

**WHAT ACCOUNTS FOR GENDER INCOME INEQUALITY?
EMPIRICAL EVIDENCE FROM VIETNAMESE SMALL AND MEDIUM
MANUFACTURING ENTERPRISES**

VAN HA ^{a, b}, TINH DOAN ^c AND MARK HOLMES ^a

^a *University of Waikato, New Zealand*

^b *Thuongmai University, Vietnam*

^c *Australian National University, Australia*

This paper examines the gender income inequality between male and female workers in small and medium-sized manufacturing enterprises in Vietnam. Using the Blinder-Oaxaca decomposition approach to a dataset obtained from a unique employee survey during the 2011-2015 period, we find that the gender income gap (7.4%) in micro, small and medium-sized enterprises (SMEs) is smaller than the common gendered wage gap (10%) in the general workforce in Vietnam. Our results reveal that education and experience play less important roles in the workers' earning in SMEs where education and high skills may not highly demanded. The gender wage gap is mostly unexplained by observed factors or endowments in our models. The largest part of the gendered wage gap is still mystified which may include gender discrimination that is unobservable. Overall, the gender income inequality in the sector in Vietnam is not as worse as seen in higher skilled sectors as well as in many other countries. This helps shed light on the mechanism of gender income inequality and helps policy makers to tackle the causes of income gap or inequality between sexes as well as amongst all workers.

Keywords: Gender Income Gap, Decomposition, Small and Medium Enterprises (SMEs)

JEL Classification: J31, J16, O15, O53

1. INTRODUCTION

There is an enormous body of literature on the gender wage gap that confirms the pronounced income inequalities between male and female workers in both developed

and developing countries (Altonji and Blank, 1999; Arulampalam, Booth, and Bryan, 2007; Blau and Kahn, 2017; Blinder, 1973; Kidd and Shannon, 1996; Liu, 2004a; Monti, Stinson and Zehr, 2020; Nguyen, Albrecht, Vroman, and Westbrook, 2007; Oaxaca, 1973; Oaxaca and Ransom, 1994). There are various factors contributing to the gender wage gap. For example, paid work time, unpaid domestic time, labour market discrimination, type of jobs and occupation, where men are more likely to have more paid work time than women given that women have constraints on account of caring duties, and domestic work (Craig and Mullan, 2010; O'Neill and O'Reilly, 2010). The jobs with lower hours, for example casual work, on-call jobs and part-time jobs, are often low-paid (Valletta and Bengali, 2013; Wilkins and Wooden, 2014) whereas jobs with longer work hours are often more highly paid and are more likely to be male-dominated (Blau and Kahn, 2017; Minnotte, Cook, and Minnotte, 2010). Occupation and skill matching are also other factors contributing to the male-female income gap. Male employees tend to be better regarded with respect to heavier and high physically-demanding jobs that also require more work hours and are maybe better paid (Cha and Weeden, 2014; Fitzenberger and Seidlitz, 2020; Wilkins and Wooden, 2014). It is also argued that men and women have different opportunities in the labour market and time to prepare for work. Before joining the labour market, men and women make different decisions about their education that paves different directions for their future career. Moreover, during their career, male workers may have more opportunities to upgrade their skills and education by participating in training courses, while women have less available time due to unpaid tasks such as childbearing, caring and domestic work (Blau and Kahn, 2017; Vu and Yamada, 2018).

Over the past few decades, female labour force participation worldwide has decreased from 50.94% in 1990 to 47.66% in 2015 (WB, 2019). The rate is higher in Asian developing countries. For example, it is 62.54% in China, 60.93% in Thailand and 74.29% in Cambodia, compared with developed countries such as Japan (49.85%), the USA (55.83%), the UK (56.69%), of Australia (59.19%). Meanwhile, the Vietnamese labour market has experienced a considerably higher and increasing female participation rate compared with other developing countries in the region, notably from 71.3% in 2010 to 73.3% in 2015 (WB, 2019). This makes Vietnam an interesting case study. Such data may be due to the sharp growth in the real average wages (Pham and Reilly, 2007) that attracts more workers, especially women to join the labour market on account of increasing the opportunity cost for housework and caring for children and other household members.

Although men are generally found to have a higher income than women in Vietnam (Liu, 2004a; Pham and Reilly, 2007), the gender wage gap has narrowed significantly in the Vietnamese labour market during the 1990s-2000s period. In the early 1990s, female workers' average income was roughly 75% of male's average income, but it increased to 88 % in early 2000s (Pham and Reilly, 2007). The gap has recently narrowed to the extent that men are reported to have earned around 10% more than women in the 2010s (General Statistic Office, 2014; ILO, 2018). Existing studies show that female

disadvantages in the labour market account have mainly for the gender wage gap in Vietnam over the years (Liu, 2004a, 2004b; Pham and Reilly, 2007), especially in the private sector (Liu, 2004b). Female workers have fewer options to choose occupations due to their time constraint and availability to work, which prevents them from seeking better-paid jobs. There are many factors contributing significantly to the male-female income gap. These include the nature of occupation (Chowdhury et al., 2019), skills and education level, type of work (casual with no labour contract or full time with contract), observed skills (Liu, 2004a), experiences (Vu and Yamada, 2018) and working conditions (Nordman and Sharma, 2020).

In the existing literature, it is recognized that gender discrimination varies among firm sizes (Walter and Todd, 1999), which may be more pervasive in small business rather than in large enterprises as a result of the gender discrimination of enterprise's owner (Becker, 2010; Gottschalk and Niefert, 2012) or because antidiscrimination may target large enterprises rather than small ones (Carrington and Troske, 1995). The opposite could also happen if large firms with an increased monopoly power may lead to a higher level of gender discrimination in those plants (Carrington and Troske, 1995). In Vietnam, while there exists some research on gendered income inequality for the general population using data from household surveys, there is limited evidence for small and medium enterprises' (SMEs) employees. Overall, SMEs are regarded as a crucial sector in terms of employment in the Vietnamese economy that the government sees as central for inclusive economic growth (Rand and Tarp, 2020). Over the past three decades, the private sector has expanded considerably. This sector today accounts for around 97% of total number of firms of which 95% are small and medium-sized enterprises (SMEs). The SMEs contribute approximately 50% of the workforce and about 40% of GDP (Rand and Tarp, 2020).

Since foreign direct investment firms (FDI) are large and experienced while state-owned enterprises (SOEs) are financially funded by the government in Vietnam, they are more productive and resilient than SMEs, especially in times of turmoil (Ministry of Planning and Investment, 2019). Consequently, employees in foreign-invested and state-owned firms not only receive higher income but also have more secure jobs than those in the SMEs. Furthermore, SMEs in transitional economies generally have poorer equipment, facilities, capacity, less advanced technologies, lower skilled workforce, and weak market power (Hernandez, Nunn and Warnecke, 2012; Le and Rondinelli, 1993; Nguyen and Bryant, 2004; Peng and Heath, 1996). They also receive little or less attention (policies, interventions) from government's interventions. For example, the minimum-wage scheme may not be applied or trade union may not be required so wage setting or income negotiation is less distorted by the government interventions. While employees in the SMEs in Vietnam appear to earn less than other types of firms, the income gap between male and female workers may behave differently from the rest of the labour market. Since education and experience play an important role in the worker's income both theoretically and practically, they also significantly contribute to the overall earnings of the Vietnamese workers generally. However, SMEs

in Vietnam are often labour-intensive firms, where high-skilled labour force may not be required. In such cases, the requirement of skills and education in productivity is less and so this offers a good opportunity to explore gender income inequality including gender discrimination. Our hypothesis is that gendered income inequality in manufacturing SMEs in Vietnam mainly results from effects based on occupation and work hours rather than education and skills since most SMEs in Vietnam are mainly in the lower-skilled industries.

This study contributes to the literature by addressing the following research questions: (i) How large is the gender income gap in Vietnamese manufacturing SMEs? (ii) What contributes most to the gendered wage gap in the Vietnamese manufacturing SMEs? As many aspects of the small and medium enterprises, has not been investigated in Vietnam as well as in other countries (Carrington and Troske, 1995; Webster, Walker and Schaper, 2003), this paper sheds some light on the mechanism of gender income inequality. The paper also contributes to understanding further the mechanism of the gendered inequality in a developing economy that may support the case for policy to reduce the gender inequality. In Vietnam, since women continue to be the main force constituting the poor, lower-income labor group, they are more likely to be victims of underemployment or unemployment, and have precarious employment conditions than men. Working in SMEs may also make them more vulnerable compared with men or with other sectors. As reducing the gender income inequality not only makes employees better off (Chant and Sweetman, 2012; Kennedy et al., 2017) but also helps boost the firm's productivity (Klasen, 2000) that helps lead to a smart, effective economy (Chant and Sweetman, 2012), closing the income gap between male and female workers in the SMEs can improve the employee's well-being and their productivity, reduce conflict at work and improve the firm's reputation and performance and contribute to boost the economy as well as poverty reduction.

The rest of the paper is structured as follow: The next section provides a methodology approach. Section 3 is for data description. Section 4 presents empirical results and Section 5 concludes.

2. EMPIRICAL METHOD

This study investigates what accounts for the gender monthly income gap. The disparity between male and female wages may be explained by a set of regressors or predictors that vary systematically with employee and job characteristics. For instance, variations in the average wage may be explained by variations in the observable variables in the model, such as employee education, experience, occupation, etc. There are also unobservable factors such as worker family background and other external factors. The decomposition technique, which was first introduced by Oaxaca (1973) and Blinder (1973), is widely applied in this setting to examine gender income inequality (Bhaumik and Chakrabarty, 2008; Deschacht, 2017; Huber and Solovyeva, 2020; Liu,

2004b; Maurer-Fazio and Dinh, 2004; Nguyen et al., 2007; Reimer and Schroder, 2006; Scicchitano, 2012; Shahrabani, 2007; Vu et al., 2018).

The Blinder–Oaxaca decomposition approach (henceforth B-O) distinguishes between two different elements of the wage gap. The first component - the explained component - considers differentials in observable characteristics between male and female workers (endowment) by the mean. This component is constructed from the contribution of observable variables in the labours' earning equation. The second component is the unexplained element (coefficients) that represents the differentials in coefficients, which is not explained by the differences in the observed predictors. It captures the group differences in the effects of the observed predictors on the outcome. For example, women may have less work experience than men due to the time spent on childbearing and caring (the endowment component), and the effect of unexplained factors such as labour market gender discrimination that results in the wage difference between male and female employees. The contribution from such factors to the gap is considered as the coefficient component.

We start with a simple regression model for male and female workers as follows:

$$\begin{aligned} \ln W_m = & \beta_{m0} + \beta_{m1}Edu_{i,m} + \beta_{m2}Expert_{i,m} + \beta_{m3}Expert_{i,m}^2 + \beta_{m4}Hours_{i,m} \\ & + \beta_{m5}Marital_{i,m} + \beta_{m6}Relationship_{i,m} + \beta_{m7}Contract_{i,m} \\ & + \beta_{m8}Occupation_{i,m} + \beta_{m9}Region_{i,m} + \omega_{i,m}, \text{ if male,} \end{aligned} \quad (1)$$

and

$$\begin{aligned} \ln W_f = & \beta_{f0} + \beta_{f1}Edu_{i,f} + \beta_{f2}Expert_{i,f} + \beta_{f3}Expert_{i,f}^2 + \beta_{f4}Hours_{i,f} \\ & + \beta_{f5}Marital_{i,f} + \beta_{f6}Relationship_{i,f} + \beta_{f7}Contract_{i,f} \\ & + \beta_{f8}Occupation_{i,f} + \beta_{f9}Region_{i,f} + \omega_{i,f}, \text{ if female,} \end{aligned} \quad (2)$$

where $\ln W$ is the monthly wage in log form, β is a vector of coefficients and intercept, ω is the error term. The subscript m refers to males and f refers to females. X is as vector of control variables in the earning equation. Including workers' education ($Educ$) which generally have a significant positive link with labour's wage (Kabeer, 2005). Since small and medium firms mostly operate in low-skilled sectors (Rand and Tarp, 2020), education is expected to have a smaller impact on employees' income. Experience ($Exper$) refers to the number of years accumulated in the workers' career, and experience-squared is added to capture a non-linear relationship between work experience and income. Workhours ($Hours$) is employee's average monthly working hours, we add this to capture a higher wage premium on account of longer work hours. *Marital status* takes value of 1 if a worker is married, and 0 otherwise. *Relationship* refers to how close is an employee with the enterprise's owner, which equals 1 if a worker is the owner's relative (husband/wife/children or relative) and 0 otherwise.

Employment contract represents the contract status that employees have signed with the firm, equals 1 if they have a written employment contract and 0 if otherwise. *Occupation* has six categories (managers, professional workers, office workers, sales workers, service workers, and production workers). Manager group is set as the reference group. *Region* (North, Central, and South) is added to capture income differential across regions in the country.

The gap in mean outcomes of male and female is equal to

$$\bar{Y}_m - \bar{Y}_w = \bar{\beta}_m \bar{X}_m - \bar{\beta}_w \bar{X}_w = \bar{\beta}_m (\bar{X}_m - \bar{X}_w) + \bar{X}_w (\bar{\beta}_m - \bar{\beta}_w) = \bar{\beta}_m \Delta X + \bar{X}_w \Delta \beta, \quad (3)$$

where Y is monthly wage in log form ($\ln W$), β is a vector of coefficients including intercept, and ε is the error terms. X is a vector of independent variables. Equation (3) is a special case of a general decomposition (4) where the interaction term is often small or negligible as below:

$$\bar{Y}_m - \bar{Y}_w = \bar{\beta}_m \Delta X + \bar{X}_w \Delta \beta + \Delta X \cdot \Delta \beta. \quad (4)$$

The gap in mean outcomes between men and women can be thought of as deriving from a gap in *endowments* (E) (the first term of Equation (4)), which is the differential between the sexes that can be explained by the regressors weighted by the coefficients of female worker's observable characteristics. This term indicates the wage income difference between men and women that can be explained by differences in the predictor variables (endowments), or the observable characteristics of the male and female workers. In other words, the endowment element measures the expected changes in women's mean wage income if women had men's observed predictor levels. Meanwhile, the second component is gap in *coefficients* (C) (the second term of Equation (4)), is the unexplained component of the return to factors/endowments or gender inequality, weighted by the average characteristic of the female workers. The coefficient component is the unexplained differential (differences between male and female workers' coefficients) weighted by the female's (mean) predictor variable levels. It measures the expected change in women's mean wages if women had male unobserved characteristics that are reflected in male's coefficients. This component may also capture sex discrimination in the labour market as well as the impacts of other factors that are not observed in the data. The last term of Equation (4) is a gap arising from the interaction between endowments and coefficients (CE).

We first estimate the earnings equation using the OLS technique and standard Blinder-Oaxaca decomposition. Since there is a potential endogeneity bias that occurs in the earning model where independent variables (most notably education) may be correlated with error terms, we then extend our model to an instrumental variable (IV) approach. While it is hard to find a perfect instrumental variable (Wooldridge, 2012), labour economists have used family's education background or number of siblings to instrument for own education. (e.g., Doan and Steven, 2011; Solon, 2004; Lee, 2004). It is

argued that parents with higher education have more knowledge and resources to invest more in their children's education. This point especially makes sense in the Asian context, including Vietnam, where the family bonding is strong, and there is lack of government welfare supports. Children are expected to look after their parents when they are old. Investing in children's education means investment in their own future retirement. Since the Vietnamese parents in the survey were mostly growing up during the wartime, when the country was devastated and very poor. Given limited resources and gender attitude in the transitional society by that time, education was often prioritized to boys rather than girls (Haughton and Haughton, 1995). We therefore choose father's education as an instrument for worker's education. The relationship between father's and worker's education is reported in the Appendix 1, which shows that workers' education is highly correlated with his/her father's education.

3. DATA

This paper uses data from the *Employee Survey*, which is a module of the Vietnamese Small and Medium manufacturing enterprises (SMEs) survey. It is a face-to-face survey that is conducted every two years by the United Nations University (UNU) in collaboration with the University of Copenhagen and a range of Vietnamese government agencies. More than 2,500 domestic private manufacturing firms from 10 provinces across the country have participated in the survey with a large proportion of repeated firms over time. The Employee module (available for 2011, 2013 and 2015) covers approximately a quarter of randomly selected firms in the SMEs survey that collects information on a random number of employees among the selected companies. Employee data contain information about worker characteristics such as education, experience, sex, family background, relationship with owners, labour contract status, etc. There are nearly 1,500 employees participating in the survey each year, making up a dataset of 4,309 observations in three years.

The dependent variable in this study is the total monthly wage ($\ln W$) (wage is in millions Vietnamese dongs - VND). Some workers report hourly, daily, or weekly wages which we converted to a monthly wage. Total wages reported in the survey include wages and salaries, and allowances in cash or in-kind.

The average wage for males during this period is nearly 9% higher than that for females (VND3,761 million compared with VND3,454 million). Our variable of interest is *gender* (0 if female and 1 if male). Male workers account for approximately 59% of the workforce. Table 1 provides some basic statistics of the gender wage gap in the SMEs survey.

Overall, male workers earned 8.5% more than females' wage, and the gap is smallest in 2013 with males earning 7.3% more than females. This gap is smaller than the gap in the general labour market in Vietnam, which stands at around 12% overall in the study period (Cooklin et al., 2016). Table 2 below provides more information on the wage gap

by age groups.

Table 1. Average Monthly Wage Gap Between Male and Female Workers

Year	Male		Female		Male-female	
	Mean	SD	Mean	SD	Diff (%)	P-value
2011	3,037	2,143	2,800	1,334	108.5	0.000
2013	3,713	1,131	3,459	1,182	107.3	0.000
2015	4,611	2,093	4,178	1,303	110.4	0.000
2011-15	3,761	1,933	3,454	1,386	108.5	0.000

Notes: Authors' calculation from the SME survey. The average wage is in thousand Dongs (VND).

Table 2. Average Monthly Wage by Age Group and Gender

Age	All	Male	Female	M-F differentials (VND)	M/F (%)
<25	3,132	3,188	3,031	157	105.18
25-29	3,419	3,518	3,296	222	106.74
30-34	3,782	3,849	3,685	164	104.45
35-39	3,795	3,953	3,572	381	110.67
40-44	3,834	3,938	3,663	275	107.51
45-49	3,974	4,330	3,464	866	125.00
50-54	3,633	3,886	3,325	561	116.87
55-60	3,634	3,761	3,454	307	108.89
Overall	3,641	3,761	3,454	313	108.50

Notes: Authors' calculation from SMEs. The average wage is in million dongs (VND)

Females have lower wages than males in all age groups with the largest gap in the 45-49 age group where males earn 25% more, followed by age group 50-54 (~17% more). This is different from the overall labour market wage gap in Vietnam where the largest disparity was found for the 50-54 age group (Chowdhury et al., 2019). The smallest gap is seen within the 30-34 age group (~4%), which follows the pattern in the labour market where the smallest gap is observed for the same age cohort with the gap of approximately 4% (Chowdhury et al., 2019). More details about the data description are shown in Table 3 below.

As has been shown earlier, female workers have earned less than male workers in Vietnamese manufacturing small-and-medium-sized firms. Unlike the general labour force where men have higher education than women (Cooklin et al., 2016), SME female workers have slightly higher education than male workers. Females appear to be slightly

more experienced than males in the same type of work (16.48 years of experience compared with 16.23). Both male and female workers in the SMEs work longer hours than the general workforce (approximately 48.5 hours per week for men and 47.68 hours for women in the SMEs versus 46 hours for men and 42.2 hours for women in the general workforce according to (Cooklin et al., 2016). The gap in the work hours between men and women in manufacturing SMEs is significantly smaller in relation to that of the general workforce. While it is equally dominated by men and women in professional functions as the manager, female workers appear to outweigh male employees in office, and sale roles. Male workers are more likely to dominate in production roles.

Table 3. SME Male-Female Worker Differences

Variables	Overall		Male		Female		T-test
	Mean	SD	Mean	SD	Mean	SD	P-value
Wage	3,634	1,735	3,761	1,933	3,454	1,386	0.000
Monthly wage (in log)	8.12	0.376	8.16	0.38	8.08	0.36	0.000
Education (years)	12.28	2.980	12.62	3.13	12.04	2.85	0.000
Marital status (married =1)	0.77	0.42	0.80	0.39	0.75	0.43	0.000
Experience	16.38	10.18	16.23	10.67	16.48	9.82	0.400
Monthly workhours	192.42	27.66	193.62	29.84	190.72	25.95	0.007
Have employment contract (yes=1)	0.50	0.50	0.57	0.49	0.45	0.49	0.000
Occupations							
[1] Manager	0.11	0.31	0.12	0.32	0.09	0.29	0.012
[2] Professional worker	0.09	0.28	0.15	0.35	0.05	0.22	0.000
[3] Officer	0.08	0.28	0.15	0.36	0.04	0.19	0.000
[4] Sales worker	0.07	0.26	0.11	0.31	0.05	0.22	0.000
[5] Service worker	0.04	0.19	0.05	0.22	0.02	0.16	0.000
[6] Production worker	0.59	0.49	0.41	0.49	0.79	0.44	0.000
Regions							
[1] Northern	0.41	0.49	0.42	0.49	0.41	0.49	0.278
[2] Southern	0.25	0.43	0.24	0.42	0.26	0.43	0.839
[3] Central	0.33	0.47	0.33	0.47	0.33	0.47	0.143

Notes: Authors' estimate from the SME manufacturing sector sample.

4. RESULTS

We first employ a simple T-test for the difference of the mean of wage (in log form) to examine the difference in monthly wage income between the male and female workers

(see Appendix 2 in the Appendix). The test result shows the difference is 7.4% and statistically significant at the 1% level. We then employ regression analyses uncover the gendered wage difference (Appendix 3). The result from simple OLS estimation (Appendix 3) shows there is a wage gap of 7.3% between male and female workers in the Vietnamese manufacturing SMEs. This is significantly lower than the wage gap of approximately 12% in the 2010-2017 period for the general workforce (Cooklin et al., 2016), that contrasts with other study in the US (Carrington and Troske, 1995). As expected, the return to education is significantly lower in SMEs (2.9%) than the overall population at around 6% during the 2010-2015 period (Doan, Le, and Tran, 2018; Doan, 2011). Since the manufacturing SMEs mostly operate in the areas that do not require high-skilled workers, the reward for education thus is lower. As particular jobs in the low-skill areas, e.g. garment industry, may require a similar minimum level of education to be able to do the job well, higher level of education is seemingly underutilized.

The descriptive analysis seen so far demonstrates how observed factors affect labour wage earnings and how large is the wage gap between male and female workers in SMEs in Vietnam. The next stage of the empirical investigation decomposes the wage gap to see what contributes to the earnings gap between male and female workers in SMEs. The B-O decompositions based on OLS and IV techniques are applied and we employ the bootstrapping technique to correct for the standard errors. The decomposition results are presented in Tables 4 and 5 below.

Table 4. Overall Decomposition Results of Wage Gap Between Female and Male Workers

	OLS		IV	
	Coefficients	%	Coefficients	%
Log wage (M)	8.155** (0.0075)		8.155** (0.0075)	
Log wage (F)	8.081** (0.0084)		8.081** (0.0086)	
Difference (M-F)	0.0737** (0.0114)	100%	0.0737** (0.0116)	100%
Explained component	-0.0407** (0.0086)	-55.2%	-0.0462** (0.0086)	-62.7%
Unexplained component	0.1070** (0.0113)	145.2%	0.113** (0.011)	153.3%
Interaction term	0.0075 (0.0081)	10.0%	0.0073 (0.0082)	9.4%

Notes: Robust standard errors in parenthesis, bootstrapped with 2,000 replications, statistically significant at 10% (+), 5% (*) and 1% (**). Education is instrumented by the father's education in the B-O IV estimator.

The decomposition shows that the difference in monthly wage between male and female workers is 7.4% in both OLS and IV decomposition. The explained component (endowment) is -0.0407 reveals that the women's endowment, such as education,

experience, work time, occupation (observed factors) helped reduce the gap by 4.07% (out of 7.4%). The observed factors in the earning equations can explain 55.2% of the gender income inequality in the Vietnamese manufacturing SMEs (column 3). The unexplained component (coefficients) is 0.107 (column 2), which means the unobserved factors helped increase the wage gap between men and women to 10.7%, even larger than the total gendered wage gap of 7.4%. This implies that if women have the men's coefficients, the wage gap could be reduced by another 10.7%. In other words, the unobserved factors, including labour market discrimination, lead to the gendered income gap of 10.7% (accounting for 145% of total gendered wage gap (column 3)) between men and women, larger than the contribution of observed factor differences between men and women. The interaction component and the interaction between these two components is small, just 0.0075. There is a similar pattern found in the IV technique.

Overall, the gender income gap in the SMEs is considerably smaller than the common income gap in then Vietnamese labour market. Moreover, the average wage in the SMEs are relatively lower than in the general workforce (~ 15 % lower). Small firms operate in lower skilled or lower technology sectors with many of them are household business who face credit constrain and limited resource, that may negatively affect firm productivity and the welfare of their owners and employees (Rand and Tarp, 2020). While FDI firms are welcomed and supported to do their business in Vietnam and SOEs are protected by the government (Rand and Tarp, 2020), SMEs appear to have less government interventions to improve their performance and employees' wellbeing.

A closer analysis of the factors contributing to the wage gap may help to further our understanding of the mechanism behind the gap in Vietnamese SMEs. Table 5 presents detailed decomposition results that provide more information on what factors contribute and by how much to the wage gap. In each model (Table 5, columns 2-5 for OLS and 6-9 for IV decomposition), we present results representing two components: endowment and coefficients in two forms: estimated value (columns 2, 4, 6, and 8) and percentage value (columns 3, 5, 7, and 9). The bottom line shows the aggregate contribution of all the variables in each component, which is 100%. The endowments, which explain approximately 55.2% of the gender pay gap in the SMEs, is significantly contributed to by occupation, which is somewhat align with other developing countries such as China (Hughes and Maurer-Fazio, 2002). It accounts for the majority of the explained part (66% in the OLS model and 80% in IV decomposition model, see columns 3 and 7 in Table 5). Women's occupational choice, which is often in lower paid jobs, leads to a larger the wage gap. This finding is in line with the research confirming that women appear to choose lower-paid occupations in Vietnam (Chowdhury et al., 2019).

Other observed variables such as education, labour contract status and marital status help widen the income gap between the sexes, while work experience, including both original and quadratic forms, and work hours help narrow the gap. For instance, education helps *reduce* the wage gap between male and female employees by 0.0092 points (column 2) or 22.5% (column 3) in total explained part of the gap. Longer monthly work hours help narrow the gap by about 9.7% (column 3) of the explained part of the income gap.

Table 5. Detailed Decomposition of Wage Gap Between Male and Female Workers

Variables	OLS decomposition				IV decomposition			
	Explained		Unexplained		Explained		Unexplained	
	Coeff	%	Coeff	%	Coeff	%	Coeff	%
Education	-0.0092**	22.5	-0.0092	-8.5	-0.0004	0.9	-0.0044	-3.9
<i>Work exper (sum)</i>	<i>0.001</i>	<i>-2.4</i>	<i>0.0676</i>	<i>63.0</i>	<i>0.0008</i>	<i>-1.6</i>	<i>0.0652</i>	<i>57.8</i>
Work experience	0.0006	-1.4	0.123+	114.9	0.0003	-0.6	0.117+	103.5
Work exp-squared	0.0004	-1.0	-0.0554+	-52.1	0.0005	-1.0	-0.0518	-45.9
Monthly workhours	0.0040*	-9.7	-0.0333	-31.0	0.0040*	-8.7	-0.0348	-30.8
Marital status	-0.0044**	10.7	-0.0347	-32.3	-0.0051**	11.1	-0.029	-25.7
Relationship	-0.0008	1.9	-0.0054	-5.0	-0.0009	1.9	-0.0056	-4.9
Employment contract	-0.0070**	17.4	-0.0254*	-23.6	-0.0101**	21.9	-0.0285*	-25.3
<i>Occupation</i>	<i>-0.027</i>	<i>65.9</i>	<i>-0.0107</i>	<i>-10.0</i>	<i>-0.037</i>	<i>80.1</i>	<i>0.0127</i>	<i>-11.3</i>
Managers	-0.0041*	10.3	-0.0037	-3.4	-0.0043*	9.3	-0.0031	-2.74
Professionals	-0.0015	3.2	0.0015	1.4	-0.0042*	9.2	0.0001	0.1
Officer	-0.0032	6.8	-0.0089+	-8.3	-0.0044*	9.4	-0.0096+	-8.5
Sale workers	0.0006	-1.2	0.0033	3.0	0.0006	-1.3	0.0034	3.0
Service workers	0.0030**	-6.4	0.0032+	3.0	0.0037**	-8.0	0.0038+	3.1
Prod workers	-0.0217**	46.2	-0.0061	-5.7	-0.0284**	53.6	-0.0073	-6.4
<i>Region</i>	<i>0.0014</i>	<i>-3.4</i>	<i>0.0109</i>	<i>10.1</i>	<i>0.0012</i>	<i>-2.6</i>	<i>-0.011</i>	<i>9.7</i>
Central	0.0002	-0.5	0.0267**	25.0	0.0002	-0.43	0.0291**	25.7
Northern	-0.0007	1.7	0.0077	7.2	-0.0009	0.19	0.0062	5.5
Southern	0.0019+	-4.6	-0.0235**	-21.9	0.0019+	-4.11	-0.024**	-21.6
<i>Year</i>	<i>0.0011</i>	<i>-2.9</i>	<i>-0.0003</i>	<i>-0.3</i>	<i>0.0013</i>	<i>-2.8</i>	<i>0.152</i>	<i>-0.3</i>
2011	0.0005	-1.2	-0.0046	-4.3	0.0006	-1.3	-0.0025	-2.2
2013	0.0000	0.0	0.0012	1.1	0.0000	0.0	-0.0001	-0.1
2015	0.0007	-1.7	0.0031	2.9	0.0008	-1.5	0.0023	2.0
Constant			0.1480	137.6			0.1520	134.7%
Total	-0.0407	100	0.107	100	-0.0462	100	0.113	100%

Notes: Bootstrapped robust standard errors with 2000 replications, but we do not report here for succinct reason, statistically significant at 10% (+), 5% (*) and 1% (**).

The unexplained part of occupation (columns 4 and 8, Table 5) shows that work experience accounts for most of the unexplained part of the income gap between sexes overall (63% in OLS model and 58% in IV model). It makes the second largest contribution to the unexplained part of the gap after the 'constant' coefficient (135-137%). In contrast to this, the effects of monthly work hours, employment contract status, and marital status help reduce the gap for women. This is to say if women have men's coefficients (or effects) of these factors, they would reduce the wage gap by, say

31% (column 5) (for effect of monthly work hours). The region, time and relationship explain little in the wage gap.

The biggest contributor to the unexplained component of the wage gap is due to the 'Constant' term (135-138%). This unexplained part is attributable to the omitted or unobserved factors including gender discrimination in the Vietnamese labour market. Social norms may contribute to this part of unexplained component. In Vietnam, boys particularly in rural areas, are favourably invested with better education and nutrition than girls; boys and girls at a very young age have already picked up certain occupations. The occupation selection is heavily influenced by their parents (Chowdhury et al., 2019). The differences in men and women's characteristics may also play a role insofar as women in Vietnam may be less likely to take a risk in their career as compared to men. This can lead women to choose safer and more secure jobs that are normally lower paid. Physical health is another issue that limits the chance of women to obtain higher paid jobs in manufacturing SMEs as such firms operate in jobs requiring heavier physical duties, which are viewed as more appropriate for male workers.

5. CONCLUSION AND DISCUSSION

This study has investigated the gender wage gap between male and female workers in small and medium-sized manufacturing firms based on a unique survey of employees in the Vietnamese manufacturing sector during the 2011-2015 period. The B-O decomposition approach was employed to decompose the income difference between sexes. The study finds that the income gap is 7.4% which is relatively smaller than the gap found for the general workforce in Vietnam which has been confirmed in the previous studies (Liu, 2004a; Vu and Yamada, 2018), and much smaller than the common wage gap of larger than 15% found elsewhere in Europe (Jurajda, 2003; Mysikova, 2012) or Asia (Chen et al., 2013; Deshpande, Goel and Khanna, 2018). The gender income inequality in the SME manufacturing sector in Vietnam is not as wide as seen in higher skilled sectors as well as in many other countries. This study helps shed light on the mechanism of gender income inequality and helps policy makers to tackle the causes of income gap or inequality between sexes as well as amongst all workers.

Within the explained part of the wage gap, occupation is found to be the most important contributor to the income gap. Differences in endowment such as education, employment contract status, monthly work hours, and marital status play lesser roles in workers' income, while work experience, relationship with owners, and region contribute little to the gendered wage gap. However, the effect of work experience is strong in the unexplained part of the wage gap, and much stronger than that of education as well as other observed factors. This implies that the SMEs value men's work experience more than that of women thereby making the income gap larger. This may imply that men may work in industries where work experience is more highly rewarded, e.g. machinery production whereas women may work in lower skilled or manual industries like

garment, shoemaking, equipment, or machinery assembly. Unfortunately, the survey data coverage does not extend to information on sector or industry.

Although the wage gap is found to be smaller than that of the general workforce, the gender wage gap is mostly unexplained by observed factors or workers' endowments. The largest part of the wage gap is most likely accounted for gender discrimination such as social norms towards women in the labour market, unobservable factors, omitted factors such as industry, sector, etc.

Since the main factor that affects the gender paid gap in the manufacturing SME is the occupation that workers choose, considerations in the government policy to address the gender wage gap in the Vietnamese manufacturing SMEs should focus on how to support women, especially young girls, to choose better-paid jobs. More attention should be paid to improving the ability of women to choose more flexible jobs. This may require women spending less time on housework and child-care, possibly through new incentives for men to share those tasks with their partners. More employment options offered to women in the manufacturing SME sector maybe also help them to have more chances to choose the best-suited jobs. Furthermore, increasing the average wage as well as minimum wage enforcement in the SMEs is as important as reducing the gender wage gap. As it has been shown in the previous section, the average wage in the manufacturing SMEs is fairly low compared with the other sectors in the labour market, especially foreign-invested firms and public sectors. More changes in government policy should also consider some additional packages that may allow SMEs to increase their holiday pay as a way to raise their employees' total income. Furthermore, as gender-based discrimination in recruitment remains common in Vietnam, especially in private enterprises (ILO, 2015). Breaking down this barrier, as we show previously occupation plays a crucial role in income gap, will help women to earn as much as men do helping narrow or eliminate the gender wage gap in the sector.

Due to data limitations, we are not able to take into account the role of domestic unpaid time, health problems or working conditions that may contribute to the income gap between men and women in the SMEs. Those factors may affect employees' work committed time, efforts and productivity which in turn affect their income. Further investigations on the issue that takes into account those important factors is needed to help provide further understanding about the gender income gap in the Vietnamese SMEs.

APPENDIX

Table A1. Employee's Education and His/Her Father's Education Relationship

Variable	Coefficient
Father's education	0.152** (0.0121)
Gender (male=1)	0.554** (0.0891)
Northern region	1.114** (0.102)
Southern region	0.549** (0.116)
2013	0.572** (0.110)
2015	1.554** (0.153)
Constant	9.978** (0.151)
Observations	4,309
R-squared	0.069
F-statistic	242.17
Prob>F	0.000

Notes: Standard errors in parentheses, statistically significant at 10% (+), 5% (*) and 1% (**). 2011 is the reference group for year and Central is the reference group for region.

Table A2. T-Test for Wage Difference (in Log Form) between Men and Women

Group	Mean	Std. Err.	Std. Dev	[95% Conf.	Interval]
Male	8.1548	0.0075	0.3811	8.1399	8.1697
Female	8.0811	0.0085	0.3622	8.0642	8.0979
Combined	8.1244	0.0057	0.3752	8.1131	8.1356
Male-female diff	0.0737	0.0115		0.0510	0.0963
T-value	6.3804				

Table A3. Earnings Equation Estimates for Manufacturing SMEs Workers

Variable	Simple OLS	Return to education	Earning equation	IV
Gender (men=1)	0.0725** (0.0102)	0.0852** (0.0098)	0.112** (0.0102)	0.0974** (0.0128)
Education		0.0292** (0.0018)	0.0165** (0.0021)	0.0527** (0.0181)
Experience		0.0112** (0.0017)	0.0067** (0.0019)	0.0103** (0.0027)
Exper-squared		-0.0002** (4.23e-05)	-0.0001** (4.41e-05)	-0.0001* (4.62e-05)
Monthly workhour			0.0013** (0.0002)	0.0013** (0.0002)
Marital status			0.0440** (0.0139)	0.0062 (0.0237)
Relationship			0.0101 (0.0110)	0.0056 (0.0116)
Employment contract			0.0281* (0.0110)	0.0230 (0.0279)
Professionals			-0.111** (0.0223)	-0.140** (0.0272)
Officers			-0.117** (0.0223)	-0.116** (0.0231)
Sales workers			-0.140** (0.0228)	-0.113** (0.0272)
Service workers			-0.229** (0.0290)	-0.161** (0.0453)
Prod workers			-0.211** (0.0172)	-0.131** (0.0434)
Northern		0.1020** (0.0113)	0.0997** (0.0110)	0.0746** (0.0169)
Southern		0.0821** (0.0127)	0.0784** (0.0125)	0.0737** (0.0131)
2013	0.239** (0.0121)	0.234** (0.0115)	0.233** (0.0112)	0.230** (0.0117)
2015	0.436** (0.0126)	0.423** (0.0121)	0.430** (0.0118)	0.418** (0.0136)
Constant	7.863** (0.0105)	7.323** (0.0299)	7.383** (0.0500)	6.907** (0.242)
Observations	4,309	4,309	4,309	4,309
R-squared	0.227	0.284	0.337	0.291

Notes: Standard errors in parentheses, statistically significant at 10% (+), 5% (*) and 1% (**). Dependent variable ($\ln W$) is wage in log. Column (4) reports IV estimation where education is instrumented by his/her father's education. Manager is the reference group for occupations, and Central is the reference group for region.

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Mailing Address: Mark J. Holmes, Waikato Management School, University of Waikato, Private Bag 3105 Hamilton, New Zealand, E-mail: holmesmj@waikato.ac.nz.

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