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Downsizing, wage inequality and welfare in a developing economy

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ABSTRACT

This paper focuses on the cost cutting effects of firm downsizing in a developing economy. Using a dualistic production structure to depict a developing economy, the impacts of downsizing on wage inequality and social welfare are examined. Downsizing is revealed to not only narrow the wage gap between skilled and unskilled labor but also to raise the level of manufactured output and reduce the unemployment ratio in the urban sector. These effects improve the social welfare of the economy.

1. Introduction

Demand and supply are the two basic considerations when doing business. However, when demand shrinks during economic downturns, cost cutting via downsizing is apparently the only way for firms to remain in operation and meet challenges. The purpose of this paper is to investigate the distributional and welfare effects of firm downsizing in a developing economy. Specifically, we examine the impact of downsizing on wage inequality and, in turn, unemployment.

Issues related to wage inequality have been heatedly debated in the trade literature. The increasing wage gap between skilled and unskilled labor in developed economies can be attributed to two aspects: technological factors (Davis, 1998; Francois and Nelson, 1998) and trade factors, including liberalization, outsourcing and competition (Wood, 1995; Feenstra and Hanson, 1996; Neary, 2002). Marjit and Chakrabarty (2003) and Kar and Beladi (2004) extend the discussion of the rising level of wage inequality to developing economies.

In the face of the recent financial crisis, the rate of downsizing, rather than trade liberalization or technological advancement, has increased. Walde and Weiß (2007) find that downsizing by reducing the fixed costs of administrative and managerial services can increase the wage gap between skilled and unskilled labor. Anwar (2009) obtains the same result under monopolistic competition. Their models are suitable for developed economies in which the production process is more skill intensive than administrative and managerial services. Nonetheless, this assumption of factor intensity may not be applicable to developing economies as they rely on the production of light manufactured goods using less skilled labor. It is worth noting that cost cutting pressures are also arising due to increased competition in the face of increase in the pace of globalization.

Using the dualistic production structure of Harris and Todaro (1970) to depict a developing economy, we show that firm downsizing can actually reduce the level of wage inequality between skilled and unskilled labor, which is opposite to the case for developed economies. In addition, downsizing is revealed to increase the level of manufactured output and lower the unemployment ratio in the urban sector. These favorable effects improve the social welfare of the economy.

The rest of this paper is organized as follows. Section 2 presents a dualistic model for a developing economy, in which a monopolistic manufacturing firm operates in the urban sector while competitive, agricultural firms operate in the rural

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sector. Using this structure, the effects of downsizing in urban manufacturing on the wages of skilled and unskilled labor are examined in Section 3. The welfare implications of downsizing are also discussed. Section 4 offers concluding remarks.

2. The model

Consider a developing economy with urban and rural sectors. A monopolistic firm in the urban sector produces manufactured good X, while competitive firms in the rural sector produce agricultural good Y. Choosing good Y as the numeraire, the relative price of good X is denoted by p.

Letting D_X and D_Y be the demands for these two goods, consumer preferences are quasi-linear: $U(D_X, D_Y) = u(D_X) + D_Y$, where $u'(D_X) > 0$. Utility maximization subject to the income constraint, $I = pD_X + D_Y$, yields the inverse demand function for good X: $p = p(D_X)$, with $p' = u''(D_X) < 0$, and the indirect utility function is $V = V(p, I)$, with $V_p = -D_X$ and $V_I = 1$. In equilibrium, the demand for good X equals its supply, i.e., $D_X = X$.

Turning to the production side of the economy, the urban manufacturing firm produces good X under internal economies of scale, in which skilled labor (L_S) and capital (K_S) comprise the fixed inputs for in-house administration and managerial services, i.e., $k = F(L_S, K_S)$, while unskilled workers (L_X) together with capital (K_X) are employed to produce output X. The corresponding fixed and variable costs are respectively $kf(w_S, r)$ and $m(w_U, r)X$, and the total cost of producing good X is therefore $C(w_U, w_S, r, X) = kf(w_S, r) + m(w_U, r)X$, where w_S and w_U are respectively the urban skilled and unskilled wage rates and r is the capital rental rate. By the means of the envelope property, the employments of skilled labor, unskilled labor and capital in sector X are: $L_S = kf_w(w_S, r)$, $L_X = m_w(w_U, r)X$, $K_S = kf_r(w_S, r)$ and $K_X = m_r(w_U, r)X$, where the subscript represents the partial derivative. The profits of firm X are then written as $\pi = p(X)X - C(w_U, w_S, r, X)$. The firm chooses the level of output X to maximize profits. The profit-maximization condition gives the equality of marginal revenue (MR) and marginal cost:

$$p(X) + p'(X)X = m(w_U, r), \tag{1}$$

The effect of an increase in production of good X on MR is $\partial MR/\partial X = (2 + e)p'$, where $e = Xp''/p' \gtrless 0$. As shown in the Appendix, the stability condition requires $e > -1$ and hence $\partial MR/\partial X < 0$. Thus, the increase in the output of good X lowers its marginal revenue.

For the production of agricultural good Y, unskilled labor and capital are needed. Under the constant returns-to-scale technology, the unit cost is denoted by $g(w_R, r)$ and the demands for unskilled labor and capital are respectively $L_Y = g_w(w_R, r)Y$ and $K_Y = g_r(w_R, r)Y$. In equilibrium, under perfect competition, the unit cost equals the price of good Y:

$$g(w_R, r) = 1, \tag{2}$$

where the price of good Y is normalized to unity.

Following Harris and Todaro (1970), the wage rates for urban and rural unskilled workers are linked through labor migration. In the urban sector, a minimum wage is institutionally set, which exceeds the unskilled wage rate in the rural sector. The higher urban wage rate leads to rural–urban migration and also yields urban unemployment, L_u. Defining the unemployment ratio of unskilled workers in the urban sector by $\mu = L_u/L_X$, migration equilibrium requires the equality of the expected urban wage rate and the actual rural wage rate:

$$w_U/(1 + \mu) = w_R, \tag{3}$$

where $1/(1 + \mu)$ expresses the probability of finding a job among unskilled workers in the urban area.

Consider the factor markets. The market-clearing conditions for skilled labor, unskilled labor and capital are respectively

$$kf_w(w_S, r) = S, \tag{4}$$

$$(1 + \mu)m_w(w_U, r)X + g_w(w_R, r)Y = L, \tag{5}$$

$$kf_r(w_S, r) + m_r(w_U, r)X + g_r(w_R, r)Y = K, \tag{6}$$

where S, L and K denote the fixed amounts of skilled labor, unskilled labor and capital available in the economy.

Eqs. (1)–(6) describe the developing economy, which consists of six unknowns, w_R, w_S, r, μ, X and Y. We use this dualistic model to study the effects of downsizing of the urban manufacturing firm on the wage distribution of skilled and unskilled labor. In addition, the implications of downsizing on social welfare are examined.

3. Wage inequality and social welfare

Related to the fixed inputs, the size of the administrative and managerial services of the urban manufacturing firm is represented by the level of k. Downsizing is thus referred to as a reduction in k, which lowers the demands for skilled labor and capital. Because capital is mobile within and between sectors, downsizing results in the reallocation of capital from a fixed input to a productive input for the urban firm. Letting a circumflex represent the percentage change, the effect of capital reallocation on output X can be seen by differentiating (1) to yield

$$(2 + e)\hat{X} = -\varepsilon b\theta_{KX}^{m}\hat{r}, \tag{7}$$