Sectoral Implications of Indonesia's Minimum Wage Policy: Empirical Evidence using Panel Data

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List of Acronyms

ISS	International Institute of Social Studies
IFLS	Indonesian Family Life Survey
NLFS	National Labour Force Survey
Sakernas	Survey Angkatan Kerja Nasional
OLS	Ordinary Least Square
GLS	Generalized Least Square
FEM	Fixed Effect Model
REM	Random Effect Model
MP_L	Marginal Productivity of Labour
MP_K	Marginal Productivity of Capital
MRTS	Marginal Rate of Technical Substitution
GDP	Gross Domestic Product
GDRP	Gross Domestic Regional Product
RTS	Rate of Technical Substitution
MRL	Marginal Revenue of Labour
VHLSS	Vietnamese Household Living Standard Survey
GSP	Generalized Scheme of Preference
KHM	Kebutuhan Hidup Minimum (Minimum Subsistent Needs)
SUR	Seemingly Unrelated Regression
OECD	Organisation for Economic Co-operation and Development

Abstract

The absence of consensus of minimum wage effect on employment engenders study on this field remains a favour. Yet, little researches studied the functioning of minimum wage policy on sectoral employment comprehensively. Exploring Sakernas data of 2004-2013 in province level and sectoral-province level, this study notifies positive impact of minimum wage on general employment. This study also maintains that minimum wage is beneficial for rural, female, married, low educated employment. Minimum wage is empirically proved attractive for workforce to become a worker rather than an entrepreneur. Divergent effects of minimum wage on economic sectors appear regarding to characteristics of economic sector. Agricultural, forestry, hunting, and fishing sector; construction sector; wholesale trade, retail trade, restaurant and accommodation sector; finance, real estate, insurance, and business services sector; and community, social, and personal sector, which are labour intensive, positively affected by minimum wage increases. In contrast, transportation, storage, and transportation sector is adversely affected by minimum wage hikes.

Analysis on minimum wage effect on specific group of employment implies that low-educated labour is not favourable in seven of nine sectors of economy.

Relevance to Development Studies

Employment is one of indicators of economic performance. Meanwhile, welfare is a notation of economic achievement. Minimum wage is an instrument to raise welfare for worker in Indonesia. Despite its noble, minimum wage calls disagreement about its impact on employment. This study investigates the general and specific effects of minimum wage on employment. The outcome could be precious for policy maker to formulate policy that is beneficial not only for worker but also for economic performance.

Keywords

Minimum wage; labour market; workforce; employment; sectoral impact; Indonesia.

Chapter 1
Introduction

Often, minimum wage legislation attracts attention and requires much energy from stakeholders. There is a contrast in interests between employers and workers. Rising of minimum wages can be detrimental for businesses if the increase is beyond their economic calculation. In contrast, for workers, news related to an increase in minimum wages is positive. However, sometimes, it does not satisfy the workers when they feel that the increase cannot cover the rise of expenditure for their needs. To accommodate those different interests, in Indonesia, minimum wages are determined by tripartite mechanism which involves the government, representatives of business organization, and representatives of labour unions. Tripartite mechanism required that the government acts not only as a referee in this mechanism, but also it has to be actively involved in determining the minimum wage.

Historically, minimum wage was designed to protect women and children from exploitation. Firstly, the minimum wage was introduced in Australia and New Zealand in 1890s. Meanwhile, in USA, Massachusetts State pioneered to ratify minimum wage policy in 1912, and minimum wage became a national law in 1938. This legislation was proposed to protect workers from the economic crisis which occurred in 1938. The ideal is that wage received by worker must cover their basic needs (Fitzpatrick 2009). Nowadays, minimum wage is applied by almost all countries, with different scope and different level of legislation.

There are two common ways of determining the minimum wage - these are by government legislation and by collective agreement between employers and workers (Boeri 2012). Generally, in developed countries the minimum wage law covers all sectors. Meanwhile, in developing countries, which are characterized by dual sectors – formal and informal sector (including agriculture), minimum wage laws typically apply to the formal sector. However, several developing countries such as South Africa and Morocco, for example, have set minimum wages for the agricultural sector (Azam 1992, Bhorat et al. 2012).

Minimum wage policy, which aims to raise the welfare of workers, may have the unintended effect of influencing employment. There are a number of papers which have examined the effect of minimum wages on employment but there is no uniform conclusion about its impact. Several papers highlight the impact of minimum wages on employment in developed country. Lee and Sandi (2010) and Linde Leonard et al (2014; 2013) maintain that there is no significant adverse effect of minimum wage on employment in Australia and United Kingdom. Different finding proposed by Campolieti et al. (2014) from their study in Canada that minimum wage rise reduces, by about 2%, teen and youth employment.

Meanwhile, different outcomes also appear from the research in developing countries. Lemos (2009) investigates the relationship between minimum wages and employment in Brazil and concludes that setting a minimum wage does not affect employment but it positively influences income redistribution

for low income-formal sector workers and for higher up income-informal sector group. Nguyen (2013) studies the effect of minimum wage in Vietnam and finds that minimum wage adversely affects employment in the formal sector. Fang and Lin (2013) explore the effect of minimum wage in China. They find that the effects vary over time and across areas. Negative effects hamper young workers (age 15-29) during 2004-2009 and only occur in Eastern and Central of China.

Studies based on Indonesia also report different findings. Both, Rama (2001) and Alatas and Cameron (2008) conclude that minimum wage contributes to unemployment in small firms, but not in large companies. Commola and Mello (2009) find that minimum wage leads to greater unemployment and informality. Workers who are shed from the formal sector move to the informal sector. Islam and Nazara (2000) reach a different conclusion and argue that minimum wage does not cause unemployment. Islam and Nazara (2000) suggest that economic growth will compensate negative impact of minimum wage on employment.

Meanwhile, Magruder (2012) argues that minimum wages may positively affect employment and formality in Indonesia. Magruder (2012) finds that an increase in the minimum wage induces the self-employed to enter the labour market and it also stimulates part-timer workers to become full-time workers. Nonetheless, identical to Rama (2001) and Alatas and Cameron (2008), Magruder finds that minimum wage negatively affects employment in small companies.

In developing countries, while a number of papers have looked at the effect of minimum wage policy on the formal and informal sector; few papers have investigated the impact of minimum wages in specific economic sectors. Magruder (2012) limitedly has given attention in the impact of minimum wage on certain industry. Magruder (2012) deals with manufacturing, services, and retail sectors. Minimum wage positively affects employment on registered manufacturing sector and on services sector, but it negatively affects employment in unregistered manufacturing sector and on retail sector.

It is necessary to give some thought to sector-specific effects since every industry has special characteristics and different levels of adaptability. For example, agricultural, as the biggest informal sector, the most labour intensive sector in Indonesia, probably most affected by minimum wage policy. Manufacturing sector with different levels of mechanization of firm definitely will absorb different number of labour. Service sector, where services and skills become commodity of trade has its own pattern in their employment. Human capital is more important than physical capital. Additionally, service sector usually hire relative small employee for each entity (Stigler 1956).

The lack of attention given to sector-specific effects of minimum wages and the variety of economic sectors in Indonesia provides an opportunity to pursue research on this matter. This paper's novelty lies in identifying the effect of minimum wage policy in nine different economic sectors as opposed to a dual-sector approach.

The sectors included in this study are classified based on the approach used by Indonesia Statistics. These are sector-1, consisting of agricultural, forestry, hunting, and fishery activities, sector-2 comprising mining and quarrying, sector-3, dealing with manufacturing industry, sector-4, including electricity, gas and water companies, sector-5, consisting of construction, sector-6, wholesale, retail, hotel and restaurants, sector-7, familiar with transportation, storage and communication business, sector-8, dealing with finance, insurance, real estate, and business services, and sector-8, consisting of community, social, and personal services activities.

Furthermore, this study also concerns on impact of minimum wage on specific group of employment, either in general or in sectoral level. Rural employment, female employment, married employment, low-educated employment, worker, and self-employed groups become subjects of investigation.

This paper is organized as follows - chapter two discusses theories related to the effect of minimum wage on employment. Chapter two also discusses the literature. Chapter three discusses how minimum wages are set in Indonesia and the divergence across provinces. Chapter four talks about the methodology and data used to investigate the effect of minimum wage policy. Chapter five as the core of this paper discusses the findings of the empirical analysis. Chapter six summarizes and concludes points of this paper.

Chapter 2
Theoretical Framework and Empirical Evidence

2.1. Theoretical Framework

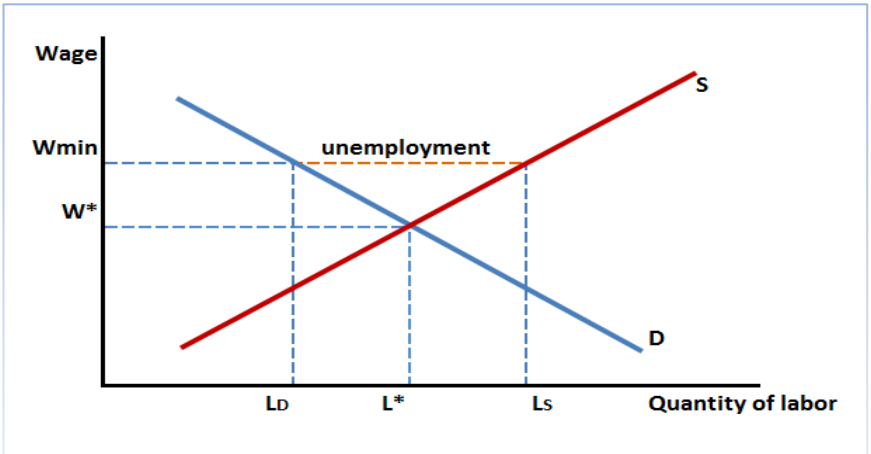
The effect of minimum wage on employment has led to debates among economists. Some argue that minimum wage is detrimental to employment and others argue the opposite. This section of the paper discussed various theories and their predictions.

First, assuming that the labour market is perfectly competitive implies that that there is perfect information and there are a large number of homogenous workers seeking employment. The allocation of labour and the wage are determined by interaction between labour supply and demand (Mankiw 2007). Additionally, workers have power in or out of the market (Bhaskar et al. 2002).

In goods/services market with perfect competition market structure, firms will only have normal profit. Demand for labour as an input reflects its productivity and hiring of additional labour depends on additional output generated by the worker. Thus, firms always adjust their inputs level as input prices change (Mankiw 2007).

Figure 1 shows wage and labour setting according to this theory. Initial wage and labour employed leads to wage and labour outcomes - w* and L*, respectively. When governments intervene by setting wage at w_{min} it induces greater supply L_s. While the increase in the cost of hiring reduced demand to L_D. Thus, the government's intervention in the labour market produces unemployment ($L_s - L_D$).

Figure 1 Perfect Competition Labour Market



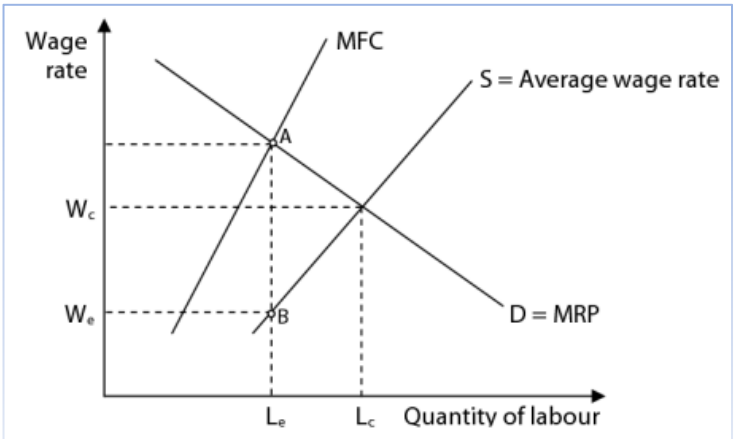
Source: Adapted from Mankiw (2007)

In contrast to perfect competition market, in a goods/services market with imperfect competition structure - monopsony, firms gain super normal profit from their output as they tend to pay less than the input productivity. A labour market is considered as a monopsony market, when the number of employers is limited and firms have greater power to decide the amount of labour

they need. From this perspective, raising minimum wage above initial equilibrium does not automatically reduce employment. The decision to employ labour depends on the marginal revenue gained from an additional employee. As long as the wage paid to a worker is lower than marginal revenue, firms will continue to add workers (Bhaskar et al. 2002)

Figure 2 describes the mechanism of labour absorption in monopsony labour market. Industry obtains maximum profit when marginal factor cost (MFC) is equal to marginal revenue productivity (MRP) at point A. At this condition, the wage level and labour absorbed by industry are W_e and L_e (point B). As wage rate rises, labour supply moves upward along supply curve resulting in additional labour in the market. Despite its effect on increasing production costs, from the graph it can be seen that adding labour hired from L_e to L_c is still favourable for the industry. The ceiling wage, which is tolerated by industry, is W_c.

Figure 2 Monopsony Labour Market

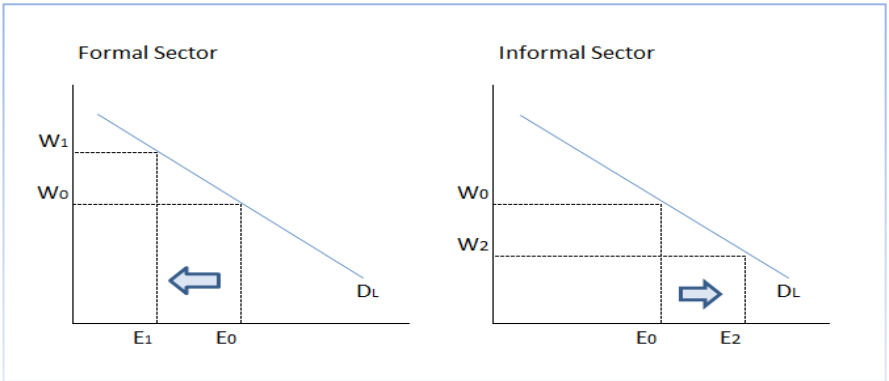


Source: Adapted from Islam and Nazara (2000)

In Indonesia, labour markets are highly segmented due to several factors. For instance, geographically, labour force is segmented by rural-urban markets due to limited transportation. Due to similar reasons, work force is concentrated in certain islands or cities. Other factors are divergence in education and skill level. Labour segmentation is probably caused by culture, which restricts particular group of citizen participate is labour market. This segmented labour market may cause disparity in labour supply across industries and provinces.

It is challenging to decide which of these two models characterize the labour market structure in Indonesia. Whether the labour market is perfectly competitive or a monopsony market lies on the assumption of an integrated market. In reality, there is a dichotomy in the labour market regarding the formal and informal sector of the economy (and in each industry). Even though there is not a generally plausible definition of formal sector, compliance with regulations, including labour regulation indicates the formality of the sector.

Figure 3 Dual Sector Labour Market



In a dual sector economy, there is possibility for labour force to move from informal to formal sector and vice versa (Commola and Mello 2009). Minimum wage policy directly influences the formal sector. Assuming that the labour market is perfectly competitive, a change in wages affects the supply and demand of labour in this sector. On one hand an increase in minimum wage attracts more people to enter the formal labour market, and on the other hand a higher minimum wage reduces the demand of labour in the formal sector. Figure 3 describes labour market dynamics in response to increases in minimum wage. When minimum wage rises from w_0 to w_1, demand for labour in formal sector may decrease from E_0 to E_1. Excess labour supply in formal sector will be absorbed by the informal sector. The demand for labour in the informal sector moves from E_0 to E_2, accompanied by decrease in wage from w_0 to w_2. Reverse movement occurs if the formal labour market is a monopsony market. Hence, this theory proposes that minimum wage policy does not affect total employment; instead it affects job formality or informality.

The dual sector economy approach possibly helps identify the structure of the labour market. A rise in informality and a decrease in average wages indicate that labour market in the formal sector is competitive. A rise in formal sector employment and in average wage rates, in contrast, may signify that labour market in the formal sector is a monopsony market. Meanwhile, labour market in informal sector is always competitive for its compliance with interaction between supply and demand of labour. Examining the link between sector-specific minimum wages and employment may provide clues on whether the labour market for a specific industry may be characterised as perfectly competitive or a monopsony.

These three labour market structures become foundation in analysing the impact of minimum wage in general employment and sectoral employment.

2.2. Empirical Evidence

Different contexts lead to divergent conclusions in studies that have examined the effect of minimum wage on employment. The diversity not only appears across countries but also within a country across industries, and within industry among firm. This chapter reviews various papers conducted in developed countries, developing countries and in Indonesia.

Studies on minimum wage in developed countries

Typically, in developed country studies the labour market is assumed to be competitive. However, research on minimum wage effects does not produce a uniform conclusion. Neumark and Wascher (1992) investigate the relationship between minimum wage and employment in United States by employing panel data of minimum wage and employment covering 50 states and the period 1973 to 1989. They find that a ten percent increase in minimum wage diminishes jobs for teenager workers by 1% to 2% and for young adult employees by 1.5% to 2%. Identical outcomes emerge from a study conducted by Campolieti et al. (2014) in Canada. Analysing the data from Masterfile of the Canadian Labour Survey for period 1997-2008, Campolieti et al. (2014) find that minimum wage increases during 1997-2008 caused reduction of opportunity for teenagers and youth by 2%. Additionally, permanent worker suffers more than temporary workers. Employers make cost adjustment due to minimum wage increases and increase hiring of temporary workers and reduce hiring of permanent workers. This finding is consistent with conclusion rising from dual market approach.

Meanwhile, Lee and Sandi (2010) and Linde Leonard et al. (2014) claim that minimum wage has no negative impact on employment. Lee and Sandi (2010) study minimum wage legislation in Australia by utilizing quarterly time series data of minimum wage and employment, and considering period of 1997-2007, when Victoria, the Australian Capital Territory, and the Northern Territory had binding minimum wages, as a structural break. The finding indicates that there is no negative impact of minimum wage on employment. This result is identical with research conducted by Linde Leonard et al. (2014) in United Kingdom. Using Meta Regression Analysis, the study indicates that there is no adverse effect of minimum wage on employment. The possibilities are, first, the negative impact has been anticipated, second, rather than reducing number of worker, firms likely opt to change working hour, and the third is that labour market in UK is not perfectly competitive.

Studies on minimum wages in developing countries

The effect of minimum wage in developing countries maybe expected to be different from advanced countries due to dissimilarities in labour market structure between the both groups - namely, greater presence of imperfect competition and segregated labour markets. As in the case of studies in developed countries, there is no consensus among scholars in estimating the consequence of minimum wage changes.

Lemos (2009) explores the relationship between minimum wage and labour markets in Brazil. The study contributes to the literature by offering dif-

ferent methodology and a wider analysis of the minimum wage impact on income and employment. Complementing prior studies which mainly use time series, Lemos (2009) works with panel data obtained from monthly household surveys from 1982 to 2004. Ordinary Least Square (OLS) using a basic specification demonstrates that increases in minimum wages do not significantly affect employment in formal and informal sector. Also, Generalized Least Square (GLS) by considering region and time fixed effect, labour supply shifter, 12 and 24 lags of dependent variable, and long differencing as adjustment mechanism, shows that change in minimum wage does not influence employment.

Meanwhile, minimum wage increase in Brazil not only raises wage for formal workers but also for informal workers. It is likely that due to spill over effects that increases in formal wage stimulates informal employer to pay their workers more. This result contradicts the dual economy theory that an increase in minimum wage causes labour migration from formal to informal sector with increasing wages in the formal sector and declining wages in the informal sector.

Contrasting opinions about the relation between inflation and minimum wage stimulated Nguyen (2013) to conduct a research in Vietnam. Proponents suggest that minimum wage has to rise to cover inflation, while the opponents argue that increase in minimum wage will create inflation. Leaving debate on inflation and minimum wage causalities, Nguyen (2013) investigates the impact of minimum wage on employment using data taken Vietnamese Household Living Standard Survey (VHLSS) from 2004 and 2006 which depicts national as well provincial level, both rural and urban groups. The 4,216 household observed in both surveys allows the author to build a valuable household panel data. The observations are identified in terms of engaging with formal or informal sector. Difference in difference method is used to measure the response of the labour market to wage changes. The idea is to use VHLSS data from 2004 and 2006 to know the consequence of minimum wage adjustment in October 2005 on income and employment. Data of 2004 considered as baseline while data of 2006 is regarded as outcome of post minimum wage policy. Findings indicate that overall, minimum wage adjustment does not significantly affect employment, instead it adversely affects formality. Percentage of worker engaged in formal sector declines from 70% to 58%. This decrease is contributed by low wage workers who lost their jobs, and became self-employed. At the same time there is an increase in the proportion of self-employed by 12% from 15% to 27% in 2006.

Taking Vietnam case as reference is reasonable since in many aspects it is similar to Indonesia. Geographically, both are situated in South East Asia, while economically, Indonesia and Vietnam are developing countries which are experiencing economic transition from primary to secondary and tertiary orientation. Furthermore, formal-informal sector approach utilized in the study conducted by Nguyen (2013) is appropriate for a study on minimum wage in Indonesia, since informal economy has big role in Indonesia.

Fang and Lin (2014) examine the impact of minimum wages on employment in China using panel data of 2002-2009 taken from household survey in sixteen provinces representing three regions, eastern, central, and western China. This methodology deviates from existing studies which employ time- series or cross-sectional data at province level. They find that the effects vary over region and over time. Adverse effects hamper youth and adult workers during

2005-2009. A ten percent hike of minimum wage reduces by 0.88% employment of low-skilled workers, especially youth and adult worker in the current year. Greater impact is suffered by this group in following years – effects are 1.36% to 1.56% due to a ten percent hike in minimum wage. Fang and Lin (2014) also underline that in more prosperous regions in eastern China markets are more competitive and employment is more sensitive to changes in wage levels. The idea of employing household micro data is more powerful to capture characteristics of worker than using macro data. Furthermore, it provides an opportunity to conduct analysis and to identify the heterogeneous effects of minimum wages. By segmenting observation by regions, these papers show that there is no uniformity of minimum wage effect on labour market in certain countries, even though in fact, the various regions experience a similar degree of minimum wage increases. These findings are valuable in guiding the current study which focuses on variations in outcomes across economic sectors.

An example of minimum wage effect on sectoral employment is delivered by Bhorat et al. (2014) who examine agricultural employment in South Africa. The aim of this study is to predict the response of agricultural sector to minimum wage legislation, which was officially promulgated in March 2003. Difference in difference methodology is conducted by utilizing data taken from Biannual Labour Force Survey between September 2000 and September 2007. This data covers six rounds of survey for pre-minimum wage law and nine waves post-minimum wage legislation. Additionally, to compare between the impact of minimum wage on farm worker and other group of workers, Bhorat et al. (2014) conduct a strategy by utilizing a control group, which satisfies requirements: workers engaged with unskilled/elementary occupation, obtaining wage worth 10,000 Rands a month, age of 15-64 years old, and completed 12 years education or less. The result indicates that after the minimum wage law was enacted, the probability of being a farm worker declines by 12%. After including controls for seasons and GDP in the analysis, minimum wage legislation reduces employment in agricultural approximately by 9%. Also, minimum wage law causes a decline in working hours. After minimum wage law enacted, overall, farm worker seemingly work 5 hours less. However, working hour increases approximately 5 hours for group of post-law farm workers. Similarly, the regulation reduces formal jobs in the agriculture sector by 19% less farm workers have contract for their job. On other hand for post- regulation farm workers, the regulation is favourable in raising their formality by 7.5%. Lastly, minimum wage triggers increasing in average wage by 7%, there is no wage gap between farmer worker and the control group. The increasing is getting bigger in areas where the wage gap in pre-minimum law is wide.

The study shows that in South Africa minimum wage legislation strongly influences the labour market in the agricultural sector. It is likely that because of its low productivity, an increase in minimum wages, translated into higher production cost and significantly reduced earning for employers. Employers respond to this impact by rationalizing their employees or resetting working hours for their workers. Alternatively, they invest their money in machinery to replace their workers and to pursue higher productivity.

As one of few literatures regarding the impact of minimum wage on agricultural employment, research conducted by Bhorat et al. (2014) contributes to the current study by showing the consequences that might be experienced by the agricultural sector due to its unique characteristics. There is a similar role of

agricultural sector as job provider for huge number of population in Indonesia and South Africa. Additionally, there is a comparable minimum wage policy that also covers agricultural sector.

Studies on minimum wage in Indonesia

Several papers have studied the impact of minimum wage in Indonesia. These papers using different methodologies and sets of data do not produce a uniform conclusion about the effect minimum wages in Indonesian labour markets. Islam and Nazara (2000) conduct a study dealing with minimum wage in the 1990s. The concern of their research is the relationship between minimum wage and welfare by using employment and profitability analysis. They argue that there is no particular theory that can be an absolute standard to justify the employment effect of minimum wage policy. In the national context, governments can stimulate markets. Minimum wage rises perhaps reduces demand because it causes more expensive goods or services, and it also reduces purchasing power for rationalization of employment. Government can neutralize this negative impact by increasing government expenditure to buy the output. In short run, industry responses by setting their capacity back to original level, and hire similar number of labour.

To estimate the relationship between minimum wage and employment Islam and Nazara (2000) employ pooled provincial level data for 1990-1998. Econometrics evidences show that every ten percent increase in minimum wage will generates employment in general by 1.36% and creates new job for paid worker by 3.95%, for paid male worker in manufacturing sector by 4.97% and for paid urban male worker in manufacturing sector by 4.84%. Meanwhile, ten percent increase in minimum wage is beneficial in creating new job for paid female worker in manufacturing sector by 3.68% and for urban female paid worker in manufacturing sector by 3.7% respectively. Islam and Nazara (2000) also assess the negative impact of minimum wage on employment. Considering economic growth variable, economic crisis 1997-1998 dummy variable, and utilising such interaction variables in any model specifications, econometrics analysis demonstrates that ten percent increase in minimum wage reduces employment by 0.58% to 0.97%. The analysis also shows that economic growth has a big role in job creation; every ten percent growth of GDRP (excluding oil and gas sector) generates new employment ranging from 3.8% to 4.4%.

Islam and Nazara (2000) open a thought of wider study on identifying the factors influencing employment by inserting other variables instead of wage, which is by classical theory supposed a determinant in employment level. Introducing economic growth variable as an employment generator distorts minimum wage effect on labour market. Approach utilized in the study, which not concern on particular theory or evidence stimulates to conduct a research by exploring any methodologies and employing alternative variables to complement key-proved variables.

Rama (2001) studies the effect of minimum wage hikes in Indonesia in 1990s on employment and income distribution. During the first half of the 1990s minimum wage in Indonesia tripled in nominal and doubled in real terms. The increase of minimum wage was stimulated by changes in minimum wage system and pressure about working conditions in Indonesia from domestic and internal community. Rama (2001) utilizes data from 1993 National La-

bour Force Survey (NLFS/Sakernas) and focuses on manufacturing companies. Testing the impact of minimum wage on average wage, Rama (2001) maintains that minimum wage hike raises average wage by 5 to 15%. Furthermore, the test also indicates that minimum wage is beneficial to redistribute income in Indonesia. On the other hand, investigating the impact of minimum wage on employment indicates that an increase in minimum wage causes a decline in urban employment by 0 to 5%, which is contributed by small firms. Meanwhile large firms experience higher employment. Minimum wage rises stimulates people to enter labour market. Furthermore labour supply increases because of workers terminated by small firms. This condition allows large firms hire more workers and expand their output by taking-over the capacity released by small companies.

Study conducted by Rama (2001) points out the different impacts of minimum wage on employment. Specializing in one industry clarifies that divergence of the effects also occurs within industry. Firm characteristics, such as size, productivity and profitability matter in responding minimum wage changes. However, limiting the study in manufacturing sector, the findings cannot be utilized to explain the impact of minimum policy in whole labour market, since the features of each industry are different. Additionally, employing single time data reduces the heterogeneity of analysis. The functioning of minimum wage policy on employment only captures provincial effect; there is no chance to compare the effect of the policy by years.

Like Rama (2001), Suryahadi et al. (2003) study the impact of minimum wage on employment in Indonesia by concentrating on labour markets during 1990s. Their analysis is based on the argument that market in Indonesia is not completely competitive or monopsony, but close to competitive. Evidence from period of 1996-1997 when economic crisis occurred, indicates that the real wage was declining and unemployment was slightly increasing during the period. Market mechanism adjusts the level of employment and real wage to a new equilibrium.

The research deals with urban formal sector and employs labour force data collected by National Labour Force Survey (NLFS/Sakernas) from 1988 to 1999. Number of observations is 312 covering 26 provinces and 12 years of data. Panel data analysis is utilized and the analysis controls for province fixed effects and time fixed effects. Ordinary Least Square (OLS) estimates indicate that minimum wage negatively affects total employment for all groups of observations except white-collar worker. At a significance level of 1%, every ten percent increase in minimum wage will reduce total employment by 1.12%. Identical increase in minimum wage causes job losses for female worker by 3.07%; young worker by 3.07%; and less educated worker by 1.96%. Meanwhile, at significance level of 5%, every ten percent minimum wage higher, full time workers potentially lose their jobs by 0.86% and part time workers by 3.36%. For white-collar workers every ten percent increase in minimum wage will create ten percent new jobs. Suryahadi et al. (2003) suggest that this is caused by substitution effect of low-productive and low-skilled workers to higher-productive and skilled labours, and also firms make additional investment in machinery to replace labour. However, the large magnitude of the minimum wage effect on the white-collar group is questionable since this group is mainly engaged in managerial, clerical, or other administrative task, areas which are characterized by fixed cost and less influenced by any changes

in wage levels. As non-production departments, number of employees occupied these position is less influenced by level of output. Additionally, the effect of minimum wage on blue-collar worker does not strongly support the argument of substitution effect. Even though blue-collar workers are negatively affected by a minimum wage hike, the estimators are not significant. As well as blue collar worker, male, adult, and educated workers are not significantly affected by changes of minimum wage.

Alatas and Cameron (2008) come with conclusion that minimum wage is detrimental for small firms but not for large firms. Alatas and Cameron (2008) focus their study on labour-intensive industries and focus on labourers working in companies producing textile, footwear, clothing, and leather located in Greater Jakarta. The finding suggests that in small firms, every percent increase in minimum wage, reduces employment by 0.31 to 0.55 percent. Nevertheless, there is no sufficient evidence that minimum wage hikes reduce the number of small firms. Meanwhile, increase in minimum wage does not have negative effect on large domestic and foreign companies. Surprisingly, some large companies experience increase in employment. This is driven by labour mobility from small to large companies. Also, dramatic increase in minimum wage during 1990 to 1996 did not reduce number of foreign firms. In contrast, during the period, foreign companies rose by 44%. This is probably because of additional cost caused be increases of minimum wage is smaller than cost to relocate the factories out of Indonesia (Alatas and Cameron 2008).

Alatas and Cameron's study allows an alternative framework in investigating the impact of minimum wage on employment. Employment is not purely determined by interaction between supply and demand and suggested by neoclassical theory with its integrated-competitive market assumption; thus the effect of rise in minimum wage will automatically create unemployment. In fact, separated Indonesia labour market into formal and informal sector and unequal power between employer and worker, assumption of competitive market fails to explain employment in Indonesia. Furthermore, focusing the study on labour-intensive industries potentially provides reference to conduct a study dealing with other sectors which are also highly dependent on labour.

Comola and Mello (2009) adopt a dual labour market approach according to formality of economic activities in Indonesia. Because of its compliance with regulations, formal economy will be affected directly by minimum wage policy. Comola and Mello (2009) employ data from the National Labour Force Survey and Industrial Survey at the district level and focus on the years 1996, 1998, 2000, 2002, and 2004. To identify the impact of minimum wage on employment, formality and informality, Comola and Mello (2009) utilize 'Kaitz index', a ratio of minimum wage to average wage of formal sector as the proxy. By performing regression and considering fixed effect, they conclude that increase in minimum wage causes informality and it simultaneously reduces formality and unemployment. At the level of error of 10%, every ten percent increase in the 'Kaitz index' will reduce formality by about 0.5%. At the same time at a level of error of 1%, for every ten percent increase in the 'Kaitz index', informality increases by 0.8% and unemployment decreases by 0.2%. Seemingly unrelated regression (SUR) produces similar estimates.

Overall, the findings support the idea that minimum wages positively affects the labour market. Dual sector labour market approach implies that increase in minimum wage does not influence total employment, where down-

sizing in formal sector is compensated by increases in the informal sector. The only explanation about declining in unemployment is by assuming that jobless people who are looking for an occupation voluntarily draws their selves from labour market (Comola and Mello 2009).

Carpio et al. (2012), using manufacturing industry survey data of 1996-2003, study the impact of minimum wage legislation in Indonesia on industrial sector. They pointed that in province level, minimum wage has positive impact on employment, but in contrast, in firm level, the policy has negative effect. Studying at the firm level and focusing on formal sector, Carpio et al. (2012) find different effects depending on size of company. Labours who work in small size enterprise suffer from increases in minimum wages. The negative impact especially burdens non-production workers, un-skilled workers, and female workers because their wage is relatively close to marginal productivity of labour ($MP_{L)}$. Thus, increase of minimum wage make their wages equal to or exceeding MP_L, which is not favourable for employers. For production workers, with considering firm fixed effect, every ten percent rise of minimum will cause unemployment of 0.2% to 0.5%. This job loss occurs in small-size companies. Meanwhile, for non-production workers, there is a similar tendency. With firm factor, ten percent minimum wage higher averagely reduces 0.5% to 0.6% job, and small size enterprises experience higher unemployment of 0.6% to 0.8%.

The research also indicates that in small firms, low educated workers potentially lose their jobs by 2% and 1.5% for production and non-production division, responding to 10% increase in minimum wage. Meanwhile, female labours working in small enterprises are predicted to lose their job by 0.6% and 0.6% to 0.7% for production and non-production workers when minimum wage increases by 10% (Carpio et al. 2012).

Lastly, Carpio el al. (2012) investigated the impact of minimum wage policy on wages paid to workers. Over all, the research indicates that minimum wage is positively correlated with wage level for the full sample. However, small companies are mostly influenced by minimum wage policy. For production workers, a 10% increase in minimum wages will raise wage levels by 1.3% to 1.8%, while for non-production workers the effect is smaller, ranging from 0.5% to 1.6%.

Magruder (2012) proposes different conclusions as compared to Comola and Mello (2009) and finds that minimum wage is beneficial for formality and employment. The philosophy of his study is assessing minimum wage as an element of big push in the economy. Instead of it raising the marginal cost, minimum wage can create new demand. Other concern of the study is minimum wage condition Indonesia during 1990 which rose and drop quickly in term of real wage and highly diverged across provinces. To investigate the impact of minimum wage on employment, there are three methods used in in this research. These are difference in difference regression, spatial-temporal fixed effect, and difference in spatial differences

In his study, Magruder (2012) employs two kinds of data sets obtained from Indonesia Family Life Survey (IFLS) of 1993, 1997, and 2000 and from Statistic Industry (SI) of 1990 to 2000 except 1997 since the data is not available. Difference in difference regression implies that minimum wage only affects self-employed people who live in 15 miles band with. Every ten percent

increase in minimum wage will create one percent entrepreneur. Spatial-temporal fixed effect method shows that every ten percent minimum wage rises positively affects full time job by 2.2% to 3.4%, negatively affect part time job by 0.43%, and negatively affects self-employment by 1.4% to 3.1% depending on the distance between the workers' work place and their residence. Meanwhile, Difference in spatial difference regression indicates that every ten percent changing of difference in minimum wage between neighbouring provinces has positive impact on full time worker by 1.05 to 1.2% and negative impact on self-employment by 0.1% to 2.2%

Utilizing IFLS data, difference in spatial different regression method indicates that ten percent changing in minimum wage gap between neighbouring provinces positively affects employment in manufacturing sector by 0.7% at significant level of 10%. This weak amplitude is due to the nature of manufacturing sector which produces tradeable goods. Hence, higher cost local product may be substituted by neighbouring supply. Meanwhile, ten percent changing in minimum wage gap between neighbouring provinces stimulates job creation in service sector by 0.9% in significant level of 1%. Service sector is untradeable industry; increase in demand of services has to be fulfilled locally. Ambiguity appears in the effect of minimum wage in retail sector. As an untradeable industry, changing in different of minimum wage between provinces reduces employment in retail sector closed to 3% at significant level of 1%. Consolidation mechanism from small retail business to large retail company is claimed a cause. Increase in minimum wage push retail worker wage up, lowering profitability of small retails. As a result, they reduce their workers. Similarly, reduction in profitability provokes self-employment to close their business down. The gap left by small retails is filled by large retails (Magruder 2012).

Based on the review of papers it can be highlighted that in measuring the impact of minimum wages on employment, the majority of work on Indonesia utilizes data from the manufacturing industry and pays attention to the formal sector. Magruder (2012) offers a wider perspective by examining the impact of minimum wage on three sectors of the economy - manufacturing, services, and retail. Nonetheless, limited coverage of sector-specific studies provides ample room to contribute a work which investigates the effect of minimum wages on sector-specific employment. Furthermore, utilizing sectoral employment is an alternative approach to estimating the general effect of minimum wages. This study deals with nine sectors of the economy, corresponding to Statistics Indonesia's categories.

Chapter 3
Minimum Wage in Indonesia

In Indonesia, minimum wage policy was introduced in the early 1970s. However, little attention was paid to implementing minimum wage by the government until the end of the 1980s. Period of 1970s-1980s was also revealed by high control of labour union. Legally, government only acknowledged single labour organization. Rare government's intervention and repressed labour union caused less effective role of government and labour union in minimum wage determination. Higher concern was given by government in late of 1980s when minimum wage was seen as an instrument of labour market policy. There were two notifications related to minimum wage setting in this period. The first was the proliferation of several labour unions even though they were considered illegal by the government, and the second was that the government applied regional minimum wage which was adjusted annually (Suryahadi et al. 2003).

Instead of supposing minimum wage as a labour market policy, the shifting of government's interest in minimum wage in late 1980s was driven by force coming from groups who were concerned that the economic achievement from industrialization should be shared with workers. Minimum wage development was also a response to external factors from North America and European Union, regions that were concerned about the labour condition in developing country, which were characterised by an inadequate working environment, low wage, and restriction of the right to establish labour unions. Working condition improvement campaign focused on workers in developing countries that produced export-oriented commodities. Eventually, adequate labour conditions become one of the terms inserted in trade agreements between developed and developing countries. Indonesia was a targeted country since due to Generalized Scheme of Preference (GSP), Indonesia enjoyed low import tariff to penetrate the US market. There was a requirement to Indonesia to raise the wage level because Indonesia was supposed paying its workers low. As a response, Indonesia revived its minimum wage mechanism in 1989 and during 1990s (Rama 2001).

During implementation of minimum wages, government has used three different references. First, from 1969 until 1995, minimum wage referred to 'minimum physical needs', which comprised a bundle of necessities essential for a single worker (Suryahadi et al. 2003). The indicator of minimum physical needs was determined in 1956 by tripartite consensus, standing of government agency, employer organization, and worker representatives. In determining this indicator, government also involved nutritionists. The minimum physical needs included foods (17 components), fuel and electricity (4 components), housing (11 components), clothes (10 components), and others (6 components).

Implementation of minimum wage policy was notified by establishing National Wage Research Council (Badan Penelitian Pengupahan Nasional) according to President Decree Number 85 Year 1969 and Local Wage Research Council (Badan Penelitian Pengupahan Daerah) by local government. Local Wage Research Council is responsible for conducting a study on market prices

every month for Jakarta region and every three months for other regions. The council gives input about minimum wage to governor. The governor recommends provincial minimum wage to Minister of Manpower, and National Wage Research Council evaluates governor's recommendation. Based on this evaluation, Minister of Manpower determines the minimum wage for each province.

In period of 1996 until 2005 minimum wage referred to set of factors; these were 'minimum subsistent needs' (KHM), living cost, company capability, current wage level, labour market structure, and economic growth. Components of 'minimum subsistent needs' were regulated by Decree of Minister of Manpower Number KEP.81/MEN/1995[1]. The 'minimum subsistent needs' is a development of 'minimum physical needs', which comprises of 43 items of necessities, representing broader and higher standard of consumption. For instance, food component was designed to fulfil 3000 calories intake rather than 2000 calories of minimum physical needs (Suryahadi et al. 2003).

Beside a change in minimum wage reference, period of 1996 to 2005 is also notified by a shift of authorization in minimum wage legislation. Minimum wage provision which was previously centralized in national government was in 2001 delegated to the provincial authority. It is consistent with regional autonomy implementation regarding to The Law Number 22, 1999 on Local Government, which effectively enforced since 1st January 2001. This delegation causes a shorter procedure, but the phases of minimum wage setting did not alter from the previous period.

Meanwhile, from 2006, minimum wage refers to 'needs of decent living' due to article 89 of Labour Act Number 13 Year 2003. Regulation about needs of decent living has prevailed since 2005 when Minister of Manpower and Transmigration released Regulation Number PER-17/MEN/VIII/2005[2] which governs the component and achievement phase of need for decent living. Because minimum wage is in effect since January, the regulation effectively prevailed since 2006. For the first time, 'needs of decent living' consisted of 46 items of necessities, ranging from food (11 items) to clothes (9 items), housing and facilities (19 items), and other necessities (7 items). In 2012, the components of 'needs of decent living' were adjusted by Regulation of Minister of Manpower and Transmigration Number 13 Year 2012[3]. The components were expanded to include 60 items consisting of food components (11 items), clothes (13 items), housing and facilities (26 items), and other necessities (10 items).

Figure 4 displays mechanism of minimum wage setting in Indonesia. Minimum wage legislation is starting by conducting a price survey in the first week

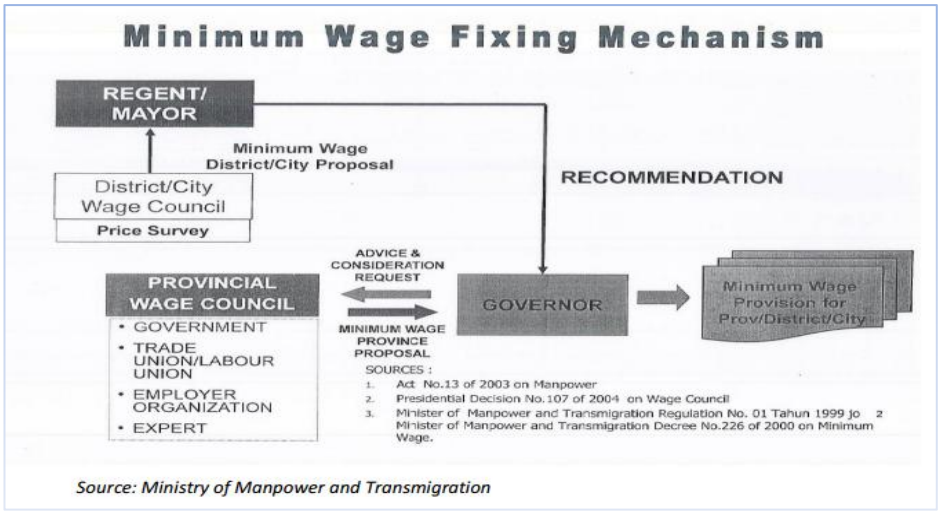
[1] Official term is Keputusan Menteri Tenaga Kerja Nomor KEP.81/MEN/1995 tentang Penetapan Komponen Hidup Minimum.

[2] Official term is Peraturan Menteri Tenaga Kerja dan Transmigrasi Nomor PER-17/MEN/VIII/2005 tentang Komponen dan Pelaksanaan Tahapan Pencapaian Kebutuhan Hidup Layak

[3] Official term is Peraturan Menteri Tenaga Kerja dan Transmigrasi Nomor 13 Tahun 2012 tentang Komponen dan Pelaksanaan Tahapan Pencapaian Kebutuhan Hidup Layak

of every month from January to September. The survey is performed by a team initiated by District/City Wage Council or by Regent/Mayor. This survey aims to know the tendency of prices of 'needs for decent living' components and to collect data for predicting prices prevailing in December. Periodically, District/City Wage Council or Regent/Mayor reports the survey result to Provincial Wage Council that also regularly reports this result to National Wage Council. Based on survey data, regent/mayor recommends minimum wage for district/city to governor. From regent/mayor's recommendation, governor proposes province minimum wage to provincial wage council. After consultation, advice and consideration from the council, governor issues provision of minimum wage for province and/or district or city.

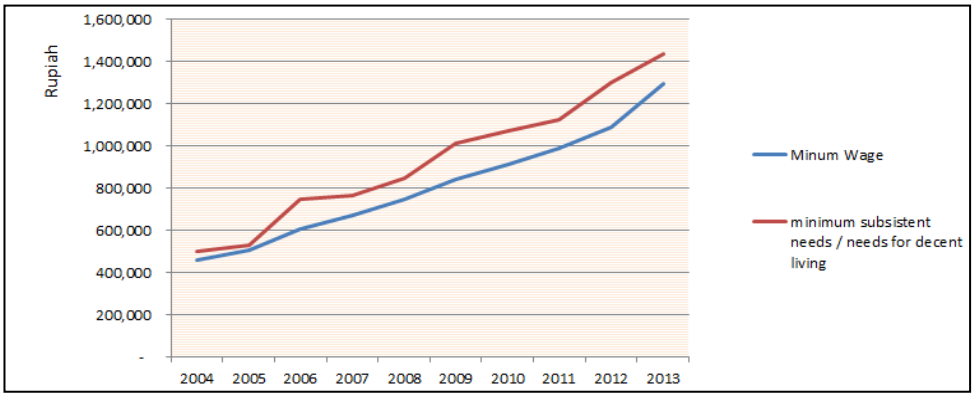
Figure 4 Minimum Wage Mechanism



Source: Ministry of Manpower and Transmigration

Yet, 'needs of decent living' is not the only determinant of minimum wage; thus there will be deviation in its application. Figure 6 shows the trends of average minimum wage and average 'minimum subsistent needs'/'needs for decent living' from 2004 to 2013. The graph tells that for 2004 and 2005 minimum wages converged to 'minimum subsistent needs' as the reference, while starting in 2006 when 'needs for decent living was applied', minimum wages diverged to 'needs for decent living' as the reference. This wide deviation remained until 2013. Change in coverage of minimum wage's reference from 43 items (up to 2005) to 46 items in 2006 and 60 items in 2013 likely become one factor of minimum wage's compliance with its references.

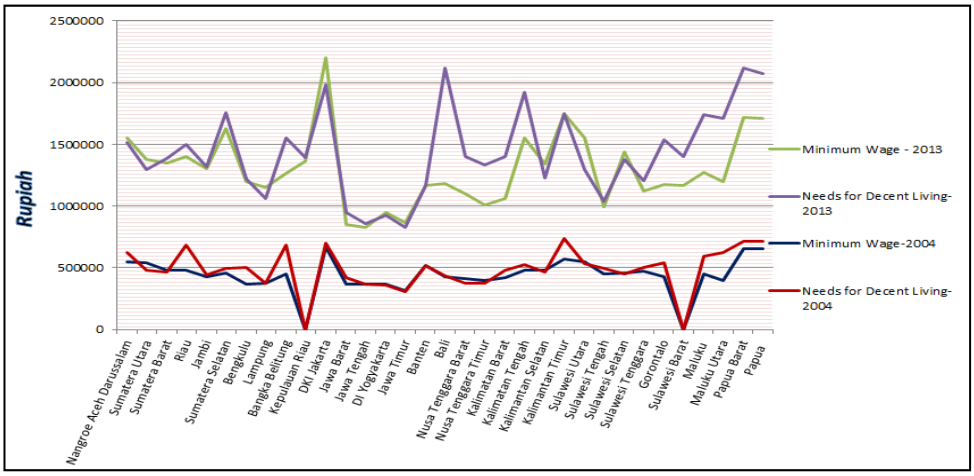
Figure 5 Minimum Wage and 'Needs for Decent Living'/'Minimum Subsistent Needs' Trends



Source: Statistics Indonesia, Ministry of Manpower and Transmigration, figure by author

Meanwhile, deviation also occurs in every province. Figure 6 shows that in 2004, in most provinces deviation are relatively small. In contrast, in 2013, most provinces were less likely to comply with needs for decent living as the reference in determining their minimum wages. The figure also informs that in 2013, DKI Jakarta, Bali, Papua, and Papua Barat (West Papua) have highest prices of consumption, while the living cost in Jawa Barat (West Java), Jawa Tengah (Central Java) and DI Yogyakarta is cheaper among other provinces. These can be identified by investigating several items of 'needs for decent living' components. One of the food components is rice which is differently priced in each region in Indonesia. Represented by rice prices in capital of province, figure 7 informs that in 2012, rice price in DKI Jakarta was the highest in Indonesia, while in Bali and Papua, even though not the highest but the prices were above the average rice price. Those provinces are not main producers of rice. Dependency on supply from other province and high cost of transportation especially from centre of rice to eastern Indonesia cause rice prices in DKI Jakarta, Bali, and Papua to be relatively higher than other provinces. In contrast, because of their role as rice producers, rice price in Jawa Barat, Jawa Tengah and DI Yogyakarta were the smallest in Indonesia.

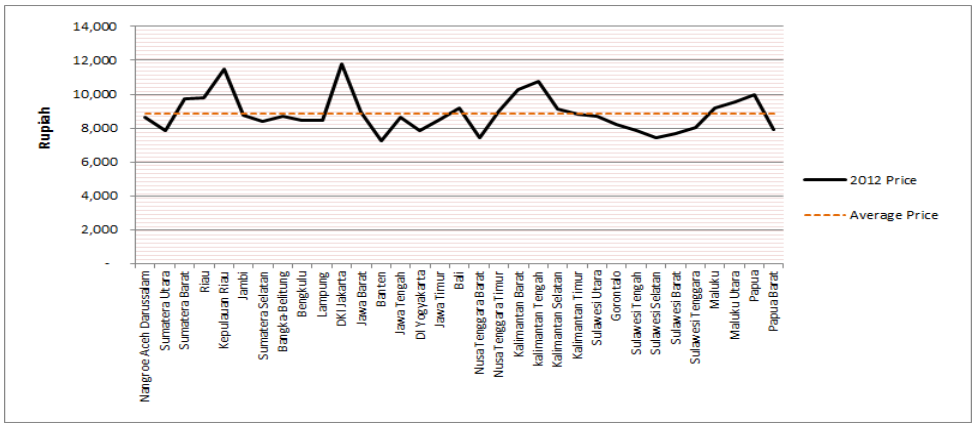
Figure 6 Minimum Wage and 'Needs for Decent Living'/'Minimum Subsistent Needs per Province*)



Source: Statistics Indonesia, figure by author

*) Data for Kepulauan Riau and Sulawesi Barat for 2004 are not available

Figure 7 Comparison of Rise Prices per Province (2012)



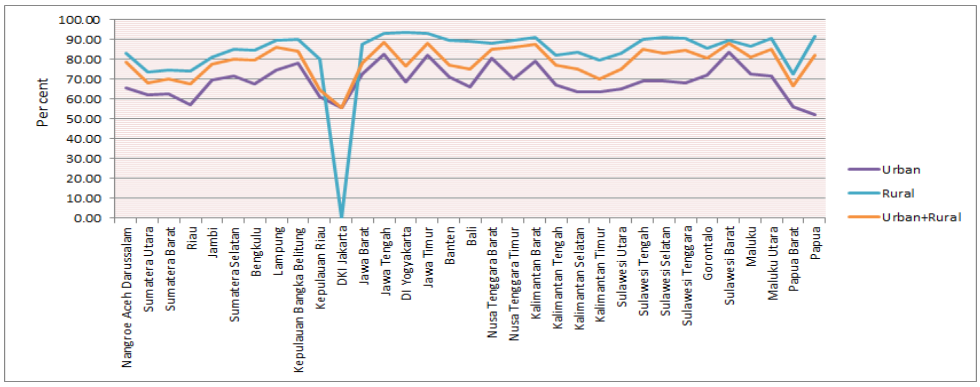
Source: Statistics Indonesia, figure by author

Another component that plays a large role in 'needs for decent living' is housing expenditure. In Indonesia, households allocate about 15% to 25% of total expenditure for housing. One factor which influences housing cost is population density; Jakarta as the most populated province has the highest population density (Shefer 1990). Another factor which is likely to influence housing cost is the house ownership rate, which represents the ratio between households owning house and total households. Smaller the ratio creates the demand of rented house and stimulates the rate hikes.

Figure 8 shows that DKI Jakarta, Bali, Papua Barat, and Papua provinces which have the highest living cost are included in provinces that have the smallest house ownership ratio. Only about 55% of Jakarta population stays in their own houses, while the rest have to pay for their settlement. Meanwhile 66% urban people in Bali, 56% urban residents in Papua Barat, and only 52% urban population in Papua Province own a house. In the other side, about 78%

urban people in Jawa Barat, 82% city residents in Jawa Tengah, and 61% urban population in DI Yogyakarta possess a house.

Figure 8 Ratio of House Ownership per Province (2012)*



Source: Statistics Indonesia, figure by author
*) For DKI Jakarta Province, whole region is categorized as urban area

Chapter 4
Research Methodology and Data

4.1. Research Methodology

The aim of this study is to measure the implication of minimum wage policy on employment in general and by sector of economy. To meet this objective, analysis is conducted at the provincial level and is based on aggregate data obtained from official publications and other documentation. Aggregate data on employment is built from ILFS individual data. To achieve the objective of the research, data is pooled at the provincial level and also grouped into sectoral level according to province. These pooled data are beneficial in investigating the effect of minimum wage on employment in general. These two pooled data sets also support comparative analyses. Sectoral employment data is necessary to examine the effect of minimum wage in every individual sector.

In this research, the implication of minimum wage policy in general and in economic sectors is measured by identifying the change in labour employed in a particular sector which may be attributed to a change in minimum wages. To identify the correlation between minimum wage and economic sectors, this research will use bivariate and multivariate statistical methods.

This study uses panel data analysis covering the period 2004 to 2013 as this permits identification of the effect of minimum wages after controlling for province and time fixed effects.

The econometric model to be estimated is developed from a model constructed by Neuwark and Wascher (1992). This study uses two pooled panel data sets- these are provincial level pooled data set and sector level pooled data sets. This study explores following models:

$$\mathbf{Y_{pt} = \alpha + \beta(MW_{pt}) + \gamma X_{pt} + \mu_p + \delta P_p + \theta T_t + \varepsilon_{pt}} \quad \ldots\ldots\ldots\ldots \quad \mathbf{(1)}$$

$$\mathbf{Y_{spt} = \alpha + \beta(MW_{pt}) + \gamma X_{pt} + \mu_{sp} + \delta S_s P_p + \theta T_t \varepsilon_{spt}} \quad \ldots\ldots\ldots\ldots \quad \mathbf{(2)}$$

Model (1) is utilized to estimate the effect of minimum wages on general employment, and the examination is conducted using a provincial level pooled data. Y_{pt} represents the labour employed in particular province and certain year, MW_{pt} indicates minimum wage prevailing in particular province and year, and X_{pt} is a vector of control variables which affect employment. The control variables are gender, marriage status, education level, residential, and economic growth. Except economic growth, all control variables are denominated in logarithm. Economic growth utilised in this paper is growth rate of Gross Domestic Regional Product (GDRP). To capture fixed effects of province and year, the model employs province dummy variable (P_p) and year dummy variable (T_t).

Variable gender is used due to the condition that different types of industries favour female or male. This research utilises female to represent gender variable. Gender still become concern of researchers since inequality issue embedded is far from solved. Studies on relationship between gender and em-

ployment indicate dissimilarity in income level and job opportunity between males and females (Seguino 2000, Morrison et al. 2007, and Braunstein 2013). Marriage status probably becomes obstacle to obtain particular job. Education level has been known as a determinant of job opportunity. Several studies point that high-educated people potentially occupy better job and earn higher income, and they are less risky from job losses (Mingat and Eicher 1982, Mincer 1991, Harvey 2000). As the proxy of the education variable, this research utilises low-educated workforce or employment as the observation, which is claimed as marginal and low productive worker. Residential is included because it can be positive or negative point for individual to engage with formal or informal and sectoral job. It is likely that rural people have smaller chance to get formal job than those who live in urban area. There is opinion that formal job mainly exists in urban and only little exists in rural area. Finally, we cannot neglect economic growth as control variable since this variable is crucial in job creation. Economic growth can offset the decline of employment caused by minimum wage rises.

Meanwhile, in model (2), analysis employs a three dimensional data set which comprises of province and sector of economy as unit of analysis and year as a time dimension. Hence, $Y_{spt,}$ reflects employment in particular sector, particular province, and certain year. Meanwhile MW_{pt} is the minimum wage in a particular province and year, and X_{pt} is set of control variables in particular province and year. To identify the impact of minimum wage on sectoral employment, this research utilises fixed effect model (FEM) by pooling data on sector-provincial level. FEM is utilised with assuming that influence of sector and province is constant over time (Wooldridge 2003).

4.2. Data review

This research is organized by using both micro and macro data. Micro data is mainly obtained from Sakernas (Indonesian Labour Force Survey/ILFS). ILFS is a periodical survey conducted by Statistics Indonesia. This survey uses ILFS data from 2004 to 2013. 2004 is a year after Indonesia established Act Number 13 Year 2013 concerning Manpower[4]. One of the points regulated in this act is minimum wage. Although the law was promulgated on March 25, 2003, regulation about minimum wage effectively applied in January 2004.

Regarding the ILFS data utilized in this research, several points need to be highlighted. The first is that the variables involved and the structure of the survey periodically adjusted. Second, there is reclassification of business sectors. Statistics Indonesia maintains nine main sectors in most publication. Most surveys have already been completed with this main classification. In particular surveys, the business sector is expanded, but not complemented by the original classification. Thus, tracing back to earlier business categories is necessary. The third is very important because it is related to data consistency. Up to 2010 the survey covered 10-14 year old or elder individuals as the observations, while

[4] The translation is unofficial, which is provided by Jakarta agency of International Labour Organization (ILO). Original term of the act is "Undang-undang Nomor 13 Tahun 2003 tentang Ketenagakerjaan".

starting from the 2011 survey coverage is restricted to 15 years and above. For uniformity, analysis derived in this paper is based on data of 15 year old or more. This is consistent with act of manpower which states that the lower bound of the work force is 15 years old. However this study does not comply with the act which governs 64 years old as the upper bound of work force. The reason is that this study does not distinguish between formal and informal sectors - informal sectors are usually less likely to comply with regulations.

Due to the ILFS data condition, the employment data utilized in this paper has to satisfy several characteristics; the first, samples are 15 years old age or more; second, they have a job and receive income from their job; furthermore their job-sectors are identified. Otherwise, the data is not used in the analysis.

While useful the ILFS data has limitations. First, ILFS uses different respondents for different surveys. Although in consecutive surveys some respondents are the same, the survey does not provide tools for the user to identify them. Second, ILFS is a self-reporting survey, where respondents voluntarily record their status. Reliability of some variables and consistency among variables become crucial issues. For instance, income data may not be accurate. Evaluating the data sets, it is found that for many observations there is information on job status but no information on income and for others no information on sector of work. Due to the objectives of this paper these observations are dropped. Table 1 summarizes the sample size obtained from ILFS (Sakernas). Number of observations represents 15 years old or more respondents, number of observations in a job is describes observations who have an occupation, while samples identified by job sector and income are those whose jobs are identified and receive for their job.

Table 1 Sample Summary

Year	Number of Samples	Number of Samples in a Job	Number of samples Identified by job sector and income
2004	209,480	124,316	71,745
2005	153,653	89,104	31,324
2006	178,673	106,343	58,543
2007	793,292	483,580	264,041
2008	812,029	500,767	268,504
2009	805,656	501,354	266,954
2010	828,101	520,307	275,572
2011	524,810	323,273	185,275
2012	507,713	318,509	185,446
2013	495,076	296,305	170,576

Source : Sakernas

Macro data mobilized in this study comprises of minimum wage, need for decent living, and economic growth data. Minimum wage and economic growth data are provided by Statistics Indonesia, while need for decent living data is acquired from Ministry of Manpower of Republic of Indonesia. Minimum wage data employed in this study is minimum wage at provincial level, instead of residence or sectoral level. While there are sector specific minimum wages it is not an obligation, and not all provinces set it. The only regulation

for provinces that establish sectoral minimum wage is that it is not allowed to be lower that minimum wage.

There is missing data on minimum wage for Papua Barat Province (West Papua) between 2004 and 2007 and ILFS data is only available from 2006. The province was initially part of Papua Province and became an autonomous region since 2003. After three years transition, the province fully operated since July 26, 2006. Meanwhile, need for decent living data of 2006 shows that both provinces have equal amount. Thus to fill the gap this research treats minimum wage of West Papua for 2006 equal to Papua Province. Missing information about minimum wage and need for decent living of West Papua also appears for 2007. With same reason, this information is treated equally to Papua Province level.

In this study, the data on need for decent/minimum living is collected from the Ministry of Manpower. The absence of data on this measure for minimum living of 2004 and 2007 for West Papua Province is solved by adopting need for minimum living of Papua Province.

Another macro data utilized in this paper is economic growth data, which is published by Indonesia Statistics. This research uses provincial economic growth data which sufficiently represents both total provincial economic growth and sectoral-provincial economic growth. One of the methodologies to calculate the economic growth is by sectoral approach, while the total economic growth serves as the average of sectoral economic growth.[5]

4.3. Variables

This research employs variables which are appropriate to investigate the effect of minimum wage on employment. The summary of variables is displayed in table 2 as follows:

Table 2 List of variables

Variable	Description
Ln_Employment	Employment in every province or in nine sectors of the economy. The variable employment is denominated in Ln level.
Ln_MWage	Log of Minimum wage prevailing in every province.
Eco_Growth	Provincial economic growth.
Ln_FemaleWorkforce	Log of female workforce in each province.
Ln_RuralWorkforce	Log of workforce living in rural areas.
Ln_MarriedWorkforce	Log of married workforce in each province.
Ln_LowEducWorkforce	Share of workforce that has studied up to Junior High School in each province. This group consists

[5] Consept and Methodology of GDP Calculation, Statistics Indonesia. <http://www.tbps.go.id/Subjek/view/id/11#subjekViewTab1> accessed on 4 June 2015.

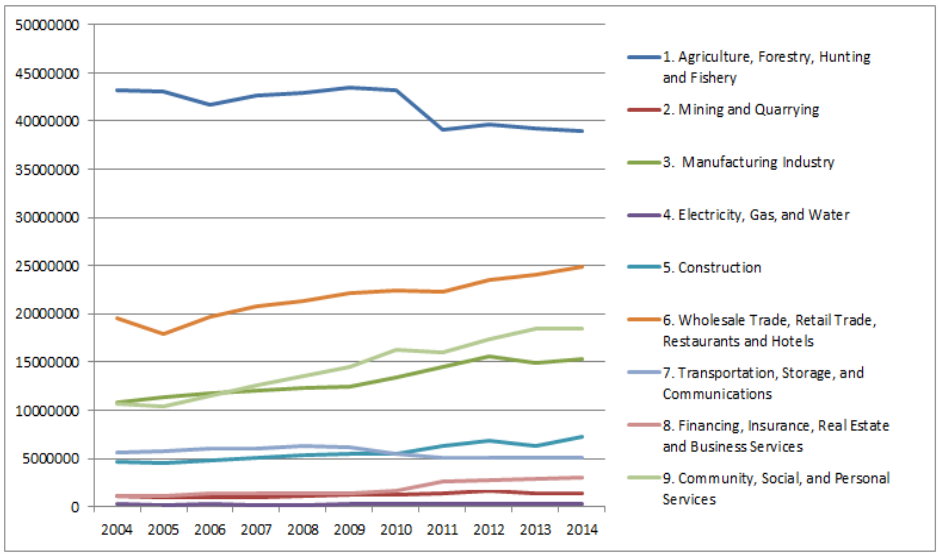
of labour that has completed 9 years education (junior high school) or less. This is consistent with government program to pursue 9 years basic education for all citizens.

Chapter 5
Result and Discussion

5.1. Employment Trend in Indonesia

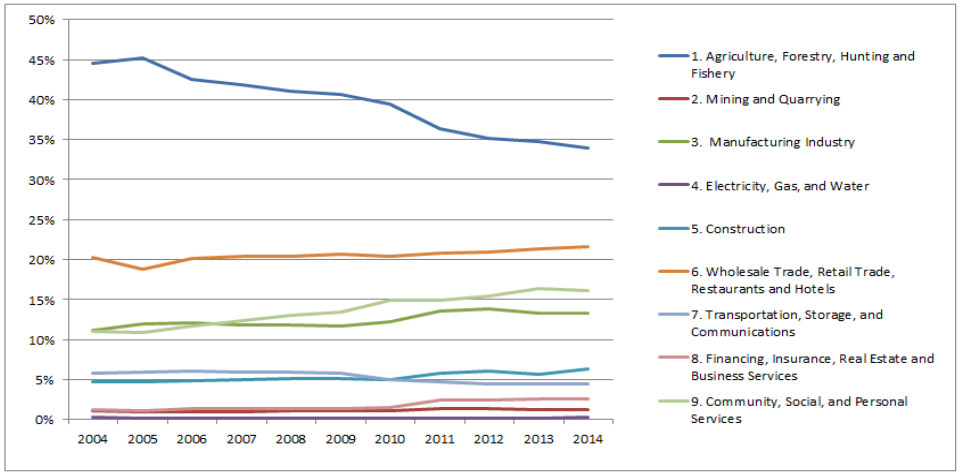
Current employment in Indonesia has different patterns in each sector. The data shows that the number of workers engaged in agricultural sector is decreasing over time. There are five sectors that consistently grow in labour absorption. They are wholesale trade, retail trade, restaurant and hotels; manufacturing industry; community, social, and personal services; financing, insurance and business services, and also construction sector. Meanwhile transportation, storage, and communication; mining and quarrying; and electricity, gas, and water sectors remain stable (figure 9). Similarly, the proportion of labour engaged in each sector also shows similar pattern. Exemption appears in agriculture, forestry, hunting, and fishery sector and transportation, storage, and communication sector, which theirs portions tend to decrease (figure 10).

Figure 9 Trend of Sectoral Employment



Source: Statistics Indonesia

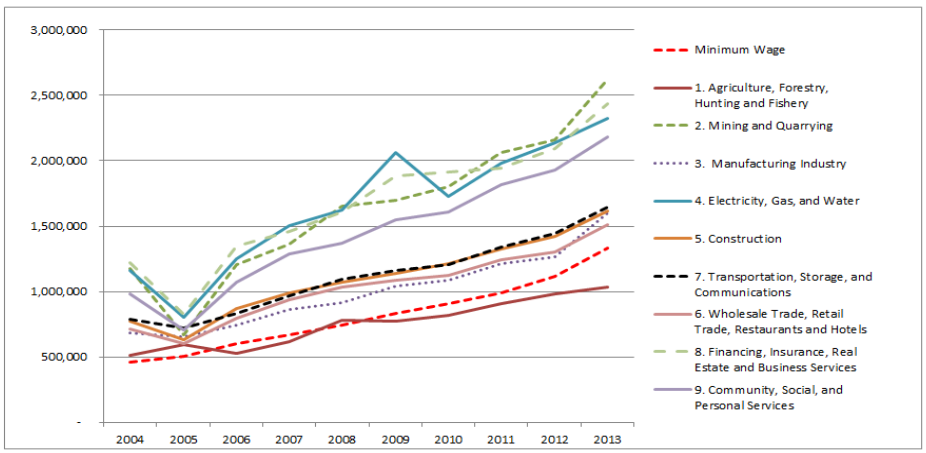
Figure 10 Trend of Contribution of Sectoral Employment in Labour Market



Source: Statistics Indonesia

From the sample utilized in this study, except in sector-1, average income received by labour is above minimum wage level. Sector-3, 5, 6, and 7 have moderate deviation of average income from average minimum wage, while sector 2, 4, and 8 pay their employees much higher than the minimum wage. However, in labour market, these three sectors are the least labour absorber. One sector that has high salary for its employees is sector-8, which comprises of community, social, and personal services (figure 11). Regarding to perfect competition labour market theory, this condition will likely not influence employment since minimum wage level is below market wage, except for agricultural, forestry, hunting, and fishery sector.

Figure 11 Comparison between Average Minimum Wage and Average Sectoral Income



Source: Statistics Indonesia, Sakernas, calculation and figure by author

5.2. Descriptive Analysis

Table 3 describes basic statistics of workforce and employment regarding particular features. Panel A summarizes the sample workforces (comprises of 15 years old individuals or older) without classifying them according to their occupation.

Panel A shows that on average the workforce is dominated by low-educated individuals - 71% of total sample, even though the trend is declining in recent years (figure 12). In contrast, medium-educated workforces contribute about 20%, and figure 12 shows this group is increasing. The share of those with completed high education is about 8%.

Sixty percent of workforce lives in rural area. However, the portion of those living in rural areas is declining (figure 12). It is an indication that agricultural and rural-informal sector still has a large role in employment and it is an early warning about the consequence of employment in sectors that are highly dependent on rural labour.

Regarding the gender, the ratio is close to 50% implying no dominance of men or women in workforce. Married people account for more than 66% of the workforce. It is reasonable since the sample was restricted to those 15 years or older that more than 70% respondents are 25 years old or more[6]. The trends for both categories in the labour market are constant (figure 12).

Panel B of table 3 displays the profile of employment. On average, in a province 5,591 of 16,693 individuals or about 33% of respondents are engaged in paid work. The other 67% are probably enrolled in education, dealing with unpaid work, doing domestic work, or are unemployed. This gap also indicates the ability of the economy to create jobs. It is consistent with variable 'Ln Employment' representing growth of employment. The increase of job opportunity, approximately 8% does not catch up the growth of workforce of 9.35%. This unbalanced condition potentially strengthens selection mechanism by giving employers bigger chance to choose their preferred employees.

Similarly, the growth of different groups in the workforce does not parallel the growth of job opportunities for the same groups. Sixty percent job participation for low-educated employment when they account for seventy one percent portion of the workforce. This is probably due to shifting of employer preference to hire higher educated worker. This is indicated by figure 13 which shows that low-educated employment is declining, and mid-educated group is increasing. From workforce side, there is a pattern of migration from low-educated group to higher-educated groups. Surprisingly, job participation of high-educated reaches 14% of employment, much greater than its portion in workforce. It seems that this group has the biggest opportunity to acquire a job among workforce. Full samples of Sakernas 2004-2013 employed in this study

[6] Data of Sakernas 2004-2013 indicates that in average 27% respondents are 15-25 years old, 53% samples are 26-50 years old, and 20% observations are 51 years old or older.

informs that from around 393,000 high-educated observations, 246,000 or about 62% respondents have a job and receive income from a job.

Meanwhile, on average more rural workers are active in certain profession than their urban colleagues. Around 53% employment is in rural areas. However their contribution is getting smaller, shown by the declining trend in figure 13. After peaking in 2005 by occupying 64% job opportunity, its role shrinks to 46% in 2011 and 48% in 2013. Lack of job opportunity in rural area and urbanization are perhaps the main reasons for this change.

Comparing Panel A and B of table 3, it can be suggested that women have a weaker position in the labour market. On average, only around thirty percent of jobs are occupied by women. However, portion of women possessing a job increases from about 20% of total employment in 2004 to 27% in 2008 and 30% in 2011. This level remains until 2013 (figure 13)

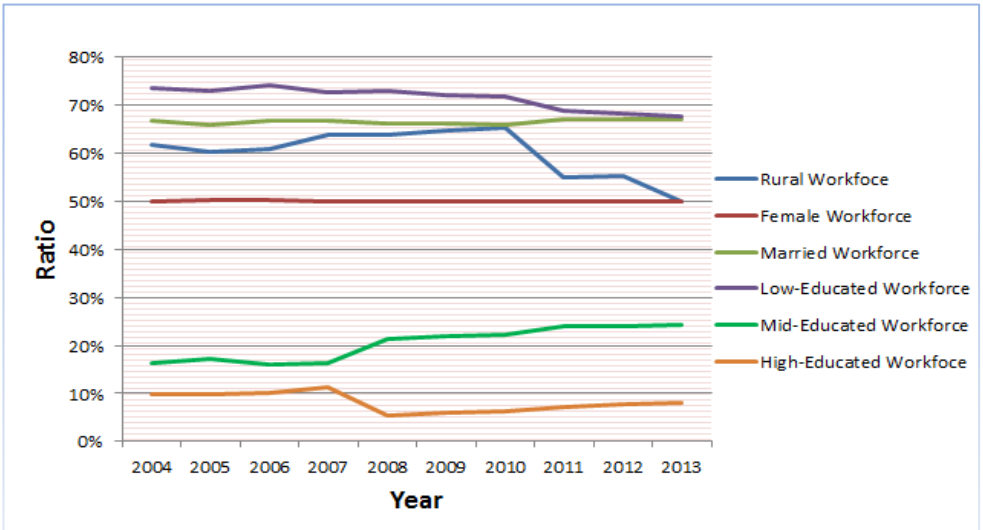
Percentage of married labour in employment is relatively big, consistent with its share in the workforce. A larger share of married worker in employment, 71%, compared to 60% in workforce is an indication that marriage status does not inhibit a person to possess a job.

Panel B also contains information on key variables such as minimum wage and economic growth. Standard deviation, minimum/maximum values of minimum wage between provinces shows wide variation. Likewise, minimum wage also changes overtime. The other key variable is economic growth. Different from minimum wage, which rises overtime, economic growth fluctuates. It is showed by small standard of deviation, minimum and maximum values of economic growth within province. Figure 14 shows the trend of average minimum wage and average economic growth from 2004 to 2013.

Table 3 Workforce Statistics-Pooled in Province Level

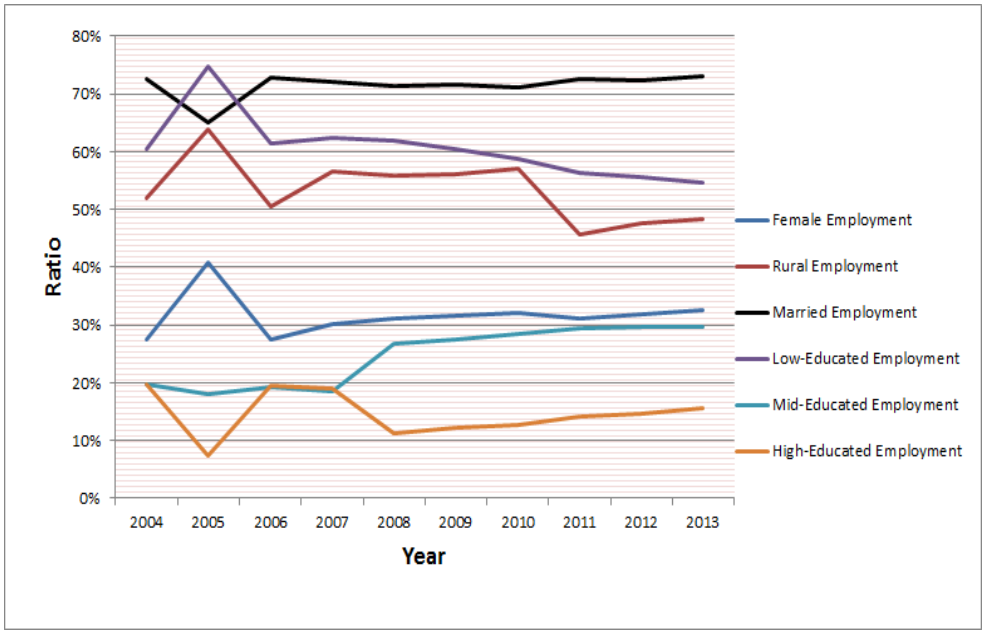
Variable		Mean	Std. Dev.	Min	Max	Observations
			PANEL A			
Total Workforce	overall	16693.34	15263.83	849	82702	N = 318
	between		11762.3	5550.125	54912.6	n = 33
	within		9767.819	-16056.26	44482.74	T-bar = 9.63636
Ln Total Workfoce	overall	9.354916	.8929456	6.744059	11.323	N = 318
	between		.5852271	8.521792	10.7922	n = 33
	within		.6795298	7.529731	10.35483	T-bar = 9.63636
LowEduc Workfoce	overall	.7146416	.0745157	.3415783	.8708949	N = 318
	between		.0670813	.4843132	.8149392	n = 33
	within		.0335788	.450518	.8004484	T-bar = 9.63636
MidEduc Workforce	overall	.2048627	.0584704	.0734617	.4240283	N = 318
	between		.0450738	.1301244	.3363783	n = 33
	within		.0378894	.1127671	.3439558	T-bar = 9.63636
HigEduc Workforce	overall	.0804957	.0350556	.0333448	.2455439	N = 318
	between		.0249315	.05228	.1793084	n = 33
	within		.0247108	.0252962	.2055262	T-bar = 9.63636
Rural Workfroce	overall	.6006565	.1665696	0	.8409278	N = 318
	between		.147638	.0505601	.7798433	n = 33
	within		.0799977	.2851621	1.055697	T-bar = 9.63636
Female Workforce	overall	.4999318	.0128113	.4723031	.5324555	N = 318
	between		.0121095	.4784668	.5250637	n = 33
	within		.0046753	.4799069	.5200549	T-bar = 9.63636
Married Workforce	overall	.6659949	.031947	.5838795	.73288	N = 318
	between		.0304288	.5958329	.7200312	n = 33
	within		.0108599	.6217662	.7091797	T-bar = 9.63636
			PANEL B			
Total Employment	overall	5591.132	5451.859	1	29144	N = 318
	between		4210.207	1699.75	18560.2	n = 33
	within		3476.982	-12951.07	16174.93	T-bar = 9.63636
Ln Employment	overall	8.046143	1.581737	0	10.28	N = 318
	between		.683371	6.736771	9.665747	n = 33
	within		1.427895	.2112337	9.595697	T-bar = 9.63636
LowEducEmployment	overall	.6028064	.1034714	0	1	N = 318
	between		.0700674	.4496938	.7359317	n = 33
	within		.0767652	.1007211	.9799208	T-bar = 9.63636
MidEducEmployment	overall	.2493068	.0864642	0	1	N = 318
	between		.0454742	.166522	.3346877	n = 33
	within		.0739332	.0089607	.9325171	T-bar = 9.63636
HigEducEmployment	overall	.1478869	.0560309	0	.3273953	N = 318
	between		.0304286	.0975463	.2156185	n = 33
	within		.0471935	-.0332382	.2955681	T-bar = 9.63636
Rural Employment	overall	.5307496	.1681174	0	1	N = 318
	between		.1423001	0	.7013907	n = 33
	within		.0918399	-.0306617	1.119489	T-bar = 9.63636
Female Employment	overall	.3141352	.0886741	0	1	N = 318
	between		.0479986	.2216669	4059517	n = 33
	within		.0750052	-.0016641	9654007	T-bar = 9.63636
MarriedEmployment	overall	.7162544	.0858916	0	1	N = 318
	between		.0399419	.6019229	.7653907	n = 33
	within		.0762423	.0363039	.9723799	T-bar = 9.63636
Minimum Wage	overall	825367.5	301945.7	310000	2200000	N = 318
	between		166722.4	550475	1235625	n = 33
	within		254643.1	275856.4	1897094	T-bar = 9.63636
Economic Growth	overall	.0573242	.0387191	-.225337	.2846699	N = 318
	between		.0258105	-.0144048	.142348	n = 33
	within		.029938	-.1601053	.2874289	T-bar = 9.63636

Figure 12 Workforce Demography Trends by Selected Parameters for 2004-2013



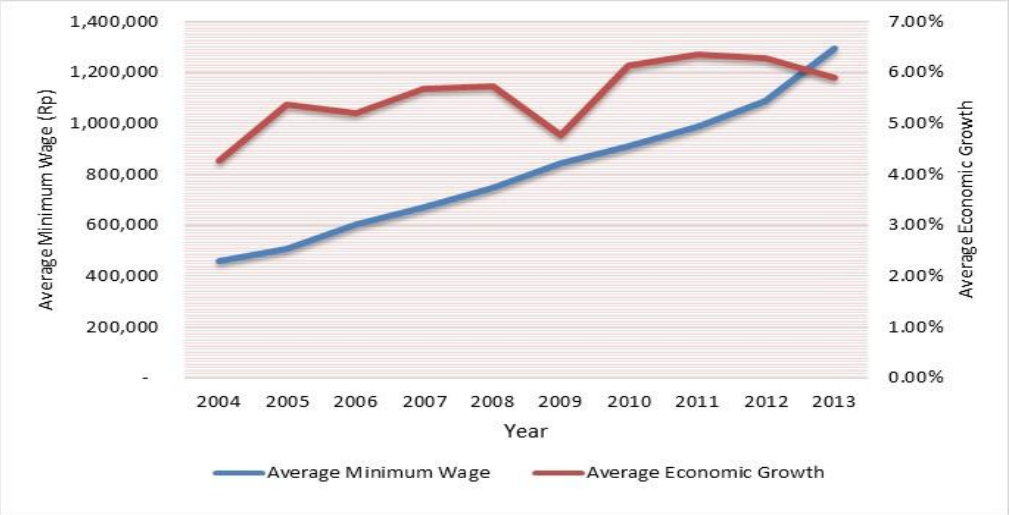
Source: Sakernas, calculation and figure by author

Figure 13 Employment Demography Trends by Selected Parameters for 2004-2013



Source: Sakernas, calculation and figure by author

Figure 14 Trends of Average Minimum Wage and Average Economic Growth 2004-2013



5.3. Econometric Analysis

5.3.1. The Impact of Minimum Wage on General Employment

Table 4 displays the result of ordinary least square (OLS) analysis using provincial level pooled data. Model specification-1 includes minimum wage, and economic growth. Spesification-2 accommodates workforce traits while the last three specifications include province and year dummy variables, respectively.

Table 4 Impact of Minimum Wage on General Employment – OLS Analysis Using Provincial Pooled data

Variable	Independent Variable : Ln_Employment				
	Spec_1	Spec_2	Spec_3	Spec_4	Spec_5
Ln_MWage	1.4591784***	.43334714**	.11680428	.04019257	-.96339201
Eco_Growth	.79222959	-.46691335	-1.7605036*	-.76443439	-.88553207
Ln_RuralWorkforce		-.27359029	-.52769081	-.39609349*	.22627959
Ln_FemaleWorkforce		.27276285	5.5946483	.95820469	7.5088374**
Ln_MarriedWorkforce		3.9207396***	-.88252795	2.6694417***	-4.1806346
Ln_LowEducWorkforce		-2.6690993***	-2.7245801	-2.1484521***	-2.3956656
Constant	-11.784068***	-8.7594925***	-5.6675422	-1.4957243	12.43948
Dummy Province	*No*	*No*	*Yes*	*No*	*Yes*
Dummy Year	*No*	*No*	*No*	*Yes*	*Yes*
N	318	308	308	308	308
r2	.11376067	.55870359	.60121963	.72483744	.76362845
r2_a	.10813375	.54990698	.54488634	.71070238	.72089975

legend: * p<.1; ** p<.05; *** p<.01

These estimates show that except in model specification-5, there is a positive link between minimum wage and employment, even though the coefficients are not always statistically significant. The same pattern prevails regardless of the estimation using fixed effect and random effect approach (see table 5). This is consistent with many studies conducted in developing country, that minimum wage is not detrimental to employment. With regard to the other

variables, there is no indication that female status negatively affects employment. Low educated workforce is consistently negative correlated with employment in all models while marital status is not an impediment to engage with labour market.

Table 5 Impact of Minimum Wage on General Employment – FEM/REM Analysis Using Provincial Pooled Data

Variable	*Independent Variable : Ln_Employment*	
	Fixed_Effect	Random_Effect
Ln_MWage	.11680428	.43334714**
Eco_Growth	-1.7605036**	-.46691335
Ln_RuralWorkforce	-.52769081	-.27359029
Ln_FemalelWorkforce	5.5946483	.27276285
Ln_MarriedWorkforce	-.88252795	3.9207396***
Ln_LowEducWorkforce	-2.7245801	-2.6690993***
Constant	-4.7479732	-8.7594925***
N	308	308
r2	.51347205	
r2_a	.50377382	

legend: * p<.1; ** p<.05; *** p<.01

Narrowing investigation of implication of minimum wage into specific group of employment produces similar indication. Consistent with impact on employment in general, minimum wage positively influences employment of groups of workers. Table 6 demonstrates that female, married, and low educated workers are positively affected by increases in the minimum wage. At level of significant of 10%, a ten percent increase in minimum wages raises employment for these groups by more than three percent. Greater effect is received by rural group. Minimum wage also influences the workforce in determining their occupations. Column 5 and 6 of table 6 show the preference to be a worker/employee or become an entrepreneur as a response of minimum wage rises. Even though the signs are positive, minimum wage raises workforces' interest to be a worker rather becoming self-employed or an artisan. Definitive income promised by a worker status is still alluring for people to join a job market. If minimum wage rises by ten percent, the number of workers may be expected to grow by close to two percent.

Table 6 Impact of Minimum Wage on Specific Employment – OLS Analysis Using Provincial Pooled Data

Variable	*Independent Variable : Ln_Employment*					
	Rural	Female	Married	LowEduc	Worker/Employee	SelfEmpl/Freelancer
Ln_MWage	.54195089***	.30559019*	.33929373*	.32359201*	.17229781***	.2354273
Eco_Growth	-.07892708	.0724798	-.38480531	-.55889485	.28793453	-.42082797
Ln_RuralWorkforce	.71957861***	-.41518286**	-.22117413	-.38217579**	-.69571941***	-.00872037
Ln_FemalelWorkforce	-.08079948	1.1970379*	.36860139	-.15175002	.75164682***	-.00669712
Ln_MarriedWorkforce	3.3380992**	2.4860377**	2.8510228***	2.7166076**	1.928178***	3.427944**
Ln_LowEducWorkforce	-2.7506603***	-2.0348694***	-1.8344074***	-.94894511	-.95856103***	-2.1653707**
Constant	-10.646748***	-7.8388868***	-7.0062571***	-7.8651427***	-3.8014877***	-6.8137843***
N	307	306	305	307	298	308
r2	.56701346	.63590746	.59568571	.57877222	.96376612	.57730678
r2_a	.55835373	.62860125	.58754516	.57034766	.96301903	.56888101

legend: * p<.1; ** p<.05; *** p<.01

The finding indicated in this research is not consistent with other researches that lie on the competitive labour market assumption and use labour market in advanced country as the subject of study. Major researches in advanced countries point the negative effect minimum wage on employment, while female and low-educated labour notified the groups that suffer deeper for this policy. Statistics suggests that labour homogeneity and labour power as the notation of fee market do not exist in Indonesia. In contrast, Indonesia labour forces are heterogeneous and segregated, such as by equal ratio of gender, slight different between rural and urban settlement, and by educational level. Absence of sufficient social security forces everyone to have particular occupation although the payment is less that minimum wage. These all condition support argument that, labour market in Indonesia is typically a monopsony market which the level of employment strongly determined by firms.

Other factor that causes the different effect of minimum wage in employment is the labour-dependency level of industry in developed countries and developing countries, including Indonesia. This dependency can be measured by using "Capital Stock/Worker Ratio" which reflects the amount of capital in every labour. For example, The United State has absolute capital stock/worker ratio of 77.79 (in Ln level equal to 4.35); Australia, 70.11(4.250); and Japan of 216.38 (5.38); meanwhile, India has capital/labour ratio of 1.7 (0.52) and Indonesia of 5.24 (1.66) (Hasan et al. 2013). Apparently, this can also reflect the substitution degree of economy. Higher is the ratio, higher capital intensive the industry. Imposition of minimum wage which results higher cost motivates industry to intensify their machinery or replaced existing employees with fewer more productive workers.

To complement the investigation about employment effect of minimum wage, table 7 provides estimates with sector-province as the unit of analysis. The results are consistent with provincial pooled data analysis and show a positive link between wages and employment. OLS analysis demonstrates that every ten percent increase in the minimum wage will stimulate employment by three percent. FEM and REM analysis yield similar results. At the same time, in all models, economic growth has a positive sign although not significant. Rural and low educated workforce, consistent with provincial pooled data, is negatively linked to employment.

Table 7 Impact of Minimum Wage on General Employment – Using Sector-provincial pooled data Analysis

Variable	Dependent Variable : Ln_Employment		
	OLS	FEM	REM
Ln_MWage	.3004468*	.2227131***	.21940114***
Eco_Growth	.45191802	.15533378	.16502008
Ln_RuralWorkforce	-.09078952	-.18858558	-.20757897*
Ln_FemalelWorkforce	1.6024973**	-.2207873	-.15625264
Ln_MarriedWorkforce	.28809657	3.0022682***	2.9586473***
Ln_LowEducWorkforce	-1.0011696*	-1.4870698***	-1.4893921***
Constant	-9.0256833***	-7.5965156***	-7.5371631***
Dummy Sector-Province	Yes	No	No
Dummy Year	Yes	No	No
Sector-Province FE		Yes	
Sector-Province RE			Yes
N	2688	2688	2688
r2	.91927779	.67761744	
r2_a	.90905636	.67689596	

legend: * p<.1; ** p<.05; *** p<.01

To identify the best model representing the correlation between economic sector and employment using panel data, LM test and Hausman test guide that the random-effect model produce the best estimators (appendix 1)

5.3.2. The Impact of Minimum Wage on the Sectoral Employment

To predict the implication of minimum wage policy in sectoral employment, econometrics analysis is derived employing restricted sample. By using individual sector sample, analysis not only provides information about the impact of minimum wage, but also other factors, on sectoral employment.

Fixed Effect Model analysis maintains various indications about the impact of minimum wage on sectoral employment. Seven sectors positively response the changes of minimum wage, even though only in on sector, the effect is significant in level of error 1%, two sectors significant in 5%, and two sectors in 10% (table 8). At level of significance of 1%, in sector-9 employment likely will grow by 4.2% as a result of ten per rises of minimum wage. At level of significance of 5%, a sector-1 response a ten percent increasing of minimum wage, by absorbing 5.6% additional labour and sector-8 adds its worker by 4.2%. Meanwhile at level of significance of 10%, similar increase in minimum wage positive affects employment by 1.7% in sector-5 and by 3.9% in sector-6. Otherwise, there are two sectors negatively affected by minimum wage changes, although only in one sector, the effect is significant at level of error of 1%. Sector-7 negatively responses a ten percent increase in minimum wage by reducing its worker by 3.3%. Meanwhile, only in sector-3 and sector-8, economics growth shows its significance as an employment generator.

In some cases, the analysis shows unpredicted result. Early prediction supposes that minimum wage will reduce employment in agricultural sector (sector 1). The assumption is that this sector is identical with informal sector, which is not covered by any regulation (Lewis 1954). Less income and lower productivity cause labour migration from rural-agricultural sector to urban-manufacturing sector (Harris and Todaro 1970). Statistically, this sector is infe-

rior in term of actual income to other sectors and the level of income is lower that minimum wage. Econometric test implies that this sector is responsive to changes of wage level. When minimum wage is applied in all sectors of economy, including in agricultural sector, every ten percent minimum wage rises stimulates 5.6% new job in this sector. The role of income as a stimulant in deciding an occupation is shown by an alternative econometrics test, which introduces average income as primary independent variable. Appendix 2 indicates that when average income in agricultural sector increase by ten percent, it is predicted that employment in this sector grows by 14%. This result coincides with Azam (1992, 1997). Azam (1992, 1997) was motivated by assumption that level of consumption is equal to level of income and wage is one of income sources. Furthermore, family members are supposed as income generators. In studies about the effect of minimum wage rises on agricultural production in Morroco, Azam (1992, 1997) finds that increase in minimum wage raise agricultural output. Rises of minimum wage successfully attracts more people, which dominated by poor farmers, to work in this field.

Employing minimum wage as independent variable is not sufficient to answer the question about declining trends of agricultural employment. Alternative analysis utilising income as primary estimator results information about influences of control variables in employment. Positive signal of agricultural dependency on low-educated workforce is strengthened by the analysis. Econometrics analysis indicates that every ten percent number of low-educated workforce increases, employment in this sector grows by 52% (appendix 2). In contrast, the portion of low-educated workforce is declining over time. Additionally the analysis demonstrates negative relationship between married workforce and employment; every ten percent additional of married workforce cause 45% reduction of in agricultural employment ((appendix 2). Statistics shows that married labour forces are dominant in labour market. Other factor such as mechanisation can be taken into account as a cause of job losses in this sector as maintained by Bhorat et al. (2014).

In mining and quarrying sector (sector-2), employment is not sensitive to any changing of minimum wage. Small capacity of labour absorption and existing average income which is much higher than minimum wage was acknowledged as stronger determinant for workforce to engage with this sector. As well as agricultural sector, this sector is not sensitive to economic growth. Combination of those factors causes the contribution of mining and quarrying sector in employment tends to stable. Low educated people are not favourable with this sector.

There is ambiguity in impact of minimum wage on manufacturing employment raises from prior studies (Islam and Nazara 2000, Magruder 2012, Carpio et al. 2012). Econometrics analysis indicates that minimum does not affect labour market in manufacturing sector (table 8). However negative sign of this estimator implies minimum wage possibly obstructs manufacturing labour market in Indonesia. Manufacturing produces tradable goods, which is substitutable. Introducing minimum wage that raises the prices of goods triggers market to look for other sources to provide the needs. Furthermore, average income in this sector that is moderately higher than minimum wage causes this sector is sensitive to changes of wage. Meanwhile, economic growth positively affects manufacturing labour market; one percent economic growth will serve 1.2% new occupation in this sector. The sense is that job creation in

manufacturing sector is forced by economic growth instead of minimum wage dynamic is in line with Islam and Nazara (2000). Manufacturing sector is also adaptive to technological progress, which allows industry to re-set up their resources to achieve efficiency. Enterprise can substitute less productive labour by investing money in production machinery. Low educated labour and female labours, which identical with low productivity, are unfavourable in this sector. This finding is in line with many prior researches that used manufacturing workers as the observation.

Table 8 Impact of Minimum Wage on Sectoral Employment – FEM Analysis Using Individual Sector

Variable	Independent Variable: Ln_Employment								
	Sector_1	Sector_2	Sector_3	Sector_4	Sector_5	Sector_6	Sector_7	Sector_8	Sector_9
Ln_MWage	.56029072**	.16115024	-.19012746	.34947404	.17186445*	.39889491*	-.33149073***	.42520607**	.42203216***
Eco_Growth	-.50127286	-.49367844	1.2895908**	-1.1524318	-.25827559	.12710165	-.17154573	2.4872141***	.07268995
Ln_RuralWorkfoce	-.27592182	-.2126667	-.32802632	.16367787	.15555901	-.51707075	-.26035069*	-.29738832	-.05618874
Ln_FemaleWorkforce	-2.7388794	3.059608	-1.8454917	.12966114	1.61341	-3.1285784	-.21960848	.44782784	.9083633
Ln_MarriedWorkforce	.27345935	2.3403022	4.8438108**	2.257426	2.6655221	3.1834124*	2.5729116	6.3068887***	2.7118796
Ln_LowEducWorkforce	3.8493537	-3.9371451**	-1.5491323	-1.5918092	-3.2888762***	1.5443175	-.97250156*	-5.4497428***	-2.4072008**
Constant	-11.7662**	-7.9010219**	-2.3612142	-10.509435***	-6.317237***	-9.8176494**	.08976989	-10.30129***	-8.9426467***
N	301	297	300	295	299	301	298	297	300
R^2	.59751771	.74540814	.66177433	.68966323	.7329129	.59100177	.75323291	.86246135	.70565812
Adj. R^2	.58930379	.74014072	.65484821	.68319788	.72742481	.58265487	.74814493	.85961572	.69963064

legend: * p<.1; ** p<.05; *** p<.01

Sector-4 (electricity, gas, water) is one of the highest salary payers to its worker. However, this sector is the smallest one in providing employment. Table 8 shows that there are not any variables employed in this research significantly affect employment in this sector, even though minimum wage signals positive effect on employment. In contrast, negative sign of low educated variable indicates its preference to higher productive and skilful worker.

Sector-5 (construction) is affected by increase minimum wage, but in small amplitude. Its characteristics of long-term work makes this sector cannot adjust their level of employment immediately. Other attribute of construction sector is that demand is designed by consumer and it is fluctuating (Werner and Sell 2015). Different conclusion is proposed by Werner and Sell (2005) regarding to their survey in Germany. Using prices of product as the outcome of minimum wage policy, they notifies that in West Germany, there is no sufficient evidence about the relationship between minimum wage and price of product. This condition is caused the small coverage of minimum wage in construction worker; less than three percent of workers are bound with the policy. Meanwhile, in East Germany minimum wage push the prices up, accompanied by decrease in employment. This suggests that construction labour market in East Germany is competitive.

Sector-6, which deals with trade and restaurant and hotel, is one of sectors that has lowest capital/labour ratio (Leonardi 2007). It means that this sector has high dependency on labour. Thus minimum wage rises should endanger employment in this sector if cost and profit become the only consideration. Since the labour is the main asset of this industry, minimum wage rises must be overcome by alternatives instead of worker reduction. Analysis shows that this sector will hire about 4% additional labour as a response of ten percent in-

crease in minimum wage. This result is relevant with Magruder (2012) with his big push approach. Products of this sector categorised as services. Increase of demand driven by rises of minimum wage has to be filled by domestic industry. It is also quite similar with Dube (2013). Utilizing employment data on accommodation, retail, and manufacturing sectors in US, Dube (2013) finds that minimum wage negatively affect job creation in manufacturing, but it does not affects employment in retail and accommodation sector. Wide range of business covered by the sector is also advantageous for low educated labour. The outcome is also in line with Card and Krueger's (1994) study on minimum effect on employment in fast-food industry. Employing 410 fast-food restaurants in New Jersey and Eastern Pennsylvania pre and post rises of minimum wage on April 1, 1992, they conclude that no negative effect of minimum wage increases on employment in fast-foods industry. Contrarily, rises in minimum wage increases employment and involving more low-wage worker.

Sector-7 covers telecommunication and transportation and known as a capital intensive sector. The industry negatively response to the increase in minimum wage, that every ten percent increase in minimum wage will reduce sectoral job by 3.3%. Rather than maintaining the existing employee firms prefer reducing their employees and intensify their equipment or replace the less productive workers with more productive ones.

Sector-8 dealing with financial business, real estate, rents, and company services is positively affected by minimum wage rises. Every ten percent growth of minimum wage encourages growth employment in this sector by 4.2%. Concordantly, income becomes a big determinant of job creation in this sector. Economics growth significantly affects financial sector employment, which employment predicted grows by 23% when economy develops by 10%. Big coefficient of married work force variable is probably caused by incentive promised by this sector. This sector asks higher educated candidate to joint in its job.

As a sector that is familiar with community, social, and personal services, sector-9 is unlikely negatively affected by rises of minimum wage. The scope of this sector is ranging from governmental administration, defence, healthcare, education, social and cultural, personal services, and international organization. Most of the products in included in basic necessity, which the needs of them always grows. Characterised as un-tradable product, the needs of services has to be satisfied by local industry. Furthermore, instead of rising of minimum wage, big government involvement in this sector causes the income level not only refers to minimum wage legislation, but also to specific payroll regulation. Expectation of better future becomes another stimulus in choosing public officer as an occupation. Moreover, because large regulation introduced in this sector, this economic sector has high formality. These all conditions are manifested in similar positive effects of minimum wage, and economic growth in job creation. Compared to other sectors, sector-9 is relatively friendly with female workforces. Table 8 indicates that ten percent additional females enter labour market potentially stimulates 4.2% job creation in this sector. Analysis on specific effect of minimum wage supports that female employment is positively affected by minimum wage policy; every ten percent minimum wage increase potentially creates services job for female by 55% (table 10). This positive outcome is concordant with service sector in OECD countries. Wolfl (2005) points strong relationship between female and service employment di

OECD countries. Minimum wage as an incentive induces jobless individuals and single parent to enter service labour market in USA, UK, and Canada. Instead of its favour, minimum wage, in developed country, potentially traps service sector in low productivity. Thus, restructuring service labour market by unbinding wage level encourage worker more productive to earn higher income (Wolfl 2005).

Regarding to sectoral impact of minimum wage, this study also test minimum wage implication to group or employment. Table 9 - 12 investigate sectoral impact of minimum wage on groups which are predicted suffered from minimum wage policy. Meanwhile table 13 and 14 predict the effect of minimum wage on preference of workforce to decide the choices of working as an employee or as an entrepreneur or freelancer.

Rural employment in sector-1, sector-2, sector-4, sector-6, sector-8, and sector-9 gather benefit from minimum wage rises. In contrast, rural employment in sector-7 is destructed by this policy (table 9). In sector-1, sector-6, sector-8, and sector-9, female employment experience advantages from higher minimum wage, while their colleagues in sector-7 suffered from this policy (table 10). Meanwhile, only in sector-1, sector-8, and sector-9, married labour benefited by increasing minimum wage. In contrast, minimum wage is detrimental for married worker in sector-7 (table 11). Lastly, low-educated workers in sector -1, sector-5, sector-8, and sector-9 positively response minimum wage; differently sector-7 is adversely affected by increasing minimum wage (table 12).

Regarding to the choice of self-employment, minimum wage negatively affects the number of self-employment in sector-7. Table-13 displays the magnitude of minimum wage influence in self-employment. Negative effect of minimum wage in sector-7 hampers self-employment more deeply. Ten percent increase in minimum wage reduces self-employment by 5.1%. The potential income that is not too high; on the other hand, rising of minimum wage automatically raises the cost for entrepreneurs and declines their profit. Additionally, high capital and high-tech type industry impede common people to be an entrepreneur in this field. Differently, sector-8 (finance, real estate, company services) is benefitted in term of number of self-employment by increasing minimum wage. Niche labour market causes little workforce absorbed by financial companies. However, this sector is attractive since the income potentially received by people working in this sector is high. Econometrics analysis shows that ten percent minimum wage rises creates about 14% new self-employment in this sector. Other sectors that demonstrate similar pattern in positively response to minimum wage changing are sector-1 (rises by 4.9% for ten percent minimum wage hikes), sector-2 (4.5%), and sector 5 (3.2%)

Meanwhile, that minimum wage influences workforce to be a worker in this study is significantly proved in sector-1, sector-6, sector-8, and sector-9 in any level of significances. In sector 9 at level of significance of 1%, every ten percent increase in minimum wage stimulates rises of new workers by 4.8%. While at level of significance of 5%, there are 4.9%, 4.6%, and 4.2% new workers dealing with sector-1, sector-6, and sector-8.

Table 9 Impact of Minimum Wage on Rural Employment – FEM Analysis Using Individual Sector

Variable	*Independent Variable: Ln_RuralEmployment*								
	Sector_1	Sector_2	Sector_3	Sector_4	Sector_5	Sector_6	Sector_7	Sector_8	Sector_9
Ln_MWage	.56238963**	.6154826*	-.11204824	.47705675**	.14731199	.41427914**	-.47003815***	.56668484*	.50108737***
Eco_Growth	-.38793869	.51280751	1.9308731*	-1.4425302	1.9116304***	.83834311**	.77751786**	.46613409	.9923247
Ln_RuralWorkfoce	-.2082603	.2537167	.16808697	.28818282	.67987269**	.20405115	.41421375**	.65254424	.63228877**
Ln_FemaleWorkforce	-3.849931	4.999691*	-3.1872689*	-1.8401708	.31025728	-4.1463444*	-1.32052	1.6429315	1.3347255
Ln_MarriedWorkforce	.93022659	-2.2300884	4.8233783***	.26282284	3.1258183	2.8101989	2.9786709	4.1636978**	.53977212
Ln_LowEducWorkforce	4.2991996	-1.7671293	-.66566899	2.1675225*	-2.8382748**	2.2336877	-.92938939	-5.45653***	-1.2954128
Constant	-12.920731***	-14.216997***	-4.7256917*	-13.445716***	-8.4200753***	-11.49484***	.53450354	-13.075559***	-11.445261***
N	301	297	300	295	299	301	298	297	300
R^2	.58215469	.71860746	.71216078	.57971761	.78336351	.66915907	.77836174	.74144675	.77827686
Ajd. R^2	.57362723	.71278554	.70626646	.57096173	.77942235	.66240722	.77379188	.73609737	.77373646

legend: * p<.1; ** p<.05; *** p<.01

Table 10 Impact of Minimum Wage on Female Employment – FEM Analysis Using Individual Sector

Variable	*Independent Variable: Ln_FemaleEmployment*								
	Sector_1	Sector_2	Sector_3	Sector_4	Sector_5	Sector_6	Sector_7	Sector_8	Sector_9
Ln_MWage	.57002293**	.15461068	-.29095648	-.0411959	-.07030731	.47558476**	-.58738913**	.45074841**	.54910983***
Eco_Growth	-.21317331	-1.9070222*	.94384065*	-1.5701406*	-.4371975	.45069732	-1.296696	.88614845	.38675939
Ln_RuralWorkfoce	.11344908	-.49354836	-.28674384	.10135371	-.23495961	-.35409401	-.01467023	-.51610712*	-.08914047
Ln_FemaleWorkforce	-1.6490458	1.0170298	.8805909	-1.0866309	.17925692	-2.0251136	1.747987	-.47771247	1.1342998
Ln_MarriedWorkforce	.1832803	-.04760395	2.9088482	2.8665492	2.8077711**	2.4457878	1.4209637	6.7846933***	2.5483558
Ln_LowEducWorkforce	2.5238882	.60674777	-2.3534961	-1.3311193	-1.8116293	1.0585728	-1.6790546	-4.7187743***	-2.4244891***
Constant	-13.553012***	-9.6647869***	-1.4240236	-3.811815	-5.5309168**	-11.592152***	-2.1042375	-12.737592***	-11.561102***
N	301	297	300	295	299	301	298	297	300
R^2	.62581294	.59608771	.64057128	.29788586	.6588514	.66087052	.7361169	.81135697	.7523326
Ajd. R^2	.61817647	.5877309	.63321097	.28325848	.6518415	.65394951	.73067601	.80745401	.74715886

legend: * p<.1; ** p<.05; *** p<.01

Table 11 Impact of Minimum Wage on Married Employment – FEM Analysis Using Individual Sector

Variable	Independent Variable: Ln_MarriedEmployment								
	Sector_1	Sector_2	Sector_3	Sector_4	Sector_5	Sector_6	Sector_7	Sector_8	Sector_9
Ln_MWage	.57209991**	.09032265	-.01590709	.18158635	.15890166	.32733311	-.32682999***	.3698277**	.41131683***
Eco_Growth	-.51414298	-.55514984	1.4209666***	-1.1402517	-.16111948	-.17003776	-.14261874	2.3370836***	.10643929
Ln_RuralWorkfoce	-.28167518	-.30750959	-.21184008	.02494642	.16539238	-.54964827	-.26203205*	-.36315996	-.09920002
Ln_FemaleWorkforce	-2.9328223	2.2323971	-3.670858**	.76601082	1.2276967	-2.9333365	-.03674574	-.58100134	.41483309
Ln_MarriedWorkforce	.58912251	3.5035309**	6.1344645***	1.8464715	3.4003866*	3.1332604*	2.4430991	7.049997***	3.096509*
Ln_LowEducWorkforce	3.7175795	-4.1607886**	-1.1617182	-1.6787566	-3.6643756***	1.4231084	-1.0385124*	-5.1670093***	-2.2716788**
Constant	-12.122561***	-7.6268723**	-5.3834395*	-8.317862**	-6.38603***	-9.0755497**	-.05706306	-9.6833199***	-9.1017683***
N	301	297	300	295	299	301	298	297	300
R^2	.59259207	.75539282	.6844551	.67865559	.74711531	.60828787	.75621821	.85826991	.71987559
Ajd. R^2	.58427762	.75033199	.67799343	.67196092	.74191905	.60029375	.75119178	.85533756	.71413925

legend: * p<.1; ** p<.05; *** p<.01

Table 12 Impact of Minimum Wage on Low Educated Employment – FEM Analysis Using Individual Sector

Variable	Independent Variable: Ln_LowEducatedEmployment								
	Sector_1	Sector_2	Sector_3	Sector_4	Sector_5	Sector_6	Sector_7	Sector_8	Sector_9
Ln_MWage	.53475945**	.34330295	-.07095488	.2629001	.26001365***	.28451198	-.25029945***	.7332851**	.37928441***
Eco_Growth	-.43512694	-.96646824	1.0908975**	.75445471	-.16293601	.2047717	-.27607434	-.17419454	.38266655
Ln_RuralWorkfoce	-.28565647	-.22963177	-.18871026	.1050914	.123187	-.40020929	-.33937897**	-.64784553*	.10835195
Ln_FemaleWorkforce	-2.7153647	1.1904144	-2.7799414	.21854702	-.36364145	-2.1374491	-.98812861	-2.6036034	1.0403981
Ln_MarriedWorkforce	.19116207	2.6399085	4.7078479***	-.55630464	3.0820623*	1.2971638	2.0966837	5.4865663**	1.4654238
Ln_LowEducWorkforce	3.9087151	-2.3547902	-.58899933	.86920736	-1.7102616***	2.312702	.35713015	-1.2609792	-1.4682334
Constant	-11.468068**	-11.359815***	-5.0065795*	-8.057432*	-8.3951888***	-8.4082271**	-1.8630362	-17.009112***	-9.8033645***
N	301	293	300	232	297	300	298	275	300
R^2	.57782015	.70579087	.70299396	.29687739	.78417903	.69579611	.75455651	.69596357	.74127157
Ajd. R^2	.56920424	.69961865	.69691193	.27812745	.77971377	.68956668	.74949582	.68915678	.73597337

legend: * p<.1; ** p<.05; *** p<.01

Table 13 Impact of Minimum Wage on Self Employment/Freelancer – FEM Analysis Using Individual Sector

Variable	Independent Variable: Ln_SelfEmployed/Freelancer								
	Sector_1	Sector_2	Sector_3	Sector_4	Sector_5	Sector_6	Sector_7	Sector_8	Sector_9
Ln_MWage	.49148622**	.45728311**	.11169814	.08142005	.3278582**	.27876685	-.51349307***	1.4096064***	.16781807
Eco_Growth	-.64865322	.41231085	.63975061*	-1.331374*	.86255788	-.10916877	-.27151392	-.32899503	-.16860699
Ln_RuralWorkfoce	-.36751691	.2050979	.12388062	.30842963	.26939005	-.64838549	-.40043436**	-.35056675	.1638139
Ln_FemaleWorkforce	-2.8510044	4.5981049**	.1309982	1.985496	2.6711345	-3.2618382	-.12712462	-1.0523033	2.5000913
Ln_MarriedWorkforce	.41961231	-2.1325493	.20947449	-3.5701234**	.50397153	2.7290007	2.1819907	1.7391461	-.17641072
Ln_LowEducWorkforce	3.9378761	-1.3835006	.66168002	1.6297103	-2.3264187**	2.3167943	-.47026495	.11868732	-1.3762431
Constant	-11.407417**	-12.967439***	-7.0149454**	-3.1186452	-8.8127668***	-9.1638581**	1.4836418	-21.64229***	-6.6591633***
N	301	297	300	295	299	301	298	297	300
R^2	.60917917	.71404957	.70278586	.20706206	.73724523	.61755135	.74466313	.41962126	.73000858
Ajd. R^2	.60120323	.70813335	.69669956	.19054252	.73184616	.60974627	.73939845	.40761342	.72447974

legend: * p<.1; ** p<.05; *** p<.01

Table 14 Impact of Minimum Wage on Worker Status – FEM Analysis Using Individual Sector

Variable	Independent Variable: Ln_WorkerStatus								
	Sector_1	Sector_2	Sector_3	Sector_4	Sector_5	Sector_6	Sector_7	Sector_8	Sector_9
Ln_MWage	.59102237**	.06591276	-.27574619	.33251413	.00874144	.46184262**	-.04810733	.42036505**	.4835536***
Eco_Growth	.69223015	-.47485753	2.279783**	-.96278539	-.33988932	.33649513	.01959793	2.1199256***	.06452501
Ln_RuralWorkfoce	.22852371	-.39397866	-.48848218*	.03739559	-.16766027	-.16550939	-.17032061	-.27462569	-.18302411
Ln_FemaleWorkforce	-1.7580518	2.7513525	-2.4116283	-1.5078963	1.0860717	.25866698	.45812571	.50584013	-.00761095
Ln_MarriedWorkforce	.28176663	3.9944598*	7.0273151***	4.0349367*	3.2371898*	2.4315953	2.1301955	6.7048277***	3.8172131**
Ln_LowEducWorkforce	2.3224145	-5.1120245***	-3.0255379**	-1.5800864	-2.9852335**	-1.5232706	-1.3823172*	-5.8692645***	-2.4224653**
Constant	-13.151578***	-7.2562401*	-1.7851884	-11.134378***	-5.2333521***	-9.8948324**	-3.8079989**	-10.835624***	-10.659881***
N	301	297	300	295	299	301	298	297	300
R^2	.597235	.67694615	.59580685	.67036292	.75913361	.64223989	.78202994	.85983363	.70499039
Ajd. R^2	.58901531	.67026228	.58752986	.66349548	.7541843	.63493866	.77753571	.85693363	.69894924

legend: * p<.1; ** p<.05; *** p<.01

Chapter 6
Conclusion

Implementation of minimum wage policy directs to two consequences, labour welfare and employment. Main purpose to ensure that labours receive decent income for their job probably reduces the opportunity to have an occupation. Any change of wage levels influence industry in employing labour since wage is a crucial component in goods or services production.

This paper complements prior studies, which deal with the impact of minimum wage on employment. Instead of minimum wage, this study notifies other factors affect the employment. Labour market, business, workforces characteristics determine the level of employment. Income cannot be neglected as an allure for people to choose their job. Hence, this study accommodates those factors, and furthermore the analysis is derived in both province and sectoral level.

Classical approach which lays the study on free competition assumption sees increase in minimum wage will set new equilibrium in lower employment rate. Thus, this policy will slow the economy down less output and higher unemployment. Different effect appears in monopsony labour market, where firms see opportunity allowed by minimum wage policy. More attractive wage level pulls more people to enter labour market. There are additional labours that firms can hire to increase their production. Decision to employ to labour is not determined by market mechanism but by the profit gained from additional labour. As long as profitable, firm still add their employee anything they have to pay.

Another factor that influences labour absorption is the dependency of firm on labour. This is reflected by Rate of Technical Substitution that indicated the rate of how labour can be substituted by capital to earn same output. Another parameter to measure the labour dependency is capital/labour ratio. Higher ratio informs that a company more capital intensive. This firm will easily reduce the less productive labour when minimum wage rises substantially increase its production cost. Alternatively the firm will utilize the capital or replace the labour by higher productive employee.

The fact that Indonesia has excess workforce leads labour market to be a monopsony. Furthermore, compared to advanced country, capital/labour ratio in Indonesia is much smaller. Thus, in general, minimum wage rises is indicated not detrimental to employment. In contrast, it signals positive effect although the result of examination in this study not always shows significant influence.

Various effects of minimum wage are demonstrated in sectoral employment. The pattern of sectoral impact, in general, are concordant with general effect of minimum wage, which seven sector are positively affected where five of them are significantly influenced, and two sectors are adversely affected by minimum wage rises where only one sector indicated negatively affected. Agricultural, forestry, hunting, and fishery sector, electricity, gas, and water sector, trade, hotel, and restaurant sector, finance, insurance, real estate and business service sector, and community, social, and personal services sector are positive-

ly affected in any levels of significant. Meanwhile, only transportation, storage, and communication sector that negatively and significantly affected by minimum wage increasing.

Various groups of labour are also differently affected by minimum wage policy. The effects and sensitivity of minimum wage on employment depend on either the groups of workers or the sector they deal with. This papers highlights and support findings that low-educated workers are not favourable in majority sectors of economy.

Regarding to the job status, minimum wage stimulate people to be an entrepreneur in agricultural, forestry, hunting, and fishery sector, manufacturing sector, construction sector, and financial, insurance, real estate, and business services sector, but not in transportation, storage, and communication sector. Meanwhile, only in agricultural, forestry, hunting, and fishery sector, electricity, gas, water sector, trade, restaurant and hotel sector, financial, insurance, real estate, business services sector, and community, social, and personal sector, labour forces consider minimum wage to be a worker. Minimum wage is not a consideration to be a worker in other sectors.

Reviewing the effect of minimum wage policy that in general not detrimental for employment, especially in sectors that absorb big labour forces, the policy is still appropriate to be an instrument in raising welfare for worker in Indonesia. However, various effects in sector level and group of worker ask government to create complement policies to anticipate the negative impact of minimum wage on employment. Policies that enforce higher education acquisition will be beneficial for workforce in labour market. Also policy that stimulates spreading of manufacturing is favourable for rural labour force to engage with manufacturing sector.

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Appendices

Appendix 1 Hausman Test Result – Using Sector -Provincial Pooled Data

	---- Coefficients ----			
	(b) FEM	(B) REM	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
Ln_MWage	.2227131	.2194011	.003312	.0183001
Eco_Growth	.1553338	.1650201	-.0096863	.0529816
Ln_RuralWorkfoce	-.1885856	-.207579	.0189934	.0387403
Ln_FemalelWorkforce	-.2207873	-.1562526	-.0645347	.2727988
Ln_MarriedWorkforce	3.002268	2.958647	.0436209	.2501634
Ln_LowEducWorkforce	-1.48707	-1.489392	.0023223	.1295306

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 2.09
Prob>chi2 = 0.9108

Appendix 2 Relationship between income level and sectoral employment

Variable	Independent Variable: Ln_Employment								
	Sector_1	Sector_2	Sector_3	Sector_4	Sector_5	Sector_6	Sector_7	Sector_8	Sector_9
Ln_AvgIncome	1.451019***	.28093435	.93731507**	.28178263**	1.1513304***	1.7492914***	.9981585**	.41634379***	1.8371512***
Eco_Growth	-1.1089136	-.60616567	.54151957	-.71349731	-.32672006	.8081653***	-.97535278	2.5319308***	-.01143587
Ln_RuralWorkfoce	.09434118	-.17541951	.0947361	.14709324	.46859229**	.28509999	.11780522	-.38813584*	.36794317
Ln_FemaleWorkforce	.04263002	3.6053283*	-.15810112	.62271241	1.6971649	-.52999823	.98886474	.50496865	2.6645298
Ln_MarriedWorkforce	-4.5427369**	1.1541153	-.80557729	2.270301	-1.4202228	-3.0698751**	-3.4857565	6.3057469***	-4.5591659**
Ln_LowEducWorkforce	5.2767928***	-3.3571207	1.766481	-2.0816771**	.19437186	4.0118736***	3.2263959*	-5.4044268***	2.316326*
Constant	-20.756182***	-9.3407408**	-15.448231***	-9.6329767***	-18.270444***	-24.452452***	-15.670249***	-10.576556***	-25.72031***
N	301	297	300	295	299	301	298	297	300
R^2	.83232567	.75199072	.74487718	.69514418	.89317634	.87510325	.85305725	.86852853	.8932733
Ajd. R^2	.82890374	.74685949	.73965282	.68879301	.89098133	.87255433	.8500275	.86580843	.89108777

legend: * p<.1; ** p<.05; *** p<.01