

Labour Cost & Foreign Direct Investment-Evidence from India

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This study measures the effect of labour cost on foreign direct investment in India and finds out whether the foreign owned firms pay higher wages than their domestic counterparts. The estimation has been done by the Ordinary Least Square (OLS) technique. Data suggest that after controlling the output, the lower average wage attracts foreign investment in a firm implying that India enjoys comparative advantages of low labour cost which enables her to lead in product competition globally. Second, Indian firms will have efficiency wage to encourage employees to produce higher output. In addition, the foreign owned firms in India pay higher wages than their domestic counterparts. The firms with higher ratio of foreign ownership pay more wages than the firms having lower ratio.

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India & Foreign Direct Investment

India is the second-most populous country in the world, and is also a constituent of BRIC. The nation has witnessed high economic growth post 1990s and the foreign investment played an important role in its economic development. India has had some amount of success in exerting a pull on FDI since the beginning of 1991. With the liberalization of the country's economy, the large Indian market is being opened to foreign investors and several companies are setting up (or have set up) operations in India.

As the business around the world recurrently alter their direction to remain competitive, the government in host countries are taking up and trying out various policies to attract foreign investors to locate in their countries. Blomström and Kokko (1997) and Aizenman and Spiegel (2003) have argued that the governments around the world actively attempt to attract foreign investment to locate in their countries by using substantial government and private investment incentives such as tax cuts and property right enforcement. How-

ever, in the case of India, over and above the government's fiscal and financial incentives for MNCs, the cheap human resource has also played an imperative role in attracting foreign investors in to the country. Based on the studies of India and China, Wei (2005) argued that India has advantage in its cheaper labor cost, lower country risk, geographic closeness to OECD countries, and cultural similarity, and these advantages can increase the FDI inflow (Wei 2005). Nevertheless, policy maker seems to have made their own judgments that inward FDI is valuable to their countries (Lipsay & Sjöholm 2004) and to some extent such a scenario prevails in India.¹

Literature Review

Hatziu (2000), and Janicki and Wunnava (2004) have claimed that high unit labour cost increases FDI outflow but decreases FDI inflow. Moreover, according to Feenstra and Hanson (2001), foreign outsourcing is associated with increase in the wages paid to skilled employees in the United States, Japan, Hong Kong and Mexico. However, labor cost may not impede the FDI inflow, if the host country has high market potential as well as legal and economic en-

vironment (Carstensen & Toubal 2003). Based on the evidence from China, Gao (2005) indicated that the labor quality will have more significant effect rather than the labor cost in attracting foreign investment from the developed countries.

Girma et. al. (2001) found that labour productivity in foreign firms is higher than in domestic firms after controlling other inputs. Based on higher productivity, they indicated that foreign firms pay more than the domestic firms. Sarkar and Lai (2009) have also indicated that the firms with no foreign investment (domestic firms) are found to be less productive in sectors with more foreign investment compared to those domestic firms in sectors with relatively smaller foreign presence.

The extra wages paid by foreign firms may come from (1) informational asymmetries, (2) effective use of the newer technology, and (3) mitigation of labour turnover between foreign and domestic firms.

Besides labour productivity, the foreign owned firms may pay extra wage to employees in the host countries. The extra wages paid by foreign firms may come from (1) informational asymmetries, (2) effective use of the newer technology, and (3) mitigation of labour turnover between foreign and domestic firms. Eicher and Kalaitzidakis (1997) claimed that informational asymmetries coupled with human capital differences may explain why foreign owned firms pay higher wages than domestic firms in developing countries. Blomstrom and Kokko (2003)

1. The annual budget document of the government (2005) lays down the policy maker's own conviction about the opportunities provided by the growing foreign investment in terms of technological up-gradation, gaining access to global managerial skills and practices, optimizing utilization of human and natural resources, and competing internationally with higher efficiency (Annual Budget Document, Government of India 2005).

have found that foreign owned firms initiate more on-the-job training programs than their domestic counterparts, and these foreign firms also bring with them the product quality improvement practices like quality control, just-in-time etc., which are the antecedents for the effective use of newer technology. Besides, foreign owned firms pay higher wages to alleviate the labor turnover as domestic employees over a period of time tend to move from foreign to domestic firms owing to technology spillover (Sarkar & Lai 2009).²

With the increased foreign presence in local market, increased level of competition is likely to compel the domestic players to be either (a) more productive by investing in physical capital, or (b) efficiently use the resources so as to effectively apply the technology induced by foreign firms to remain competitive, or (c) quit. The consequence of this form of competition is an abridged dispersion of overall output in a specific industry. The foreign firms may increase output through their own higher productivity and also by raising the productivity of domestic firms (Aizenman & Spiegel 2003, Girman et. al. 2001).³ However, the productivity spillover may not always get reflected in the wage spillover. There are

three possible wage effects. Foreign firms entering the domestic market could either (i) increase wages, or (ii) have no effect, or (iii) could even cause a decline in wages paid by domestic firms. In the first case, the labour demand in domestic firms will shift to the left when foreign ownership increases in an industry sector, because the domestic firms will simultaneously raise the wages to attract (or retain) better workers (Feenstra & Hanson 1999).⁴ In addition, the labour demand will further increase because the value of human capital will increase if domestic firms invest more in employees' training due to foreign competition. As a result, both competition and demonstration effects will lead to higher wage for domestic firms.

In the second situation, the labour demand in domestic firms may not change with the increase in foreign investment. It may happen that foreign firms do not have much technology transfers, and they are simply acquiring domestic firms that are already in high wage sectors. As a result, the domestic firms do not face much competition and demonstration effects. Hence, the foreign presence will have no or little impact on domestic firms' wages. In the third situation, the labour demand in domestic firms will decline after foreign investment increases in an industry sector. This would happen

2. In order to obtain know-how or technology from foreign owned firm, the domestic firms may pay higher wages to attract employees from foreign owned firms.

3. Export monitoring and enforcement costs are assumed to be lower for domestic firms than for foreign owned firms, but foreign owned firms have the countervailing productivity advantages (Aizenman & Spiegel 2003).

4. Feenstra & Hanson (1999) indicate that the growth in FDI can increase the skilled labour wage. Both labour demand and skill-biased technical change will shift the demand away from low-skilled activities, while increasing the relative demand and wages of the higher skilled labour force.

since the foreign firms will be able to attract the best workers from domestic firms, leaving them with low wage employees. Therefore, the competition and demonstration effects will be absent in this situation; besides, employees of domestic firms will not have many on-the-job training to develop their human capital.

Theoretical Model

On the basis of Besley and Burgess' (2002) study, we have developed in this paper a model to measure the effect of wages on FDI. The state of technology in Cobb-Douglas production function is represented by A_i where A_f and A_d represent the state of technology adopted by the foreign and domestic firms, respectively. To avoid problems of firm size, fixed capital costs and number of firms, we have adopted the convenient assumptions of constant returns to labour (L) and capital (K). Using a Cobb-Douglas formulation, the production function is given by $F(K, L) = A_i K^\alpha L^\beta$, $\alpha, \beta < 1$. Production in a firm is measured as where $F(K, L)$ is a homogenous production function. Hence, owners of firms will enjoy a rent due to the scarcity of the factor represented by θ_i , where and are used for foreign and domestic firms, respectively. Prices of all manufactured goods are normalized at one.

.....(1)

All firms operate in a common set of factor markets for labour and capital whose prices are w and r . In the present study, we have taken the cost expression

in equation (2), where total cost is represented by $(w + e_i)$ and r .

.....(2)

By setting output price to unity, the firm's aim at profit maximization can be expressed as:

$$\text{Max}\pi = \theta_i F(K, L) - C_i = -rK - (w + e_i)L \quad \text{.....(3)}$$

Now we would like to determine how the optimal choice functions will respond to change in a parameter of wage ($w + e_i$), and rent of capital (r). The optimal choices have to satisfy the first-order conditions. First-order conditions require , which leads to the following respectively:

.....(4)

.....(5)

As seen in Equation (5), more productive workers will have a higher marginal product and hence will be paid higher wages, considering that the employment number will be equal for both foreign and domestic firms. The output for foreign and domestic firm will be equal to and $Q_d = (w + e_d) \frac{L}{\beta}$ respectively. The output differential between foreign and domestic firms will be equal to the premium differential between foreign and domestic firms ($Q_f - Q_d = (e_f - e_d) \frac{L}{\beta}$, $\Delta Q_{fd} = \Delta e_{fd} \frac{L}{\beta}$). We assume that if the foreign firms have higher output in comparison to domestic

firms ($\Delta Q_{fd} = Q_f - Q_d > 0$), the output differential between foreign and domestic firms () will become larger, and as a result, the foreign firms will pay higher premium than domestic firms ($\Delta e_{fd} =$). On the other hand, if the output spills over from foreign to domestic firms, then the output differential between foreign and domestic firms (Δe_{fd}) will become smaller, leading to smaller premium differential between these two types of firms. It implies that premium of domestic firms () will increase.

From these two first-order conditions, the ratio of marginal products of capital and labour to their respective marginal cost was established. As seen in equations (6A) and (6B), the second-order condition is derived from the first-order condition with respect to the wage (w).

$$\dots\dots\dots(6A)$$

$$\dots\dots\dots(6B)$$

The second-order conditions were established in equations (6A) and (6B). The determinant of the cross-partials of the objective function is given as:

$$D =$$

$$= \begin{vmatrix} \frac{\alpha\beta\theta Q}{KL} \\ -\beta(1-\beta)\theta Q \\ L^2 \end{vmatrix} \dots\dots (7)$$

$$= \frac{\alpha\beta(1-\alpha-\beta)\theta^2 Q^2}{K^2 L^2} > 0$$

Based on the equations (6A and 6B) and (7), we will be able to determine the effects of a change in wages on the capi-

tal formation. However, the bargaining power of employers will discourage the capital accumulation ($\frac{\partial K}{\partial w} < 0$). Using Cramer's rule, we found

$$\dots\dots\dots(8)$$

Now, based on equation (8), we can determine the effects of a change in wage on inward FDI. The inward FDI will encourage the capital accumulation ($\frac{\partial FDI(\text{inf low})}{\partial K} > 0$). Finally, as shown in equation (9), the wage will discourage the inward FDI.

$$\dots\dots\dots(9)$$

Based on the above, we have three objectives for the present study. The first objective is to examine the relationship between foreign investment in firms and their labour cost. Here we would examine whether the labour cost will attract foreign investment in firms in India. However, the firms having higher output in host country may also attract FDI inflow, therefore, the model measure the effect of labour cost after controlling the output (labour productivity).

Although the high wage may prevent inflow of foreign investment from the host countries, the foreign owned firms may still pay extra wages to induce higher output.

Although the high wage may prevent inflow of foreign investment from the host countries, the foreign owned firms may still pay extra wages to induce higher output. Therefore, the second objective

is to analyze whether the extra wages will be paid by foreign owned firms rather than the domestic firms and what if the extra wages in the foreign owned firms do not have a significant effect on output. As we have explained before, there may not be any effect because of (1) informational asymmetries, (2) effective use of the newer technology, and (3) alleviation of labour turnover between foreign and domestic firms.

Finally, the third objective of our study is to measure the wage spill over effect. We have seen that the outputs of foreign firms will spill over to domestic firms, leading to higher output in domestic firms (Sarkar & Lai 2009). Moreover, the output differences between foreign and domestic firms will decline, leading to higher premium for labour effort in the domestic firms. But will there be a similar spill over in the case of wage? The wage of domestic firms may depend on whether the labour demand will be different for domestic firms in a particular industry sector where the presence of foreign owned firms is relatively higher.

Therefore, the specific research questions to be addressed in this study are as follows:

1. Does the lower labour cost attract foreign direct investment in to India?
2. Because foreign owned firms have higher output than domestic firms, foreign firms may pay higher wages to encourage their employees to deliver higher output. In that case do the foreign owned firms in India pay

extra wages compared to their domestic counterparts?

3. Since the output will spill over from foreign firms to domestic firms, the domestic firms may also pay higher wage to their employees to motivate them to deliver improved output. Therefore, in that case, does foreign ownership in an industry sector affect the wage of domestic firms? (Whether there will be significant “wage spill overs” to domestic firms?)

The Expected Model

We have followed the approach taken by earlier studies and estimated the linear FDI inflow at firm level in equation (10). The statistics for all variables of the present study are described in more details in the next section on measure.

$$\text{FDI firm}_{ijt} = \alpha_0 + \alpha_1 X_{ijt} + \alpha_2 \text{Wage}_{ijt} + \alpha_3 d_{it} + \epsilon_{ijt} \dots \quad (10)$$

Based on the papers by Girma et. al. (2001) and Sarkar and Lai (2009), in the present study we have built three models to test our hypotheses. In order to test the model, we have adopted the variable of foreign ownership at firm level as FDI firm_{ijt} which can measure the FDI inflow at firm level. The independent variables will include log output Y_{ijt} for firm *i* in industry *j* at time *t* which is regressed on a vector of variables X_{ijt}, which is a matrix of log inputs hypothesized to impact firm level output, namely labour productivity (), firm size (Size_{it}), capital

(Capital_{it}), and wage (Wage_{ijt}).⁵ Based on the study of Girma et al. (2001), we have adopted the variables of labor productivity (LP_{it}) and wage (Wage_{ijt}). The real wage will directly reflect the cost of labour, and the labour productivity is the measurement of production value of unit labour. The firms having higher labour productivity in host country may also attract FDI inflow and decline the outflow; therefore, the model will measure the effect of labour cost after controlling the output (labour productivity). We have used the labour productivity index as the proxy. After controlling the labour productivity, the model has used wage variable to measure the effect of labour cost.

and β are vector of constant parameters to be estimated. Assuming that α is correlated with regressors, dummy variables or “within estimator” d_{it} is used where α_{it} for each firm i is obtained by including dummy variables, which takes the value 1 for the corresponding i and 0, otherwise d_{it} denotes industry dummy and annual time dummy. ε is a random error term. The use of annual time dummy and industry dummy helps to tone down concerns that the type of industry and year in which foreign investment is made might be correlated with factors that also affect firm’s total output.

With the increased foreign presence in local market in India, the increased competition in labor market is likely to compel the domestic players. This may

lead to either (a) foreign firms having a countervailing productivity advantages (Aizenman & Spiegel 2003), or (b) informational asymmetries coupled with human capital differences giving rise to empirically observed multiple wage equilibrium. Hence, foreign firms may pay higher wages compared to domestic firms in developing countries.

Now, with the aim of finding out whether the Indian labour has benefited from the presence of foreign firms, the second and third hypotheses of the study were tested. Consequently, the output regression in equation (11) was written as:

$$Y_{ijt} = \alpha_{it} + \beta_1 \text{Wage}_{ijt} + X_{it} + \beta_2 \text{FDI firm}_{ijt} + \beta_3 \text{FDI firm}_{ijt} \times \text{Wage}_{ijt} + \text{FDI firm}_{ijt} \times X_{it} + \varepsilon_{ijt} \dots \quad (11)$$

In the above equation, if the foreign subscribed capital (equity) participation increases the firm’s output, one should observe a positive coefficient on FDI firm_{ijt}. The estimation of the above equations has been done by the Ordinary Least Square (OLS) technique. In the direction of answering the research questions, we have followed the approach taken by the earlier studies and estimated the wage function at the firm level as:

$$\text{Wage}_{ijt} = \alpha_{it} + \sum_{k=1}^{m3} \beta_k X_{it} + \text{FDI firm}_{ijt} + \text{FDI industry}_{jt} + \text{FDI firm}_{ijt} \times \text{FDI industry}_{jt} + \text{FDI firm}_{ijt} \times X_{it} + \varepsilon_{ijt} \dots \quad (12)$$

This forms the basis of our empirical work. Here, log output Wage_{ijt} for firm i

⁵ The output function compares variation in knowledge involved in choices about factor combinations, size, capital intensity of the firm, or sources of the firm level inputs.

in industry j at time t is regressed on a vector of variables X_{it} , which is a matrix of inputs hypothesized to impact firm level wage, namely labour productivity (LP_{it}), firm size ($Size_{it}$), and capital ($Capital_{it}$). There are two measures of foreign ownership i.e., $FDIfirm_{ijt}$ and $FDIindustry_{jt}$ (more details in section on measure). β is a vector of constant parameters to be estimated. Aitken and Harrison (1999) estimated the spill overs hypothesis using a cross-section of industries instead of firm level panel data where the coefficient on foreign share was understood as a measure of spill overs from FDI to domestic firms. The interaction terms for $FDIfirm_{ijt}$ and $FDIindustry_{jt}$ is expected to measure the spill over effect. In order to avoid the problem of endogeneity, we set some variables which simultaneously determine the foreign ownership and firm's output. The variables $FDIfirm_{ijt} \times X_{it}$ can control the problem of endogeneity. Assuming that α is correlated with the regressors,

dummy variables or "within estimator" d_{it} is used where α_{it} for each firm i is obtained by including dummy variables, which takes the value 1 for the corresponding i and 0, otherwise. d_{it} denotes industry dummy and annual time dummy. ε is a random error term.

Data

The study uses the detailed firm-level panel data of Indian industries from *Capitaline 2005* – a database of Capital Market Ltd (an Indian Information Services firm) that provides firm level financial information of more than 13,000 companies. The present study has used data related to only 305 firms distributed among 14 industries for three years (2002-03 to 2005-06) due to the constraints on matching variables of different types and to obtain greater homogeneity in data set, however (Table 1). The data set originally used for analysis consists of 630 firms from 14 industries, but

Table 1: Industry-wise Sample Distribution

Industry Sector	No. of Firms
Chemicals & allied products – carbon black, paints, plastics, fertilizers,	63
Engineering – power generation, steel, metal	53
Domestic appliances and FMCG – decorative, leather products	20
Services – trading, telecommunication, construction, entertainment	7
Electronics and electrical appliances/equipments	19
Food and diary products – coffee, tea, vanaspati, distilleries, sugar	19
Computers	8
Pharmaceuticals and biotechnology	23
Automobiles and auto ancillaries	30
Textile	23
Cement	10
Mining – minerals / refineries / oil exploration/gas	12
Paper	6
Others – rubber, tyres, miscellaneous,	12
Total	305

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to attain larger consistency in the data, firms with very high and low rate of performance were dropped from the list of 305 firms finally chosen. Some industries were either dropped or merged with other because there were too few firms in a specific industry like, trading, telecommunication, construction, and entertainment sector were merged with service industry. Furthermore, some observations were dropped due to the missing value for labour cost. Three hundred and five odd firms from 14 industries in the study account for the majority of Indian stock markets and therefore, they were purposively included in the sample.

The categorization of industry sectors in the present study is driven by the pattern of classification of sectors made by Reserve Bank of India (RBI) and the recommendation made by Planning Commis-

sion, Government of India on foreign investment. In the context of growing heterogeneity of production function and measures of output, data was pooled from 14 industry sectors to estimate the log-linear equation rather than estimating for only few sectors. Estimation for a few selected sectors could result in the lack of control for correlations between explanatory variables and unobservable heterogeneous firm specific factors that affect the firm's output. Though, just about all the industry sectors as categorized in the major RBI reports were taken for analysis with varied number of observations made in each sector, the selection of sectors is largely driven by considerations of the past trend of inward FDI in to India.⁶ The data set is a balanced panel; therefore, total number of observation is $n-T$ and contains information on firm's output, sales turnover, foreign equity par-

Table 2: The Percentage of FDI Inflow in India

Industry	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01
Chemicals & allied products	17	18	16	9	15	9	19	8	7
Engineering	25	8	15	18	35	20	21	21	14
Domestic Appliances	6	1	12	0	1	2	0	0	0
Finance	1	10	11	19	11	5	9	1	2
Services	1	5	11	7	1	11	18	7	12
Electronics and electrical equipment	12	14	6	9	7	22	11	11	11
Food and Diary Products	10	11	7	6	12	4	1	8	4
Computers	3	2	1	4	3	5	5	6	16
Pharmaceuticals	1	12	1	4	2	1	1	3	3
Others	25	19	19	24	14	22	13	35	30
Total	100	100	100	100	100	100	100	100	100

Source: RBI Annual Reports

6 A distinct purpose for inward FDI in four sectors – service and computers industries (with positive growth) and chemical, food and diary industry

ticipation, market capitalization, gross block, and employee cost. As seen in Table 2, the foreign direct investment has increased in most industries since 1992.

6. contd.

sectors (with negative growth of inward FDI through 1990's till 2002 is apparently confirmed in these reports. Besides, the entry barriers to foreign investment in each of these industries vary and show that either by RBI automatic route or by Foreign Investment Promotion Board's (FIPB, Govt. of India) approval, the existing equity limits in most of the sectors are not more than 40 % except for a few which allow 100% FDI. Furthermore, some sectors are yet to open to foreign investment. The engineering, services, electronics and electrical equipment and computers, were the main sectors receiving FDI in 2000-01 – base year for the study. Domestic appliances, finance, food and diary products which were important sectors attracting FDI in the early 90's, have seen a downtrend in the latter half of the nineties. Furthermore, services and computers have seen an increasing trend in the latter half of the last decade and the trend seems to be continuing till this decade. Given the imperative of attracting FDI for increasing India's GDP growth rate, there should be presumption in favour of permitting FDI. Accordingly, entry barriers to FDI (i.e., over and above those applying to private investment generally) in any industry must be explicitly justified. Government in recent times felt that many of the entry barriers had greater justification at the time they were imposed, but with a much stronger and more competitive economy many of these can be removed. This will eliminate minor irritants that are sometimes blown out of proportion by interested parties to the detriment of the national interest. Some of the major recommendations with which government is presently working and likely to show certain significant changes in the coming days are mostly lifting up the equity limit from 20+% to at least 50%, and most of the sectors with existing equity limits of 50% or 74% are likely to open to foreign investors with equity limit as high as 100%.

Measure

The present study sought to extend the existing literature on creation of measures used in estimation of panel data for testing spill overs hypothesis. The sample statistics is given in Table 3. With regard to dependent variables, FDI firm_{ijt} is a vector that captures the share of foreign ownership at firm level. In the light of the current workable recommendations made to Government of India as well as the government's existing equity limit, the framework adopted for the study treats the percentage of foreign equity participation (FEP) in firms as the measure for FDI firm. The share of foreign equity participation (FEP) has been used as the measure for FDI firm_{ijt}, which varies between 0 and 100 %. FDI industry_{it} is a measure of the ratio of industry sales of NDF to the total sales of the industry for a particular year.⁷ FDI industry = 1, if the percentage of foreign equity in the firm $\geq 50\%$; and 0 if $< 50\%$ for the last three consecutive years. As given in Table 3, output is defined as log value of total output at the firm level. The value of sales less change in inventories (Sales turnover_{it} – [Inventories_{it} – Inventories_{it-1}]) is taken as a measure of the dependent variable – log output. With regard to independent variables, we have taken the yearly average employee cost (unit labour cost)

⁷ For example, say in year 2002-03, total number of NDF in Cement Industry is 11 and industry sales of these 11 firms is Rs. 33.3 million, and if the industry sales for 2002-03 is Rs. 120.46 million, then the ratio can be found to calculate FDI Industry for Cement in 2002-03 as 0.28. But the ratio is below 0.50, and then FDI industry for cement is zero.

Table 3: The Sample Statistics

Variable	Means	Standards Deviation
Dependent Variables:		
FDI firm _{ijt} : The share of foreign equity	5.95144	(6.99242)
Output: log total Output at the Firm Level	9.4549	(0.4992)
Independent Variables:		
LPit: log labor productivity	6.5151	(0.1857)
Wageit: log value of yearly unit labor cost expressed in Rupees	0.020	(0.0194)
Sizeit: log value of size	9.0008	(6.0992)
Gross Block: log value of capital input	9.2179	(0.5271)
FDI Industry _{ijt} :	0.0100	(0.0227)
Industry Dummy variables:		
D1: Chemicals and Fertilizers	0.206557	(0.404835)
D2: Engineering	0.17377	(0.378912)
D3: Domestic Appliances/FMCG	0.065574	(0.247536)
D4: Telecommunication	0.022951	(0.149747)
D5: Electric-Electronic	0.062295	(0.241691)
D6: Food and Diary Products	0.062295	(0.241691)
D7: Computers	0.02623	(0.159817)
D8: Pharmaceuticals	0.07541	(0.264051)
D9: Automobiles , Auto, Ancillaries	0.098361	(0.297802)
D10: Textile	0.07541	(0.264051)
D11: Cement	0.032787	(0.178078)
D12: Mining-oil-refineries	0.039344	(0.194413)
D13: Paper	0.019672	(0.138871)
Time Dummy variables:		
T-Dummy	0.333333	(0.471405)
T-Dummy-1	0.333333	(0.471405)
T-Dummy-2	0.333333	(0.471405)

as proxy of wage. It is calculated as the annual employee cost divided by total number of employees at firm level and is also taken as a measure of log value. Any price deflator did not deflate both values of output and wage, as the annual time taken for the study is few ($T = 3$). Market capitalization is taken as a measure of firm size (Size_{it}) and gross fixed capital stock ('gross block' as given in *Capitaline* database) as a measure of capital input (Capital_{it}).

Effects of Foreign Investment

The results for the equation (1) are

reported in Table 4. The dependent variable i.e. FDI inflow for firm i in industry j at time t is regressed on a vector of variables which is a matrix of firm level inputs hypothesized to impact the FDI inflow for firm i in industry j at time t after controlling output for firm i in industry j at time t . The un-standardized coefficients in Table 4 indicate that there is a decrease in percentage of FDI inflow at firm level for each unit of wage, whereas, there is an increase in percentage of FDI inflow at firm level for each unit of output.

Results of OLS reported in columns

1 and 3 of Table 4, show positive coefficients for wage results, but have negative coefficients for output. On the other hand, the OLS results in columns 5 of Table 3 show positive effect on wage, but are statistically insignificant.

In columns 1 and 3 of Table 4, the explanatory power and significance level of the coefficients of the model expressed in column 1 (after introducing firm size and capital as dependent variables) is greater than coefficients in column 3.⁸ The coefficients of labour productivity and wage in the function (A) are greater than function (B) in Table 4. However, the negative effect on wage in columns 1 and 3 of Table 4 indicate that for each percentage of wages there will be a decrease in foreign direct investment at firm level. On the other hand, the positive coefficients on labour pro-

ductivity in columns 1 and 3 of the table indicate that labour productivity will encourage foreign owned firms to increase their investment.

For each percentage of wages there will be a decrease in foreign direct investment at firm level. Labour productivity will encourage foreign owned firms to increase their investment.

In order to measure the effect of wage on FDI inflow, we re-estimated equation 1 without labour productivity variable and the results are reported in column 3 of Table 4. With regard to the explanatory power and significance level, values in column 3 are weaker than those in column 1. It therefore suggests that the function (B) is less important than function (A).

Table 4: Effect of Wage on Foreign Investment

	Function (A)		Function (B)	
	Coefficient (1)	β (2)	Coefficient (3)	β (4)
Intercept (a_{it})	-28.773(4.578)***		-19.550(4.284)***	
LPit	3.475(0.666)***	0.214		
Size _{it}	0.193(0.098)**	0.067	0.250(0.098)**	0.087
Capital _{it}	3.687(0.361)***	0.382	3.863(0.365)***	0.400
Wage _{ijt}	-4.164(0.809)***	-0.195	-2.183(0.725)***	-0.102
Number of firms	305		305	
R square	0.235		0.206	

a. (Dependent Variable = Foreign ownership percentage of firm level) * $p < .01$ ** $p < .005$ *** $p < .001$
b. Regressing share of foreign ownership at firm levels on log inputs & output at firm levels. The industry and time dummy variables are also included in the regressions. All standard errors are shown in parentheses

⁸ The R^2 values suggest that the joint contribution of all the input factors are statistically significant with 21.4 % and 20.9 % of variance explained by the given set of predictor variables used in function (A) and (B) of equation (1).

With regard to the effect of wage on output, the results for the equation (2) are reported in Table 5. In columns 1 and 3 of Table 5, we estimated equation (2)

Table 5: Effect of Labor Cost for Foreign Investment on Firm s Output

	Function (A)		Function (B)	
	Coefficient (1)	β (2)	Coefficient (3)	β (4)
Intercept (a_{it})	0.215(0.202)		0.349(0.247)	
LPit	0.277(0.029)***	0.169	0.339(0.036)***	0.207
Wage _{ijt}	0.146(0.035)***	0.068	0.057(0.043)	0.027
Size _{it}	0.033(0.004)***	0.114	0.030(0.005)***	0.105
Capital _{it}	0.706(0.016)***	0.726	0.700(0.020)***	0.719
FDI firm _{ijt}	0.003(0.001)**	0.032	-0.030(0.024)	-0.297
FDI firm _{ijt} × LPit			-0.012(0.004)***	-0.812
FDI firm _{ijt} × Wage _{ijt}			0.020(0.006)***	1.079
FDI firm _{ijt} × Size _{it}			0.0001(0.001)	0.032
FDI firm _{ijt} × Capital _{it}			0.0001(0.002)	0.030
Number of firms		305		305
R Square	0.859		0.862	

a. (Dependent Variable = Log Output at the Firm Level) * $p < .01$ ** $p < .005$ *** $p < .001$

b. Regressing log output at firm level on log inputs & share of foreign ownership at firm levels. The industry and time dummy variables are also included in the regressions. All standard errors are shown in parentheses.

using OLS. Without controlling the variables of the interaction term for $FDI_{firm_{ijt}}$, the column 1 of Table 5 (function A) shows that both $Wage_{ijt}$ and $FDI_{firm_{ijt}}$ have positive significant effect on firms' output.⁹ It suggests that increase in employees' wage and foreign ownership in a firm will raise the firms' predicted output. As seen in column 1 and 3 of Table 5, the coefficient of 0.277 and 0.339 on LP_{ijt} suggests that increase in employees' productivity in a firm will raise the firms' predicted output.

Increase in employees wage and foreign ownership in a firm will raise the firms predicted output.

⁹ However, there exists the multi-collinearity problem between $FDI_{firm_{ijt}}$ and their interaction with firms' input, leading to the insignificant coefficients of $FDI_{firm_{ijt}}$ and $Wage_{ijt}$ in function B.

The coefficient of 0.013 on $FDI_{firm_{ijt}} \times Wage_{ijt}$ suggests that increase in employees' wages in a foreign owned firm will increase the firm's predicted output rather than in domestic firms. Therefore, by paying extra wage, foreign firms will be able to achieve greater output compared to their domestic counterparts in India. At the same time, the coefficient of -0.012 on $FDI_{firm_{ijt}} \times LP_{ijt}$ suggests that the labour productivity will increase lesser output in foreign owned firms in comparison to the domestic firms.

The results for the equation (3) are reported in columns 1 to 3 of Table 6. The dependent variable i.e. wages for firm i in industry j at time t is regressed on a vector of variables which is a matrix of firm level inputs hypothesized to impact the wages. OLS results reported in column 3 of Table 6 show positive coefficient for $FDI_{industry_{jt}}$. In column 3, the positive and significant term for the

Table 6: Effect of Foreign Ownership on FDI

	With the industry and time dummy		Without the industry and time dummy	
	Coefficient (1)	β (2)	Coefficient (3)	β (4)
Intercept (a_{it})	1.799(0.221)***		1.956(0.212)***	
LPit	0.405(0.030)***	0.531	0.415(0.029)***	0.545
Size _{it}	0.0083(0.005)*	0.062	0.0082(0.005)*	0.061
Capital _{it}	0.0904(0.019)***	0.200	0.0684(0.018)***	0.151
FDI firm _{ijt}	-0.018(0.020)	-0.393	0.0143(0.020)	0.305
FDI industry _{it}	0.0031(0.049)	0.003	0.0533(0.031)*	0.050
FDI firm _{ijt} × FDI industry _{it}	0.0086(0.008)	0.074	0.0125(0.007)*	0.107
FDI firm _{ijt} × LPit	-0.001(0.003)	-0.110	-0.005(0.003)	-0.680
FDI firm _{ijt} × Size _{it}	0.0009(0.001)	0.193	0.0013(0.001)**	0.283
FDI firm _{ijt} × Capital _{it}	0.0006(0.002)	0.119	0.0001(0.002)	-0.098
Number of firms	305		305	
R Square	0.421		0.367	

a. (Dependent Variable = Log wage) * $p < .01$ ** $p < .005$ *** $p < .001$

b. Regressing log output at firm level on inputs & share of foreign ownership at firm levels. The industry and time dummy variables are also included in the regressions. All standard errors are shown in parentheses.

FDI firm_{ijt} × FDI industry_{it} suggest that foreign investment will increase wages in the particular industry.

Conclusion

The interesting phenomenon suggested by the results from this study is that the firm's labour productivity will significantly and positively increase with foreign investment in the firm. It was also found that the lower average wages will attract the foreign investment in a firm, leading to a comparative advantage (Wei 2005). Compared to the evidence of China (Gao 2005), the labour cost has significant but negative effect on inflow of FDI in India compared to the FDI in China. The labour cost and labour productivity are two important factors that can be used to determine the inflow of foreign investment (Feenstra & Hanson 2001, Harms & Meulen 2009). India may

have comparative advantages of low labour cost, which will enable her to lead in the product competition globally. Therefore, the lower price of labour will attract more investment in to India. It also suggests that the foreign firms may introduce several labour-intensive firms in India. At the same time, the higher labour productivity will also attract the capital-intensive firms to India.

India may have comparative advantages of low labour cost, which will enable her to lead in the product competition globally.

With regard to the output, the foreign firms in India will pay extra wages to encourage their employees to produce higher output. The extra wages will have more effect on foreign owned firms' output than on their labour productivity. At

the same time, the empirical evidence from the present study shows that extra wage will have lesser effect on firm's output than its labour productivity. It implies that the foreign owned firms will prefer to pay extra wages to induce higher output.¹⁰

The positive spill over effect on labour cost of domestic firms in India will correspond to the finding of Feenstra and Hanson (1999). The domestic firms may pay higher wages to attract and retain talented employees, because the wages of employees in domestic firms will follow the wages in foreign owned firms over a period of time. Moreover, the positive wage spill over can explain that foreign investment will increase the average costs in a specific industry (Sarkar & Lai 2009, Aitken & Harrison 1999). Especially, the labour cost will increase in a particular industry sector which has higher percentage of foreign ownership.

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¹⁰ In order to obtain know-how or technology from foreign owned firm, the domestic firms may pay higher wages to attract employees from foreign owned firms.

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