

## Can training close the gender wage gap? Evidence from Vietnamese SMEs

Bjerge, Benedikte; Torm, Nina; Trifkovic, Neda

*Published in:*  
Oxford Development Studies

*DOI:*  
[10.1080/13600818.2021.1883572](https://doi.org/10.1080/13600818.2021.1883572)

*Publication date:*  
2021

*Document Version*  
Peer reviewed version

*Citation for published version (APA):*  
Bjerge, B., Torm, N., & Trifkovic, N. (2021). Can training close the gender wage gap? Evidence from Vietnamese SMEs. *Oxford Development Studies*, 49(2), 119-132. Advance online publication. <https://doi.org/10.1080/13600818.2021.1883572>

### General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain.
- You may freely distribute the URL identifying the publication in the public portal.

### Take down policy

If you believe that this document breaches copyright please contact [rucforsk@kb.dk](mailto:rucforsk@kb.dk) providing details, and we will remove access to the work immediately and investigate your claim.

## **Can training close the gender wage gap? Evidence from Vietnamese SMEs**

### **Abstract**

In many developing countries the skill base of the local workforce is a cause for concern as it impacts how internationally competitive a country can be. Firm-provided training is generally seen as an important tool for bridging the skills gap between the labour force and what the private sector demands. Little is known about how successful such training can be in closing the gender wage gap. We use a matched employer-employee panel dataset to assess why firms train and whether formal training affects wage outcomes in Vietnamese SMEs. Training is generally found to be firm-sponsored and specific in nature. We find that training is associated with higher wages for trained women as compared to both untrained women and men. However, we do not find a statistically significant wage difference between trained women and men. Furthermore, the wage increase is only associated with on-the-job training. Our findings indicate that, at least in Vietnam, firm-sponsored on-the-job training could help increase women's labour productivity and thus contribute to closing the gender wage gap.

Keywords: training, wage, SME, gender, Vietnam

## 1 Introduction

Human capital development, referring to both education and post-school training, has been a central part of the development strategies of most countries because it contributes to economic growth, both through raising productivity and facilitating the use of new technologies. Even though the data shows significant improvements in school attainment across the developing world in recent decades (Hanushek, 2013), firms frequently indicate that a lack of skills is a severe obstacle to productivity and growth (Almeida & Aterido, 2011). Countries in the global south are generally characterized by a larger supply of low-cost labour and a relatively smaller pool of highly skilled labour, yet workplace training is less common in developing than in developed countries, and especially among SMEs when compared with larger firms (Almeida & Aterido, 2011, 2015). The lower incidence of training in developing country SMEs is often attributed to high worker turnover, a lower expected return on the investment in training, as well as the lack of finance and information (Almeida & Aterido, 2015).

While the accumulation of human capital benefits both employers and employees (Almeida & de Faria, 2014; Parent, 1999), men and women differ in terms of their likelihood of participating in employer-provided training and the returns to labour (Altonji & Blank, 1999; Bertrand, 2011; Blau & Kahn, 2006; Goldin, 2014; Lynch, 1992; Manning & Swaffield, 2008; Ng, 2005; Pischke, 2001). Women tend to filter into jobs offering less training and receive lower wage growth over time due to their higher resignation rate (Barron et al., 1993). Considering such outcomes, it is worthwhile to explore empirically whether women, who usually have a lower skill base, benefit differently from workplace training compared to men. Men's higher returns to further training may act to increase the gender wage gap even further. However, if women can efficiently improve their skills and productivity through training, there is potential for the gender wage gap to be reduced.

In this paper, we investigate differences across gender in formal training access, purpose and financing, and test whether training leads to different wage outcomes for working women and men in Vietnamese SMEs. We use a unique matched employer-employee dataset of manufacturing SMEs in Vietnam, which allows us to consider not only the effect of training by gender and training type, but also the motivation for firms to provide training.

We find that training tends to be financed by firms, not employees, and thus training is specific in nature. The main purpose for offering training is to teach both new and existing workers new production technologies. We find that women who have undergone training in their current job receive higher wages than untrained workers (both men and women). We also show that the wage increase is only associated with on-the-job as compared to off-the-job training. At the same time, we do not find a statistically

significant wage difference between trained women and men. The results indicate that employer-provided training could play a role in increasing productivity of the female labour force and thereby help to close the gender wage gap.

Since the launching of comprehensive economic reforms in 1986, permitting the establishment and development of private enterprise, Vietnam has experienced enormous growth in industrial output and the economy as a whole. We focus on the period from 2013 to 2015, when the real GDP increased from 1,505 to 1,667 USD per capita and the labour force grew from 54.1 to 55.5 million with a higher participation rate for men (86 percent) than for women (78 percent) (World Bank, 2019). The private sector (private enterprises and household business) accounts for about 40 percent of GDP, about 10 percentage points more than the state sector. In 2015, women accounted for 46 percent of employment in the enterprise sector. Women employees across different industries and services routinely earn lower wages than their male colleagues (GSO, 2015; Liu, 2004). They also have a lower societal standing and less rights in practice than men, both in terms of ownership of land titles (UNDP, 2010) and access to assets (UN Women and OHCHR, 2013).

The education level, quality and skills of the Vietnamese workforce have been assessed as modest (ILSSA and ILO, 2018). Some 80 percent of business leaders in Vietnam complain about a lack of appropriate qualifications among job applicants, while 84 percent cite the lack of experience as a major business constraint (World Bank, 2013). Between 30 and 40 percent of SME owners report difficulties in finding workers with the required skills (CIEM et al., 2014). The skills gap is partially remedied by the expansion of vocational training institutions (ADB, 2014), yet workplace training has declined over the past decade with the proportion of private sector firms offering formal training decreasing from 43.5 per cent in 2009 to 22 per cent in 2015 (World Bank, 2019).

By providing evidence from Vietnam, our paper adds to the literature on the impact of firm-provided training on employee wages, most of which was previously done on data from developed countries. Moreover, studies on the impact of training on employee wages from developing countries tend to use only firm-level data, not accounting for the selection of workers into training based on unobservable characteristics. In the case of Vietnam, existing research is limited by rather small cross-sectional samples which do not focus on gender differences in training uptake (Quang & Dung, 1998; Thang et al., 2011; Thang & Quang, 2007; Zhu et al., 2008). Furthermore, to the best of our knowledge, no previous studies have used a matched employer-employee panel dataset from a developing country to analyse the impact of training on individual wages.<sup>1</sup> The matched aspect of the data enables us to control for observed worker

---

<sup>1</sup> Cross-sectional matched employer-employee data have been used in, for example, Görg (2007) and Almeida and de Faria (2014).

and firm specific characteristics that are correlated with training incidence and individual wage outcomes. The panel dimension of the data allows for reducing bias from time-invariant unobserved heterogeneity, which is likely to influence both training and wages. Possible remaining bias from unobservable heterogeneity is accounted for in an instrumental variable (IV) estimation.<sup>2</sup>

## 2 Literature review

Workers can increase their productivity through the accumulation of human capital by learning new skills and upgrading old ones. The increase in individual productivity in turn raises earnings, and is often used to explain upward-sloping wage profiles. One way to accumulate human capital is through training, which is a process that raises future productivity, but differs from school training since the investment is undertaken while employed. The cornerstone of the standard human capital theory is the strong distinction between general and specific training (Becker, 1964). The cost and benefit of specific training is shared by the worker and employer, whereas workers are the sole beneficiaries of general training, and thus in a competitive market will bear the entire cost associated with general training.

In practice however, it is often observed that firm-sponsored training programs regularly include a general training component and that firms pay part of the investment in training (Barrett & O'Connell, 2001; Loewenstein & Spletzer, 1999). Acemoglu and Pischke (1999b, 2002) show that when wages are compressed below workers' marginal productivity, firms are willing to pay part of the cost associated with general training. As the current employer has more information about the worker's ability compared to potential employers, and since the firm obtains part of the marginal return, it has an incentive to invest in human capital. This implies that both general and specific training impact worker wages and lead to higher firm productivity and is consistent with empirical evidence showing that firm-sponsored training has a positive and significant impact on productivity and wages, and thus the accumulation of human capital has favourable outcomes for both parties (Alfonsi et al., 2019; Ballot et al., 2006).

Building on the theoretical labour market literature, where the marginal product of labour is equal to the real wage rate in a competitive market, most empirical studies use wage rates to proxy for labour productivity. A striking feature of the empirical literature is the very mixed evidence across both developed and developing countries, which is partly explained by the differential estimation methods and data used. The variation in findings may also be a reflection of the limitations of the human capital approach, which,

---

<sup>2</sup> Previous studies use matching methods to identify the average effect of training on wages (Almeida & de Faria, 2014; Rosholm et al., 2007), which controls only for selection for training based on observable characteristics. If selection into training is based partly on unobserved characteristics, such as worker ability or a firm's training practices, the impact of training on individual wages could be over- or underestimated.

due to its competitive labour markets assumption and inherent focus on the supply side, is largely unable to account for the processes, institutions and relationships in the workplace (O'Connell & Byrne, 2012). In fact, within economics (and other disciplines), there are increasing calls (Hamermesh, 2008) to bring attention back to the analysis of training in the context of the workplace by looking at the demand side of the labour market. These calls advocate taking into account how workplace organization may influence the quantity and quality of worker training (Felstead et al., 2010). Such factors may be more important in a developing country context, and in particular among SMEs.

Compared to developed countries, empirical evidence of the training effects on individual wages in developing countries is more limited, mainly due to a lack of comprehensive data, yet some of the most relevant findings are briefly summarised in what follows. One of the earliest studies (Arriagada, 1990) found that among urban Peruvian women training improves employment probabilities, but not wages. In contrast, urban Peruvian men employed in the private sector experience positive wage gains from training. Distinguishing the impact of education and on-the-job training on employee salary in the case of China, Xiao (2002) shows that on-the-job training is positively associated with salary increases through improved technical proficiency, whereas formal education is not. The study also points out that on-the-job training serves to both upgrade job skills of employees, and develop shared values and ways of working together to strengthen a firm's unique competitiveness in transforming economies like China (and Vietnam), again pointing to the potential importance of demand side factors. Using a matched employer-employee dataset and propensity score matching, Almeida and de Faria (2014) find significant wage returns to on-the-job training for male workers in Malaysia and a lower wage return to training for women in Thailand. By contrast, Ng (2005) finds that female workers in manufacturing firms in Shanghai experience a small earnings return from off-the-job training. Rosholm et al. (2007) apply matching methods and find a positive average effect of longer spells of training in Sub-Saharan Africa, and focusing on Tanzania, Kahyarara and Teal (2008) reach a similar conclusion.

In terms of findings on wage returns from past training, the evidence is mixed. For instance, Xiao (2002) and Ng (2005) find that firm-provided training that includes a general skill component is transferable between firms, whilst Kahyarara and Teal (2008) find no evidence that wage returns from past on-the-job training are significantly different from zero. Comparing the effectiveness of vocational and on-the-job training, Alfonsi et al. (2019) find greater benefits of subsidized vocational training in Uganda due to an enhanced skills transfer. Thus, developing country findings on the returns to training demonstrate the existence of frictions and gender differences in wage outcomes, and question the traditional economic assumption of fully competitive labour markets where wages equal productivity, something that is unlikely to be the case in the context of a skills gap, as in the case of Vietnam.

Methodologically, one major shortcoming of existing studies is their failure to account for the potential endogeneity of training. If selection for training is based partly on unobserved characteristics, such as a worker's ability or a firm's training practices, this could lead to an overestimation of the impact of training on individual productivity. Yamauchi et al. (2009) address this point by using an employee panel dataset based on retrospective training questions (over three years) for workers employed in large Thai manufacturing enterprises. Their findings suggest that on-the-job training is important in general and particularly among production and newly hired workers, however the impact disappears when interacted with experience. Although this approach accounts for omitted time-invariant heterogeneity, estimates may still be biased if training participants and non-participants have different wage growth rates (Frazis & Loewenstein, 2005; Pischke, 2001). In the absence of randomization as an option, an alternative is to use IV estimation or define a comparison group of similar non-participants (Görlitz, 2011; Leuven & Oosterbeek, 2008; van den Berg et al., 2011).<sup>3</sup>

### **3 Data**

This paper uses matched employer-employee data from two Vietnamese SME surveys, conducted in 2013 and 2015 (see CIEM et al., 2014 for details). The surveys trace the same manufacturing firms over time in 10 provinces of Vietnam. The sampling scheme of the surveys is based on a representative sample of registered household and non-household firms drawn from enterprise census information (General Statistics Office [GSO], 2010). The samples were stratified by ownership form to ensure that all types of non-state enterprises, including officially registered households, private firms, cooperatives, limited liability companies and joint stock enterprises were represented. For reasons of implementation, the surveys were confined to specific districts in each province/city. The employee component was implemented in a random sub-sample of firms stratified by location. Between one and seven randomly selected workers were interviewed in each firm.

The sample comprises 2,531 enterprises with 1,571 interviewed employees in 2013 and 2,628 enterprises with 1,342 interviewed employees in 2015. After undertaking a thorough data cleaning including removing enterprises with missing key variables and checking consistency of time-invariant

---

<sup>3</sup> A randomized controlled trial (RCT) could address remaining endogeneity issues more efficiently. The literature evaluating various types of randomized labour market interventions is extensive and mainly focused on evaluations of labour market policies in the form of vocational training, wage subsidies, and job search assistance. The main conclusion from a couple of meta-analyses is that there is a relatively weak impact of such programs on employment and wages in developing countries (Card et al., 2018; McKenzie, 2017), while a targeted training increases the job search success (Abebe et al., 2019).

variables between the two survey rounds, we obtained an unbalanced panel of 2,201 permanent workers: 1,180 in 2013 and 1,021 in 2015. The survey did not aim to create a balanced employee panel, but we were able to identify repeatedly surveyed employees and thus to construct a balanced panel consisting of 1,050 individual observations (525 in each year).

Both enterprise and employee questionnaires included questions about training types: on-the-job training and off-the-job training. On-the-job training is defined in the survey as training received while at the job during ‘normal’ working hours, i.e. formal in-house training that has an identifiable start and end, while off-the-job training is defined as training received outside the formal workplace (i.e. at a vocational school, an SME association or similar).<sup>4</sup>

### **3.1 Descriptive statistics**

Descriptive statistics are presented in Table A1 in the Appendix. The average nominal wage increased from 3.6 million Vietnamese Dong (VND) in 2013 to 4.5 million VND in 2015. The average real wage across both years is 2.9 million VND per month (in 2010 prices) and similar to the nominal wage, it increased over the time period considered.<sup>5</sup> The overall training incidence, including both on-the-job and off-the-job training, increased from 17 to 24 percent between 2013 and 2015. The increase was mainly in on-the-job training. Women’s labour market participation in the private manufacturing sector increased both in terms of the number of women owners and workers. Around 25 percent of workers have higher education, while 72 percent have finished secondary school, illustrating generally high levels of education in Vietnam. The average level of education increased in the observed period, as did the share of production workers. The average firm has 28 employees, with the size increasing slightly over time. Limited liability companies make up the majority of our sample, followed by household firms, private firms and joint stock companies. Slightly more than one-half of the sample comprises firms from urban areas (Ho Chi Minh City, Hanoi and Hai Phong). In line with the observed rise in employees’ educational level, the share of owners with secondary and higher education is also rising.

## **4 Econometric approach**

---

<sup>4</sup> The questionnaire also includes information about informal training, but we do not base our key estimations on this variable, as it is likely to include substantial measurement error due to the vague definition of this training type.

<sup>5</sup> In nominal terms, the average wage is in line with the average monthly earning of wage workers reported by the General Statistics Office, which were 3.8 million VND in 2012 and 4.5 million VND in 2014 (GSO, 2015).



In order to analyse the relationship between job training and wages, we estimate an equation where individual wages depend on both worker attributes and firm characteristics. Building on the basic model of (Abowd & Kramarz, 1999), the specification takes the following form:

$$\ln w_{ijt} = \alpha + \beta T_{it} \times G_{it} + \gamma T_{it} + \delta G_{it} + \varphi X_{it} + \tau F_{jt} + \theta_t + \eta_j + \varepsilon_{ijt} \quad (1)$$

where  $\ln w_{ijt}$  is the log of real monthly wage of worker  $i$  in firm  $j$  at time  $t$ . Our main variable of interest is job training ( $T_{it}$ ), which is defined as an indicator variable for whether the worker has received on-the-job or off-the-job training in his/her current job. In a subsequent analysis, we also separately consider the effects of different training types.  $G_{it}$  is an indicator for women workers,  $X_{it}$  is a vector of worker  $i$ 's characteristics,  $F_{jt}$  is a vector of characteristics for firm  $j$ ,  $\theta_t$  is a time fixed effect,  $\eta_j$  are firm fixed effects and  $\varepsilon_{ijt}$  is an error term.

In terms of other worker characteristics ( $X_{it}$ ), we control for age, education of the worker, job function and hiring method. We use age of the worker as a proxy for experience and include age squared to allow for a diminishing marginal effect. We also include an indicator variable for post-secondary education since educational attainment accounts for a large share of the variation in earnings (Mincer, 1974; Spence, 1973). We also control for work position (manager, professional, sales, service, office and production worker) since wages tend to vary across occupation categories (beyond what is captured by education). As for firm attributes ( $F_{jt}$ ), we control for firm size, legal status, owners' gender and education, the share of women and professional workers, location and sector.<sup>6</sup>

In estimating equation (1), we take account of potential biases. Bias may arise from the presence of unobserved heterogeneity, whereby some firms may both pay higher wages and invest more in employee training. We address this form of bias by using firm fixed effects. As we use matched firm-employee data, firm fixed effects also partly account for the selection of workers with the highest unobserved abilities for employment in firms that tend to provide more training. Bias may also arise if the decision to participate in training is a function of the perceived wage increase. To reduce such self-selection bias, we use a two-stage least squares (2SLS) estimation with instrumental variables (IV) that account for time-varying unobservable

---

<sup>6</sup> Low value added sectors include: food and beverages, textiles, apparel, leather and recycling. Medium value added sectors include: wood, paper, publishing, rubber, petroleum, chemicals, non-metallic minerals, basic metals and fabricated metals. High value added sectors include: electronic machinery, vehicles, transport equipment and furniture.

factors that may simultaneously influence the decision to train and subsequent wage outcomes.<sup>7</sup> As our specification contains two endogenous variables (training and interaction of training and gender), we need at least two instruments. To instrument for training ( $T_{it}$ ), we construct a variable that measures the average value of investment in human capital upgrading by firms in a specific district and 2-digit industry. To instrument for the training-gender interaction ( $T_{it} \times G_{it}$ ), we interact the above-mentioned district-industry value of human capital investment with the gender of the employee. It is unlikely that training intensity per district and industry affects individual wages, but it is possible that employees in industries and districts with high training intensity stand higher chances of receiving training. This identification strategy allows us to determine the return to training among compliers—those adjusting their training status in response to the instrument.

Our choice of instrumental variables is akin to instruments used in earlier training studies. For example, Kuckulenz and Maier (2006) use training intensity by industry and the sectoral share of firms that include continuous training in their collective bargaining agreement as instruments for individual training. Our set of instruments has good predictive power in the training equation (see Table 1 in the Online Appendix) and the joint test of significance indicates that the instruments are jointly significant at the 1 percent level. We examine the strength of our instruments using the Cragg–Donald Wald F-statistic, which provides evidence that the IVs identify the model. As shown in Table 2 in section 6 below, we reject the null hypothesis that the models may suffer from the weak instrument problem. This indicates that the instruments influence wages only through their effect on training participation.

## **5 Incidence, financing, and benefits of training**

Table 2 in the Online Appendix reports basic statistics on training incidence and the duration of training for new and existing workers. More than one-third of the firms train new workers and 10 percent train existing workers. Training of existing workers is generally shorter in duration. Whereas for most of the newly hired employees training lasts between one and three weeks on average, it is less than one week for existing employees. Women owners provide more training to existing workers and for a longer duration. In general, both the incidence and duration of training increase with firm size.

The main reasons for firms to train newly hired workers are to teach them new production technologies (48 percent), to overcome the general lack of skills required to perform relevant tasks (24 percent), to manage new areas of responsibilities (10 percent) and to improve productivity (9 percent) (see

---

<sup>7</sup> The IV estimation procedure is described in the Online Appendix.

Table 3 in the Online Appendix). For existing workers, more than 70 percent of the employers report that the cost of training is paid by the enterprise, compared to just under 50 percent for new workers. Compared with existing workers, new workers are more likely to bear the cost of training through reduced wages prior to or during the training. The difference in the financing of training suggests that training of existing workers is likely to be specific in nature, while training of new workers includes a larger general training component, influencing the willingness of firms to finance the training.

Table 4 in the Online Appendix shows that the most common type of training is on-the-job training (19 percent). Off-the-job training is rare (3 percent). On-the-job training is more common among men than women, who in comparison receive more off-the-job training. Workers with post-secondary education receive twice as much off-the-job training as less educated employees. Around 20 percent of workers received some training in their previous job, and 97 percent found their past training to be useful in their current job. Workers find off-the-job training less beneficial in terms of wage increases compared to on-the-job training. Independent of training type, the vast majority of workers report being trained only once (65-78 percent). Less educated and younger workers receive fewer on-the-job but more off-the-job training spells. Training on average lasts less than one week, yet the duration differs by gender with men attending longer off-the-job training sessions and women receiving shorter on-the-job training. Similarly, those with post-secondary education attend longer off-the-job training sessions, while the less educated more frequently attend shorter on-the-job trainings.

Table 5 in the Online Appendix shows the correlations between training incidence and demographic characteristics. In line with the above findings, women workers are less likely to receive training and production workers (the reference category) generally receive more training. Firms with a higher share of professionals are more likely to train and the type of training that dominates is on-the-job training. In addition, larger firms are more likely to train, regardless of the type of training considered.

## **6 Results**

Table 1 reports estimated parameters and their standard errors from equation (1). Column 1 shows an earnings gap of 7.4 percent for trained women employees when compared to both untrained men and women. Trained women employees earn 1.8 percent less than trained men (0.074-0.092), but the difference is not jointly different from zero. In contrast, untrained women employees get 9.2 percent less than untrained men do. Column 2 shows the results when employee and firm controls, as well as location fixed effects, are added. In this case, the earnings gap between trained and untrained female employees becomes smaller (4.2 percent, obtained as 0.091-0.049), while the earnings gap between untrained female and

untrained male employees becomes larger (compare -0.113 in column 2 and -0.092 in column 1). The training premium for women as compared to untrained men increases to 9.1 percent, while the earnings gap between trained men and trained women increases to 2.2 percent, but again it is not jointly significant.

The results for the balanced panel of workers with firm fixed effects are shown in column 3. We find 11.5 percent higher wages of women employees who undertook some training as compared to untrained men and women, and further, 0.5 percent higher wages for trained women as compared to trained men employees (not jointly significant). The training premium for women is also detected in columns 5 (0.7 percent) and 6 (1.2 percent), but the joint effect is indistinguishable from zero. The Oaxaca-Blinder decomposition shown in Table 6 in the Online Appendix confirms that trained women employees get higher wages when compared to untrained workers and that there is no wage difference between trained women and trained men employees. Given the existing raw wage gap, our findings imply that training may increase the productivity of women and thus contribute to closing the wage gap between women and men employees.

There is a concern that the observed correlation between training and wages could reflect a cumulative effect of training over different jobs along the life cycle of the worker, in columns 4-6 we therefore control for any previous training the employee may have had. While the results show that the previous training is positively correlated with the current wage (columns 5 and 6), previously established results of the relationship between training and wages are unchanged.

Given existing evidence that low-educated workers who receive training have significantly lower returns than workers with higher education (Bassanini, 2006), we investigate whether training has differential impact for different levels of schooling. We find that, while more educated workers receive higher wages, the training does not carry an additional wage benefit to them.

The wage return is considered a lower bound of the productivity gain. If the firm pays for the training, the true productivity return will exceed the wage return (Acemoglu & Pischke, 1999a), but if some of the training is general and workers are willing to share some of the costs (e.g., through lower wages during the training period), the wage return may be overestimated. To address this possibility, we add controls for the main reason that firms train workers and the source of finance for training. Controlling for the training purpose and finance does not affect the significance and the magnitude of the results, as shown in column 6.<sup>8</sup>

---

<sup>8</sup> The results are robust to removing outliers in terms of wages (bottom and top 1 percent) and winsorizing, where the results of the positive effect of training on women's wages remain significant at the 5 percent level. We do not show these results for space considerations, but they are available from authors upon request.

Table 1: Impact of training on real wages

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS	FE, bal.	OLS	FE, bal.	FE, bal.
Training × Woman	0.074* (0.039)	0.091*** (0.033)	0.115** (0.058)	0.087** (0.034)	0.119** (0.058)	0.125** (0.062)
Training	-0.006 (0.033)	-0.049* (0.028)	-0.054 (0.035)	-0.055* (0.028)	-0.053 (0.035)	-0.057 (0.036)
Woman	-0.092*** (0.021)	-0.113*** (0.020)	-0.110*** (0.034)	-0.112*** (0.021)	-0.112*** (0.033)	-0.113*** (0.034)
Worker age		0.022*** (0.005)	0.027*** (0.010)	0.022*** (0.005)	0.025*** (0.009)	0.025*** (0.009)
Age sq. (× 1,000)		-0.252*** (0.064)	-0.309*** (0.118)	-0.251*** (0.064)	-0.288** (0.115)	-0.290** (0.115)
Firm size (ln)		0.069*** (0.011)	0.080 (0.052)	0.069*** (0.011)	0.089* (0.052)	0.080 (0.051)
Sector medium value added		-0.070*** (0.021)	-0.129 (0.113)	-0.070*** (0.021)	-0.123 (0.113)	-0.112 (0.107)
Sector high value added		-0.047* (0.028)	0.031 (0.109)	-0.047* (0.028)	0.021 (0.110)	0.034 (0.109)
Owner male		-0.035* (0.020)	-0.001 (0.033)	-0.035* (0.020)	-0.002 (0.034)	-0.016 (0.037)
Owner has higher education		0.056** (0.022)	0.071** (0.028)	0.056** (0.022)	0.072** (0.028)	0.069** (0.027)
Share of professionals		-0.058 (0.127)	-0.266 (0.227)	-0.061 (0.126)	-0.284 (0.232)	-0.275 (0.223)
% of labour force that is women		-0.217*** (0.050)	-0.238** (0.118)	-0.218*** (0.050)	-0.226* (0.115)	-0.226* (0.117)
Post-secondary education (employee)		0.099*** (0.024)	0.089** (0.038)	0.095*** (0.025)	0.090** (0.038)	0.096** (0.042)
Training × Post-secondary education				0.018 (0.043)	-0.021 (0.050)	-0.027 (0.049)
Previous training				0.011 (0.022)	0.079** (0.037)	0.078** (0.037)
Training to improve skills						0.136** (0.068)
Training due to innovation						0.089 (0.078)
Enterprise pays for training						-0.003 (0.060)
Employee pays for training						-0.057 (0.087)
Year	0.106*** (0.019)	0.095*** (0.018)	0.105*** (0.027)	0.096*** (0.018)	0.115*** (0.028)	0.113*** (0.029)

Constant	7.890*** (0.018)	7.434*** (0.110)	7.063*** (0.224)	7.436*** (0.110)	7.046*** (0.225)	7.053*** (0.222)
Work position controls	No	Yes	Yes	Yes	Yes	Yes
Legal ownership controls	No	Yes	Yes	Yes	Yes	Yes
Location controls	No	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.04	0.25	0.21	0.25	0.22	0.22
Wald F-test (p-value) for Training × Woman + Woman	0.31 (0.58)	0.55 (0.46)	0.02 (0.90)	0.72 (0.40)	0.05 (0.83)	0.07 (0.79)
Wald F-test (p-value) for Training × Woman + Training	4.28 (0.04)	2.78 (0.09)	0.93 (0.34)	1.39 (0.24)	1.01 (0.32)	0.84 (0.36)
Observations	2,201	2,201	1,050	2,201	1,050	1,050

Note: Standard errors (in parentheses) are clustered at the firm level. \* p<0.10. \*\* p<0.05. \*\*\* p<0.01. Stock-Yogo weak identification test critical value for 10 percent maximal IV size is 7.03.

Finally, we address the possible endogeneity bias, which may arise from selection of individuals for training who already have higher wages. The instrumental variable estimation results shown in Table 2 are in line with the estimations so far, indicating that trained women workers have higher earnings than untrained men and women workers. We also see higher wages compared to trained men employees (7.5 percent in column 1 and 6.6 percent in column 2)<sup>9</sup>, but the effect is jointly not different from zero.

We also find a significant negative result for the training variable, which indicates that untrained men could have higher wages than their trained counterparts. This could be explained by the catching-up argument, whereby it could be that training is offered to those who need it most, e.g. those with lowest skills who need to catch up with others in terms of productivity. A support for this argument is offered in Table 3 in the Online Appendix, showing that in contrast to women workers, men are more frequently trained to improve the skills required to perform tasks, and to improve their productivity.

<sup>9</sup> A direct comparison of the coefficient size with the OLS and fixed effects models is not straightforward. While OLS estimates show average treatment effect (ATE), the 2SLS regressions show a local average treatment effect (LATE), which is the effect of treatment for compliers—those whose treatment status is affected by the instrument (Angrist et al., 1996).

Table 2: Impact of training on real wages: IV estimation

	(1)	(2)
	IV, unb.	IV, bal.
Training × Woman	0.215*	0.244*
	(0.129)	(0.142)
Training	-0.212	-0.269
	(0.199)	(0.225)
Woman	-0.140***	-0.178***
	(0.035)	(0.054)
Constant	7.455***	7.361***
	(0.109)	(0.186)
R <sup>2</sup>	0.23	0.22
χ <sup>2</sup> test (p-value) for Training × Woman + Woman	0.55	0.41
	(0.46)	(0.52)
χ <sup>2</sup> test (p-value) for Training × Woman + Training	0.00	0.03
	(0.99)	(0.87)
Cragg-Donald Wald F statistic	24.02	15.34
Observations	2,201	1,050

Note: Estimations on the pooled sample. Control variables are the same as in columns 2-5 in Table 1. Stock-Yogo weak identification test critical value for 10 percent maximal IV size is 7.03. Standard errors (in parentheses) are clustered at the firm level. \* p<0.10. \*\* p<0.05. \*\*\* p<0.01.

## 6.1 Results by training type

Our variable of interest contains both an on-the-job and off-the-job training component, so we investigate which training type has a dominant effect on women's wages. The results in Table 3 show a positive association of on-the-job training and average wage returns for women as compared to untrained men and women. This means that the benefits from training go primarily through the on-the-job channel, in line with the employee evidence that workers believe that on-the-job training is the most valuable training type for wage growth. Our result is comparable to earlier studies, which attribute positive wage effects mostly to on-the-job training (Almeida & de Faria, 2014; Kahyarara & Teal, 2008; Rosholm et al., 2007; Xiao, 2002). Additionally, the positive wage effect combined with the fact that training is primarily firm-sponsored suggests that on-the-job training is mainly specific in nature.

The result holds when we control for training duration and incidence, as shown in columns 4 and 6. Neither training duration nor incidence have a significant effect on wages. This could be a consequence of very similar length and types of firm-sponsored training or that the benefits of longer training take more time to be reflected in employee wages.

Table 3 also shows the estimates of IV regressions in which we have instrumented on- and off-the-job training and training-gender interactions with the same instruments as in Table 2. The results confirm higher wages for women employees who have received on-the-job training compared to untrained women and men. We also find higher wages of women employees with on-the-job training as compared to trained men, but the coefficient is not jointly significant. The effect on wages from off-the-job training is not statistically significant, possibly due the low number of workers receiving off-the-job training.



Table 3: Impact of on-the-job and off-the-job training on real wages

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS	FE, bal.	OLS	FE, bal.	OLS	FE, bal.	IV, bal.	IV, bal.
On-the-job training × Woman	0.060* (0.033)	0.096* (0.049)	0.061* (0.033)	0.097** (0.049)	0.057* (0.033)	0.100** (0.049)	0.255* (0.151)	
Off-the-job training × Woman	0.210** (0.100)	0.138 (0.126)	0.216** (0.097)	0.133 (0.104)	0.205** (0.082)	0.125 (0.111)		-12.389 (36.178)
Woman	-0.112*** (0.020)	-0.109*** (0.033)	-0.113*** (0.020)	-0.108*** (0.032)	-0.112*** (0.020)	-0.111*** (0.033)	-0.180*** (0.055)	0.295 (1.203)
On-the-job training	-0.039 (0.028)	-0.052 (0.035)	-0.034 (0.032)	-0.076 (0.050)	-0.050* (0.030)	-0.036 (0.038)	-0.283 (0.235)	
Off-the-job training	-0.074 (0.083)	-0.011 (0.052)	-0.142** (0.072)	-0.015 (0.082)	-0.068 (0.122)	0.117 (0.126)		11.855 (33.580)
Duration of on-the-job training			-0.000 (0.001)	0.001 (0.002)				
Duration of off-the-job training			0.002** (0.001)	-0.000 (0.002)				
On-the-job training incidence					0.007 (0.005)	-0.009 (0.007)		
Off-the-job training incidence					-0.006 (0.052)	-0.109 (0.091)		
Constant	7.430*** (0.110)	7.078*** (0.231)	7.423*** (0.110)	7.076*** (0.233)	7.428*** (0.110)	7.078*** (0.230)	7.375*** (0.191)	7.963*** (2.283)
Worker controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Location	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Legal ownership	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.25	0.21	0.25	0.21	0.25	0.22	0.14	0.18
Cragg-Donald Wald F statistic							14.19	0.06
Observations	2,201	1,050	2,201	1,050	2,201	1,050	1,050	1,050

Note: OLS are based on the unbalanced panel. Control variables are the same as in columns 2 and 3 in Table 1. Standard errors (in parentheses) are clustered at the firm level. \*\*\* p<0.01. \*\* p<0.05. \* p<0.1.

## 7 Conclusion

This paper has examined the effects of training on individual wages in Vietnamese SMEs using a matched employer-employee two-year panel dataset. In our sample, training is mostly firm-sponsored and specific in nature. Even though the likelihood of receiving training is smaller for women employees, we find that training is positively associated with higher wages for trained women as compared to untrained men and women. We are unable to distinguish statistically between the wages of trained women and men, which indicates that employer-provided training could increase the productivity of women's workforce, thus contributing to reducing the gender wage gap.

Focusing on different types of training, we also show that women employees benefit primarily from on-the-job training and thus the challenge for policymakers is to find ways of ensuring that employers do not restrict training access for women. In particular, there should be more focus on encouraging training activities to upgrade the Vietnamese women's workforce skill level. More equal opportunities for women could come about with a more widespread participation by women in training activities. An initial step could be to introduce the possibility for firms to receive tax deductions for both off- and on-the-job training expenditures. However, independent of whether the tax policy is changed to include on-the-job training, our results suggest that in addition to better information campaigns, steps should be taken to simplify procedures on how to deduct training expenditures. This could presumably help encourage Vietnamese SMEs to increase investments in training, and thereby help realize their growth potential through increased labour productivity as a result of human capital upgrading.

A couple of caveats still remain. The conclusion is based on the premise that we can extrapolate the degree of selection bias in our sample to the general population of SMEs in Vietnam. We are unable to see where the training is undertaken, by whom it is given and with what aim. We only estimate wage returns, while some of the benefits of firm-sponsored training may be longer employment duration or reduced chances of immediate or future unemployment. Our data unfortunately does not offer information which could be used for such analysis as it only covers private sector firms over two years. Nonetheless, we have shown that workplace training could be an important avenue for reducing wage inequality between genders.

## **Acknowledgements**

We would like to thank members of the Development Economics Research Group (DERG) at the University of Copenhagen for helpful comments and constructive feedback, especially John Rand and Finn Tarp. We are also grateful for productive and stimulating collaboration with the survey teams from the Vietnamese Institute of Labour Science and Social Affairs (ILSSA) and staff at Central Institute for Economic Management (CIEM). Financial support from Danida and UNU-WIDER is appreciated. An earlier version of this paper appeared as 'Gender matters: Private sector training in Vietnamese SMEs', WIDER Working Paper 2016/149, parts of which are reproduced here with the permission of UNU-WIDER.

## References

- Abebe, G., Caria, S., Fafchamps, M., Falco, P., Franklin, S., & Quinn, S. (2019). *Anonymity or Distance? Job Search and Labour Market Exclusion in a Growing African City* (No. 0224; SERC Discussion Papers). Spatial Economics Research Centre, LSE.
- Abowd, J. M., & Kramarz, F. (1999). Chapter 40 The analysis of labor markets using matched employer-employee data. In O. C. Ashenfelter & D. Card (Eds.), *Handbook of Labor Economics* (Vols. 3, Part B, pp. 2629–2710). Amsterdam: Elsevier.
- Acemoglu, D., & Pischke, J.-S. (1999a). The Structure of Wages and Investment in General Training. *Journal of Political Economy*, 107(3), 539–572.
- Acemoglu, D., & Pischke, J.-S. (1999b). Beyond Becker: Training in Imperfect Labour Markets. *The Economic Journal*, 109(453), 112–142.
- Acemoglu, D., & Pischke, J.-S. (2002). *Minimum Wages and On-the-Job Training* (CEP Discussion Paper No. dp0527). Centre for Economic Performance, LSE, United Kingdom.
- ADB. (2014). *Technical and Vocational Education and Training in Viet Nam: An Assessment* (ADB Reports No. RPT146301). Asian Development Bank (ADB).
- Alfonsi, L., Bandiera, O., Bassi, V., Burgess, R., Rasul, I., Sulaiman, M., & Vitali, A. (2019). *Tackling Youth Unemployment: Evidence from a Labour Market Experiment in Uganda* (No. eopp64; STICERD - Development Economics Papers - From 2008 This Series Has Been Superseded by Economic Organisation and Public Policy Discussion Papers). Suntory and Toyota International Centres for Economics and Related Disciplines, LSE.
- <https://ideas.repec.org/p/cep/stidep/eopp64.html>
- Almeida, R., & Aterido, R. (2011). On-the-job training and rigidity of employment protection in the developing world: Evidence from differential enforcement. *Labour Economics*, 18, S71–S82.
- Almeida, R., & Aterido, R. (2015). Investing in formal on-the-job training: are SMEs lagging much behind? *IZA Journal of Labor & Development*, 4(1), 8.

- Almeida, R., & de Faria, M. (2014). The wage returns to on-the-job training: evidence from matched employer-employee data. *IZA Journal of Labor & Development*, 3(1), 1–33.
- Altonji, J. G., & Blank, R. M. (1999). *Chapter 48 Race and gender in the labor market* (B.-H. of L. Economics, Ed.; Vols. 3, Part C, pp. 3143–3259). Amsterdam: Elsevier.
- Angrist, J. D., Imbens, G. W., & Rubin, D. B. (1996). Identification of Causal Effects Using Instrumental Variables. *Journal of the American Statistical Association*, 91(434), 444–455.
- Arriagada, A.-M. (1990). Labor market outcomes of non-formal training for male and female workers in Peru. *Economics of Education Review*, 9(4), 331–342.
- Ballot, G., Fakhfakh, F., & Taymaz, E. (2006). Who Benefits from Training and R&D, the Firm or the Workers? *British Journal of Industrial Relations*, 44(3), 473–495.
- Barrett, A., & O’Connell, P. J. (2001). Does Training Generally Work? The Returns to In-Company Training. *Industrial and Labor Relations Review*, 54(3), 647–662.
- Barron, J. M., Black, D. A., & Loewenstein, M. A. (1993). Gender Differences in Training, Capital, and Wages. *The Journal of Human Resources*, 28(2), 343–364.
- Bassanini, A. (2006). Training, wages and employment security: an empirical analysis on European data. *Applied Economics Letters*, 13(8), 523–527.
- Becker, G. (1964). *Human Capital: A Theoretical and Empirical Analysis*. Columbia University Press and the NBER.
- Bertrand, M. (2011). Chapter 17 - New Perspectives on Gender. In O. Ashenfelter & D. Card (Eds.), *Handbook of Labor Economics* (Vols. 4, Part B, pp. 1543–1590). Amsterdam: Elsevier.
- Blau, F. D., & Kahn, L. M. (2006). The U.S. gender pay gap in the 1990s: Slowing convergence. *Industrial and Labor Relations Review*, 60(1), 45–66.
- Card, D., Kluve, J., & Weber, A. (2018). What Works? A Meta Analysis of Recent Active Labor Market Program Evaluations. *Journal of the European Economic Association*, 16(3), 894–931.  
<https://doi.org/10.1093/jeea/jvx028>

- CIEM, DoE, & ILSSA. (2014). *Characteristics of the Vietnamese business environment: Evidence from a survey in 2013*. Central Institute of Economic Management (CIEM).
- Felstead, A., Gallie, D., Green, F., & Zhou, Y. (2010). Employee involvement, the quality of training and the learning environment: an individual level analysis. *The International Journal of Human Resource Management*, 21(10), 1667–1688.
- Frazis, H., & Loewenstein, M. A. (2005). Reexamining the Returns to Training: Functional Form, Magnitude, and Interpretation. *The Journal of Human Resources*, 40(2), 453–476.
- Goldin, C. (2014). A Grand Gender Convergence: Its Last Chapter. *American Economic Review*, 104(4), 1091–1119.
- Görg, H., Strobl, E., & Walsh, F. (2007). Why Do Foreign-Owned Firms Pay More? The Role of On-the-Job Training. *Review of World Economics / Weltwirtschaftliches Archiv*, 143(3), 464–482.
- Görlitz, K. (2011). Continuous training and wages: An empirical analysis using a comparison-group approach. *Economics of Education Review*, 30(4), 691–701.
- GSO. (2010). *The real situation of enterprises through the results of surveys conducted from 2000 to 2009*. Statistical Publishing House.
- GSO. (2015). *Report on labour force survey 2014*. General Statistics Office of Vietnam.
- Hamermesh, D. (2008). Fun with matched firm-employee data: Progress and road maps. *Labour Economics*, 15(4), 662–672.
- Hanushek, E. A. (2013). Economic growth in developing countries: The role of human capital. *Economics of Education Review*, 37, 204–212.
- ILSSA and ILO. (2018). *Labour and Social Trends in Viet Nam 2012-2017*. Institute of Labour and Social Affairs (ILSSA) and International Labour Organization (ILO).
- Kahyarara, G., & Teal, F. (2008). The Returns to Vocational Training and Academic Education: Evidence from Tanzania. *World Development*, 36(11), 2223–2242.

- Kuckulenz, A., & Maier, M. (2006). Heterogeneous Returns to Training: An Analysis with German Data Using Local Instrumental Variables. *Jahrbücher Für Nationalökonomie Und Statistik / Journal of Economics and Statistics*, 226(1), 24–40.
- Leuven, E., & Oosterbeek, H. (2008). An alternative approach to estimate the wage returns to private-sector training. *Journal of Applied Econometrics*, 23(4), 423–434.
- Liu, A. Y. C. (2004). Gender wage gap in Vietnam: 1993 to 1998. *Journal of Comparative Economics*, 32(3), 586–596.
- Loewenstein, M. A., & Spletzer, J. R. (1999). General and Specific Training: Evidence and Implications. *The Journal of Human Resources*, 34(4), 710–733.
- Lynch, L. M. (1992). Private-Sector Training and the Earnings of Young Workers. *The American Economic Review*, 82(1), 299–312.
- Manning, A., & Swaffield, J. (2008). The gender gap in early-career wage growth. *Economic Journal*, 118(530), 983–1024.
- McKenzie, D. (2017). How Effective Are Active Labor Market Policies in Developing Countries? A Critical Review of Recent Evidence. *The World Bank Research Observer*, 32(2), 127–154.  
<https://doi.org/10.1093/wbro/lkx001>
- Mincer, J. (1974). *Schooling, Experience, and Earnings* [NBER Books]. National Bureau of Economic Research, Inc.
- Ng, Y. C. (2005). Training determinants and productivity impact of training in China: a case of Shanghai. *Economics of Education Review*, 24(3), 275–295.
- O’Connell, P. J., & Byrne, D. (2012). The Determinants and Effects of Training at Work: Bringing the Workplace Back in. *European Sociological Review*, 28(3), 283–300.
- Parent, D. (1999). Wages and mobility: The impact of employer-provided training. *Journal of Labor Economics*, 17(2), 298–317.
- Pischke, J.-S. (2001). Continuous training in Germany. *Journal of Population Economics*, 14(3), 523–548.

- Quang, T., & Dung, H. K. (1998). Human Resource Development in State-Owned Enterprises in Vietnam. *Research and Practice in Human Resource Management*, 6(1), 85–103.
- Rosholm, M., Nielsen, H. S., & Dabalen, A. (2007). Evaluation of training in African enterprises. *Journal of Development Economics*, 84(1), 310–329.
- Spence, M. (1973). Job Market Signaling. *The Quarterly Journal of Economics*, 87(3), 355–374.
- Thang, N. N., & Quang, T. (2007). International briefing 18: training and development in Vietnam. *International Journal of Training and Development*, 11(2), 139–149.
- Thang, N. N., Truong, Q., & Buyens, D. (2011). Training and firm performance in economies in transition: a comparison between Vietnam and China. *Asia Pacific Business Review*, 17(1), 103–119.
- UN Women and OHCHR. (2013). *Realizing women's rights to land and other productive resources*. UN Women and OHCHR.
- UNDP. (2010). *Power, Voice and Rights: A Turning Point for Gender Equality in Asia and the Pacific*. United Nations Development Programme.
- Van den Berg, G. J., Pinger, P., & Schoch, J. (2011). *Instrumental Variable Estimation of the Causal Effect of Hunger Early in Life on Health Later in Life* (IZA Discussion Paper No. 6110). Institute for the Study of Labor (IZA).
- World Bank. (2013). *Vietnam Development Report 2014 - Skilling up Vietnam: Preparing the workforce for a modern market economy* (p. 138). World Bank.
- World Bank. (2019). *World Bank Data*. <https://data.worldbank.org/>
- Xiao, J. (2002). Determinants of salary growth in Shenzhen, China: an analysis of formal education, on-the-job training, and adult education with a three-level model. *Economics of Education Review*, 21(6), 557–577.
- Yamauchi, F., Poapongsakorn, N., & Sriant, N. (2009). Technical Change and the Returns and Investments in Firm-level Training: Evidence from Thailand. *The Journal of Development Studies*, 45(10), 1633–1650.



Zhu, Y., Collins, N., Webber, M., & Benson, J. (2008). New forms of ownership and human resource practices in Vietnam. *Human Resource Management, 47*(1), 157–175.

## Appendix

Table A1: Summary statistics

	2013		2015		All		All, balanced	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Nominal monthly wage 1000 VND	3,673	1,275	4,460	1,972	4,039	1,682	4,029	1,473
Real monthly wage 1000 VND	2,731	948	3,053	1,350	2,881	1,163	2,866	1,018
Training	0.17	0.38	0.24	0.43	0.21	0.40	0.23	0.42
On-the-job training	0.17	0.38	0.24	0.42	0.20	0.40	0.23	0.42
Off-the-job training	0.02	0.14	0.03	0.17	0.02	0.15	0.03	0.17
Female	0.42	0.49	0.41	0.49	0.41	0.49	0.39	0.49
Worker age	33.97	9.49	35.89	9.77	34.86	9.67	34.72	9.25
Post-secondary education	0.25	0.43	0.27	0.44	0.26	0.44	0.24	0.43
Manager	0.10	0.30	0.07	0.26	0.09	0.28	0.08	0.27
Professional worker	0.12	0.32	0.10	0.29	0.11	0.31	0.10	0.30
Office worker	0.11	0.31	0.11	0.31	0.11	0.31	0.10	0.30
Sales worker	0.08	0.27	0.07	0.26	0.08	0.27	0.08	0.27
Service worker	0.05	0.22	0.04	0.18	0.04	0.20	0.03	0.18
Production worker	0.55	0.50	0.61	0.49	0.58	0.49	0.61	0.49
Firm size (ln)	2.67	1.10	2.78	1.11	2.72	1.11	2.77	1.13
Sector low value added	0.34	0.47	0.33	0.47	0.34	0.47	0.31	0.46
Sector medium value added	0.40	0.49	0.41	0.49	0.41	0.49	0.42	0.49
Sector high value added	0.24	0.43	0.24	0.42	0.24	0.43	0.27	0.44
Owner male	0.54	0.50	0.51	0.50	0.53	0.50	0.52	0.50
Owner has higher education	0.88	0.33	0.88	0.33	0.88	0.33	0.90	0.31
Share of professionals	0.08	0.09	0.07	0.09	0.07	0.09	0.07	0.09
Female labour force percent	0.39	0.24	0.39	0.25	0.39	0.24	0.39	0.25
Urban	0.54	0.50	0.53	0.50	0.54	0.50	0.57	0.50
Observations	1,180		1,021		2,201		1,050	

Note: Averages for unbalanced panel in all columns apart from the last two. 1 USD is around 20,500 VND.