate us to theoretically explore how the institutional quality improvement aimed at reducing unproductive activities influences the skilled–unskilled wage inequality.

In order to fill the current research gap, this paper builds two-sector general equilibrium models to discuss the relation between the institutional quality improvement and the skilled–unskilled wage inequality. We firstly consider the situation where unproductive activities prevail in both sectors, and argue that the institutional quality improvement will affect the interest rate and the interest rate combining with the capital intensity will generate an impact on the skilled–unskilled wage inequality. Therefore, the change of the skilled–unskilled wage gap is determined by the interaction between the change of the interest rate resulting from the institutional quality improvement and comparisons of the capital–labor relative distributive shares between two sectors. These results are robust even when we extend the basic theoretical model by considering the cases where unproductive activities appear in a single sector and the participating modes of unproductive activities are different.

In sum, the contributions of this paper are mainly embodied in the following two aspects. The first aspect is that we try to address the issue concerning the increasing skilled–unskilled wage inequality from the perspective of the institutional quality improvement. Our angle is quite different from the current mainstream viewpoints. Specifically, this paper is related to and complementary with the fourth strand of literature. The second aspect is that we try to detect the relation between the intuitional quality improvement and the wage inequality. The discussion of this issue is ignored by the theoretical literature on unproductive activities. What is more, this paper builds general equilibrium models to investigate such an issue, instead of building game-theoretical or contractual models that are widely used by the mainstream theoretical literature in this field.

It should be mentioned that Mandal and Marjit (2010) also discuss the relation between unproductive activities and the skilled–unskilled wage inequality in a general equilibrium framework. In their paper, unproductive activities take the form of corruption. The main differences

between this paper and Mandal and Marjit (2010) are as follows. Firstly, Mandal and Marjit (2010) treat corrupt behaviors as a tool that smoothes the transaction in the production sectors and saves transaction costs, and describe corrupt behaviors as an intermediate input. Contrastedly, we treat unproductive behaviors directly as an erosion of economic resources, which are shifted from productive activities to unproductive activities. Therefore, Mandal and Marjit (2010) and this paper have quite different treatment methods for unproductive behaviors. Secondly, Mandal and Marjit (2010) conduct their analysis only in the situation where corrupt behaviors are symmetric for all the production sectors. However, although we assume that unproductive behaviors are symmetric for all the production sectors, we later relax this symmetric assumption and test the robustness of the results obtained in the symmetric assumption. Therefore, the findings in this paper are more comprehensive and reliable. In sum, this paper offers a different lens on unproductive activities and the wage inequality, and can be regarded as a deep-going discussion of Mandal and Marjit (2010) from a new perspective.

The rest of the parts are organized as follows. We establish the basic theoretical model in Section 2. In Section 3, we conduct the comparative static analysis to investigate how the institutional quality improvement influences the skilled–unskilled wage gap. Section 4 offers potential extensions and related discussions. Concluding remarks are given in Section 5.

## 2. The theoretical model

Consider a small open economy consisting of two production sectors, sector 1 and sector 2.<sup>3</sup> There are three economic resources in our assumed economy, capital, skilled labor and unskilled labor. Here, capital is owned by the capital-owners. Sector 1 produces the high-skill product, which uses skilled labor and capital as factors of production. Sector 2 produces the low-skill product, which uses unskilled labor and capital as the factors of production. The production functions of sectors 1 and 2 satisfy the neoclassical properties. The denotation of the production sectors shares the common feature of models in the existing literature (e.g., Mandal and Marjit, 2010; Marjit and Kar, 2005). The output and input markets are perfectly competitive.

The cost minimization condition of the production sectors yields:

$$p_1 = a_S w_S + a_{K1} r, \quad (1)$$

$$p_2 = a_U w_U + a_{K2} r, \quad (2)$$

where  $p_1$  and  $p_2$  are the prices of products in sectors 1 and 2, respectively.  $a_S$  and  $a_{K1}$  are the skilled labor and capital usages to produce one unit of high-skill product, respectively.  $a_U$  and  $a_{K2}$  are the unskilled labor and capital usages to produce one unit of low-skill product, respectively.  $w_S$  and  $w_U$  are the wage rates of skilled labor and unskilled labor, respectively.  $r$  is the interest rate of capital.

Furthermore, we assume that the institutional quality in our assumed economy is not high enough to forbid unproductive activities. The existence of unproductive activities can be attributed to the low level of the institutional quality. Now, let us turn our attention to the denotations of unproductive activities. On the basis of the broad concept of unproductive activities (see Bhagwati, 1982; Krueger, 1974), unproductive activities will occupy economic resources and thus some economic resources will be shifted from productive activities to unproductive activities. Moreover, economic agents will engage in these activities and earn their incomes. According to Krueger (1974), the income of a participant in unproductive activities should be equal to that in productive activities. In the spirit of the features of unproductive activities, it is hypothesized that due to the

<sup>3</sup> The economy discussed in this paper is a small open economy in goods trade. However, its capital market is closed. Thus the interest rate of capital in our assumed economy is endogenously determined. Similar assumption can be referred to Marjit and Kar (2005), Chaudhuri and Yabuuchi (2007), Beladi et al. (2008), and Mandal and Marjit (2010).

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