

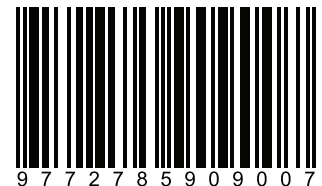
EU-ERA
DISCUSSION PAPER SERIES
EU-ERA DP 18/2023

Are Vulnerable Workers Being Compensated Fairly in Developing Countries? Evidence from Malaysian Labour Market

Hazrul Shahiri
Wye Chung Khain



ISSN 2785-9096



EU-ERA DP 18/2023

Are Vulnerable Workers Being Compensated Fairly in Developing Countries? Evidence from Malaysian Labour Market

Hazrul Shahiri

Centre for Sustainable and Inclusive Development, Faculty of Economics,
Universiti Kebangsaan Malaysia.

Wye Chung Khain

Centre for Value Creation and Human Well-Being Studies, Faculty of Economics,
Universiti Kebangsaan Malaysia.

January 2023

Abstract

Motivation and aim: In developed countries, the labour market is usually characterized with shortage of labour, especially for high risk, vulnerable jobs. However, in developing countries there are excess supply of labour for low paid jobs, including high risk and vulnerable jobs. Malaysia is the best example of a developing country with a large excess supply of labour for low paid jobs, including high risk and vulnerable jobs. This study adopted the Hedonic Wage Theory to test relationship between vulnerable workers and wage in a developing country.

Method and material: The empirical analysis employed Heckman wage regression model to solve self-selection bias of being vulnerable. A total of 1,705 private sector employees were selected into the present study. The survey was conducted on a sample of currently employed workers between 15 and 80 years of age, and distributed nationwide.

Key findings: The results showed that the coefficient for predicted vulnerable worker variable was significant but not positive. A worker is considered as vulnerable if the employer does not fulfill the requirement of working duration as well as low protection channel and high risk of being denied basic labor rights. Female and experienced workers are positively associated with being vulnerable while the level of education significantly reduces the likelihood of being vulnerable. Vulnerable workers are not being paid accordingly based on their risk, type of job and level of difficulty. Firms benefited from a greater profit margin through paying lower wages while there is no change in the price of final goods.

Policy implications: The results implied that no wage adjustments were made by employers to compensate workers for undesirable job conditions. Thus, there must be clear guidelines in differentiating 3Ds jobs from low-skill jobs. Workers who are vulnerable should be protected by law or at least duly compensated with higher wages regardless of the type of job performed in order to avoid continuous exploitation. Third party interventions, namely the government, are therefore necessary in order to protect and enhance the wellbeing of vulnerable workers.

JEL Classifications

J28, J31

Keywords

self-selection, vulnerable, wage, bias.

Are Vulnerable Workers Being Compensated Fairly in Developing Countries? Evidence from Malaysian Labour Market

1. INTRODUCTION

Studies on vulnerable workers have been of interest in recent literature (Maxwell and Grant 2018; Fatima, Sergio and Abdul Suleman 2019; Burgess and Connell 2015; Coupe 2019; Burrone and Giannelli 2020). Discussions were mainly focused on issues and ways of dealing with vulnerable workers in developed countries (Sgobbi 2015; Kretsos and Livanos 2016; Remi and Cristina 2016; Koumenta and Williams 2019; Keune and Pedaci 2020; Hall et al. 2022). In developed countries, the labour market is usually characterized with shortage of labour, especially for high risk, vulnerable jobs. Therefore, it is not surprising that the hedonic wage theory states that workers in such jobs should be compensated with higher wage. Otherwise, no worker wants to do the high risk, vulnerable jobs.

On the other hand, the situation in a developing country particularly Malaysia is different. Excess supply of labour for low paid jobs, including high risk and vulnerable jobs, is often found in developing countries. This is particularly observed among the youth and women who are unlikely to move to jobs with better quality once they have started with vulnerable jobs (Alazzawi and Hlasny 2022). The labour does not have choices. Therefore, it is not surprising that those workers are paid low wages though they work in vulnerable and high-risk jobs. There are about half of the workers reportedly trapped in vulnerable jobs in the developing economies (ILO, 2014).

The past literature generally associated vulnerable workers with disadvantaged groups including women, the young and temporary workers (Kalleberg 2000; Booth, Francesconi and Frank 2002; Azmat, Guell and Manning 2006; Pollert and Charlwood, 2009; Başak and Simla 2018). In contrast, the present study will focus on regular workers in similar predicament, but on the hypothesis that such workers can also be subject to vulnerability if

they are not fully protected in the labour market. In fact, the degree of vulnerability suffered by workers in the Malaysian formal sector was particularly conspicuous during the COVID-19 pandemic period where key workers offering essential services were exposed to greater level of job burnouts following exceptionally increasing demand (Lim 2022).

While Bazillier et al. (2016) created an index to measure employment vulnerability, the present study identifies vulnerable workers based on characteristics as defined in the Employment Act 1955. This identification, which is based on legal framework, as defined in the Act differentiates the present study from past studies such as Kretsos et al. (2016) who used self-assessment on individuals which may be prone to bias. Furthermore, the present study extends the efforts by recent researchers such as Kretsos et al. (2016) and Koumenta and Williams (2019) in further investigating whether vulnerable workers, as identified, are compensated fairly in the labour market in accordance to the Hedonic Wage Theory.

The goal of this paper is twofold. Firstly, the present study aims to identify vulnerable workers based on characteristics stated in the Employment Act 1955 using the 2012 Labour Survey (LS) data. The survey provides reliable, nationally representative data on labour market activities, work experience, job characteristics, personal characteristics, and employment practice in Malaysia. Information on vulnerable workers was sourced from the survey conducted on selected private firms in the country. Secondly, this paper applies a Hedonic wage function (Rosen 1974 & 1986) to test the relationship between vulnerable workers and wage based on Mincer's (1974) semi-log wage function. The Hedonic wage model is based on a traditional human capital Becker model (Becker, 1984) with corrected self-selection bias. In addition, the Mincer wage equation is a single-equation model which not only best explain the human capital theory but also applies the Hedonic wage function by revealing productive attributes such as schooling and work experience (Heckman et al., 2003).

2. BACKGROUND

2.1 The Existence of Vulnerable Workers

As a result of globalization, many countries have shifted their substantial demand for low-skill labour to high-skill one in order to remain competitive in the global economy. This change has led to a more flexible labour market (Viebrock and Clasen 2009). In the past, there were many formal jobs available in the form of full time employment. However, such employment has been decreasing in recent times. This trend is more prevalent among the young and low-educated female workers who are unable to find their desired formal and full-time jobs, despite being endowed with internet availability (Kusumawardhani et al. 2023). Besides, firms are reluctant to hire labour on full employment basis to avoid paying out entitlements such as holiday perks, sick pay and pensions. In addition, the decreasing trend in full time employment also suggests economic instability. In particular, the demand for goods is not sufficiently strong and is very unstable. Since the demand for labour is a derived demand, firms would not be able to keep many employees on full time basis since the demand for goods is unstable.

The full-time jobs are now still replaced with informal jobs performed by workers who are part-time, contract, temporary or self-employed, despite the recent fall in the share of informal workers due to COVID-19-induced output loss (Leyva and Urrutia 2023). Such jobs are often associated with vulnerable occupations. The workers who are without alternatives often have to accept minimal employment benefits from employers. Such vulnerable workers are often exposed to accidents due to uncondusive and low safety work environment, and coupled with job insecurity (Law Commission of Ontario 2012).

The International Labour Organization (ILO), in its annual report on the flow of global labour force, estimated that about 1.54 billion workers, or almost half of world's labour force, are involved in jobs categorized as vulnerable (ILO 2013). And the majority of these workers are from developing countries. For example, in 2012, about 56 percent of the total

1.49 billion workers in developing countries were categorized as vulnerable. This figure is approximately a nine million increase from the previous year. The increasing trend has occurred throughout Southeast Asia and the Pacific, including Malaysia. As consequence, this large pool of vulnerable workers has slowed down the country's economic development since it limits the growth in aggregate demand such as in consumption (ILO 2013).

The term vulnerable worker is not confined to one specific type. Some workers are more vulnerable than others to workplace injury and illness, either due to communication (or language) barriers (De Jesus-Rivas et al. 2016) or lack of experience (i.e., new or young workers) (Gyekye & Salminen 2010). The past literature defined the vulnerable worker as one who works in an unpleasant and insecure job and receives low wage with inadequate employment benefits (Pollaert and Charlwood 2009; Law Commission of Ontario 2012; ILO 2013). Vulnerable workers may thus include young workers, recent immigrants, older workers, those new to their jobs or working for new businesses, temporary foreign and seasonal workers, part-time or low-paying jobs, and workers involved in temporary employment. Following this definition, the number of vulnerable workers in Malaysia's labour market in 2012 was estimated at 2.72 million or 21.3 percent of the entire labour force (Malaysia, 2013). An influx of low-skilled foreign labourers into Malaysia's labour market has exacerbated the situation. Most Malaysian employers would particularly choose these low cost foreign labourers for jobs that are considered as low-skill occupation due to their higher productivity, employers' favouritism, and discrimination towards native workers (Shahiri et al 2021). This has forced many local labourers into vulnerable jobs and in consequence they could only enjoy the bare minimum benefits as stated in the Employment Act 1955.

Although the percentage of vulnerable Malaysian workers is far smaller compared to global figures, the number could spike easily if several important factors are considered in its calculation as for example the inclusion of vulnerable workers in informal sectors such

as those who are self-employed and also family workers who are under-employed and earning below the elementary occupation (Yu et al. 2020). In addition, there is also the likelihood of workers, who despite working in a formal sector do not receive full rights and protection. This situation is likely to happen in the Malaysian labour market due to foreign worker influx in many sectors. The relatively sudden excess in labour supply could prevent workers in the formal sector to enjoy many employment benefits as allocated in the Employment Act 1955. In consequence, this could increase the firm's monopsony power and conversely reduce demand power on labour. Subsequently, such firm could take advantage of the situation and offer employment to labour that have the lowest reservation wage. This can be achieved through not taking into consideration employee qualification as well as their worker rights. Ultimately, many local workers are trapped as vulnerable workers, especially among women (Aksu et al. 2022), despite working in the formal sector due to excessive supply of foreign labour with low education and skills.

Many studies (Pollaert and Charlwood 2009; Law Commission of Ontario 2012; ILO 2013) have shown that vulnerable workers exist in the workplace. Globally its current number is about half the world's labour force and it is expected to keep on increasing (ILO 2013). These workers are identified based on specific characteristics from selected occupational groups considered as "vulnerable". For example, a low-skill foreign worker and a self-employed worker are often associated with being vulnerable. In fact, the former workers are very likely to be vulnerable due to the workplace hazard and inadequate policies on occupational safety and health (Ronda-Pérez et al. 2019). The uncondusive and unsafe working environment together with long working hours, insecure jobs, and limited employment benefits can result in negative impacts on worker's welfare and job security. All the characteristics of the vulnerable worker were mentioned in Pollaert and Charlwood (2009).

2.2 *The Hedonic Wage Theory*

The most basic neoclassical model of the labour market suggests that wages should be equal to labour productivity. Labour exploitation occurs in the market if labour is paid lower than its productivity. This standard labour market model is based on assumptions of homogeneity of workers and firms, perfect competition, and profit maximization. Under such circumstances, a single wage equalizes the quantities of labour supplied and demanded. If the wage is too low then the excess demand for workers drives up the wage, and conversely if the wage is too high the excess supply of workers drives the wage down. Contrary to the basic model, there are clearly differences among the wages of individuals. Most players accept such wage difference as the natural result of living in a competitive capitalist market economy.

To explain the observed wage differentials among workers, this section will first summarize the concept of the theory of equalizing differences, often referred to as compensating differences, developed in the context of Hedonic Wage Theory (Rosen 1974 & 1986). The theory of equalizing differences is one of the main neoclassical arguments explaining the difference in workers' wages. The theory generally refers to observed wage differentials required to equalize the total monetary and non-monetary advantages or disadvantages among work activities and among workers themselves. More specifically, in the theory of equalizing differences, wage differentials are identified as a result of intrinsic properties of specific occupations that require wage compensation for negative job traits or are compensated for with non-pecuniary positive traits.

The theory of equalizing differences can be traced to Adam Smith's *The Wealth of Nations*. The theory suggests a worker's willingness to require additional compensation to accept jobs with disagreeable characteristics, because "the whole of the advantages and disadvantages of the different employments of labour and stock must, in the same neighborhood, be either perfectly equal or continually tending toward equality (Smith 1776)." Adam Smith explained that labourers receive different wages due to five factors

that are associated with job characteristics such as worker's willingness to accept job, level of job difficulty, job sustainability, job responsibility, and career prospect. To illustrate, if wage is the only criterion for a worker's willingness in accepting a job, there are three things that could make the wage differ across labour. These factors are job level of difficulty, job risk, hygiene, and social status of the job. The workers should be paid higher than their counterparts if their jobs are challenging, dangerous, and of low level of hygiene as well as social status. Theoretically, those who are willing to work in this kind of environment must receive high compensation in the form of higher wages. In principle, a labourer prefers to work in less difficult and dangerous job.

In this paper we will focus exclusively on the predicted trade-off between wages and undesirable job attributes. As noted, the theory of equalizing differences implies that workers receive higher wages for accepting undesirable job characteristics. The relationship between unpleasant job characteristics and wage generates the Hedonic wage model (Rosen 1974; Rosen 1986; Hwang et. al 1998; Frank 1999). The Hedonic model of Rosen (1974) proposes a theoretical structure for an equilibrium in which worker and firm decisions lead to a sorting function that characterizes the wage effects of taking a job with a particular set of amenities. When workplace differs in terms of non-wage job attributes, a wage function instead of a single wage, equilibrates the quantity of labour supplied to the quantity demanded at or near possible values of the attribute (Rosen 1974). The fundamental theory of Hedonic wage function argues that the difference in wages is due to different job characteristics. In particular, the Hedonic model of wages corresponds with the idea that there are compensating differentials that workers would get higher wages for jobs that are more unpleasant. Such jobs in the Hedonic Wage Theory are featured by specific occupational risk. This condition is very similar to workers who are in vulnerable occupation. The main assumption of the theory is that every worker is biased towards risk or vulnerability. To be able to attract workers to work in an unpleasant job, an increase in risk is associated with an increase in wage as well. Similar relationship can also be found in employer preference. Since a firm's main objective is to maximize profit, for every

decrease in risk, there will be a reduction in wage so that the production cost does not change. As a result, workers who receive high wages are those who are involved in risky or highly unpleasant jobs.

The existing literature however, does not totally support the theory that labourers who work in unpleasant jobs earn high wage (Brown 1980; Elliott and Sandy 1998). Liu et al. (1997) for example found that there was clear evidence that labour wage depends on the risk of the job in the Taiwan's labour market. In contrast, Bocquier et- al. (2010) discovered that there was no wage compensation for labourers who worked on riskier jobs in seven capital cities in West Africa. They concluded that labourers received low wages despite their hazardous working environment.

An influx of foreign workers combined with an oversupply of high educated labour could potentially be the reason why research findings have contradicted the Hedonic Wage Theory. These foreign workers are preferred by the labour market due to their low reservation wage and willingness to work in vulnerable jobs (McCollum and Findlay 2015).¹ In the meantime, an oversupply of higher educated labour results in a stiff competition which ultimately displaces the less-educated workers from their jobs (Gesthuizen and Solga 2014). Many less-educated labour are left with limited alternatives other than to venture into 3Ds job characteristics (i.e., Dirty, Dangerous, Difficult) that are prone to be vulnerable. As a result, the supply of workers in unpleasant jobs increase dramatically. Hence, monopsony firms in particular are well placed to exploit foreign workers with low reservation wage and large volume of labour supply. These workers are invariably suited to unpleasant jobs, with their wages set below their productivity level, thus contradicting the Hedonic Wage Theory.

¹ Economic Planning Unit, Prime Minister Department of Malaysia, reported that there were more than two million foreign workers in Malaysia in 2015.

2.3 *The Employment Act 1955*

In Malaysia there are at least 16 primary labour laws that can be categorized into 6 groups, namely job, wage, occupational health and safety, labour social welfare, labour union, industrial relation. To construct a vulnerable worker indicator, it is sufficient to refer to all the rights that are included in the Employment Act 1955.² The Act is the fundamental legislation regarding conditions of employment in Malaysia prescribing the statutory minimum standard terms and conditions of employment. The Act enshrines the rights of both the employees and employers, and the obligations or responsibilities for them to be provided with legal protection. The scope of the Employment Act 1955 only covers workers who are defined as “employees” under the Act.³ However, with effect from 01.08.1998 the Act has been amended to enable non-manual “employees”, whose wages per month exceed RM2,000.00 (or RM1,500.00 before 1.4.2012) but below and including RM5,000.00, to make claim vide Labour Court for wages and other payments in cash under Part XV of the Act. The Employment (Part-Time Employees) Regulations 2010 came into force on 01.10.2010. The Employment (Amendment) Act 2012 has come into operation on 01.04.2012 with amendments and new provisions to the principle Act. It is important and of benefits to the employers to comprehend fully the requirements as well as the implications of the new employment laws regarding the cost of wages, productivity, competitiveness and other related subjects.⁴

The enforcement of the Employment Act 1955 in the meantime is a legal channel for workers to claim their rights or gain protection. It must be made clear that the Employment Act 1955 is only applicable to all private sector workers in West Malaysia and the Federal Territory of Labuan. Meanwhile, workers in Sabah and Sarawak are subjected to their

² Among the basic labour rights in Employment Act 1955 are wage, duration of working hours, and leave.

³ For more details, see ILO (http://www.ilo.org/dyn/natlex/natlex4.detail?p_lang=en&p_isn=48055).

⁴ For more details, see Overview and Latest Update Employment Act 1995 (<https://pdf4pro.com/fullscreen/overview-and-latest-update-on-employment-act-2cba70.html>).

respective employment regulations, namely the Sabah Labour Ordinance (Sabah Bab 67) and the Sarawak Labour Ordinance (Sarawak Bab 76).

The Employment Act 1955 covers labour contracts, payment of wages, prohibition of truck, employment of women, maternity protection, domestic workers, employment conditions (rest days, hours of work, sick leave, annual leave), termination, layoff, inspection, complaints and inquires, and penalties for offences. More specifically, among the minimum protections in this Act include wage, right on paid leave, working hours, and notification of service contract termination (Section 12). The Act also covers wage protection issues such as wage duration, wage reduction, and the requirement for employer to provide pay slips. In the case of wage duration, for example, under Section 18(1), it is mentioned that wage duration should not exceed one month. In another law, the employer must pay the employee with cash unless otherwise stated in the contract of service on the method of payment.

These terms are crucial in order to prevent workers from being exploited by employers. In fact, it is compulsory for employers to inform their employees on the basic terms of contract such as wage, duration of working hours, leave, and notification of contract termination. Meanwhile, pay slips must be provided for when the employers pay the workers their monthly salaries. The primary terms of Employment Act 1955 and their implications are shown in Table 1.

Table 1: Selected Primary Terms - Employment Act 1995

The Definition of “Employees”

Section 2(1)

Any person, irrespective of his or her occupation, who has entered into a contract of service with an employer under which such person’s wages do not exceed RM2000 a month; All workers must be given a contract of service.

Contract of Service:

Notification of Service Termination,
Section 12(2)

The duration of notification must be mentioned in the contract. The minimum of notification duration is based on years of working: (a) < 2 years - 4 weeks notification; (b) 2 - 5 years - 6 weeks notification; (c) > 5 years - 8 weeks notification

Payment of Wages:

Section 18 & Section 19
Section 24(9a,b,c) &
Section 25

Wages are paid within 7 days of the following month. Any deduction is subject to worker permission. Maximum limit of wage deduction is 50% or 75% (including housing loan)

Employment of Women:

Female labour night work prohibition, *Section 34*

Female workers are not allowed to work in industry or agricultural between 10pm-5am, except with permission by Workforce Head of Director

Female labour maternity protection, *Section 37(2)*

Minimum maternity leave of 60 days. (a) For female workers who are paid on daily or weekly basis - Allowance is based on the worker's regular payment rate or minimum payment of RM6.00 per day, or whichever higher; (b) For female workers who are paid on monthly basis - Allowance is based on monthly wage rate

Other Benefits:

Working hours, *Section 60A(1)*

The regular working hour can't exceed 8 hours per day/48 hours per week.

Working overtime on:

Regular day *Section 60A(3)(a)*

1.5 × hourly wage rate

Leave day *Section 60(3)(c)*

2 × hourly wage rate

Public holiday <i>Section 60D(3)(aa)</i>	3 × hourly wage rate
Public holidays, <i>Section 60A(D)</i>	At least 11 days must be authorized.
Leave benefit, <i>Section 60A(E)</i>	Paid annual leave, sick leave & public holiday. Minimum annual leave benefits depends on number of years in the firm (a) < 2 years - 8 days; (b) 2 - 5 years -12 days; (c) > 5 years - 16 days.
Sick leave, <i>Section 60A(F)</i>	14 - 22 days of paid sick leave & 60 days paid hospital admission.
Regular payment rate, <i>Section 60(I)</i>	(a) Monthly worker: (Monthly payment rate/26); (b) Weekly worker: (Weekly payment rate /6); (c) Daily worker: (Total wage in the previous wage duration)/(Actual days of wage duration)

Termination and Lay-off Benefits:

Termination of service benefits, <i>Employment Regulation 1980</i>	The payment depends of years of working. (a) < 2 years - 10 days of wage for every year of service; (b) 2 - 5 years - 15 days of wage for every year of service; (c) > 5 years - 20 days of wage for every year of service
--	--

3. METHODOLOGY

3.1 Data

This paper utilized the 2012 Labour Survey (LS) conducted on a sample of the Malaysian workers. The data were collected for the Department of Higher Education, Malaysian Ministry of Education under the Fundamental Research Grant Scheme (FRGS) for the study on vulnerable workers. In contrast to other recent labour market data, the LS provides information on vulnerable characteristics as mentioned in the Employment Act 1955. The main objective of this survey was to provide comprehensive information and national-level estimates on the behavior of Malaysia's labour force and other materials such as demographic status and human capital characteristics, employment background, individuals' attitudes and satisfaction at work, and a number of geographical dimensions. The LS was conducted on a sample of currently employed workers between 15 and 80 years of age, and distributed nationwide to include all regions in the Peninsula. The Survey also collated information from private sector employees who earned a monthly income of less than RM2000.

For the purpose of this paper, the LS is particularly suitable because it serves as a national sample of interviews with workers across all sectors. Moreover, it is also the most recent dataset that provides relevant information on the current trends among labour in the Malaysian labour market. In the analysis, this study concentrated solely on private sector employees, the largest sector subgroup. In addition to this, this study also limited the original LS dataset to salaried workers between the age of 15 and 65, so that self-employed and unpaid family-employed workers are not included in the sample. This is because data gaps will render the calculation of their wages quite impossible. Accordingly, we are left with a sample of 1,117 private sector workers.

3.2 Identification of Vulnerable Workers

There are two important characteristics that could cause workers' vulnerability based on the Employment act 1955. One is basic labour right and the other is labour protection channel.⁵ In the first characteristic, vulnerable workers are denied their basic labour rights while in the second, vulnerable workers do not have a proper channel to protect themselves (Zulkifly, 2011). Thus, the risk of these workers being denied their basic labour rights is high and they do not have enough competency to protect themselves from being exploited by their employers (CONIAC, 2009). The prospect of being a vulnerable worker corresponds to the above characteristics as shown in Table 2. More specifically, workers who are at high risk of being denied basic labour rights with low competencies in terms of having labour protection channels are classified as vulnerable.

Table 2: Identification Strategies of Vulnerable Workers

Categories		Capability / Labour Protection Channel	
		High	Low
Risk of Being Denied Basic Labour Rights	High	Self-protection	Vulnerable
	Low	Protected by existing laws	Protected by third parties

Source: Authors' Strategies on Identification of Vulnerable Workers.

Table 3 shows the number of vulnerable workers analyzed in this study. The workers are not considered as vulnerable if they have regular working period of 8 hours per day or 48 hours per week. They also deserve at least one day weekly leave or at least 11 public

⁵ The risk of vulnerable workers being denied their basic labour rights is high and they do not have enough capability to protect themselves from being exploited by their employers (CONIAC, 2009).

holiday leaves as shown in Table 1. Moreover, the workers must also be given their pay slips whenever they receive their salaries. It is significant to emphasize here that the first two terms, i.e. duration of working hours and paid leave, are very important for labour welfare. However, these terms are easily exploited by the employer. Therefore, it is sufficient at this point to mention that a worker is considered as vulnerable if the employer does not fulfill the requirement of both working duration and paid leave. For example, a worker can be considered vulnerable if there is no paid leave, and works more than permissible hours although there is a pay slip given with the salary. The number of vulnerable workers in this study is shown in Table 3 below.

Table 3: The Incidence of Vulnerable Workers

	Numbers of Vulnerable	
	Workers	Percentage (%)
Total	1,705	100.0
Vulnerable worker	274	16.1
Non-vulnerable worker	1,431	83.9

Source: 2012 Labour Survey.

3.3 *Empirical Strategy*

The difference in the nature of the two types of occupations (vulnerable and non-vulnerable) is likely to induce workers to self-select based upon their observable and unobservable characteristics, such as risk and monetary benefits. To illustrate, vulnerable occupations are expected to be more common among male, young and high-skill workers. Thus, the failure to consider this problem may result in a self-selected sample rather than a random sample.

Sources of selection bias are derived from the Hedonic Wage Theory which specifically states that all individuals select their own desired jobs. Workers often avoid working in vulnerable occupation that features 3Ds characteristics. Although this type of job offers high salary, it is often associated with high risk, unpleasant and uncomfortable working environment. Under such circumstances, the Ordinary Least Squared (OLS) estimates based on this selected sample (i.e. vulnerable workers) will suffer selectivity bias. The present paper thus employs the Heckman's two step procedure to investigate whether vulnerable workers are fairly compensated in the labour market as one of the possible solutions (i.e. Heckman correction).

In the first stage, using all observations, we estimate a probit model of vulnerable workers as follows and compute the inverse of Mills ratio (IMR):

$$P(Y_i = 1 | X_i) = 1 - \Phi\left(-\frac{X_i' \beta}{\sigma}\right) = \Phi\left(\frac{X_i' \beta}{\sigma}\right)$$

where i indexes individuals. The dependent variable Y_i is a dichotomous variable taking the value of 1 if a worker is vulnerable in the workplace and 0, otherwise. X represents a vector of all observable individual characteristics.

The IMR is used to account for the self-selection bias in selecting vulnerable occupations. The IMR can be written as follows:

$$\lambda_i = -\frac{\phi(X_i' \beta)}{\Phi(X_i' \beta)} = -\frac{f(x)}{F(x)}$$

More specifically, the IMR (λ_i) is used as an additional regressor to correct for selection bias in the wage equation, which is

$$\ln(W_i) = \alpha_i + \beta_1 VULNERABLE_i + \beta_2 \lambda_i + \beta_k X_{ik} + \varepsilon_i$$

where W_i is individual wage and $VULNERABLE_i$ is the variable of interest that takes the value of 1 if the worker is vulnerable and 0, otherwise. λ_i (IMR) is the bias correction term / selectivity variable created to account for selection bias in the sample wage respondents.

In the second stage, using the selected sample of vulnerable workers, the wage equation above is estimated by OLS. The second [step](#) provides consistent and asymptotically normal estimators for $\widehat{\beta}_1$ and $\widehat{\beta}_2$. Based on the Hedonic Wage Theory, a vulnerable variable (*VULNERABLE*) should yield a positive (+) sign. That is, vulnerable workers receive higher wages, compared to their non-vulnerable counterparts. As noted earlier, the Hedonic Wage Theory generally implies that workers receive higher wages for accepting jobs with undesirable characteristics.

An “exclusion restriction” is the key to solve an identification problem in this selection model by incorporating variables that influence an individual’s decision in selecting vulnerable or non-vulnerable job during the first stage regression of probit model; but they are excluded in the second stage of wage regression. This exclusion restriction variable is the status of the service contract. In other words, identification is obtained by including a dummy variable indicating the status of the service contract in the first stage equation and excluding it from the wage equation in the second stage. This is based on the assumption that for vulnerable workers this excluded variable, sometimes called instrumental variable, contributes in determining the propensity score at searching for vulnerable or non-vulnerable job, but is not related to wages obtained. Contract of service does not affect labour wage. In particular, those who have the service contract are not paid higher than those who are without. According to the Section 2(1) Employment Act 1955, contract of service is defined as “All verbal and written agreements between employer and employee to serve and work in respective employer’s firm”. The service contract is a very important document for workers to refer to in the event their employers denying their labour rights as stated in the document. Indirectly, the document serves as a worker’s protection from being vulnerable in the workplace. Unfortunately, there is no legal channel

that monitors a proper submission of service of contract to the worker thus resulting in many of them without one. In addition, since the contract of service is given at the beginning of the workers' employment, many have forgotten its content and on how it should be used when their employers violate the agreement.

4. RESULTS AND DISCUSSION

With regards to the Malaysian labour market, some aspects of the data are worth noting at this point. Table 4 presents simple descriptive statistics from the sample used in the analysis. In panel *A*, male workers accounted for about 42.4% of the population sample. Overall, female workers constituted the dominant group in this study. In panel *B*, temporary workers were dominated by female while the number of males were higher among contract workers. Further, panel *C* shows educational background of the workers along with their income. The average years of schooling was 12, thus, suggesting that most of the workers had at least high school certificate. On average, most of the respondents were young workers with income of about RM1100 per month. Interestingly, male workers received higher wages than females although the latter had slightly more years of schooling. The finding indicated a gender wage discrimination which has actually existed in the labour market since several years ago (Latifah 2000; Rahmah 2011; Rahmah et al. 2013).

Table 4: Descriptive Statistics

Variables	Male	Female	Total
Sample Size(Observation)	723	982	1,705
<u>Panel A: Region:</u>			
<i>North</i>	71	80	151
<i>Central</i>	182	254	436
<i>South</i>	250	316	566
<i>East</i>	220	332	552
<u>Panel B: Job Status:</u>			
<i>Permanent</i>	517	719	1,236
<i>Contract</i>	142	137	279
<i>Temporary</i>	64	279	190
<u>Panel C: Socio-Economic Status:</u>			
<i>Years of Schooling</i>	12.2	12.5	12.4

<i>Age</i>	29.0	27.4	28.2
<i>Income(RM)</i>	1,192.2	1,033.3	1,112.8

Source: 2012 Labour Survey.

Note: MYR (Malaysian Ringgit) is the currency of Malaysia and the currency symbol is RM.

Table 5: Probit Estimates of Vulnerable Worker Status

Variables	Coefficients	Standard Errors
Male	-0.081	(0.082)
Experienced	0.009	(0.012)
Experienced Square	0.000	(0.000)
Foreign Worker	-0.619***	(0.095)
Permanent Worker	-0.738***	(0.089)
Years of Schooling	-0.022	(0.017)
North	-1.183***	(0.196)
Central	-0.414***	(0.106)
South	-0.316***	(0.096)
Non-Union Member	-0.001	(0.112)
Contract of Services	-0.578***	(0.094)
Constant	0.289	(0.254)

Note: Standard errors in parentheses: ***p<0.01, **p<0.05, p*<0.1.

Table 5 shows a probit regression model of the status of vulnerable workers on all individual characteristics. Female and experienced workers are positively associated with being vulnerable. The level of education significantly reduces the likelihood of being vulnerable. Those who attend longer schooling are expected to have better jobs. These jobs typically feature good working condition which possibly limits the likelihood of being vulnerable. Foreign workers, who complement domestic workers, could possibly explain

for the negative relationship with the unintended choice of being vulnerable. The “exclusion restriction” variable and contract of service have negative coefficient. This should explain that workers who do not have a contract of service are very likely to be vulnerable. In other words, workers with contract of service are more aware about their rights in the workplace. Therefore, having a service contract reduces the likelihood of the worker from being vulnerable.

Table 6: Heckman Selection Regression of Log Wage on Individual Characteristics

Variables	Coefficients
Vulnerable Status	-0.151*** (0.022)
Experience	0.015*** (0.003)
Experience Square	-0.000*** (0.000)
Years of Schooling	0.044*** (0.003)
Permanent Worker	0.029 (0.023)
North	-0.018 (0.044)
Central	0.292*** (0.024)
South	0.096*** (0.022)
Foreign Worker	-0.073*** (0.026)
Male	0.160*** (0.016)
Non-Union Member	0.062*** (0.021)
Inverse Mills Ratio	0.125*** (0.037)
Constant	0.599*** (0.059)
Number of observations	1,705

Note: Standard errors in parentheses: ***p<0.01, **p<0.05, p*<0.1.

Table 6 shows the Heckman wage regression for all workers. Years of schooling, experience and experience square show significance and expected coefficient signs as in

human capital theory (Becker 1964). The results were consistent with those of other studies such as Psacharopoulos & Patrinos (2004) and Zulkifly Osman et. al (2010). In the meantime, the coefficient of worker vulnerability status was significantly positive. In particular, a vulnerable worker received about 15% lower wage than non-vulnerable worker. This result contradicted the Hedonic Wage Theory which states that vulnerable worker should receive wage compensation in the form of high salary. This phenomenon arises due to the numerous workers trapped in 3Ds jobs. One potential reason could be due to steep competition from an oversupply of higher educated labours which displaces the less-educated workers from their jobs (Gesthuizen and Solga 2014). A number of literatures have highlighted the issue of overeducated labour in the Malaysian labour market (Zulkifly and Hazrul 2013; Zakariya 2014; Zakariya 2017; Wye and Ismail 2019). The second factor could be due to the rising non-standard work arrangement in labour market and no net increase in full time employment (Kalleberg and Vallas 2018). The 3Ds jobs are occupied with a large number of low skill foreign workers whose reservation wage is considerably low. These jobs are often associated with unsafe and unpleasant working conditions. There is clear evidence that the presence of foreign labour depressed wages in the Malaysian labour market. (Athukorala and Devadason 2012).

Male workers earned about 16% more than their female counterparts. The literature has indicated gender discrimination as the key factor in labour markets to explain why female workers were paid less despite performing at the same productivity level (Adireksombat, Zheng and Chris 2016; Chuang, Eric and Shih 2018; Deshpande, Goel and Khanna 2018; Jung and Joonmo 2020). In Malaysia, gender wage discrimination has been a permanent feature of labour market where male workers are normally treated as the advantaged group (Ismail, Shahiri, and Yuliyusman 2015; Ismail, Chung and Nur 2017; Ismail, Maryam and Chung 2017). The finding also showed that non-union workers earned about 6.4% more than union counterparts. Literatures in developed countries identified the effect of threat as a possible explanation why non-union workers receive higher wages (Corneo and Lucifora 1997; Farber 2005). This is especially prevalent at the lower job category where workers

are more prone to join unions. The fear of union power arose as a result of the drastic increase in the number of trade unions in Malaysia which recorded 71% increment between 1980 and 2012 (Shahiri, Osman and Park 2016). As a consequence, the employer is very likely to increase wages of non-union workers in order to discourage them from forming or joining workers' union.

5. CONCLUSION

Understanding the tradeoffs between wages and jobs with undesirable traits may enlighten many fundamental topics in labour economics. In this paper, we attempt to test the theory of compensating wage differentials (i.e., the Hedonic Wage Theory) by selecting vulnerable workers and identifying positive wage differentials associated with them. This study discovered that a significant number of labourers can be categorized as vulnerable workers in accordance with the minimum standard of Employment Act 1995. Firms were shown to continuously exploit labour when workers were not paid accordingly. In fact, firms benefited from a greater profit margin through paying lower wages while the price of final goods produced remained the same in the market.

Evidence that indicates vulnerable workers are generally compensated by “the market” for doing unpleasant jobs would be useful to policymakers who are motivated to resolve workplace problems such as health hazards, poor pension practices and inferior working conditions. Unfortunately, empirical tests on the theory of compensating wage differentials in the literature are thus far largely inconclusive. After correcting for selection bias, this study also concluded that vulnerable jobs do not necessarily lead to increase in labour wage; thus, contradicting the Hedonic Wage Theory. In particular, those who work on unpleasant jobs do not receive any wage compensation, precisely because these are normally regarded as low-skill positions. The employers typically exploited this anomaly to their advantage by offering lower wages to selected workers. Non-vulnerable workers on the other hand are found to mainly occupy high-skill jobs. Hence, as a result of this

segregation in occupation, a wage gap between the two groups exists. This study proposed that wage differential mainly exist due to the observable characteristics of the workers. However, labourers who self-select their work preference for either vulnerable or non-vulnerable occupation, are causal to the wide gap between the two groups.

The study thus showed the need for policymakers to take appropriate actions in order to protect and safeguard all vulnerable workers in Malaysia's labour market. Any policy review must consider various aspects of labour welfare such as working hours, number of paid leaves and the type of paid leaves. The policy review would be able to reduce the risk of labour from being vulnerable since such disadvantaged positions could appear in both low-skill and unpleasant jobs. Thus, there must be clear guidelines in differentiating 3Ds jobs from low-skill jobs. Workers who are vulnerable should be protected by law or at least duly compensated with higher wages regardless of the type of job performed in order to avoid continuous exploitation. This recommendation is critical since it is focused on increasing the employment of local workers in the low-skill and unpleasant jobs. This effort could ultimately reduce market over-dependency on foreign workers in the long term.

References

- Adireksombat, Kampon, Zheng, Fang & Chris Sakellariou. 2016. The Evolution of Gender Wage Differentials in Thailand: 1991–2007—An Application Of Unconditional Quantile Regression. *The Singapore Economic Review* 61(05).
- Aksu, E., Erzan, R. & Kırdar, M. G. 2022. The impact of mass migration of Syrians on the Turkish labor market. *Labour Economics* 76: 102183.
<https://doi.org/10.1016/j.labeco.2022.102183>
- Alazzawi, S. and Hlasny, V. 2022. Youth labor market vulnerabilities: evidence from Egypt, Jordan and Tunisia. *International Journal of Manpower* 43(7): 1670-1699.
<https://doi.org/10.1108/IJM-04-2021-0239>
- Athukorala, Prema & Devadason, Evelyn. 2012. The Impact of Foreign Labour on Host Country Wages: The Experience of a Southern Host, Malaysia. *World Development* 40(8):1497–1510.
- Azmat G., Guell M & Manning A. 2006. Gender Gaps in Unemployment Rates in OECD Countries. *Journal of Labour Economics* 24: 1-37.
- Başak, Akkan & Simla, Serim. 2018. Work and Family Reconciliation in Turkey: Young Women as a Vulnerable Group in The Labour Market. *Research and Policy on Turkey* 3(2): 173-186.
- Bazillier, R., Boboc, C. & Calavrezo, O. 2016. Measuring Employment Vulnerability in Europe. *International Labour Review* 155: 265-280.
- Becker, G. S. 1964. *Human Capital*. New York: National Bureau of Economic Research.
- Bocquier, Philippe.; Christophe J. & Vescovo, Aude. 2010. Employment Vulnerability and Earnings in Urban West Africa. *World Development* 38(9): 1297-1314.
- Booth A.L., Francesconi M., Frank J. 2002 Temporary Jobs: Stepping Stones Or Dead Ends? *Economic Journal* 112(480): 189-213.
- Brown, Charles. 1980. Equalizing Differences in the Labour Market. *The Quarterly Journal of Economics* 94(1): 113-134.
- Burgess, J. & Connell, J. 2015. Vulnerable Work and Strategies for Inclusion: An Introduction. *International Journal of Manpower* 36(6):794-806.

- Burrone, Sara & Giannelli, Gianna. 2020. Child Labour, Gender and Vulnerable Employment in Adulthood. Evidence for Tanzania, *Journal of Development Studies* 56(12): 2235-2250.
- Corneo, Giacomo. & Lucifora, Claudio. 1997. Wage Formation under Union Threat Effects: Theory and Empirical Evidence. *Labour Economics* 4(3):265-292.
- Chuang, Hwei., Eric S. Lin., & Shih Chiu. 2018. The Gender Wage Gap in the Financial Industry: Evidence from the Interindustry Ranking. *International Review of Economics & Finance* 55: 246-258.
- Coupe, T. 2019. Automation, Job Characteristics and Job Insecurity. *International Journal of Manpower* 40(7):1288-1304.
- De Jesus-Rivas, M., Conlon, H. A. & Burns, C. 2016. The Impact of Language and Culture Diversity in Occupational Safety. *Workplace Health & Safety* 64(1): 24-27. <https://doi.org/10.1177/2165079915607872>
- Deshpande, Ashwini., Goel, Deepti., & Khanna, Shantanu. 2018. Bad Karma or Discrimination? Male–Female Wage Gaps among Salaried Workers in India. *World Development* 102:331-344.
- Elliott, Robert F. & Robert Sandy. 1998. Adam Smith May Have Been Right After All: A New Approach to The Analysis of Compensating Differentials. *Economics Letters* 59(1):127-131.
- Farber Henrys. 2005. Nonunion Wage Rates and the Threat of Unionization. *ILR Review* 58(3):335-352.
- Fatima Suleman, Sergio Lagoa & Abdul Suleman. 2019. Patterns of Employment Relationships: The Association between Compensation Policy and Contractual Arrangements. *The International Journal of Human Resource Management* 30(7): 1136-1156.
- Frank, Robert H. 1999. What Price the Moral High Ground *Southern Economic Journal* 63: 1-17.

- Gesthuizen, M. & Solga, H. 2014. Is the Labour Market Vulnerability of Less-Educated Men Really About Job Competition? New Insights from the United States. *Journal for Labour Market Research* 47(3): 205-221.
- Gyekye, S. A. & Salminen, S. 2010. Organizational safety climate and work experience. *International Journal of Occupational Safety and Ergonomics* 16(4): 431-443. <https://doi.org/10.1080/10803548.2010.11076856>
- Hall, A., Hall, R., & Bernhardt, N. (2022). Dealing with ‘vulnerable workers’ in precarious employment: Front-line constraints and strategies in employment standards enforcement. *Economic and Industrial Democracy* 43(1): 469–494. <https://doi.org/10.1177/0143831X20909143>
- Hwang, H., Mortensen, D.T. & Reed, W.R. 1998. Hedonic Wages and Labour Market Search. *Journal of Labour Economics* 16(4): 815-847.
- International Labour Organization (ILO). 2013. *Global Employment Trends 2013*. Geneva: International Labour Office.
- International Labour Organization (ILO). 2014. *World of Work Report 2014. Developing with Jobs*. Geneva: International Labour Office.
- Ismail, Rahmah., Shahiri, Hazrul., & Yuliyusman, F. 2015. Occupational Selectivity Bias and Gender Wage Gap in Malaysian Manufacturing Sector. *Economic Annals-XXI V* 3-4(1):109-112.
- Ismail, Rahmah. Chung, Wye. & Nur Palel. 2017. Analysis of Glass Ceiling and Sticky Floor Effects for Gender Wage Gap in Malaysian Labour Market. *Jurnal Ekonomi Malaysia* 51(2): 131-142.
- Ismail, Rahmah, Maryam, Farhadi. & Chung-Khain Wye. 2017. Occupational Segregation and Gender Wage Differentials: Evidence from Malaysia. *Asian Economic Journal* 31(4): 381-401.
- Jung, Hanna. & Joonmo Cho. 2020. Gender Inequality of Job Security: Veiling Glass Ceiling in Korea. *Journal of the Asia Pacific Economy* 25(1): 79-98.
- Kalleberg A.L. 2000. Nonstandard Employment Relations: Part-time, Temporary, and Contract Work. *Annual Review of Sociology* 26: 341-365.

- Kalleberg A., Vallas S. 2018. Probing Precarious Work: Theory, Research, and Politics. *Research in the Sociology of Work* 31:1–30.
- Keune M, Pedaci M. 2020. Trade Union Strategies against Precarious Work: Common Trends and Sectoral Divergence in the EU. *European Journal of Industrial Relations* 26(2):139-155.
- Koumenta, M & Williams, M. 2019. An Anatomy of Zero-Hour Contracts In The UK. *Industrial Relations Journal* 50: 20-40.
- Kretsos, L. & Livanos, I. 2016. The Extent and Determinants of Precarious Employment in Europe. *International Journal of Manpower* 37(1): 25-43.
- Kusumawardhani, N., Pramana, R., Saputri, N.S. & Suryadarma, D.. 2023. Heterogeneous impact of internet availability on female labor market outcomes in an emerging economy: Evidence from Indonesia. *World Development* 164: <https://doi.org/10.1016/j.worlddev.2022.106182>
- Latifah, Mohd. 2000. Occupational Sex Segregation and Discrimination in Peninsular Malaysia. *Jurnal Pengurusan*. 19: 89–107.
- Leyva, G. & Urrutia, C. 2023. Informal labor markets in times of pandemic. *Review of Economic Dynamics* 47: 158-185. <https://doi.org/10.1016/j.red.2022.01.002>
- Lim, L. L. 2022. Key workers in Malaysia during the pandemic. *ILO Working paper 81*, International Labour Organization. <https://www.ilo.org/legacy/english/intserv/working-papers/wp081/index.html>
- Liu, Jin., J.K. Hammitt & Jin, Long. 1997. Estimated Hedonic Wage Function and Value of Life In A Developing Country. *Economics Letters* 75 (3): 353–358.
- Law Commission of Ontario. 2012. *Vulnerable Workers and Precarious Work*. Toronto.
- Malaysia, 2013. *Laporan Penyiasatan Tenaga Buruh Malaysia 2012*. Kuala Lumpur: Jabatan Perangkaan Malaysia.
- Maxwell, G. & Grant, K. 2018. Commercial Airline Pilots’ Declining Professional Standing and Increasing Precarious Employment. *The International Journal of Human Resource Management* 29:1-23.

- McCollum, D. & Findlay, A. 2015. Flexible' Workers for 'Flexible' Jobs? The Labour Market Function of A8 Migrant Labour in the UK. *Work, Employment and Society*, 29(3): 427–443.
- Mincer, J. 1974. *Schooling, Experience and Earnings*. New York: Columbia University Press.
- Pollert, A. & Charlwood, A. 2009. The Vulnerable Worker in Britain and Problems at Work. *Work Employment Society* 23: 343-362.
- Psacharopoulos, G. & H.A. Patrinos. 2004. Returns to Investment in Education: A Further Update. *Education Economics* 12 (2): 111-134.
- Rahmah, Ismail. 2011. Gender Wage Differentials in Malaysian Services Sector. *African Journal of Business Management*. 5(19): 7781–7789.
- Rahmah, Ismail, Zulkifly, Osman, Syazwani A. Malek. 2013. Perbezaan Upah Mengikut Jantina dan Diskriminasi Majikan dalam Sektor Teknologi Maklumat dan Komunikasi *Jurnal Teknologi (Social Sciences)* 63:1: 41–50.
- Remi, Bazillier & Cristina, Boboc. 2016. Labour Migration as A Way to Escape from Employment Vulnerability? Evidence from the European Union. *Applied Economics Letters* 23(16):1149-1152.
- Ronda-Pérez, E., Gosslin, A., Martínez, J. M. & Reid, A. (2019). Injury vulnerability in Spain. Examination of risk among migrant and native workers. *Safety science* 115: 36-41. <https://doi.org/10.1016/j.ssci.2019.01.026>
- Rosen, Sherwin. 1974. Hedonic Price and Implicit Markets: Product Differentiation in Pure Competition. *Journal of Political Economy* 82: 34-55.
- Rosen, S. 1986. The Theory of Equalizing Differences. In O. Ashenfelter & Layard, R. (Eds.). *Handbook of Labour Economics*, (Chapter 12). New York: Elsevier Science Publishers.
- Sgobbi, Francesca. 2015. Wage Policy Models: What Implications for Vulnerable Employees? *International Journal of Manpower* 36(6):912-930.
- Shahiri, Hazrul., Osman, Zulkifly. & Park, Kihong. 2016. Union Relevance in the Malaysian Labour Market. *Asian-Pacific Economic Literature* 30: 45– 56.

- Shahiri, Hazrul, Cheng, Z. & Al-Hadi, A. A. 2021. Why do low-skilled foreign workers have a wage advantage? Evidence from the palm oil plantation sector in Malaysia. *Population, Space and Place* 27(3): e2404. <https://doi.org/10.1002/psp.2404>
- Smith, Adam. 1776. *An Inquiry into the Nature & Causes of the Wealth of Nations* 1. London: W. Stranhan & T. Cadell.
- Viebrock, Elke and Jochen Clasen. 2009. State of the Art: Flexicurity and welfare reform: a review. *Socio-Economic Review*, 7 (February): 305–331.
- Wye, Chung & Ismail, Rahmah. 2019. The Effects of Ability on Returns to Over-And Under-Education: Evidence from Malaysia. *International Labour Review* 158(3):535-559.
- Yu, D., Blaauw, D., & Schenck, R. (2020). Waste pickers in informal self-employment: Over-worked and on the breadline. *Development Southern Africa* 37(6): 971-996.
- Zakariya, Zainizam. 2014. Wage Effect of Over-Education And Mismatch in Malaysia A Random Effect Approach. *Jurnal Ekonomi Malaysia* 48(2):3-17.
- Zakariya, Zainizam. 2017. Job Mismatch and On-the-job Search Behavior among University Graduates in Malaysia. *Asian Economic Journal* 31: 355-379.
- Zulkifly, Osman., Ishak, Yussof & Abu, Hasssan 2010. Inflasi Pendidikan Mengikut Ketentuan Dalam Pasaran Buruh Malaysia, *Journal Ekonomi Malaysia* 44: 61-71.
- Zulkifly, Osman. 2011. Kualiti Pekerjaan dan Indikator Pekerja Vulnerable. Dlm. Mansor Jusoh et al. (eds.) *Prosiding – Ekonomi Berpendapatan Tinggi: Transformasi Ke Arah Peningkatan Inovasi, Produktiviti dan Kualiti Hidup* (Jilid 1). Bangi: Penerbit UKM untuk Fakulti Ekonomi dan Perniagaan, 368-376.
- Zulkifly, Osman., & Hazrul, Shahiri. 2013. Ketaksepadanan Pekerjaan dan Inflasi Pendidikan. *Jurnal Ekonomi Malaysia*. 47(2):141-151.

About the Authors

Hazrul Shahiri is an Associate Professor in the School of Economics at Universiti Kebangsaan Malaysia. His research has been focused to solve labor market issue using recent and modern econometric techniques. Studies on vulnerable worker, minimum wage, and labor market of ageing population have been his recent interest. He has worked and engaged with international scholars across the countries. His recent works are published in Asian Pacific Economic Literature (Q4), International Journal of Islamic and Middle Eastern Finance (Q2), and Population, Space and Place (Q1).

Email: hizuan@ukm.edu.my

Wye Chung Khain is a senior lecturer at the Faculty of Economics and Management, Universiti Kebangsaan Malaysia. He is also the Managing Editor for Jurnal Ekonomi Malaysia. He received his PhD in Economics from the same university. His research interests are in labour economics, human resources development, and economics of education. His recent works have been published in International Labour Review, The Economic and Labour Relations Review, and Asian Economic Journal.

Email: wyeck@ukm.edu.my



