FOREIGN FIRMS AND THE GENDER GAP IN EMPLOYMENT: EVIDENCE FROM VIET NAM

Foreign firms and the gender gap in employment:
Evidence from Viet Nam

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Abstract

This paper investigates the differences between foreign and domestic firms with respect to female employment and wages. We focus our analysis on Viet Nam, a country which has experienced a relatively large and sustained inflow of FDI since the opening up of its economy in 1986 (Doi Moi period). We find that foreign firms in Viet Nam create more employment opportunities for (unskilled) female workers compared to domestic firms, but pay lower average wages. The overall effect on the gender gap in employment is ambiguous as the presence of foreign firms only improves the balance in terms of employment opportunities while widening the gender wage gap.

1. Introduction

Multinational enterprises (MNEs) are commonly seen as fundamental agents of economic growth in developing countries as these firms, generally speaking, bring new capital, knowledge and employment opportunities. Recent contributions have investigated how MNEs affect gender inequalities in the labour market. Chen et al. (2013) find that foreign firms in China, particularly those with high export orientation, have a higher propensity to hire women, though the gender wage gap tends to be significantly larger when compared to domestic firms. The lower wages offered to female workers reflect gender productivity differentials. On the other hand, Kodama et al. (2016) examine the case of Japan and find that not only foreign affiliates employ a higher share of female workers at all skill levels compared to domestic firms. They also create more "female friendly" conditions in the workplace.

A large gender gap in economic opportunities is observed all over the world and specifically in poor and middle income countries (WEF, 2014). Providing equal opportunities to women in terms of employment and professional advancement is a priority for policymakers, since the existing gender gap is not only socially unjust but also represents a tremendous waste of human resources and talent (Hsieh et al., 2013).

This paper investigates the differences between foreign and domestic firms with respect to female employment and wages. We focus on Viet Nam, a country which has experienced a relatively large and sustained inflow of FDI since the opening up of its economy in 1986 (Doi Moi period). Our analysis exploits a rich firm-level dataset set up by UNIDO (2012), the *Viet Nam Industry Investor Survey* (henceforth VIIS 2010). The survey contains detailed information on a representative sample of foreign and domestic firms operating in Viet Nam. The present study contributes to the existing literature in several dimensions. First, it documents the propensity of foreign firms to generate employment opportunities for female workers at various skill levels. Secondly, it contributes to the debate on the relationship between global interactions and gender inequality in the context of developing countries.

We find evidence of a higher propensity of foreign firms to hire female employees in low-skill positions. In other words, foreign firms have a lower propensity to recruit skilled female workers compared to domestic firms. Moreover, the average wages for this type of labour force decreases in the share of female skilled workers. Our results suggest that FDI in developing countries largely contributes to the employment of low-skilled women in labour-intensive and export-oriented manufacturing (Braunstain, 2006; UNCTAD, 2014), with a fairly limited impact on demand for more qualified and better paid positions.

2. Data and methodology

We use data from the UNIDO Viet Nam Industry Investor Survey (UNIDO, 2012) which contains detailed information on a cross-section of domestic and foreign firms—472 and 763, respectively—located in 9 provinces[1].

We estimate the following empirical specification:

$$FemaleShare_i = \beta_0 + \beta_1 MNE_i + \beta_2 X_i + \sum \beta_j Sector_{j,i} + \sum \beta_k Province_{k,i} + \varepsilon_i$$

Our main dependent variable, $FemaleShare_i$, is the share of female workers over the total number of full-time employees in firm i. In addition, we consider the gender composition of the workforce by skill level, i.e. low and high-skilled occupation[2]. We estimate a Tobit model, with our dependent variables ranging from 0 to 1[3]. Table 1 presents selected summary statistics of the dependent and independent variables used in the estimates.

Our main explanatory variable is the dummy MNE_i, which is equal to 1 when the firm is foreign-owned and equal to 0 otherwise. Additional firm-level covariates are included in vector X_i. We specifically control for the degree of automation in production and technology which at the firm level, affects demand for physically challenging tasks (Juhn et al., 2014). To this end, we use the variables *capital intensity* (logarithm of fixed assets on total assets), *ICT intensity* (ICT assets per employee lagged one year) and *skill intensity* (number of skilled employees to total employees) (Chen et al., 2013). Following Ozler (2000) and Chen et al. (2013), we use the variable *export share* (share of exports to total sales) to account for the higher propensity of export-oriented firms to hire female employees. Given the importance of direct and indirect exports through participation in global supply chains (GVCs), we also add a dummy variable (*industrial zone*) equal to 1 when the firm operates in the industrial/export processing zone. Industrial zones are an important policy tool used by governments to attract foreign investors and to link domestic suppliers to GVCs. To the best of our knowledge, previous studies have not investigated the gender dimension of labour demand generated by firms located in industrial zones. We also include the *age* (log of the years since establishment) and *size* of each firm (log of output value). Finally, we include *sector fixed effects* as well as *province fixed effects* to

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[1] The provinces are Ha Noi, Hai Phong, Da Nang, HCMC, BRVT, Bac Ninh, Binh Duong, Dong Nai and Vinh Phuc. The data were collected in 2009-2010 via face-to-face interviews and are representative of firms in the formal sectors with more than 10 employees.

[2] We define high-skilled occupations as those belonging to the categories of technicians, supervisory staff and managers. Production workers are considered low-skilled workers.

[3] Note that around 10 per cent of observations have a share of female workers equal to 0. We use OLS with a robust MM estimator as an alternative method (Verardi and Croux, 2009) to check the robustness of the results to outliers. The results are available upon request.

control for unobserved additional factors that might affect firms' incentive to hire women in different industries and across geographical dimensions.

Table 1 Summary statistics

	Domestic firms		Foreign firms		All firms	
	Mean	SD	Mean	SD	Mean	SD
Dependent variables						
Total female share (%)	38.1	25	52.4	26.3	47	26.7
Female low-skill/total low-skill (%)	36.7	29	53.1	29.8	46.8	30.5
Female high-skill/total high-skill (%)	30.1	20.4	33.5	24.7	32.2	23.2
Average wage (log)	7.54	0.6	7.63	0.69	7.6	0.66
Other variables						
Average number of workers	457	715	692	1392	602	1185
Skilled workers/total workers (%)	16.2	12.1	12.8	11.3	14.1	11.7
Size (total output; log)	15.4	1.63	15.65	2.15	15.58	1.97
ICT value/total workers	192	776	9016	159.9	5644	125.7
Capital intensity (log)	8.66	1.29	8.82	1.89	8.76	1.69
Firm age (years; log)	18.6	15	10.2	5.1	13.5	11
Industrial zone (%)	3.4	18	53	50	34.2	47.5
Export share (%)	25.6	38	63	40.8	48.7	43.7
Observations	**473**		**771**		**1244**	

Source: UNIDO & MPIV (2012)

3. Empirical results

Table 2 presents the regression results. In Models 1 to 3—where our dependent variable is the female share to total employment—we find a positive and highly significant coefficient of the dummy *MNE*, suggesting that foreign firms employ a higher share of female workers compared to domestic firms (between +7-9 per cent depending on the specification). Our results—in accordance with Chen et al. (2013) regarding the context of China—suggest that foreign firms in Viet Nam generate sizable employment opportunities for female workers in the formal sector.

A higher export orientation is positively associated with the share of females in total employment. We find no robust indication that foreign exporters use a significantly higher share of female employees[4], but we observe an interesting positive association between firms' location in industrial zones and female employment shares (Model 3). The feminization of the labour force is weaker in capital and ICT-intensive firms (Tejani and Milberg, 2010). This result suggests that the complementarity (or substitutability) between factors of production—capital and labour—is heterogeneous by gender. Investments in production automation have a negative impact on demand for manual work, but they also reduce the repetitive tasks female workers usually perform in labour-intensive firms.

Along these lines, we observe that more skill-intensive firms have a lower share of female workers. With reference to the female component of Viet Nam's labour force, this can either be explained by a lower demand for high-skilled female workers or by a lower average of education /skill level[5]. Larger firms employ lower shares of female employees while firm age is not of significant relevance for the share of female workers.

In Model 4 (5) of Table 2, we use the share of *skilled (unskilled) female* to total skilled (unskilled) employees. The different propensities of foreign and domestic firms to hire female workers can be explained by the higher employment of unskilled female workers in foreign enterprises. No gender differences are found in the employment of skilled workers (see Model 4). It is worthy of consideration that firms' export intensity is positively associated with the use of both skilled and unskilled female workers. As export-oriented firms are highly sensitive to wages and are more exposed to international competition, a higher share of female workers might be the direct result of the gender wage gap (Ozler, 2000; Seguino, 2000).

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[4] The interaction effect *MNE*Export share* is not statistically significant. Results are available upon request.
[5] Among developing countries, Viet Nam has a relatively balanced education system. Literacy rates and enrolment in primary and secondary education are only slightly lower for women with a female-to-male ratio of approximately 0.95-0.96. There is a larger gap for participation in tertiary education (female-to-male ratio of 0.73). (WEF, 2014).

Table 2 Determinants of share of female workers: Are foreign firms different?

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
Dependent variable	Total female employees/Total employee			Skilled female/	Unskilled female/
				Total skilled	Total unskilled
MNE	0.0816***	0.0872***	0.0703***	0.0098	0.0808***
	(0.0201)	(0.0193)	(0.0200)	(0.0140)	(0.0243)
Export share	0.0018***	0.0016***	0.0015***	0.0010***	0.0019***
	(0.0003)	(0.0003)	(0.0003)	(0.0002)	(0.0004)
Capital intensity (Log)		-0.0173***	-0.0183***	-0.0182***	-0.0180***
		(0.0039)	(0.0042)	(0.0049)	(0.0046)
ICT intensity			-0.0035*	0.0032	-0.0051**
			(0.0019)	(0.0026)	(0.0024)
Skill intensity		-0.208**	-0.1840**	0.1910***	-0.3250***
		(0.0855)	(0.0849)	(0.0633)	(0.1060)
Size (Output; log)	-0.0106***	-0.0069**	-0.0068**	0.0060	-0.0089**
	(0.0039)	(0.0029)	(0.0034)	(0.0039)	(0.0043)
Firm age (Log)			0.0108	0.0095	0.0186
			(0.0118)	(0.0101)	(0.0142)
Industrial zone			0.0454***	0.0232	0.0527***
			(0.0139)	(0.0159)	(0.0179)
Sector fixed effects	YES	YES	YES	YES	YES
Province fixed effects	YES	YES	YES	YES	YES
Constant	0.498***	0.631***	0.621***	0.258***	0.647***
	(0.0712)	(0.0785)	(0.0889)	(0.0751)	(0.107)
Sigma	0.208***	0.205***	0.204***	0.229***	0.249***
	(0.0068)	(0.0064)	(0.0062)	(0.0066)	(0.0085)
Pseudo R2	2.18	2.33	2.38	0.61	0.7
Observations	1,272	1,269	1,244	1,240	1,240

Estimations using Tobit method. Standard errors (in parentheses) are clustered at the sector level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

We find evidence that skill intensity is positively associated with the share of skilled female workers, but negatively associated with unskilled ones. As overall demand for skilled workers increases, firms tend to hire a larger share of female skilled workers, most likely due to the lower price associated with this component of the labour force. Finally, firms located in industrial zones show a higher propensity to hire unskilled female workers, but no gender bias is found when looking at the share of skilled female employees.

Figure 1Estimated MNEs wage premium vis-à-vis domestic firms by skill level and share of female workers
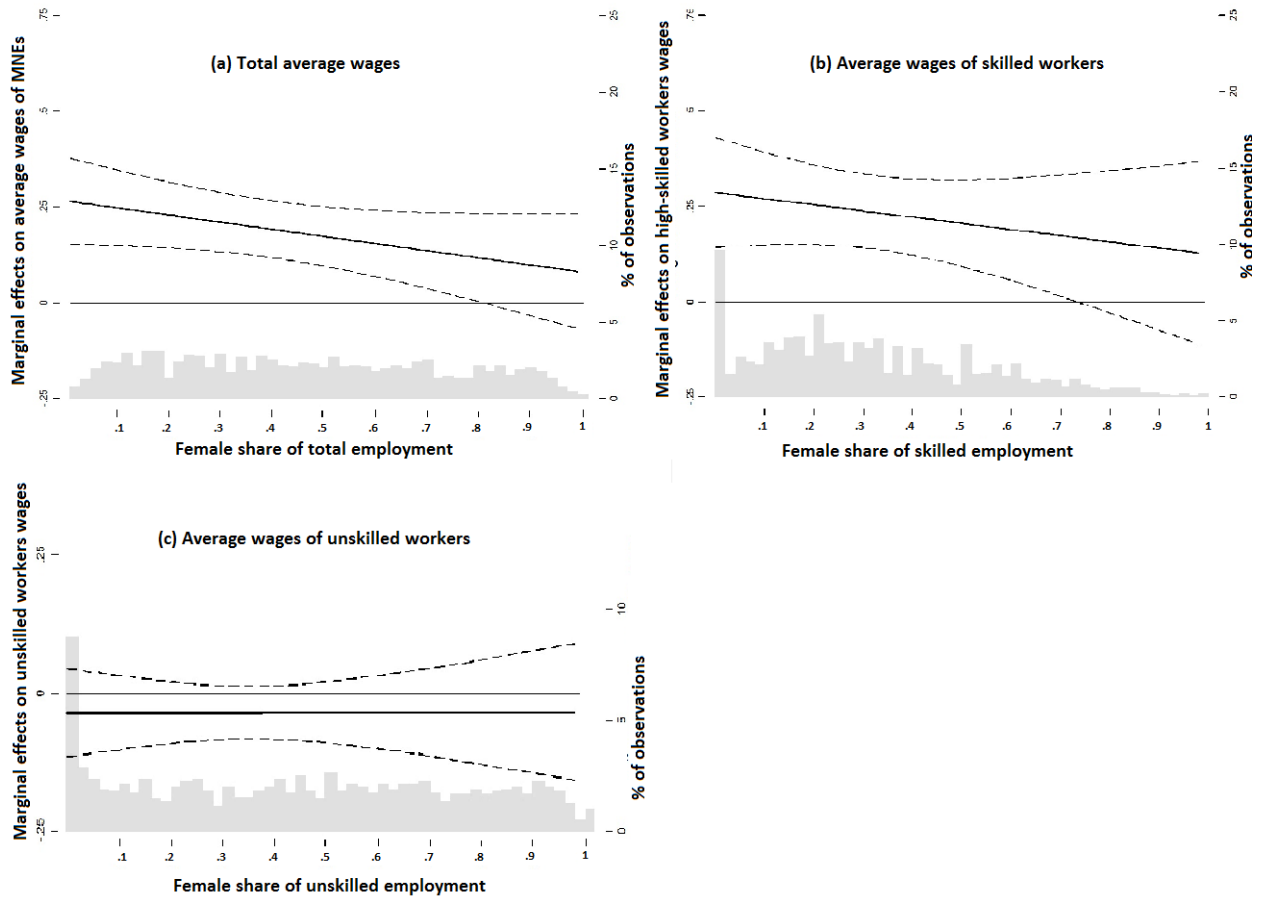
Do MNEs in Viet Nam pay lower salaries to women compared to domestic firms when controlling for firm-level characteristics and for skill level of employees? The answer to this crucial question is provided in the three panels of Figure 1, where we report the estimated coefficients derived from firm-level average wage regressions[6].

Panel (a) displays the results for average total wages; the estimated coefficient on the dummy variable MNE (vertical axis) is reported as level of share of female workers (horizontal axis). Foreign employers pay relatively higher wages compared to domestic ones, although the average wage gap decreases significantly as the share of female workers increases. This intuitive result is unsurprising, as foreign firms show a higher tendency to hire unskilled female workers. To control for this composition effect, the dependent variables in *Panels (b) and (c)* are, respectively, the average wage of skilled and that of unskilled workers. Interestingly, we

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[6] We report the estimated MNE wage premium conditional on the female share of the labour force. The regression table is reported in *Appendix A*.

find evidence of a gender wage gap for skilled workers (*Panel b*). As the share of females in the firm's labour force increases, the MNE's wage premium is reduced. Nonetheless, over the relevant period, foreign firms still pay significantly higher wages. By contrast, we find no evidence of a gender wage inequality when considering unskilled workers (*Panel c*): the average MNEs' wage premium for unskilled workers is negative but statistically not significant, and not affected by the share of female unskilled workers.

4. Conclusions

Globalization, through its multiple channels, has important distributional effects. This paper sheds some light on the effects that one of these channels, FDI, has on gender inequalities in employment opportunities.

We observe that foreign firms offer relatively more employment opportunities to female workers in Viet Nam than domestic firms, although the majority of these jobs are in low-skilled occupations. There is no evidence of MNE wage premiums compared to similar domestic firms in the formal sector. On the contrary, job opportunities for high-skilled female workers created by foreign firms are limited, a result which is most likely driven by the comparative advantage of Viet Nam in labour intensive and relatively low-technology production.

MNEs' wage premiums for skilled workers decreases in the share of females in the labour force, while we do not find evidence of differences between foreign and domestic firms with respect to gender wage gap for unskilled workers.

Our results are based on analysis drawn from foreign and domestic firms operating in the formal sector. The positive effects of FDI on gender inequalities is likely to be much higher when considering the structural change that these investments generate and their contribution in moving a large number of female workers from low-paid jobs in the agricultural and informal sectors to better paid jobs in the formal sector.

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Appendix A

Table 1A. Do foreign firms pay higher wages to female workers?

Dependent variables (Log)	Model (1) Average wage of total workforce	Model (2) Average wage of high-skill work	Model (3) Average wage of low-skill work
MNE	0.266***	0.287***	-0.0356
	(0.0576)	(0.0736)	(0.0412)
Female share	-0.290*		
	(0.149)		
MNE*Female share	-0.187		
	(0.112)		
HS female share		-0.127	
		(0.110)	
MNE* HS female share		-0.162	
		(0.170)	
LS female share			-0.183**
			(0.0805)
MNE* LS female share			0.00180
			(0.0935)
Capital intensity (Log)	0.0524***	0.0145	-0.00185
	(0.0161)	(0.0139)	(0.00884)
Export share	-0.000344	-0.00102*	-0.00161***
	(0.000537)	(0.000504)	(0.000398)
Skill intensity	0.895***	-0.156	0.268*
	(0.204)	(0.164)	(0.139)
Firm age (Log)	0.0509	-0.0486**	0.0200
	(0.0329)	(0.0216)	(0.0168)
Size (Output; log)	0.0527***	0.0515***	0.0271***
	(0.0151)	(0.0125)	(0.00653)
Industrial zone	0.0162	-0.0203	-0.0543
	(0.0516)	(0.0596)	(0.0404)
Sector fixed effects	YES	YES	YES
Province fixed effects	YES	YES	YES
Constant	6.180***	5.210***	4.612***
	(0.270)	(0.289)	(0.126)
Observations	1,215	1,197	1,187
R-squared	0.252	0.125	0.137

Estimations using OLS method. Standard errors (in parentheses) are clustered at the sector level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 2A. The determinants of female workers share: are foreign firms different? (MM outlier robust estimation)

Dependent variables	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
	Total female/Total employee			Skilled female/	Unskilled female/
				Total skilled	Total unskilled
MNE	0.0680***	0.0718***	0.0477***	-0.00638	0.0498***
	(0.0152)	(0.0151)	(0.0160)	(0.0226)	(0.0185)
Export share	0.00245***	0.00224***	0.00217***	0.00106***	0.00243***
	(0.000264)	(0.000258)	(0.000262)	(0.000234)	(0.000314)
Capital intensity(Log)		-0.0113**	-0.0124**	-0.0267***	-0.0103*
		(0.00467)	(0.00542)	(0.00779)	(0.00568)
ICT intensity			-0.00269	0.00399	-0.00561
			(0.00324)	(0.00313)	(0.00402)
Skill intensity		-0.225***	-0.194***	0.233***	-0.298***
		(0.0681)	(0.0691)	(0.0752)	(0.110)
Size (Output; log)	-0.0105**	-0.00840*	-0.00676	0.00688	-0.00961**
	(0.00484)	(0.00434)	(0.00458)	(0.00551)	(0.00469)
Firm age (Log)			-0.00175	0.0105	-0.000497
			(0.0122)	(0.0127)	(0.0147)
Industrial zone			0.0568***	0.0469*	0.0737***
			(0.0176)	(0.0248)	(0.0203)
Sector fixed effects					
Province fixed effects					
Constant	0.571***	0.677***	0.662***	0.357***	0.715***
	(0.0857)	(0.0883)	(0.0993)	(0.107)	(0.104)
Observations	1,272	1,269	1,244	1,240	1,240

Estimations using MM OLS method. Standard errors (in parentheses) are clustered at the sector level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$