Foreign Competition and Distributive Share of Indian Union Sector Workers: Theory and Evidences

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The paper attempts to provide an explanation for declining trend of union bargaining power with the advent of trade reformseven when substantial legislative reform measures are not undertaken. A strategic trade model withdual labour market is applied to investigate the effects of trade competition on the distributive share of formal or unionized workers. It is shown that the import competition due to tariff-cuts and foreign direct investments unambiguously hurt their wages and distributive shares in the presence of decentralised unions. Panel regression using data for the Indian economy also reveals that the foreign competition, due to tariff cuts and inward capital flow, causes expansion of non-unionised sector and depresses the distributive share of the unionised sector.

Keywords: Trade reform; industrial disputes; unionised sector; wage and distributive share

JEL Classifications: D21; L23

1. Introduction

The contemporary development experiences suggest that the effect of trade liberalization has not been uniform in accelerating economic growth across developing countries (Li, 2010). It is argued that the countries which are successful must have better institutions and investment climate than others. Achieving better investment climate, therefore, is an important objective of many developing countries in the recent years, and gaining considerable attention among both academics and policy makers. Since the labour legislation provides an impetus to the rigidity in a country, a substantial legislative reform has been

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generally recommended for the same reason. In India, this discussion has been continuing for quite some times since the industrial and trade reform measures were undertaken in the early 1990s. For example, Besley and Burgess (2004) studied the effect of labour market rigidity on regional growth in a federal setting of Indian economy during 1952-1997 and established that the states having labour laws favourable to workers grew at a slower rate than others. This observation played a significant role in motivating policy makers towards labour market reforms.

The Industrial Disputes Act 1947 has been the key ingredient of labour market rigidity in India. It placed labour issues in the hands of state governments, resulting in significant variation in labour regulations and/or their enforcement across Indian states (Besley and Burgess, 2004 and Hasan et al., 2007). Besley and Burgress (2004) classified the Indian states by the forms of labour legislation – pro-workers, neutral, and pro-employer – looking at the direction of its amendment by the state governments and found that the states which amended in favour workers are lagging behind the others.But, the direction of amendments in the legislation defined in this work was confined into a narrow area of labour laws and they did not clearly capture the overall direction (Bhattacherjea, 2006). Moreover, the form of amendment they considered did not capture the functioning of the labour market institutions as well.

Figure 1: Wage Share of Workers in Major States of India, 1980-2007
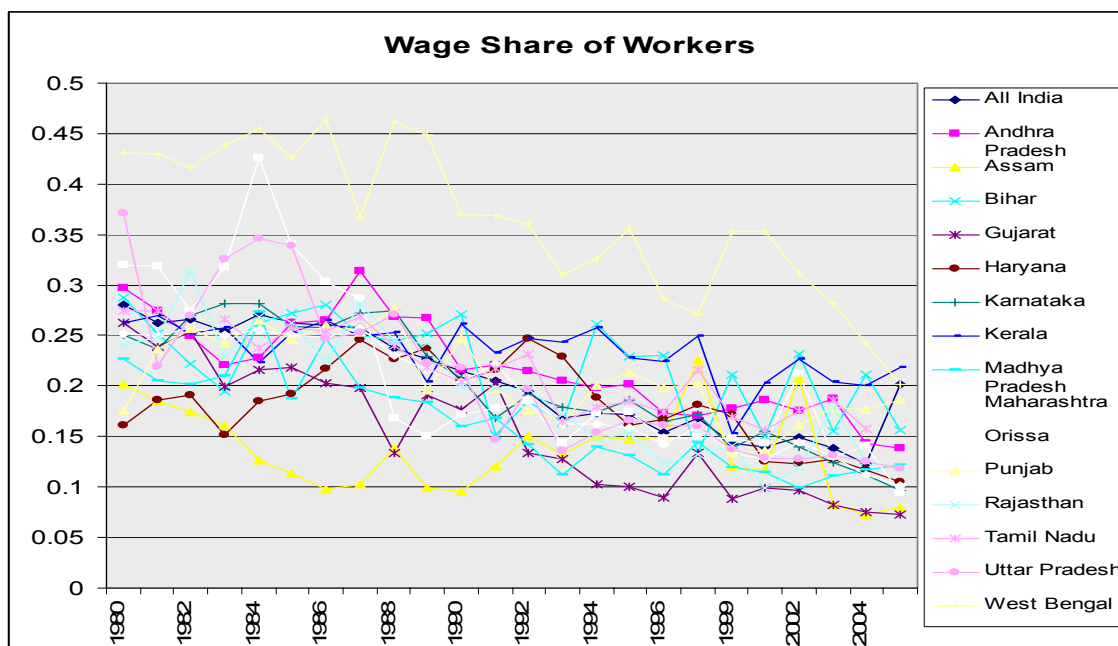
On the contrary, the contemporary evidences drawn from the Indian economy during the period of 1980 to 2007 seem to have been suggesting some altogether different implications on this debate. A sharp decline of union or formal sector wage share in all the major States in India, including pro-employer and pro-workers States, is observed throughout the period (see Figure 1). Moreover, the number of strikes and lock-outs, which are major indicators of union power, has declined sharply from 1459 in 1990 to 210 in 2007 in the economy as a whole. The state-wise figures of strikes in India during 1980-2007 shows that such decline has taken place for all the major states (Figure 2). West Bengal – the state famously known as a labour rigid state – also accounts for a declining trend, and has, in fact, registered smaller number of such trade union activities than some other states in the recent years. Andhra Pradesh has a kind of unsettling graph but even then it shows a decreasing trend after 2002-03. Number of lockouts has also declined during this period from arround 700 in 1992 to less than 200 in 2007. All these together indicate a decline in bargaining power in the economy during the study period. However, not much labour market reforms have taken place in the Indian States during this period, which means that decline in the number of strikes and lockouts is not due to labour market reforms. These observations have motivated us to enquire about what explains the declining bargaining power even when no major legislative reform is undertaken in the Indian labour market. The current paper seeks to find an answer in the pro-competitive effects of trade reforms.

Figure 2: Number of Strikes in Major States of India during 1997-2007
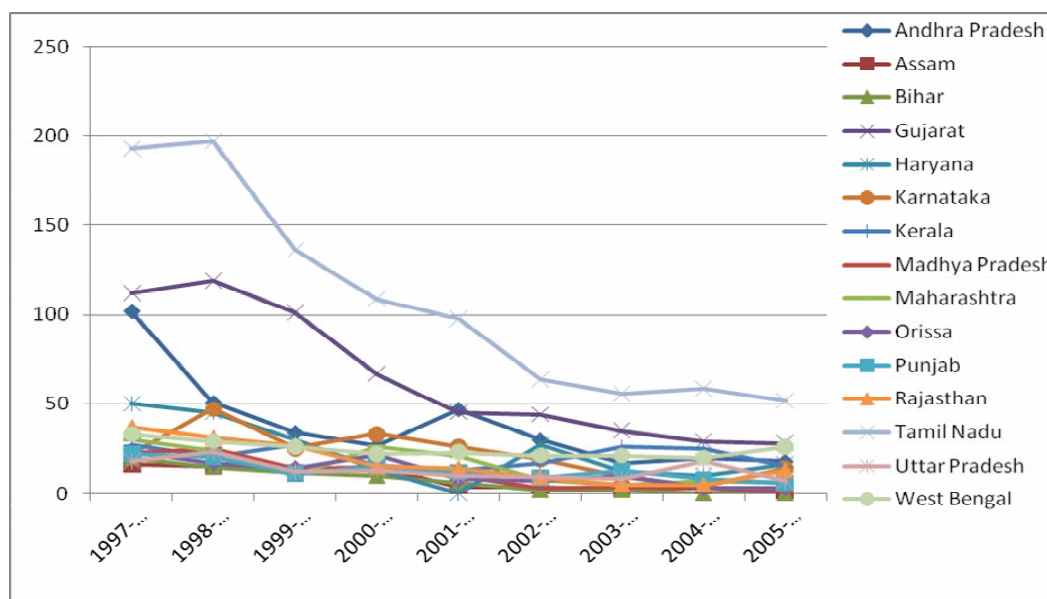
Now, the most important question here is whether the existing legislative framework in India is conducive for such changes and allows substitution of the unionized workers by non-unionized workers in reality. No doubt, the existing law does not let an instantaneous adjustment in wage and employment. But, firms still find ways to do it slowly in the medium to long run, by either not filling up new positions or not hiring against retirements directly. Second, while the labour turnover rate tends to be higher under competition, the workers would always look forward for better opportunity outside. Then, it would not be difficult to change the wage and employment combination easily when the employment possibility increases. Third, the existing labour laws in India provide a bit of autonomy to firms in retrenching labour under changed market condition. This is true even for the Factory Acts (1947) in India, which is not applicable to those who hire less than ten workers[2] (Besley and Burgess, 2004). These laws allow siphoning off the competitive pressure from in-house union workers either by firing them or by contracting outside, instantaneously. Fourth, a mere existence of strong legislation cannot be sufficient for higher rigidity in the labour market. It is not just a question of legislation, but the level of enforcement too is crucial to the extent at which firms deterred by labour legislation (D'Souza, 2008). The enforcement level of the existing laws has been extremely weak in India. Fifth, a formal sector firm also enjoys legislative supports of using flexible labourers on a contractual basis as per the Contract Labour Regulations Acts (1970) in India. More the employment on contractual and flexible basis the larger would be pressure on union bargaining. These suggest that union sector labour composition can be changed gradually in India within the domain of existing labour legislation.

Rodrik (1997) argued that the globalization and liberalization directly and indirectly put downward pressure on union and thereby reduce their bargaining power. There also exists a contrasting view (Maiti and Mukherjee, 2013). However, most of analyses in the existing literature have ignored the existence of low cost non-unionized sector in the developing world. The focal point of analyses has also been confined to the effect of trade reforms either on wage or employment, or both. But what would be the impact on the distributive share of the union[3] (i.e., formal) sector – relative to total value addition – when the producer has a choice of producing at the low cost sector with workers moving out of the unionized sectors under competitive pressure is still under-researched. When the product market condition is changed due to trade reform, the relative distribution of residue must be changed under the transformed bargaining position between the factor owners.

In a developing economy, a large part of production activities is undertaken outside the formal or organized sector. Workers engaged in this sector do not receive any

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[2] However, this limit varies across state governments in the Indian federal framework.
[3] Since workers in the formal sector receive legislative supports, they could form a union.

legislative supports and thereby cannot form a union. From this perspective, this sector can be definedas 'non-unionized sector'. A large body of theoretical and empirical literature clearly reveals that the size of non-unionized sector (i.e., the informal sector) has been on the rise, particularly in the developing world (ILO-WTO, 2009). Various factors are responsible for this phenomenon – for example, liberalization, increased competition, disintegration of the production process etc. (Acemoglu et al., 2005; Maiti, 2008). We are not going on to investigate such factors. But, the most important factor to be noted is that the increased competition would lead to bypass union workers and to employ more non-unionized labour in the production of traded goods. If so, the use of the non-unionized sector would indirectly put pressure on union bargaining power of the workers engaged in the organized and formal sector (termed as 'unionized sector') and, thus, would change the resultant distributive share between employer and employee of a firm. So, the presence of non-unionized sector acts as a limiting factor of the union sector bargaining power in the developing countries.

In such a context, the present paper examines to what extent labour market rigidity and its trend can be explained as an effect of trade reforms initiated during the 1990s. A simple duopoly model is developed to find an answer to this research question and to motivate our subsequent empirical analysis. We, however, ignore exportability of the domestic firm and its implication on the union, which is partly because of the fact that the net exports of Indian economy is declining gradually in the post-reform period. Imports have been dominating over exports at the aggregate level even after reform policies introduced in 1991 and thereafter. On the other hand, the effects of competition on foreign capital (e.g., spillover effect) are assumed to be constant in the theoretical exercise of this paper. In its presence, one might find even a stronger effect of competition due to its substitution effect on labour.

The empirical work, however, has controlled such effects, using technology parameter, in the regression analysis. We run two-stage panel regressions to see the effect of trade reform on union wage share for the major states in India during 1980-2007. The tariff rate and foreign direct investments by states, the two reform variables, have been regressed on the non-unionized output, and then the predicted value of non-unionized output is regressed on union wage share. The regression results reveal that higher the openness, in terms of lower tariff rate and higher FDI, the higher is the size of non-unionized sector, and the lower is the resultant union wage share.

The rest of the paper is organized as follows. Section 2 provides a brief review of the existing literature. In Section 3 we develop the theoretical framework and in section 4

we carry out the empirical analysis. Finally, Section 5 ends up with concluding remarks.

2. Review of Literature

The effects of trade liberalization on employment and factor prices have been a great topic of interest, following the seminal work of Stolper and Samuelson (1941). In the earlier days, this issue has been addressed in perfectly competitive framework. However, this is not always the correct reflection of real world scenario. In alternative scenarios, the theoretical result of Huizinga (1993) and Sørensen (1993) show the unionized wage is higher under autarky than under free trade. Acemoglu et al. (2001) argue that unions encourage productive training, and such training is incentive compatible for firms only when the wage structure is compressed. Alternatively, collective decision making process within a union may reflect the preferences of its median voter, and if this median voter is an unskilled worker, he tries to increase unskilled wages at the expense of skilled wages. It is also possible that union members choose to compress wages because of ideological reasons or for social cohesion purposes. The theoretical works by Naylor (1998 and 1999), Munch and Skaksen (2002), Bastos and Kreickemeier (2009) suggest that trade reforms have positive effects on unionized wage. In two-country trade models, Naylor (1998 and 1999) show that two-way trade liberalization increases unionized wage. Bastos and Kreickemeier (2009), on the other hand, examine the effects of two-way trade liberalization in a general equilibrium model with unionized and non-unionized sectors. They find that trade liberalization may increase unionized wage by affecting the disagreement utility of the firms if the union is an open shop, where all the workers are not union members. In a recent study, Maiti and Mukherjee (2013) show that trade reform might lead to a rise of union wage if the firm has a strategic choice of subcontracting to the informal sector.

However, the empirical works stand entirely on mixed findings of trade reforms on wageacross countries. Rodrik (1997) points out that the globalization reduces the bargaining power of trade unions and, thus, creates an adverse effect on wage. This concern is more prominent in Europe, where the labour market in most countries is strongly unionized.[4] Blanchard and Giavazzi (2003) find that product market deregulation raises the real wage of the workers to the extent that it reduces barriers to enter. Moreover, the product market deregulation, by decreasing total surplus, reduces the incentives for workers to derivea proportion from the surplus. Keil et al. (2007) conducted a similar kind of study on Belgium firms and found that trade liberalization has led to a reduction in the union bargaining power, leading to a greater distributive

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[4] As mentioned in OECD (2004), on average, 67 per cent of the workforce in the European nations is covered by union agreements.

share in favour of firm owners. On the other hand, Feenstra (2007) finds a substantial improvement in wage earnings in USA and Canada during the 1980s and 1990s, following tariff reduction. Cragg and Epalbaum (1996) also observe a high growth of skilled wage in Mexicoduring the period of tariff reduction during the 1990s. The other interesting trend that has been observed in recent years, particularly in the developing world, is that a share of output being delegated more to the informal sector where the wage rate is determined by the market at a relatively low level, in order to bypass expensive labour in the formal sector (Maiti, 2008). The recent reports, produced by WTO-ILO (2009) and Jütting and de Laiglesia (2009), also provide ample evidence of such experiences. If this is true, it would act as a depressing factor on the bargaining power of trade unions as well as on the resultant wage share. The existing literature, however, is almost silent on the relative distributive share of union workers.

3. The Model

Trade liberalization means adoption of policies which expose domestic economy into the global market. The pro-competitive effect of trade liberalization can be captured in two ways – by allowing imports and foreign capital inflows. In this paper, we examine effects of these policy changes on the union wage and its distributive share. The paper also examines the effect of these policies onbi-sourcing choices of producers. In keeping with the fact that a significant share of production activity in the developing countries takes place outside the formal sectors, we consider a segmented labour market with a unionized formal sector and a non-unionized informal sector. We begin with autarky where a single domestic firm produces in the economy and, hence, enjoys a monopoly power in the output market. Then, the competition effect, due to change in either of the two policies mentioned above, will be captured by comparing the union wage share under autarky with that when foreign firm competes the domestic firm in response to a trade policy.

When two firms produce the same goods in a country, the trade unions in the respective firms are assumed to work de-centrally. Since firms have bi-sourcing option in the developing countries, the strategic outsourcing to the non-unionized sector would put an indirect pressure on the union. The firm can choose between producing in the foreign country and selling in the domestic market (i.e., exports in presence of tariffcuts) andproducing and selling in the domestic market (i.e., inward FDI). Here, the attempt is not to derive any condition capturing the trade-off between exporting and FDI inflow by the foreign firm in the domestic economy. Rather, analyzing the effect of competition, due to the various choices of the foreign firm in response to these trade policies, on the labour markets is the primary focus of the present paper. In both the cases that we consider, the foreign firm competes with the

domestic firm in the domestic market and we assume that the firms act as Cournot duopolists. The only difference between the two cases is that the foreign firm can access non-unionized labour in the case of FDI-mode of entry like the incumbent domestic firm, and this must have different impact on trade union because of increased demand for labours in the domestic market. The present study further assumes that, for simplicity, the foreign firm is not different from the domestic firm in terms of either technology used or quality of products produced. However, even when the foreign firm is assumed to be technologically superior,the results derived here will not change.

To keep things simple, we assume that firms face a linear domestic demand function as $P = a - Q$. The technology to produce the good is also assumed to be of the simplest form: One unit of labour produces one unit of output. The firms maximize their respective profits by choosing the output levels for any given market price according to this demand schedule. The trade unions aim to maximize their welfare which is simply the wage bill to. Following the 'right-to-manage' model, we assume that the outside option for workers is zero. The union wage share is the ratio of union wageto value addition.

3.1 Autarky

Let us assume that the domestic firm produces the good either by usingunionized workers or by subcontracting outside the unionized sector, or both. Subcontracting to non-unionizedsector helps the firm to bypass the union wage for hiring labour. But, we assume that there is an additional costof transaction involved in subcontracting and such cost is assumed to be increasing with the volume of transactions. The total cost under subcontracting includes the wage and transaction costs for such contracting. Depending on the production level, the firm may choose to produce in respective sectors simultaneously like a multi-plant producer. Due to labour abundance in the developing economies, the non-unionized wage is assumed to be a constant and, for simplicity, set to zero. Further, let q and k be the output levels produced, respectively, in the unionized and non-unionized sector, and ck be the marginal transaction cost of subcontracting. The game is structured as follows: at stage 1 the trade union chooses the wage and at stage 2, the firm chooses q and k, simultaneously. If the firm produces $Q = q + k$, the profit function of the domestic firm would be:

$$\pi = (a - q - k - w)q + (a - q - k - ck)k \qquad (1)$$

The equilibrium wage in that case would be:

$$w^A = \frac{ca}{2(1+c)} \tag{2}$$

It is easy to check that w^A is positively related to c. If the transaction cost for subcontracting tends to be higher, the union-sector production goes up and the resultant union wage must rise.

The optimum outputs to be produced are:

$$q^A = \frac{a}{4}, \; k^A = \frac{a}{4(1+c)} \qquad \text{and} \qquad Q^A = \frac{a(2+c)}{4(1+c)} \tag{3}$$

Therefore, the wage share is as follows:

$$S^A = \frac{2c(1+c)}{(2+c)(2+3c)} \tag{4}$$

3.2 Tariff Reduction

Now, suppose that the foreign firm imports and competes with the domestic firm in the output market. The foreign firm pays tariff (denoted as t) for each unit of sale and, for simplicity, all other costs are ignored.Now, suppose that under the previous specifications the domestic firm has bi-sourcing options of producing same goods. The game can be solved by using the backward induction method. Suppose the domestic firm produces q_1 in the unionized sector and k in the non-unionized sector, and the foreign firm imports q_2 where $Q = q_1 + q_2 + k$. We write the profit function of the domestic and foreign firms as follows:

$$\pi_1 = (a - q_1 - q_2 - k - w)q_1 + (a - q_1 - q_2 - k - ck)k \tag{5}$$

$$\pi_2 = (a - q_1 - q_2 - k - t)q_2 \tag{6}$$

We solve the union wage as:

$$w^T = \frac{c(a+t)}{3+4c} \tag{7}$$

The firm and industry output levels are given as:

$$q_1^T = \frac{a+t}{6}, \quad q_2^T = \frac{(3+5c)a - (6+7c)t}{3(3+4c)}, \quad k^T = \frac{a+t}{2(3+4c)},$$

$$Q^T = \frac{(6+7c)a - (3+5c)t}{3(3+4c)} \tag{8}$$

In equilibrium, the employment in the unionized and non-unionized sectors depends positively on the tariff rate. The wage share to the total value addition is as follows:

$$S^T = \frac{c(3+4c)}{2(3+5c)(3+2c)} \tag{9}$$

Note that the prohibitive tariff rate is $t^T = \frac{(3+5c)a}{(6+7c)}$. If the tariff rate imposed on foreign output is higher than this prohibitive tariff, the domestic firm alone produces and enjoys monopoly power in the domestic market.

Proposition 1: If $t < t^T$ ***, then in an economy with the existence of non-unionized sector,*** $w^A > w^T$ ***and*** $S^A > S^T$ ***.***

Proof: From (9), we get that $w^T = w^T(t)$ and taking partial derivative with respect to t we get $w^T_t > 0$. Comparing (2) with (7), we can write that $w^A > w^T$. And also comparing (4) and (9), we find that $S^A > S^T$.

The intuition is as follows. When the foreign firm enters the domestic economy due to a decline in tariff rate from the prohibitive rate, the union wage in the domestic firm declines from w^A to w^T purely due to the increased competition. The domestic firm forces the union to lower wage by raising total production through subcontracting to the non-unionized sector. The lower cost of production depresses the market price and thereby raises the union sector production as well. In total, the union wage and its wage share in the domestic firm decline. This is due to the combined effect of competition and the domestic firm's bi-sourcing options.

3.3 Inward FDI

Now, suppose that the foreign firm decides to produce the good in the domestic country. Let the domestic and foreign firms respectively produce q_1 and q_2 in the unionized sector, with total output being $Q = q_1 + q_2$. Two firms have two unions and w_1, w_2 are the firm-specific wage rates to be paid by the domestic and foreign firms, respectively, to the union workers. F is the fixed cost for staring business and production in the domestic economy. Comparing t and F, the foreign firm takes a

decision between exporting and direct investment, but we are not deriving this condition here. Other descriptions of the model are as specified in the earlier section.

Suppose that both firms produce locally produce the same good in the economywith an access of the non-unionized sector for hiring labour. Suppose the domestic firm produces q_1 and k_1 in the unionized and non-unionized sector respectively and the foreign firm produces q_2 and k_2 in the unionized and non-unionized sector respectively, with the total output denoted by $Q = q_1 + q_2 + k_1 + k_2$. Let us assume that w_1, w_2 are the firm-specific union wages to be paid by the domestic and foreign firms respectively. Given that ck_i is the cost per unit of outsourcing by the i-th firms (where $i = 1, 2$), the profit functions of the firm are as follows:

$$\pi_1 = (a - q_1 - q_2 - k_1 - k_2 - w_1)q_1 + (a - q_1 - q_2 - k_1 - k_2 - ck_1)k_1 \qquad (10)$$
$$\pi_2 = (a - q_1 - q_2 - k_1 - k_2 - w_2)q_2 + (a - q_1 - q_2 - k_1 - k_2 - ck_2)k_2 - F \qquad (11)$$

Given the similar conditions, the equilibrium wage rates will be equal. Then, we get

$$w^D = w_1^D = w_2^D = \frac{ca}{3(1+c)} \qquad (12)$$

$$q_1^D = q_2^D = \frac{(3+4c)a}{18(1+c)}; \quad k_1^D = k_2^D = \frac{a}{6(1+c)}, \quad Q_1^D = \frac{(3+2c)a}{9(1+c)} \qquad (13)$$

The union wage share to the total value addition by the domestic firm can be written as:

$$S^D = \frac{3c(3+4c)}{2((3+5c)(3+2c))} \qquad (14)$$

Following inequality is easy to check now:

$$q_1^D < q^A \text{ and } Q_1^D > Q^A$$

In other words, the domestic firm produces less when FDI is allowedthan the output that it produces under autarky in an economy with both the union and the non-union sectors. The industry output is larger under FDI. These output comparisons reflect the pro-competitive effects of FDI. The following proposition specifies comparisons of wage and distributive shares:

Proposition 2: *If the foreign firm produces the good locally in the developing economy through FDI, then $w^A > w_1^D$ and $S^A > S^D$.*

Proof: Follows directly from (2), (4), (12) and (14).

When the foreign firm enters and both firms have an access over the non-unionized section, the union wage declines due to competition and the bi-sourcing options. For similar reasons, in the presence ofdecentralized union, the unionized wage share would always be lower than that under autarky. Finally,

Proposition 3: In the domestic economy, (i) $w^T < w_1^D$***, if*** $0 < t < \dfrac{ac}{3(1+c)}$***, and***

(ii) $S^T < S^D$ ***for all tariff rates.***

Proof: Follows from (7) and (12), and (9) and (14).

This is because when tariff is too low, the foreign firm captures a greater market share in the domestic economy by producing the good in its own country and exporting it to the home country.With no demand for labour from the foreign firm in such a situation, the union wage happens to be low. But under FDI mode of entry by the foreign firm, both firms generate demand for labour in the domestic economy which increases the union wage compared to the wage under export mode of entry.

Therefore, the theoretical exercise suggests that the impact of tariff cuts on the union wage and its share in the developing country has been adverse. Even when the foreign firm invests in the developing economy, the wage and its share could decline in the presence of decentralized union.

4. Trade and Labour Market Adjustments

The theoretical exercise in the previous section suggests that foreign competition has an adverse impact on union wage and its share through the expansion of the non-unionized sector. In this section, we empirically test such an inverse relationship in the Indian context using panel regressions at the state level for the period 1980 to 2007. India offers itself as an interesting case study as more than 90 per centits workforce is employed in the non-unionized sector (or the informal sector). A large number of researches demonstratean expansion of this sector in the economy after opening up of the economy in the early 1990s, termed as informalization of the Indian economy. But, the impacts of trade reforms on the union wage and distributive share are rarely discussed in the literature.

India started liberalizing her economy vigorously from the early 1990s. In the post-1991 period, the economy has gradually liberalized by reducing trade barriers. From a

very high average tariff rate of around 100 per cent in the year 1985, the tariff rates were reduced sharply to 79.2 per cent in 1991, and to 12.5 per cent in 2006. On the other hand, the FDI started increasing significantly in the post-1991 period from accumulated FDI inflow of US$ 0.07 billion during 1980-1990. In more recent times, there is a huge influx of funds, with a slump in 2002and a pick in 2004. The FDI inflow had reached at US$ 20.3 billion in 2006. However, still the total FDI accounts for only one percent of India's GDP. Therefore, the impact of tariff reduction on the economy would expected to be more significant on the labour market than that of the FDI flows.

India's labour market also reflects some interesting characteristics. On the other hand, it exhibits a duality in the sense that two sub markets or sectors – the formal (or unionized) and informal (or non-unionized) sectors – co-exist and work together in the economy. The output produced in the unionized sector, at 1999-2000 prices, has gone up from Rs 887.4 billon in 1980 to Rs 3938.42 billon in 2006. The non-unionized sector output has increased from Rs. 429.67 billionin 1980 to Rs. 1257.42 billion in 2006. On the other hand, the total employment in the formal industrial sector has not improved much during 1980-2005. Initially, the employment had increased from 6.07million in 1980 to 7.63 million in 1995, but during the reform period it has posted a sharp decline with only 7.14million workers employed in the formal sectors in 2005. Average firm size, defined by the number of workers per factory in the union sector, has also declined from 63 in 1980 to 51 in 2005. This clearly indicates that the density of union workers in the firms has declinedat the aggregate level. The employment figures also reveal that the use of contract labour, an indicator of weakening union power, in the sector is increasing, both in absolute numbers and relativeterms. Another interesting issue is that the real annual average wage has increased from Rs 34,226 in 1980 to Rs 50,110 in 1995 and then declined to Rs 41,680 in 2005. The share of union wage, as a percentage of gross value addition (GVA), has drastically come down from 28.0 per cent in 1980 to 9 per cent in 2007. The same, measured as a percentage of net value addition, has also declined in similar fashion from 33.6 per cent in 1980 to 10.1 per cent in 2007. The same trend can be observed for all the major states in India for the same period (Figure 1). The decline of wage share itself represents weakening bargaining position of workers engaged in formal sector. It is noteworthy to mention that labour market reform may not be able to release enough surpluses for industrial acceleration. Because, the union sector wage share has already declined to suchalow level, one cannot expect further drop of more than 2 to 3 percent points. This cannot obviouslybe sufficient for a jump in the industrial growthin the country.

4.1 Empirical Model and Methodology

Keeping in mind the theoretical predictions, econometric models are contracted to examine the effect of foreign competition (i.e., tariff reduction and FDI inflow) on the size of non-unionized output and, thus, on unionshare. The effect has been seen on union bargaining power through the change in the non-unionized sector. Two stage regressions have been run. In the first stage, the logarithmic value of the non-unionized outputs is regressed on tariff rate and FDI inflow along with other control variables (such as, revenue expenditure and capital expenditure as percentage of state domestic products, per capita electricity consumption, capital intensity). In the second stage,the wage share is regressed on the predicted value of non-unionized output from first stage regression along with control variables (such as, social sector expenditure and literacy rate). In the second stage, we have run two alternative models – one with simple predicted value and another with lag predicted value – in order to deal with any possible bias appearing into the estimated results due to the co-linearity between the regressors. While a drop in wage share reveals a weakening bargaining power of the unions, the industrial disputes can be used as a proxy for that. Since the exact figures on strike rates by states are not available, we can use this figure as a proxy of union activities when strikes are known to be a principal reason for industrial disputes. This is done for the robustness checking.

Average tariff rate is used as a proxy of import competition. But, it does not vary across the states because region-wise trade variables are not available. In addition, foreign Direct Investment by states, available from 1991, is used in the regression. The data was collected from the website, www.indiastat.com. But, FDI inflow seems to have been under-reportedfromthe years 2003 onwards. From this time period onwards, the figures are obtained by regions because of change in the geographical boundaries[5] of the states.

In stage 1, the estimated coefficients of tariff rate and foreign direct investments are found to be statistically significant and show respectively negative and positive values (Table 1). In other words, lower the tariff restriction and higher the foreign direct investment, the larger is the non-unionized output. These together indicate that the foreign competition leads to an expansion of the non-unionized sector. The capital-labour ratio is used as a proxy for the technology and this essentially captures other indirect effects of trade reform on technological shifts and therelated spill-over effects. Moreover, while the share of capital expenditure, a measure for infrastructure

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[5] In particular, for Haryana and Uttar Pradesh there is under reporting, in particular, because FDI is available for the Delhi belt which consists of Noida (geographically in Uttar Pradesh) and Gurgaon (geographically in Haryana). In addition, Haryana and Punjab are both assigned the same values as both the sates fall in the Chandigarh belt for FDI.

development, has been positive and statistically significant. The capital expenditure on infrastructure buildings helps to expand the non-unionized sector as well. But, the share of revenue expenditure, a measure of current expenditure of the government, has not been statistically significant.

In the second set of regressions on the wage share, the estimated value of non-unionized output has been negative and statistically significant. In other words, a gradual decline in the wage share of the union workers has been significantly explained by the expansion of the non-unionized sector. When the same set of variables on industrial disputes, the similar results have been found. These results confirm our theoretical prediction that foreign competition has an adverse impact on union bargaining power, particularly in developing countries like India.

5. Concluding remarks

The paper attempts to examine the effect of foreign competition due to trade reform both on union wage and its distributive share with reference to India. This is under-researched in the literature. At first, a theoretical model is constructed where a domestic firm produces with the non-unionized sector in autarky in the developing economy. This has been compared with results under strategic competition in a simple Cournot set up, between domestic and foreign firms, in response to tariff reduction and foreign direct investment under in the presence of dual labour markets. We find that if the tariff rate declines and the foreign firm raises the level of its exports in consequence, the union wage and its share in the domestic firm unambiguously decline. Even when the foreign firm invests in the domestic country, union wage and its share also decline in the presence of decentralized unions. The union wage would be higher in case of importing compared to the direct investment only when the tariff is sufficiently high. The wage share declines always with the increase of foreign competition and the share under importing is always lower than the other.

The econometric results for the Indian economy confirm that rising competition, due to increased imports and FDI inflows, causes the expansion of the non-unionized sector and, thus, depresses the union wage. Therefore, the competitive pressure due to trade reform directly and indirectly squeezes the bargaining power of the labour market institutions in the economy. Hence, the role of labour market institution is becoming less effective in determining the distributive share in the post-reform period than that was in the previous regime. It should be mentioned that the union share has already reached to such a low level in India so that hardly any substantial benefits can be derived from reforms to be undertaken in the existing labour laws.

Table 1: Determinants of Wage Share

Variable	Pooled Regression					Panel Regression (Fixed Effect)				
	1st stage	2nd stage				1st stage	2nd stage		1st stage	2nd stage
	Non-unionized output (log)	Wage share	Wage share	Industrial disputes (log)	Industrial disputes (log)	Non-unionized output (log)	Wage share	Wage share	Industrial disputes (log)	Industrial disputes (log)
Constant	7.50***	0.84***	0.75***	16.49***	13.35***	7.42***	0.81***	0.73***	15.45***	12.42***
Capital-Labour ratio	-0.02***	---	---	---	---	-0.02***	---	---	---	---
Revenue Expenditure (%NSDP)	0.07	---	---	---	---	0.07	---	---	---	---
Capital Expenditure (%NSDP)	1.45**	---	---	---	---	1.45***	---	---	---	---
Per capita Electricity consumption (log)	0.18***	---	---	---	---	0.18***	---	---	---	---
Tariff rate	-0.01***	---	---	---	---	-0.01***	---	---	---	---
FDI (log)	-0.00004***	---	---	---	---	0.0001***	---	---	---	---
Social Sector Expenditure (% NSDP)	---	0.13**	0.17***	1.93	2.60*		0.13**	0.17***	1.93	2.60**
Literacy rate	---	-0.00002	-9.30E-06	-0.05***	-0.06***		0.0001	-9.30E-06	-0.05***	-0.06***
Pred. Dep. Variable	---	-0.09***	---	-1.17***	-0.81***	---	-0.09***	---	-1.17***	---
Pred. Dep. Variable (lag)	---	---	-0.08***	---	---	---	---	-0.08***	---	-0.81***
No. of Obs	218	224	209	222	206	218	224	209	222	206
R^2	0.98	0.74	0.73	0.74	0.73	0.76	0.3	0.25	0.48	0.44
State effect	Yes	Yes	Yes	Yes	Yes					

Note: Figures in the parentheses represent level of significance; FDI – Foreign Direct Investment, NSDP – Net State Domestic Products; *** represents significance at 1* the level, ** represents significance at 5* and * represents significant at 10%.

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