



# The Impact of Minimum Wage Policy on Employment in Myanmar\*

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Received: December 17, 2020. Revised: January 07, 2021. Accepted: March 05, 2021

## Abstract

**Purpose:** The purpose of this paper is to analyze the impact of the minimum wage policy and the employment labor force in Myanmar by exploring firms' actions such as installing supplementary machines to substitute for labor resources and by addressing gender issues in employment. **Research design, data, and methodology:** This paper applies a fixed-effect estimation method by using the World Bank's enterprise panel data set surveyed in Myanmar. **Results:** Findings suggest that the minimum wage reduces both full-time and part-time employment, while the first minimum wage policy increases overall female employment. The adverse impacts are more pronounced for female employees of Joint Venture enterprises and enterprises located in the less-populated regions. Investment in capital such as equipment and machinery increase to substitute for labor after the minimum wage policy implementation; as a result, full-time employment slightly decreases. **Conclusions:** Appropriate measures concerning the minimum wage policy must be prepared by the government and institutions related to the labor union to serve the well-being of employees. Government of Myanmar should fix the minimum wage in a reasonable period based on the fiscal year for both employers and employees to prevent possible issues and losses resulting from the minimum wage being set.

**Keywords:** Minimum Wage, Policy, Gender, Employment

**JEL Classification Code:** E24, J38, J16

## 1. Introduction

The minimum wage is a commonly used public policy instrument, while legislation of a minimum wage has generated a debate among contemporary economists and policymakers. Developed countries have also adopted minimum wage policies, while many developing countries should consider for the implementation of minimum wage policy or reforming existing minimum wage systems. Del

Carpio, Nguyen, and Wang (2012) asserted that since many developing countries have legislated minimum wage regulations or amended current minimum wage systems, investigating to what extent minimum wage changes affect employment is imperative because the circumstances of the labor market will not be completely the same as those in developed countries.

According to Lemos (2009), the minimum wage will possibly be an advantageous policy instrument to get rid of poverty and inequality. Menon and Rodgers (2017) addressed that the results for employment of the minimum wage vary across studies for developing and economic transition environment. In Myanmar, applying the minimum wage policy to low-level workers is necessary for the improvement of life quality, while not much research concerning the minimum wage's effects on employment has been conducted in Myanmar.

Previous studies (Hamermesh, 2002; Harrison, & Leamer, 1997) stated that there is lack of research on the minimum wage in developing countries. Belman and

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Wolfson (2016) also claimed that various research in minimum wage has mainly focused on the Organization for Economic Co-operation and Development (OECD) countries. Therefore, the purpose of this paper is to investigate the effects of minimum wage policy in Myanmar and how the introduction of minimum wage policy has affected the employment of labor force. After adopted minimum wage policy since 2015, the employment effects of the minimum wage in the case of Myanmar have drawn much attention. This study explores whether enterprises, especially in the manufacturing sector, substitute machines for labor due to the rise of the minimum wage. The following research questions are applied in this study: i) does the minimum wage policy have an impact on full-time and part-time workers' employment in Myanmar? ii) does the minimum wage policy have an impact on female workers' employment in Myanmar? and iii) do enterprises substitute physical capital such as machines instead of labor after the minimum wage policy implementation?

## **2. Literature Review**

### **2.1. Wage Policy**

Wage policy is a set of institutions intended to bolster the earnings of workers, especially those who have less negotiating power (Levin-Waldman, 2010). A national wage policy is one subdivision of a national economic policy (Commons, 1923). The wage policy of any country should be justified, credible, and reasonable from both economic and social viewpoints. The minimum wage has been a core element of public policy for more than a century (Lin, 2016). Soares (2018) claimed that legislation for setting up a wage floor has long been an effective means of reducing inequality and ensuring social justice. Freeman (1996) stated that increasing amount of the minimum wage is an effective option to alleviate poverty and to supply a decent wage to lower-level workers.

### **2.2. Minimum Wage Policy on Employment**

Although a minimum wage is a fundamental aid for the sake of low-earning and disadvantaged families, there are some unemployment effects such as destroying jobs for low-skilled workers, forcing the workers to work fewer than previous working hours, or finding it more difficult to get a job (Neumark, 2018). Concerning the employment impact of the minimum wage, people who are in favor of the policy argue that it ensures living standards in good condition and supports the poor to get benefits, whereas opponents highlight unemployment and other adverse

effects to the poor (Sugiyarto, & Endriga, 2008). The success and outcome of the minimum wage policy depend partly on the specific circumstances of economic and social conditions and labor market situation of a country, while it also depends a great deal on the policy's management and implementation (Bernhardt et al., 2016). A minimum wage law is implemented to increase the quality of low-paid employment and accomplished by economy-wide changes to wages and working habits (Choi, 2018). Schmitt (2013) discussed that it is plausible that substantial adjustment channels emerge for the higher-wage floor for employers and workers. Choi (2018) stated that continued increases and a steep minimum wage rise have more unintended adverse consequences. Katz and Krueger (1992) suggested that employment increases could be achieved by a small minimum wage raise in monopsony models prediction, while employment decreases may appear because of an extensive raise in the minimum wage. According to Neumark and Wascher (2006), there is a trend towards the negative and statistically significant impact on employees due to hiking minimum wages where the researchers concentrate on longer panel studies that include state and time variation in minimum wages.

In a developing country context, different labor conditions such as lack of education and gender ratio, there are significant heterogeneous effects on employment (Del Carpio et al., 2012). Alatas and Cameron (2003) presented that hikes in the minimum wage are not linked to evidence of unemployment in large firms, whereas small and domestic firms show negative employment impact in low-income countries. Sugiyarto and Endriga (2008) found that the unemployment effects of minimum wages on low-skilled workers are far more serious among small firms, while those effects are insignificant among exporting and foreign-owned firms. The empirical evidence presented by Elangkovon (2012) revealed that countries that adopt a minimum wage policy have a tendency towards an effective wage effect but insignificantly adverse employment among workers. Menon and Rodgers (2017) observed positive impacts on rural sector employment and tendencies to encourage more formal-sector jobs due to legislating a minimum wage law and a rise in the minimum wage in the case of India.

The political discourse in most countries has therefore shifted from the issue of whether a compulsory minimum wage is appropriate to that of how best to implement and execute a minimum wage program, taking into account varying national expectations and circumstances (Soares, 2018). The minimum wage issue is still controversial in Myanmar labor relations (Lwin, 2017), since there has been a serious conflict between employers and workers regarding wages and salary before the minimum wage was set up. In an attempt to settle the wage disputes and show the

transparency of institutional reforms, the government of Myanmar passed the 2013 Minimum Wage Act in 2015 after two years of tripartite negotiations (Bernhardt, De, & Thida, 2017; Oo et al., 2019).

Compared to other ASEAN countries, Myanmar's minimum wage is found to be the lowest and does not have a different minimum wage among states and regions across the country (Lwin, 2017). Bernhardt et al. (2016) suggested that the minimum wage scheme is generally revised to suit new economic and social conditions. Mungoven (2018) stated that when defining the level of a minimum wage, it is necessary to consider a complex balance of many factors involving the basic requirements of workers and encouraging enterprises to be productive and to have sustainable growth for the competitiveness in the regional economy. Myanmar's minimum wage is low when compared with the poverty line, whereas it is high concerning labor productivity (Cunningham et al. 2018). In a study of industrial dispute resolution in Myanmar, Lin et al. (2019) suggested that peaceful negotiation between workers and employers based on mutual benefits and organizing a formal negotiation mechanism like a union can contribute to healthy industrial relations, thereby providing for sustainable productivity and growth of industries.

### **2.3. Minimum Wage on Business Sector**

Sabia (2015) highlighted that the minimum wage hikes can stimulate national economic growth if production processes depend only on highly-skilled workers, likely, by triggering capacity-building for less qualified workers. Rizov, Croucher, and Lange (2016) proposed that the introduction of minimum wage enhances rewards and productivity by means of beneficial wage structures or through alignment of actual wages and legitimated wages. In contrast, when wages are significantly raised, it leads to reduction in firms' productivity and profitability (Bell, & Marchin, 2018; Draca, Machin, & Reenen, 2011). In the same vein, minimum wage increases bring higher labor costs in firms that result in adverse employment effects which are obstacles to economic growth (Sabia, 2015). Thus, businesses that operate around the profit margin are expected to leave the market due to a steep rise in wage floor (Luca, & Luca, 2019). Alvarez and Fuentes (2018) mentioned that a steep rise in wage level had an adverse effect on firms' capacity. Whenever there is an increase in minimum wage, Choi (2018) pointed out that employers should deal with the situation through alternative means such as raising prices, cutting working hours, or reducing training or labor costs. Hamermesh (2014) stated that higher labor costs such as increasing minimum wages and additional employees' benefits can reduce the company's profit, employment, and working hours.

### **2.4. Minimum Wage Policy with Gender Issue**

Regarding the gender wage issue, Rubery and Grimshaw (2011) claimed that minimum wage is not only a single strategy, but also an essential element in a more comprehensive policy approach to narrowing gender wage inequity. Ortiz-Ospina (2018) addressed proper public policy and management to minimize the sizeable gender inequality. Menon and Rodgers (2017) asserted that the governments have to ensure the enforcement of and compliance with the policy, especially in industries employing a large concentration of female workers. Sun, Wang and Zhang (2015) stated that the reduction of working hours occurs remarkably among women, as employers suppress wage increases for the weakest group of workers.

## **3. Hypothesis Development**

The imposition of minimum wages was a very significant step to address the requirements of workers and their families in Myanmar (Lwin, 2017). The issue of workers' wage levels has been an important labor-relations issue and a context for many strikes in Myanmar (Bernhardt, De, & Thida, 2017).

### **3.1. Effects of Policy Intervention on Full-time Employment**

For the purpose of transforming existing outcomes, promoting validity, and better consequences, many countries call on the government or government agency for policy intervention (Rogers et al., 2017). The innovative policy dealing with the economy is commonly enacted by the government to meet the objectives of economic growth, productivity growth, increased employment, and competitiveness (Chaminade, & Edquist, 2006). Especially after the policy change, the research has mostly been carried out to measure impacts and aggregate outcomes in to compare conditions before the policy change (Huesch, Østbye, & Ong, 2012). Minimum wage policy legislation is one of the significant instances that can affect the distinction between employment and unemployment when it covered only a part of the economy (Mincer, 1976). Neumark and Wascher (2007) addressed that when segments of population, economic circumstances, and contexts are different, minimum wage effects may differ. The relationship between population size and problems of social and economic underdevelopment conditions such as sizeable inequality, extreme poverty, and prevalent unemployment must be examined with higher priority (Todaro, & Smith, 2014). Unlike other countries, Myanmar

does not divide into three or four minimum wages in the country, and the rate of fixed wages set by Myanmar is found to be the lowest among ASEAN countries (Lwin, 2017). Labor turnover rates in Myanmar were very high before enacting the minimum wage policy and reflected dissatisfaction on the job, such as much worse working conditions, lengthy working hours, low wages, or other factors (Bernhardt, De, & Thida, 2017). In order to completely recognize to what extent the stakeholders experience the consequences of policy intervention, the government is required to apply reasonable and reliable resources in evaluating and keeping track of minimum wage policy (Bernhardt et al., 2016). This study hypothesized that the higher expectation of minimum wage policy intervention affects full-time employment of the workers and also based on type of sector, ownership, and population size.

**H1:** Minimum wage policy intervention affects full-time employment.

**H1a~c:** Minimum wage policy intervention based on type of sector, type of ownership, and population size affects full-time employment.

### **3.2. Effects of Policy Intervention on Part-time Employment**

According to Rutkowski (2003), firms tend to adjust working hours and employment level to balance the operation, when there is a hike in the minimum wage. Neumark and Wascher (2008) suggested that whenever there is a change in the minimum wage, employers make adjustments to the employment situation such as reducing the numbers of hours rather than making specific workers redundant. Part-time workers are mostly affected ones in the case of cutting hours, resulting in being almost unemployed or showing resistance to precarious employment status, while this group has been ignored to investigate in the minimum wage literature (McGuinness, & Redmond, 2018).

Regarding the conflicts of employment effect of minimum wage implementation, Dickens et al. (2015) suggested that if research is not carried out on vulnerable groups, it will find no employment effect. In Myanmar, it is rare to find part-time jobs; on average, part-time workers comprise less than 5 percent of a company's workforce (Bernhardt, De, & Thida, 2017). Previous studies (Bernhardt, De, & Thida, 2017; Dickens, Riley, & Wilkinson, 2015) throw light on the skilled-labor shortage, which is the fundamental challenge for businesses, and investment in human capital development is not common in the country. By considering policy intervention as a cause of a drop in part-time employment, this study hypothesized that policy intervention affects the level of part-time

workers' employment and also based on type of sector, ownership, and population size.

**H2:** Minimum wage policy intervention affects part-time employment.

**H2a~c:** Minimum wage policy intervention based on type of sector, type of ownership, and population size affects part-time employment.

### **3.3. Effects of Policy Intervention on Female Employment**

Menon and Rodgers (2017) asserted that governments have to ensure the enforcement of and compliance with the policy, especially in industries served by a large concentration of female workers. Policymakers have attempted to impose much stricter labor standards because the conflicts between developing industrial countries and industrializing countries has become intense, especially in labor-intensive products like garments (Harrison, & Leamer, 1997). In terms of industrial relations in Myanmar, the social dialogue on the minimum wage tended to focus on certain industries that employ large numbers of lower wage workers, while the enforcement of the minimum wage was geared towards protecting the most vulnerable groups such as female rural migrant workers (Oo et al., 2019). The hike in the minimum wage in China extremely affects women with the lowest incomes or with high risks (Sun, Wang, & Zhang, 2015). Jia (2014) also found that minimum wage increases make employment drop more especially for female workers. This study hypothesized effects of minimum wage policy intervention on female employment and also based on type of sector, type of ownership, and population size.

**H3:** Minimum wage policy intervention affects female employment.

**H3a~c:** Minimum wage policy intervention based on type of sector, type of ownership, and population size affects female employment.

### **3.4. Effects of Capital Substitution on Employment**

The characteristics of employment can be transformed by adoption of technology. In line with advanced technology such as fully automated machines and the spread of online platforms, the economic system transforms itself to result in a vast array of work such as self-employment, temporary jobs, and new kinds of work relationship emerging in the online gig economy (Cahuc, 2018). Hamermesh (2014) stated that higher labor costs unaccompanied by technology, along with exchanges of capital for labor, result in employers' unwillingness to hire

workers and lead to a decrease in the total amount of work done. Moreover, Hamermesh (2014) convincingly argued that employers' spending more capital investment such as substitution capital for labor is a more attractive option when there is an increase in wage costs per employee or per hour. A potential for labor reallocation, especially low-skilled workers who are particularly vulnerable, away from jobs that are automatable can arise due to increases in the minimum wage, therefore automation has emerged as one of the dominant forces that have threatened low-skilled jobs (Lordan, & Neumark, 2018). In Myanmar, automation and artificial intelligence are gradually adopted in the manufacturing sector. This study hypothesized effects of capital substitution on overall employment and also based on type of sector, type of ownership, and population size.

**H4:** Capital substitution affects overall employment.

**H4a~c:** Capital substitution based on type of sector, type of ownership, and population size affects overall employment.

## 4. Methodology

### 4.1. Description of Data and Variables

This paper applied a panel data from the World Bank Enterprise Survey collected for Myanmar across five major industrial urban sectors in 2014 and 2016. An enterprise survey is a firm-level survey of a representative sample of an economy's private sector, collected using stratified random sampling (World Bank, 2017). According to World Bank (2017), enterprise surveys target a sample consisting of longitudinal (panel) observations and new cross-sectional data. The survey was collected from 1,239 enterprises, including 739 manufacturing enterprises, 221 retail businesses, and 239 other services. The selected 1239 enterprises categorized into 113 micro-business, 653 small businesses, 299 medium enterprises, and 174 heavy industries. This panel data structure is cross-sectional and time-series, which lends a unique advantage to controlling individual and time-invariant specific unobservable effects, as well as removing some omitted variable bias that may arise from the correlation of the error term and the explanatory variables (Wooldridge, 2016). This study applied the dependent variables including log of the number of full-time employment and part-time employment, log of the number of female employment, and log of the net book value of machines to evaluate the causal relationship between change in employment and capital substitution due to minimum wage implementation. Independent variables include the effect of minimum wage policy intervention, type of sectors such as manufacturing and service, type of

ownership including domestic ownership, joint venture, foreign ownership, population size where the observed enterprises are located, and difference in number of full-time workers during 2014 and 2016. Descriptive statistics of applied variables are summarized in Table 1.

**Table 1:** Summary Statistics - Types of Variables used in Regression Analysis

Variable	Mean	Std.Dev	Min	Max
Log of no. of full-time employment	2.94	1.43	0.00	8.16
Log of no. of female employment	8.08	0.24	0.00	8.10
Number of part-time employment	5.24	38.86	0.00	750.00
Log of net book-value of machines	17.71	2.03	10.82	23.67
Policy intervention (post=1)	0.49	0.50	0.00	1.00
Types of sector	0.40	0.49	0.00	1.00
-service	0.82	0.38	0.00	1.00
-manufacturing	0.18	0.38	0.00	1.00
Types of ownership	0.07	0.36	0.00	2.00
-full domestic-owned	0.96	0.19	0.00	1.00
-joint venture	0.01	0.10	0.00	1.00
-full foreign-owned	0.03	0.17	0.00	1.00
Population size	2.55	0.69	2.00	4.00
-over 1 million	0.57	0.49	0.00	1.00
-250,000~1,000,000	0.32	0.47	0.00	1.00
-50,000~250,000	0.12	0.32	0.00	1.00
Employment Fluctuation (2014 to 2016)	-12.99	84.29	-1350.00	360.00

### 4.2. Model Specification

This study applied fixed-effects regression as an estimation method to run panel data. As defined (Arellano, 2003), fixed-effects regression is applied to observe the causal relationship between a vector of observable variables and a dependent variable by allowing one to control for time-invariant unobserved individual characteristics that can be correlated with the observed independent variables. To estimate the effect of the minimum wage policy, this study used the following equation, where  $Y_{it}$  is the outcome variable in specific enterprise  $i$ , in a specific year  $t$ ,  $X_{it}$  and  $X_{kt}$  are independent variables,  $\beta$  is the coefficient,  $\alpha_i$  is the region, and  $\epsilon_{it}$  is the error term.

$$y_{it} = \beta_1 X_{it} + \beta_2 X_{kt} + \alpha_i + \epsilon_i \quad (1)$$

The explanatory variable is the minimum wage (*MW*) that applies to each employment in the enterprise (*i*) and year (*t*). The choices of control variables may include the numbers of enterprises (*i*) and time (*t*) effects. This model is typically estimated using data for workers in enterprises for which the minimum wage is more likely to be binding. The inclusion of the dummy variables reduces the potential bias from unmeasured specific time-invariants. Vectors  $X_{it}$  and  $X_{kt}$  contain independent variables, including minimum wage policy intervention, type of sector, type of ownership, and population size, respectively. A Hausman test (Hausman, 1978) was run to confirm the superiority of a fixed-effects model over random effects and to determine if there is a correlation between the unique errors and the regressors in the model. A Hausman test for choosing the best model between random effect and fixed effect showed that the fixed-effects estimation was adequate because interpreting the results of the Hausman test is fairly straightforward: if the *p*-value is significant at 5% (Hausman, 1978). Therefore, the fixed-effect model is applied in this study.

## 5. Empirical Results and Discussion

Table 2 showed the effect of Myanmar's minimum wage policy intervention on full-time employment with variables including type of sectors such as manufacturing and services, type of ownership such as firms fully owned by domestic entities, joint venture firms owned partially by domestic and foreign organization, and firms fully owned by foreign companies, and population size of the region where the observed enterprises are located.

Table 2 summarized the results based on Ordinary Least Square method (OLS), fixed-effect method (FE), and random effect method (RE). First, the results showed that the minimum wage policy intervention does not show significant. Observing the effects of this minimum wage policy on full-time employment based on the type of sector where the service sector is a controlled group, the effect of minimum wage policy decreases full-time employment in the manufacturing sector more than in the service sector and showed significant at the 1% level based on OLS and RE. In FE model, the policy intervention reduces full-time employment in the manufacturing sector more than in the service sector but insignificant. According to information from the former Ministry of Industry, the food and beverage and garment industries are the most important manufacturing activities in Myanmar because they are the leaders in terms of a vast range of enterprises and employment (Bernhardt, De, & Thida, 2017).

**Table 2:** The Effect of the Minimum Wage Policy on Full-time Employment

	(1)	(2)	(3)
VARIABLES	OLS	FE	RE
Policy Intervention (Post = after intervention = 1)	-0.0110	-0.0328	-0.0565
	(0.0756)	(0.0437)	(0.0407)
Types of Sector			
Manufacturing	-0.593***	-0.596	-0.564***
	(0.0691)	(0.642)	(0.101)
Type of Ownership			
Joint Ownership	2.002***	0.0396	1.268***
	(0.399)	(0.377)	(0.274)
Full Foreign Ownership	2.886***	0.121	1.563***
	(0.171)	(0.220)	(0.164)
Population Size			
Over 250,000 to 1 million	-0.892***	0.178*	-0.965***
	(0.0701)	(0.0961)	(0.0810)
50,000 to 250,000	-1.013***		-1.073***
	(0.1000)		(0.100)
Constant	3.338***	2.999***	3.462***
	(0.0700)	(0.121)	(0.0574)
Observations	1,239	1,239	1,239
R-squared	0.326	0.028	
Region FE	Yes	Yes	Yes

Notes: Robust standard errors in parentheses \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ; Dependent variable is measured as the log of no. of full-time employment.

Regarding the effect of Myanmar's minimum wage policy based on type of ownership where a control group consists of firms fully owned by domestic entities, the effect of the minimum wage policy increases full-time employment of joint ownership and foreign full ownership more than that of domestic full ownership. The results showed significant and positive based on OLS and RE. This suggests the positive impact of the minimum wage-setting process and minimum wage enforcement in creating a business-friendly environment, which in turn attracts more foreign investors to the country. FDI entries increased rapidly due to Myanmar's outlook economy reform in 2011. Myanmar Garment Manufacturers Association (MGMA, 2015) reported that it gained more than 120 new members during 2014 and 2015, and most of them were foreign companies as well as garment producers that tend to supply

foreign markets. In addition, fully or partially foreign ownership comprised almost two-thirds of the enterprises and companies (Bernhardt, De, & Thida, 2017; MGMA, 2015). As shown in previous studies (Bernhardt, De, & Thida, 2017; MGMA, 2015), this condition brings about the larger average workforce size among garment enterprises, which can improve the exports of the country.

**Table 3:** The Effect of the Minimum Wage on Part-time Employment

	(1)	(2)	(3)
VARIABLES	OLS	FE	RE
Policy Intervention (Post = 1)	-6.218**	-7.208**	-6.561***
	(2.548)	(3.117)	(2.211)
Types of Sector Manufacturing	-3.843*	7.208	-3.760
	(2.155)	(45.87)	(2.473)
Types of Ownership Joint Ownership	15.18	89.83***	19.11*
	(21.95)	(26.93)	(11.09)
Full Foreign Ownership	7.739	-23.30	5.056
	(9.117)	(15.73)	(6.726)
Population Size Over 250,000 to 1 million	-7.343***	-7.601	-7.844***
	(2.133)	(6.864)	(2.642)
50,000 to 250,000	-2.682*		-2.573
	(1.534)		(3.874)
Constant	12.08***	8.046	12.54***
	(3.282)	(18.64)	(2.182)
Observations	1,239	1,239	1,239
R-squared	0.019	0.078	
Region FE	Yes	Yes	Yes

Notes: Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1; Dependent variable is measured as the number of part-time employment.

Looking at the employment effect of minimum wage policy on full-time workers based on population size with a region with a population of over 1 million, the results are inconsistent across the estimations of three models. In the OLS model, the enterprises located in the region with a smaller population of 250,000~1,000,000 and 50,000~250,000 reduced full-time workers by -0.892 and by -1.013, respectively, than enterprises from the most populated region. In the RE model, both the enterprises located in a region with a smaller population of 250,000~1,000,000 and 50,000~250,000 reduced full-time

workers by -0.965 and by -1.073, respectively, compared with enterprises from the most populated region with over 1 million people. In the FE model, the results show full-time employment increase only in enterprises located in regions with a population of 250,000~1,000,000 by -0.178 more than the enterprises from the most populated region.

**Table 4:** The Effect of the Minimum Wage Policy on Female Employment

	(1)	(2)	(3)
VARIABLES	OLS	FE	RE
Policy Intervention (Post = 1)	0.0391**	0.0174***	0.0206***
	(0.0165)	(0.00429)	(0.00434)
Types of Sector Manufacturing	0.0177***	-0.0174	0.0339**
	(0.00372)	(0.0632)	(0.0170)
Types of Ownership Joint Ownership	-0.112**	-0.0997***	-0.122***
	(0.0541)	(0.0371)	(0.0351)
Full Foreign Ownership	-0.266	0.178***	0.0936***
	(0.210)	(0.0217)	(0.0207)
Population size 50,000 to 250,000	-0.0146*	-0.0169*	-0.0176*
	(0.00843)	(0.00945)	(0.00935)
Constant	8.063***	8.074***	8.053***
	(0.00882)	(0.0255)	(0.0113)
Observations	1,239	1,239	1,239
R-squared	0.048	0.300	
Region FE	Yes	Yes	Yes

Notes: Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1; Dependent variable is measured as the log of no. of female employment.

The results of Table 3 showed the effects of Myanmar's minimum wage policy on part-time employment, with controlling control variables the same as in Table 2. The results of the three models showed significant and negative based on OLS and RE. The results of the employment effect based on type of sector showed differently. Part-time employment in the manufacturing sector decreases by -3.843 in the OLS model and by -3.760 in the RE model compared to the service sector. In the FE model, part-time employment in the manufacturing sector increases by 7.2 more than that of the service sector. The results for the part-time employment effect based on type of ownership showed significant and positive. Therefore, effects of part-time workers increase in joint venture enterprises than that of domestic owners after minimum wage policy

implementation. In foreign-owned enterprises, part-time employment decreased by -23.30 based on FE model. Looking at the employment effect of minimum wage policy on part-time workers based on population size in a region with a population of over 1 million, the results are consistent across the estimations of the three models. In the OLS model, the enterprises located in regions with a smaller population of both 250,000~1,000,000 and 50,000~250,000 reduced part-time workers by 7.343 and 2.682, respectively, more than enterprises from the most populated region. In the RE model, both the enterprises located in the region with a smaller population of 250,000~1,000,000 reduced part-time workers by 7.844 more than the enterprises from the most populated region with over 1 million people. The results suggested that enterprises from large cities resist the effect of minimum wage policy implementation, and enterprises with smaller investment and lack of better market facilities experience a greater adverse impact than larger ones.

The results in Table 4 showed the effect of the policy on female employment. The results also showed that the effects of the minimum wage policy intervention on female employment were significant and positive. The results showed that the effects of minimum wage policy intervention based on type of sector were positive and significant at 1% and 5% based on OLS and RE models. The results also showed that the effects of minimum wage policy intervention based on joint ownership showed negatively significant at 1% and 5% based on OLS, FE, and RE models. The results also showed that the effects of minimum wage policy intervention based on full foreign ownership showed positively significant at 1% based FE and RE models. The results for population size showed that 50,000 to 250,000 reduced female workers more than firms from the more populated region.

Table 5 showed how much additional capital investment of the enterprises as well as the substitution of machines and equipment for the labor force affect overall employment due to the impact of minimum wage policy. The results also showed that the effects of capital substitution on overall employment are negatively significant at 1% based on OLS and RE. The effects based on type of sector were not significant, while the effects based on types of ownership showed significant. The effects based on joint ownership showed significant at 5% and 10% based on OLS and RE. The effects based on full foreign ownership showed significant at 1%. In terms of type of ownership, where the control group is those firms fully owned by domestic entities, the effect of capital substitution increases the overall employment of joint ownership and foreign full ownership more than that of domestic full ownership. The effects based on population size showed significant at 1%, 1%, and 5%, respectively, based on OLS, FE, and RE.

**Table 5:** The Effect of Capital Substitution on Employment

	(1)	(2)	(3)
VARIABLES	OLS	FE	RE
Employment Fluctuation (2014 to 2016)	-0.00249***	-0.0000296	-0.00235***
	(0.000571)	(0.00230)	(0.000890)
Types of Sector Manufacturing	0.347		0.301
	(0.502)		(0.434)
Types of Ownership			
Joint Ownership	1.712**	0.359	1.181*
	(0.849)	(1.178)	(0.673)
Full Foreign Ownership	2.196***	0.725	2.129***
	(0.334)	(0.883)	(0.390)
Population Size			
50,000 to 250,000	-0.885***	1.082*	-0.626**
	(0.235)	(0.543)	(0.245)
Constant	17.62***	17.50***	17.62***
	(0.106)	(0.129)	(0.110)
Observations	457	457	457
R-squared	0.134	0.075	
Region FE	Yes	Yes	Yes
Number of panel		395	395

Notes: Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1; Dependent variable is measured as the log of net book-value of machinery and equipment.

## 6. Conclusion

### 6.1. Findings

This study is intended to contribute from Myanmar's viewpoint to the ongoing discussion of the introduction of minimum wage policy. This study also aimed to set out a policy framework examining the impact of Myanmar's minimum wage policy on jobs. Based on past literature, hypothetical and statistical, the introduction (or increase) of statutory minimum wages does not have a major systematic effect on employment, positive or negative. This study has concentrated in particular on the effect of full-time employment and part-time employment in response to Myanmar's minimum wage policy. The issue of female employment was also addressed. Additionally, this study

also aimed to investigate the effects of capital substitution on employment due to implementation of the minimum wage. This study found that effects of this minimum wage policy on full-time employment in the manufacturing sector more than in the service sector. The empirical results in regard to type of ownership indicate that full-time employment of joint ownership and foreign full ownership showed greater increase than that of domestic full ownership. Thus, it may serve as an attraction to boost foreign investments. Regarding full-time employment depending on population size, the results showed that the minimum wage policy results in disproportionate effects on full-time employment based on OLS and RE by decrease in the less populated area compared to a much more populated area. In addition, the findings showed that effects of an introduction of the minimum wage causes part-time workers to lose their jobs significantly. However, the part-time employment of Joint Venture enterprises increases compared to domestic-owned enterprises. Concerning female employment effects, the empirical results show that the numbers of female workers increase at a statistically significant level. Additionally, firms located in regions with a population size between 50,000 to 250,000 reduce female workers more than firms from the more populated regions. On the whole, the empirical results presented in this study suggested that employment for enterprises from cities with lower populations experience the adverse impact of minimum wage policy implementation more than larger enterprises.

The findings also indicated that legislation of the minimum wage brings about a slight decrease in the labor force because of capital substitution such as machinery and technology. This effect of capital substitution indicated heterogeneity by population size and type of ownership and the overall employment in joint ownership, and foreign ownership, compared to the reduction of employment in enterprises from region with lower populations. The effect of capital substitution in this study showed consistent with previous work that discerned the reduction of automatable employment held by low-skilled workers due to the minimum wage increase (Lordan, & Neumark, 2018). Also, the evidence revealed that there is a need of low-skilled workers being replaced by machines and technology in the future. If wages are rising and prices of equipment and technology have dropped, firms will search for a cost-effective strategies by adopting advanced technologies.

Myanmar's industrial structure is still in its initial stage, and its industrial base is still weak, while the government of Myanmar should encourage industrial growth. Especially, the agricultural sector of Myanmar should be better promoted with provision of farm machinery and services to improve agricultural activities.

## 6.2. Policy and Managerial Implications

The results of this study confirmed that the minimum wage policy is necessary solution to increase efficiency and productivity of enterprises. Therefore, this study implied that government of Myanmar should develop proper policies and promotion regarding wage policy. Policies on Myanmar's minimum wage should be prepared by considering low-earning jobs and equality to prevent dropping the level of employment due to inappropriate wage structure. The unexpected negative effects of the minimum wage implementation should be also reduced by appropriate measures to be more positive in terms of employment effects (Choi, 2018). Therefore, the introduction of the minimum wage policy should resolve the concerns of employees and firms, while it will foster proper competition for the balance of labor market. Del Carpio and Pabon (2017) suggested that whenever changes are made in a minimum wage policy, this in turn has damaging effects on the most vulnerable workers. Newly established policies should also consider to protect social issues and any other negative consequences. The results of this study also implied that policies on the equality of women employment should be prepared by considering participation of women in labor as potential economic growth.

## 6.3. Limitations and Future Research

The survey data set applied in this study ranges only from 2014 and 2016 to examine the impact of the first minimum wage legislation in 2015, and the findings indicate no significant adverse impact on employment. The minimum wage rose from 3600 MMK to 4800 MMK in 2018. Therefore, there is a need for further study of the effects due to the minimum wage hike in Myanmar. In addition, future research is needed in the Myanmar context to investigate the extent of the poverty rate and the inflation rate whenever the minimum wage increases and how affect the workers' earnings. Further research might examine intrinsic management issues (Kim, Youn, & Moon, 2021; Nguyen, 2020; Nguyen, & Ngo, 2020), distribution channels (Lee, Ou, & Choi, 2021; Ryu & Chae, 2021), and policy considerations (Dahliah, Kurniawan, & Putra, 2020).

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