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Impact of Global Economic Crisis on Employment and Migrant Workers in Thailand

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As a result of the global financial crisis in the late 2000s, unemployment rates have continued to rise and household budgets have been reduced worldwide, especially in developed countries. The concerns of unemployment are also raised in the developing countries that mainly export goods and labour to those developed countries. This paper aims to analyze the impact of the global economic crisis on the employment in Thai labour market. The analytical framework is Computable General Equilibrium Model (CGE) and originally applies the Difference in Difference estimation with the CGE model. The paper also empirically contributes to a measurement to evaluate the impact of the economic crisis on the employment of registered and unregistered immigrants with informal and formal natives. All economic crisis proxies, represented by trade flows, technology, capital flows, and international migration, are shocked in the CGE model. The result of this study suggests that the temporary adjustment of the number of total employment in the formal sector has decreased, but the informal sector has absorbed unemployed workers from the formal sectors. Different impacts are found in various groups of the labour and economic sectors. The number of low-skilled workers in the manufacturing industry in Thailand has suffered, yet only in the short-term. The economic crisis also discourages new registered migrant workers to apply for the highly impacted countries, but there is no significance in the number of returning migrants.

JEL Codes: J23, J24, J61, 017

1. Introduction

Economic crises which take place on one continent impact other continents quickly and significantly in these decades, due to the intensive linkages of globalisation. As a result of the global financial crisis in the late 2000s in the Western continent, unemployment rates have continued to rise and household budgets have been reduced worldwide. Concerns have been raised about unemployment in the developing countries, which mainly export goods to those developed countries. Moreover, since the number of migrant workers has increased in the era of globalisation, a possible raise in returning migration from developed countries might increase the prospect of rising unemployment in the developing country, including Thailand.

In order to investigate the impact of the recent global economic crisis on employment, this research develops an estimated framework using a Computable General Equilibrium Model with imperfect labour market conditions due to minimum wages, and formal and informal employment as well as registered and unregistered migrants.

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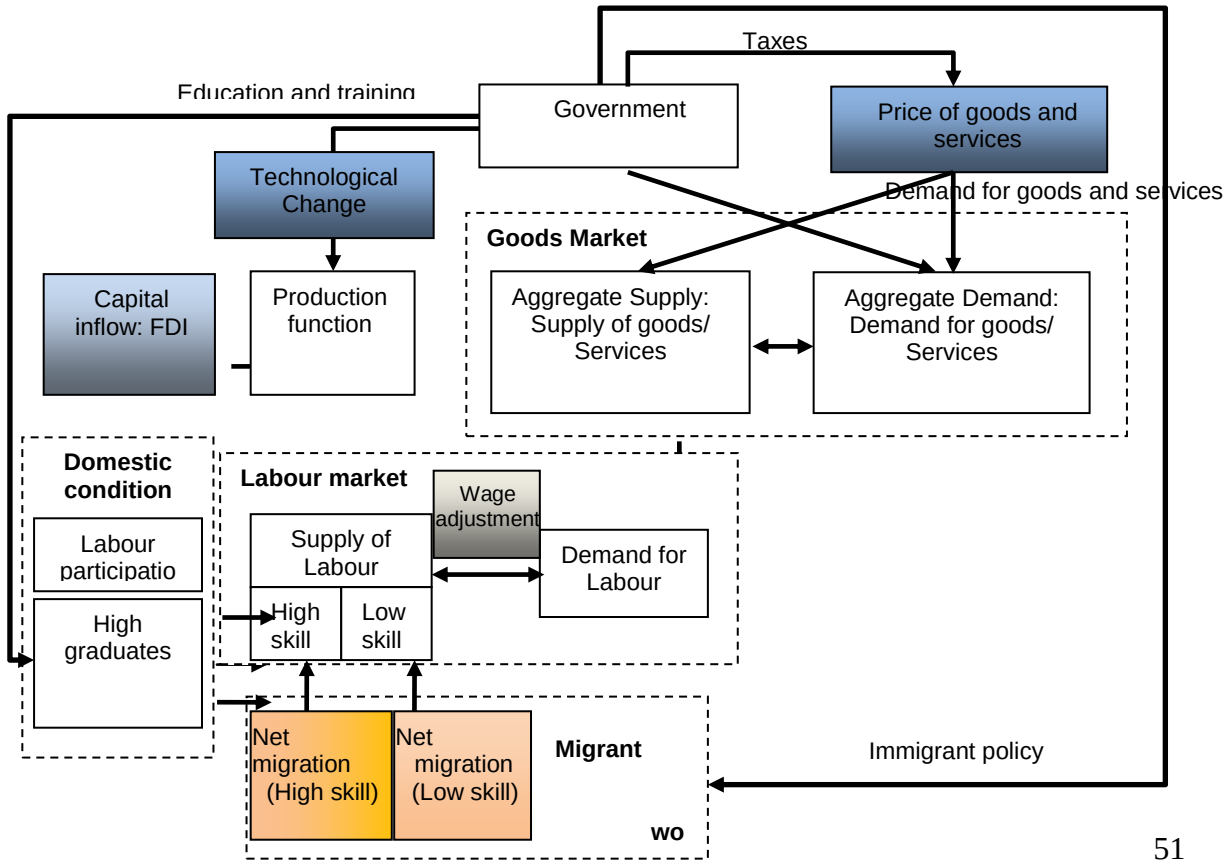
The employment of all groups of workers classified by skill is explored. In addition, a Different in Different method is initially applied with the CGE to find the real effects of economic globalisation on employment.

This paper is classified into five sections. The first section provides the introduction. The second section reviews literatures. This section also posits the framework of the study to evaluate the economic crisis effecting employment in Thailand. To measure the effect of economic crisis, not only trade but also other channels representing the economic crisis are introduced in the analysis. These channels include technology, flows of capital and migrant works which provides linkages among countries through economic globalisation. This approach provides comprehensive evaluation of economic crises on the labour market. Domestic labour conditions are also discussed in this section. The third section demonstrates analytical models applied in this study. The fourth section reveals the findings by presenting the Thai labour market during the recent economic crisis and the results of the study. The conclusion and policy implications as well as Thai major employment policy are provided in the last section.

2. Theoretical and Empirical Literature Review

This section describes empirical and theoretical literatures. The economic crisis has caused exogenous changes, including the decrease in trade volume and the reduction in flows of capital from the West which links to the technological transfer. The dynamic of international migrant workers are incorporated in the analysis. Therefore, the study classified this section into 3 main parts: trade flow, technology, and international flows of factors of production (labour and capital), as shown in Figure 2.1.

Figure 2.1: Channels of Economic Crisis on Labour Market



The explanation of each of the channels and its impact on the labour market according to the literature is demonstrated as follows:

2.1 Trade Volume

An increase in trade volume is claimed to raise the demand for labour. The Heckscher-Ohlin (HO) trade model, one of the most influential theories in international trade, points out that trade is based on different factor endowments across countries. The Stolper-Samuelson theorem (SS) also provides the linkage of changes in the production prices on factor returns. Both HO and SS theories predict that greater trade openness will increase incentives (through relative price changes) of domestic producers to specialize in goods with relatively abundant factors of production. For example, a country with low-skilled workers tends to specialize in labour-intensive goods; as a result, the demand for low- skilled workers increases.

Values of Thai export and import have been greater than those of the world averages since 1989 and 1990, respectively. This implies that the Thai foreign trade dependency ratio significantly increased over world averages since the end of the 1980s and the beginning of the 1990s. Thailand has claimed to be a labour-intensive economy. Under this theory, economic globalisation should encourage the demand for low-skilled workers. Particularly in the export countries, as a result of the economic crisis, employment should decrease due to the lower demand for goods.

2.2 Information and Technology

New technologies and knowledge, which require a compatible workforce, are known as Skilled Biased Technological Change (SBTC). It is claimed that the introduction of new technologies in lower income countries reallocate labour from low to high productivity activities which are generally more capital and skill intensive. The SBTC posits that if new technological advances are continuously introduced into the labour markets; high-skilled labour will continuously be demanded for these advances. While the HO and SS were empirically confirmed by many empirical studies during the 1990s, SBTC was mainly recognized in the 2000s. (Berman, Bound and Machin, 1998; De Laine, Laplagne, and Stone, 2000; Sasaki, and Sakura, 2005).

2.3 Flows of International Labour and Capital

The key elements of current globalisation include free movement of factors of production. These flows alter the availability or the scarcity of the factors of production. There are two highlighted factors of production: labour and capital.

These days, domestic workers can be easily replaced by foreign workers. Either high skilled or low skilled workers move from their countries of origin to other countries with faster and cheaper transportation. Normally, high skilled workers are welcomed to the destination country. On the contrary, low-skilled migrants are less welcome, as they are possibly the reason for wage suppression of the low skilled locals. For example, the ASEAN (2008) commits to free flow of highly-skilled labour as one of in five free-flow elements without any explicit commitment about the flow of low skilled workers.

The low skilled migrant is highly explored in the academic literatures. Bryant and Rukumnuaykit (2008) suggested that low skilled immigration had reduced the wages of Thais, but there was no concrete evidence on employment change. However, another study showed a contrast consequence. Kulkolkarn and Potipiti (2007) used a geographic approach in Thailand and found statically insignificant impact of immigration on native wages but significant on employment changes.

Among critics of employment and wages on local workers, the migrant workers definitely contribute to the greater GDP due to comparatively low wages of migrants. Sussangkarn (1996) found that the removal of all foreign workers from Thailand would deduct total GDP by around 0.5 percent annually. The wage of unskilled workers would increase to 4 percent. On the other hand, it would drop the wage of high skilled workers at about 4 percent. Nonetheless, for political concerns, they are also claimed to be responsible for exacerbating the worst ills of society; for example, crime, prostitution, and epidemic illness.

The other important factor of production is capital. An increase in capital inflows possibly enhances the demand for either high or low skilled workers, depending on the labour or capital intensive industry. The capital inflow is also believed to be a main source of technological transference. Multinational enterprises (MNEs) are crucial actors of globalisation, as they simultaneously transfer factor of production and intermediate goods, internationally. They also emphasized in research and development (R&D), which benefits not only the destination countries but also the home countries (OECD, 2010). The R&D is contributed by capital investment, especially in the capital-shortage country. The UN (2005) highlights the success stories of domestic companies in the electronic industry in Thailand which transferred knowledge and integrated themselves into the global economy.

3. The Methodology and Model

To seek the comprehensive approach to evaluate the impact of economic crisis on the labour market, all economic linkages affecting the labour market are considered. Economic globalisation representing the linkage of economic crises is discussed. The Computerize General Equilibrium (CGE) is applied in this study since it is able to simultaneously determine production, consumption, prices, international trade, employment and wages.

This section is organized into three parts. The first part represents the framework of the CGE model. In the second part, the labour classification is developed to reflect the characteristic of labour markets in Thailand. Lastly, the models are demonstrated.

3.1 Framework of Model

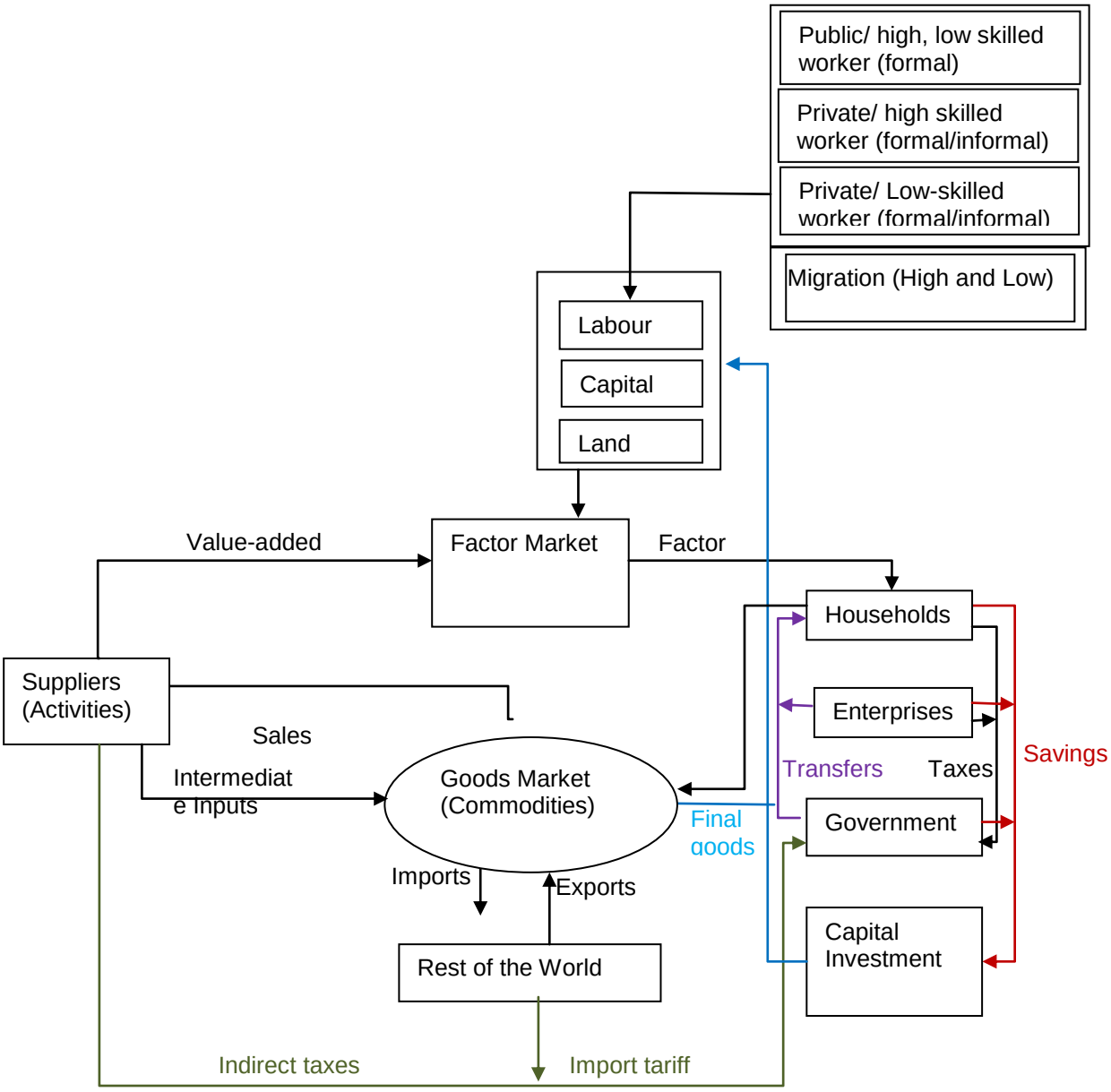
The CGE model requires the assumption that each economic agent behaves rationally, such as the consumer maximize utility from consumption and firms maximizes their profit. Perfect competition prevails in each domestic industry. Consumers and producers' behaviour reacts to the real prices not the nominal prices. Community preferences in consumption can be represented by a consistent set of community indifference curves. The government is treated as the exogenous factor. Illegal immigrants are categorised as the low skilled workers because most of them are elementary workers. The good market is competitive. The labour market behaves

monopsonistic especially in the low skilled market. The formal low-skilled worker is limited at the lower bound by the minimum wage. The low-skilled worker is the only group that is affected by the minimum wage. The framework of the economy is shown in Figure 3.1.

To measure the effect of economic crisis, all proxies of economic crisis are applied in the CGE models, including trade, technology of production, and factors of production. The programs used are Eviews and GAMS.

Note that under globalisation, international cooperation and internationalization of business increase in significance. It is found that the larger size of Multinational firms weaken the unions' power (Scruggs and Lange, 2002). On the other hand, the minimum wage is claimed to enhance a greater employment rate for low-skilled groups (Neumark and Wascher, 2006).

Figure 3.1: Framework of the Model: Linkage of the Economy

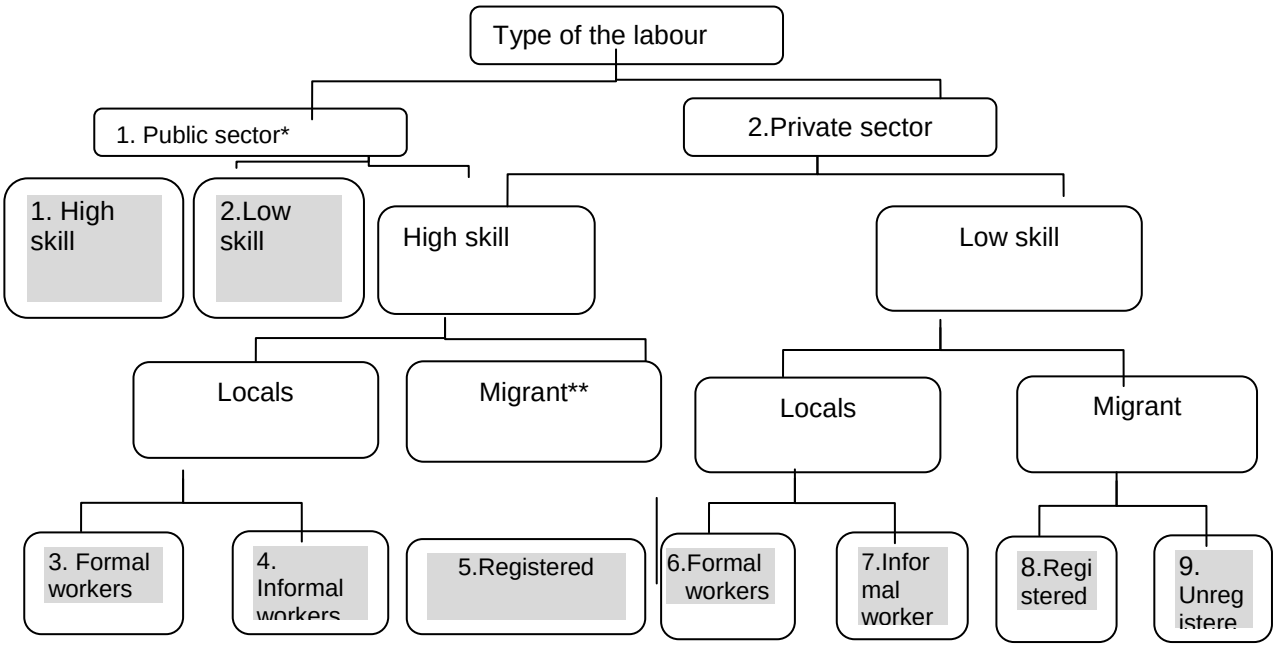


To capture the impact of the economic crisis on each type of labour, the sectors of production are classified into 3 types. Those three sectors are (1) slow technological development (represented by the agricultural sector), (2) high technological development (represented by the industry or manufacturing sector) and (3) medium technological development (represented by the other sectors). The net flow of foreign direct investment classified by sector in 1970 – 2009 the proportion of industry sector, construction, and mining & quarrying is approximately 53 percentages of the total net flow of FDI. The service sector accounts for 41 percent while the agricultural sector receives only 0.2 percent of the FDI. Besides the different share of FDI, the dependent ratio on international trade is ranking from manufacturing, service and agriculture, subsequently.

3.2 Labour Classification in this Study

One of contributions of this study is to develop the classification of the type of labour according to the character of labour market in developing countries. The first criterion is a main propose of the employer, which can be classified into public or private sector. The later criterion contains the skill sets of high skilled and low skilled workers. The next criterion consists of natives and international migrants. Finally, the subset of labour availability, which classifies the natives and the migrant workers into the formal, informal or registered, unregistered migrant, is the last criterion. Figure 3.2 depicts the classification of labour in this study. The clarification is provided followed by Figure 3.2.

Figure 3.2: Classification of Labour in this Study



Note: * Some may argue that the public sector can also employ foreigners. Most of them are consultants or specialists. However, this is less than 0.001 percent of the total workforce. Therefore, this group is considered insignificant.
** High skilled workers are assumed to be initially hired by existing firms in Thailand. Thus, there is no unregistered (or illegal) worker in this group.

3.2.1 Public and Private Sector

The first criterion is to classify by purpose the players in the economy. They are two major players, the private and public sector. The purpose of employment in the public sector is exogenously determined without the market mechanism. Meanwhile, the business sector, which mainly focuses on profit, does not concern with either employment or wage shares. In other words, the market mechanism is not concretely relevant to employment in the public sector.

3.2.2 Set of Skill

To achieve the principal objective of the private sector, the demand for labour is responsively determined by the nature of the work. For example, an engineering firm must set the number of high-skilled (e.g. engineers) and low skilled (e.g. labourer) workers to complete a certain job. The skill set can be determined in various dimensions. In this study, occupation is used to classify the skill group, of high and low skilled workers. Each skill group may be substitutable or complementable in each sector.

3.2.3 Labour Availability: Native or Migrant

The type of labour is decided by the above set of skills needed to accomplish certain work. The ability of locals and migrants in this study is assumed to be equal. However, the migrant laws and the labour laws have set the limited number of workers, and some restricted occupations to the migrant.

In Thailand, the concerns about migrant workers were occasionally mentioned in the early 1990s, yet the laws did not effectively work. For example, in September 1996, Thai government announced a voluntary measure. Regardless amnesty for all illegal migrants, there were only a tiny number of illegal migrants registered (Athukorala and Manning, 1998). Since most of the immigrant workers were in the rural area and informal sector, it easily hid from the scrutiny of government officials. However, after the economic crisis in 1998, the Ministry of the Interior implemented long jail sentences to smuggling illegal workers into Thailand. The duration of work permits was reduced to be one annual work permit.

Currently, the Acts facilitate aliens who bring about a large amount of foreign currencies for investment or expenses in the Kingdom, and to generate employment of Thai nationals in a large number. It also allows the aliens who provide technological transferring or skill development to Thai nationals. Therefore, generally high skilled workers easily obtain work permits, if their occupations are not restricted occupations under current laws. The employment or sub-contraction of foreign firms also offers the opportunities for all high skilled workers

A number of unregistered (or illegal) migrants, working in low skilled occupations, exist in the Thai economy owning to the difficulty to be arrested. Due to the illegal status, they mostly suffer by a number of unfair practices, including bribery, loss of property, deception by brokers, debt to pay brokers and bribery, physical and sexual abuse (especially women and girls), arrest and confinement by the officer in the origin and destination country, accident, injury and death during the journey. (Chantavanich et al., 2007)

3.2.4 Type of Work by Native and Migrant

This section classifies the subset of labour available as classified into locals and migrants. These two groups are also disaggregated into various types according to the different wage structure. The locals can be grouped into formal and informal employee, while the migrants are composed of registered and unregistered workers.

- **Formal and Informal Worker**

Over 30 years, according to the labour force survey, informal employment declines in every sector except one sector, high skilled workers in the agricultural sector. For the whole economy, the share of informal to formal workers is about 0.75 in the late 1980s to 0.61 in the latest year. However, the number of informal high skill workers in this sector is swiftly changing, which may reflect the inconsistency of the data or the special characteristics due to the very flexibility of the market.

It should be noted that all developing countries share this decreasing trend. But, the employment in the developed countries conversely increases in the form of part-time jobs, especially the female employment. For example, in Japan, the economic recession also fosters this phenomenon. The employer-initiated reductions in standard working hours for full-time workers which increased the numbers of involuntary part-time workers were employed (OECD, 2010). However, due to the data from Socio Economic Survey, mean wages of informal workers is lower than those of formal ones in any skilled group.

A number of studies, Mattos and Ogura (2009) and Sussangkarn (1987) suggest that formal and informal workers have different non-wage characteristics. Particularly, in Thailand, Sussangkarn (1987) using the bivariate probit estimate the indicator function or whether an individual gets into the formal sector. The study found that a male with better education, situated in Bangkok, and not a new domestic migrant to the area, is likely to be found in the formal sector. The jobs are horizontally differentiated so that workers have heterogeneous characteristics. This empirically implies that the labour supply is imperfect elastic.

A direct government intervention in the labour markets set the minimum wage for the whole economy. In Thailand, low skill workers who are formally employed are automatically obliged to receive minimum wage.

Informal workers have no or less collective bargaining than that of employers. They are excluded from the minimum wage laws. The occupations in this group are, for example, domestic workers, home artisan workers, sales and services elementary occupations, agricultural labourers. Therefore, the employers mostly occupy the bargaining power to manipulate their employee’s income and benefits.

- **Registered and Unregistered Migrants**

Foreign workers can be classified into two main types: registered (legal) and unregistered (illegal) migrants. Note that this study will not emphasize the number of Thai emigrants because the analytical framework focuses on the existing labour in the Thai economy.

The market behaviour of migrant workers in Thailand is completely different between high skilled and low skilled workers, similar to native workers. However, the low skilled migrant can be classified into registered (legal) and unregistered (illegal) persons. The actual total number of migrants is ambiguous. Chantavanich, et al (2007) suggests that in 1996, the official estimation of the overall foreign population is about 1.5-2 million. This number is normally mentioned in the current literature and interviews. The majority of the migrant workers are found in the agricultural sector, followed by domestic work and construction. The rest are dispersed in fishery and fish processing, the rice mill, ice making, mining, transportation and others.

There are wage gaps between foreigners and locals of high skilled and low skilled workers. It was found by Voon and Miller (2005) that in 1996, controlling individual factors for example, education, experience, and gender, the migrants from English-speaking countries earn about 4 percent more than local born workers. In contrast, migrants from non-English-speaking countries earn about 9- 12 percent less than comparable Australian-born. It is commonly acknowledged that the immigrants from English-speaking countries mainly work in high skilled occupations, while those from non-English speaking counties normally work in low skilled jobs. This phenomenon is also found in Germany (Liebig, 2005).

As discussed in the previous section, a work permit is necessary to work in Thailand. One with a work permit is under the same laws to the locals, including minimum wage. Their working conditions are quite equivalent to the formal employees of locals. On the other hand, the unregistered and low skilled migrants suffer from poor working conditions. They gain wages less than half of Thais. Some do not receive the wages as agreed upon (Chantavanich, et al: 2007). However, unregistered workers are continuous increasing since the minimum wage in Thailand is still higher than those in their home countries; for instance, 3-5 times to Lao's minimum wage.

3.3 Model of the Study: CGE

The following section aims to provide the highlighted sets of models in the general equilibrium.

3.3.1 Production

All firms evolve in a competitive environment and maximize profits to determine output supply and factor demands. This study applied the assumption that both high skilled and low skilled workers and capital are determined by the production function in the form of Constant Elasticity of Substitution. The input demand for each sector is derived from the profit maximization as the following equation.

$$\pi(W_L, W_H, R, M, Y) = P_Y(Y)Y - C(W_L, W_H, R, P_M, Y)\,; Y = F(L, H, K, M, Y) \quad (3.1)$$

H and L stands for high and low skilled workers, K represents capital, M is the net migrant workers and Y is the output. Note that the high and low skilled locals are classified into formal and informal employment, which is related in the CES function. There is no limitation in the high skilled migrant, since the law in Thailand allows high skilled migrants to register for the license easily. Yet, the number of low skilled migrants is legally set by the government.

The aggregate of material inputs is obtained with a Leontief technology.

$$\sum Y_i^H P^{d_i} \tag{3.2}$$

Where Y_i^H = Domestic sales of composite commodity, PD_{ij} = sales prices of composite commodity. The quantity of aggregate intermediate input is measured by a per activities unit. The firms must maximize its profit and must choose to sell in the domestic or the foreign market. The transformation function exhibits in the constant elasticity of transformation in (3.3).

$$Y_i^d = a_{T_i}\left[\delta_{T_i} E_i^{-\rho_t} + (1-\delta_{T_i}) Y_i^{dd-\rho_t}\right]^{\frac{1}{-\rho_{T_i}}} \tag{3.3}$$

Where Y_i^d = supply of domestic output of firms, Y_i^{dd} = quantity of aggregate value added or the domestic output of firms, E_i = quantity of aggregate intermediate input. a_{T_i} = shift parameter in the CET function of firm. Assume the constant return to scale (homogeneity), therefore the elasticity of transformation δ_{T_i} can be calculated by $\delta_{T_i} = \frac{1}{1+\rho_{T_i}}$.

The Armington Assumption, the firm produces a composite commodity using the domestic commodity supplied to the domestic market and imports of this commodity, is shown in the equation (3.5). The firm must minimize its total cost of the domestic commodity and import goods (M_i).

$$TC_i = P^{M_i} M_i + P^{DD_i} Y^{DD_i} \tag{3.4}$$

Subject to

$$X_i = a_{A_i}\left[\gamma_{A_i} M_i^{-\rho A_i} + (1-\gamma_{A_i}) X^{DD_i-\rho_{A_i}}\right]^{\frac{1_i}{-\rho_{A_i}}} \tag{3.5}$$

Given, X^{DD_i} is domestic production delivered to the home market(includes the transportation), P_i^{DD} is Price of domestic production delivered to the home market quantity of aggregate value added or the domestic output of firms, M_i is the import delivered to the home market, and the P^M is the import price.

Note that the public commodities produced by the transportation sector, tourism sector, and the public utility are assumed to be non-cross border trade. Even some public utilities, especially the power generator, are produced and traded among neighbouring countries; the present amount as the GDP ratio is small enough to neglect. On the other hand, for sectors not importing from other economies, the total supply equals the total domestic sales.

3.3.2 Demand for Goods and Services of Household

The household receives income from primary factors' remuneration, transfers from the government and from the rest of the world. A fixed portion of its income is used to pay income taxes to the government and its savings are a linear function of its disposable income.
On the other hand, the household's monetary income is from capital, labour unemployment benefit, transfer funds from government (TR_G) for training and educational subsidies and the transfer from the rest of the world (TR_F) and other transfers (TR_D).

$$Y^H = P^K \cdot K + P^L (LS - UNE) + TR_G + ER \cdot TR_F + TR_D \qquad (3.6)$$

Where Y^H represents the household's income. LS is the total labour supply . Given saving is a fixed fraction of net money income. ER is the exchange rate.

The model assumes that the preferences of the representative household are represented by a Stone-Geary utility function (or Linear Expenditure System). Each household maximize its utility subject to his budget.

$$U = \prod_{i=1}^{n} (c_i - \mu H_i)^{\alpha HLES_i} \qquad (3.7)$$

Subject to

$$C^{Bud} = \sum_{i=1}^{n} (1 - t_{c_i}) P^{D_i} C_i \qquad (3.8)$$

Where C_i = consumer demand for commodities. μ_{H_i} is the minimum expenditure on the commodity i. μH_i can be interpreted as the minimum required quantity. α_{HLES_i} is the marginal budget share. t_{c_i} is tax of goods C_i. C^{Bud} is the consumer budget after tax deduction. The Frisch parameter (ϕ) can be given by:

$$\phi = -\frac{C^{Bud}}{C^{Bud} - \sum_{i=1}^{n} (1 + t_{c_i}) P^{D_i} \mu H_i} \qquad (3.9)$$

$$\mu_{H_i} = C_i + \alpha_{HLES_i} \left[(1 + t_{c_i}) P^{D_i} \right]^{-1} C^{Bud} \cdot \phi^{-1} \qquad (3.10)$$

3.3.3 Government

The government's expenditures for each good are fixed in real terms. Its other expenses consist of transfers to households and net transfers to the rest of the world. Its income comes from taxes on international trade and taxes on the remuneration of

primary factors, taxes on imports consist of tariffs and other taxes, and taxes on financial units.

$$Y^G = t^{direct} + t^{Indirect} + ER_i \cdot TR_F + t^{Finan} \quad (3.11)$$

Where Y^G = the government income, t^{direct} = direct tax, $t^{Indirect}$ = indirect tax, and $ER_i \cdot TR_F$ =exchange rate multiplied by the transfer from the rest of the world t^{Finan} = taxes on financial units.

The Laspeyres consumer index is applied (PCINDEX). The government pays unemployment benefits and other transfers by the replacement rate in the nominal term. C_i^0 is the consumer demand for commodities at the time 0, $P^{D^1}{}_i$ is the price of goods at time 1 for goods i, and $P^{D^0}{}_i$ is the price of goods at time 0 for goods i.

$$PCINDEX^{\ t} = \frac{\sum_{i=1}^{n}(1+t^{c_i^0})P^{D^1}{}_i C_i^0}{\sum_{i=1}^{n}(1+t^{c_i^0})P^{D^0}{}_i C_i^0} \quad \text{t=0,1} \quad (3.12)$$

The Philips curve is applied to find the relationship between the rate of change in the real gross wage rate and unemployment. Puzon (2009) found that the marginal effect of employment to the inflation rate during 2001 – 2006 in Thailand is -0.94, at more than 90 percent significance. It implies that the one unit change in unemployment affects the inflation rate at about 0.94 units. Thus, in this study, the Phillips is set as 0.94.

For high-skilled workers, the employment level is always determined by firms and plays on the competitive market. Yet, for low-skilled workers, the wage is set in the nominal rigid regime by binding the minimum wage ($W_L^D \geq W_L^M$)

The binding of the minimum wage exists only in low skilled and formal labour. Low skilled and informal workers will be bound between the sustainable wage and the minimum wage as shown in equation (3.13).

$$\mu H \geq W_i^L \geq W_f^L \quad (3.13)$$

3.3.4 The Rest of the World

Thailand is the price taker in the world economy. The exchange rate is fixed leaving the trade balance to be determined endogenously.

The import price in Baht is $P^{M_i} = (1-t^{m_i})ER \cdot P^{WM}{}_i$ (3.14)

The export price in Baht is $P^{E_i} = ER \cdot P^{WE}{}_i$ (3.15)

The balance of payments is $\sum P^{WM_i} \cdot M_i = \sum P^{WE_i} \cdot E_i + S_i^H + S_i^G + S_i^F$

(3.16)

Where P^{WE_i} and P^{WM_i} =World market price of exports and imports. S_i^H, S_i^G and S_i^F represent saving of household, government and financial sector.

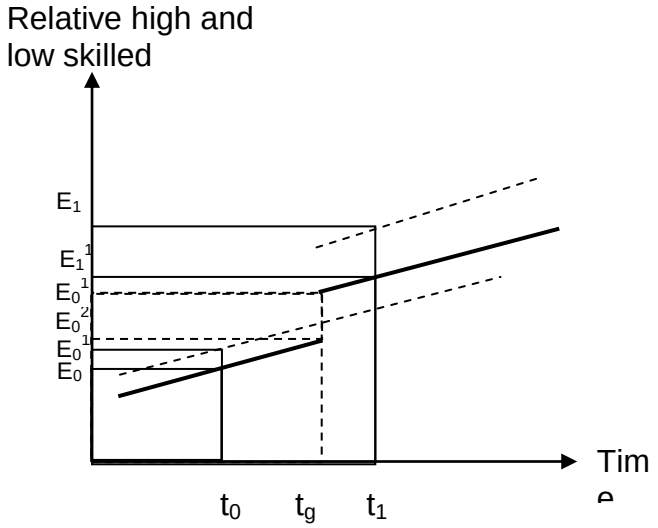
Due to data limitation, the most recent data of structure of the production bases on the Input-Output (IO) table in 2005. The main sources of data concerning labour and household behaviour are drawn from the Labour Force Survey from 2004 to 2010 and the Household Socio-Economic Survey in 2009 (the most recent data).

3.4 Model of the Study: Difference in Difference

The methodology to measure the effects of economic crisis on the employment in this study also adapted the Difference in Difference method with the results gained from the above models. The estimated process is performed as follows:

- First, the parameters are classified into two sets: the parameter representing domestic conditions and the parameter representing exogenous factors. The data is also classified into two sets: data before the economic crisis and the current data, which represents the effects on their employment. Note that the technology of the production does not change due to data limitation based on the Input Output table. The total employment serves domestic forces and external forces. Assuming no change in the economic environment, the employment growth rate of the natives should retain its value at the natural rate of (un)employment.
- The trend of all exogenous parameters in 2004-2007 is firstly assumed to represent a “stable situation” in 2008-2010. All exogenous factors are shocked in the model. The employment of each labour group will be estimated. The result of the model implies employment, if there was no economic crisis. The simple analysis is to look at the result comparing the actual data representing the economic crisis. However, the domestic economic environment is also changed overtime; the following process aims to deduct the domestic influence on employment.
- To estimate the result of economic crisis, the actual exogenous data in 2009, excluding domestic employment and migrant workers, are inputted into the model.
- The actual employment incorporates both domestic and external effects. Then, the domestic effect is subtracted out to represent only the effect of the economic crisis on employment.

Figure 3.3 Measuring the Effect of Globalization on Employment



Note: The bold lines are assumed trends. They are unnecessary to slop upward.
E_1- E_0 = True change.
E_0^1 - E_0 = estimated effect on employment before current economic crisis
E_1^1 - E_1 = estimated effect on employment after current economic crisis
(E_1^1 - E_1)- (E_0^1 - E_0) = estimated effect of economic crisis on the labour market.

4. The Findings: Impact of Economic Globalization on the Employment

This section presents the results of the framework of the study. It is classified into two parts: the facts concerning the Thai labour market during the economic crisis, and the results of the model.

4.1 Thai Labour Market during the Recently Economic Crisis

This section highlights the effects of the economic crisis on the labour market. The overall employment, the duality of the public and private employment, as well as the international migrant workers are examined in this section.

The recent economic crisis in 2009 had a stronger impact on experienced workers than the impact of new entrants. As can be seen in Table 4.1, the number of workers, who previously worked, increases from approximately 325,000 to 433,000 unemployed persons. The unemployment increases from about 1.4 in previous years to 1.6 in 2009. Instead, the number of new entrants to the labour market has declined. Considering the total employment, it is possible that there is the substitution of the new entrants to the experienced one, yet the increase in the number of employment of experienced workers is distinguishably far beyond new entrants.

Table 4.1: Unemployed Person by Work Experience and Unemployment Rate

	Total Unemployed ('000)	Never work('000)	Used to work in the previous month of the survey('000)	Unemployment rate
2006	574.52	200.61	373.91	1.59
2007	528.02	205.34	322.68	1.44
2008	510.38	185.44	324.93	1.36
2009	611.44	178.92	**432.52**	1.60
2010	417.33	142.60	274.73	1.13

Note: Average of monthly data. Since, the data availability in 2010 is limited to October, to avoid the effect of seasonal unemployment. All data are averaged from January to October.
Source: National Statistical Office

The share of experienced unemployed persons, who used to work in each economic sector, is demonstrated in Table 4.2. Clearly, the sector that suffered was the manufacturing sector because of its sudden increased share of unemployed persons. The employment in the agricultural sector absorbed the unemployment from the other sectors in the economic crisis. Coincidently, this situation occurred with the high prices of agricultural produce.

Table 4.2: Average Share of Unemployed Workers Who Used to Work in the Previous Month of the Survey by Industrial Sector of Their Previous Work

	Agriculture	Manufacture	Service	Total
2006	26	22	51	100
2007	21	26	53	100
2008	21	26	52	100
2009	**17**	**31**	52	100
2010	18	28	54	100

Note: Average of monthly data. Since, the data availability in 2010 is limited to October, to avoid the effect of seasonal unemployment; all data are averaged from January to October in quarter 3.
Source: National Statistical Office

Interestingly, the employment growth has increased about 1-2 percent in 2007 - 2010. It is the combination of the government's objectives to decrease the unemployment rate and the characteristics of the informal sector in Thailand which is flexible unlike the formal one.

As can be seen in Table 4.3, the employment growth of the public sector has steadily increased at more than 3 percent. The employment of the private sector has also raised. Yet, the classification by formality shows that the formal employment declines, while the informal sector increases. This is quite a contrast to the overall trend over the past 20 years that the formal employment has increased, while the informal employment has declined. However, this phenomenon is also temporarily found in the economic crisis at the end of the 1990s. It implies the significance of the informal sector as an absorber for employment during the economic crisis.

The contradictory number of formal and informal employment helps relieve the size of the unemployment rate in the private sector. However, the informal workers do not

have secure employment contracts, worker's benefits, social protection as well as the low wage. Some workers must be informally employed for their survival and wait to enter into formal employment. This is supported by an assumption of Sussangkarn (1987) that workers prefer to work in the formal sector rather than the informal sector.

Table 4.3: Average Employed Workers Classified by the Formality of Employment

	Total		Public sector		Private sector		Private sector: formal		Private sector: informal	
	Number ('000)	Growth	Number ('000)	Growth	Number ('000)	Growth	Number ('000)	Growth	Number ('000)	Growth
2006	35,505		3,024		32,482		14,451		18,031	
2007	36,072	1.6%	3,119	3.2%	32,953	1.5%	14,650	1.4%	18,303	1.5%
2008	36,833	2.1%	3,228	3.5%	33,605	2.0%	14,800	1.0%	18,806	2.7%
2009	37,492	1.8%	3,326	3.0%	34,166	1.7%	14,842	0.3%	19,324	2.8%
2010	37,880	1.0%	3,585	7.8%	34,295	0.4%	14,704	-0.9%	19,591	1.4%

Note: Average of monthly data. Since, the data availability in 2010 is limited to October, in order to avoid the effect of seasonal unemployment; all data are averaged from January to October.
Source: National Statistical Office

As shown in Table 4.4, the number of Thai workers working abroad has decreased. In 2009, the number of new registers explicitly dropped; while the number of re-entries slightly increased. However, it was due to the negative influence of Asia and the Middle East. In the North America, it is interesting that the number of new registers has declined, while the re-entry has moderately increased. This implies that once the workers have a chance to legally re-enter, they tend to remain in that labour market, regardless any economic situation. In Europe, the new registered workers are substantially high in 2009, before a drop in 2010. Overall, the number of Thai workers applying for work permits in Europe continues to increase.

Noticeably, the number of both new and re-entry registers to Asia suddenly decreases in 2009. However, the destination of Thai workers that worked abroad has sought other opportunities in Africa, South America, Australia and Oceania.

Table 4.4: Thai Workers Working Abroad by Destination: Total, New Registry, and Re-entry Worker

Total	2006	2007	2008	2009	2010	Average Growth Rate
Middle East	27,326	33,833	36,644	32,057	27,543	1%
Africa	3,897	5,529	8,453	10,599	12,557	35%
Asia	118,647	108,658	101,855	88,998	88,817	-7%
Europe	**6,141**	**8,960**	**9,883**	**11,176**	**9,728**	**14%**
North America	**4,042**	**3,622**	**3,429**	**3,395**	**3,306**	**-5%**
South America	41	7	186	96	62	598%
Australia and Oceania	752	1,308	1,402	1,390	1,782	27%
Total Thai workers	**160,846**	**161,917**	**161,852**	**147,711**	**143,795**	**-3%**
New register	**2006**	**2007**	**2008**	**2009**	**2010**	**Average Growth Rate**
Middle East	18,773	23,653	24,281	17,697	13,636	-5%
Africa	2,743	3,839	6,299	7,144	7,628	31%
Asia	76,260	63,971	54,080	43,832	49,488	-9%
Europe	**3,610**	**6,244**	**6,773**	**8,150**	**6,780**	**21%**
North America	**1,647**	**1,359**	**1,108**	**962**	**902**	**-14%**
South America	37	3	114	21	42	907%
Australia and Oceania	495	917	945	911	1,316	32%
Total New Register	**103,565**	**99,986**	**93,600**	**78,717**	**79,792**	**-6%**
Re-entry	**2006**	**2007**	**2008**	**2009**	**2010**	**Average Growth Rate**
Middle East	8,553	10,180	12,363	14,360	13,907	13%
Africa	1,154	1,690	2,154	3,455	4,929	44%
Asia	42,387	44,687	47,775	45,166	39,329	-2%
Europe	**2,531**	**2,716**	**3,110**	**3,026**	**2,948**	**4%**
North America	**2,395**	**2,263**	**2,321**	**2,433**	**2,404**	**0%**
South America	4	4	72	75	20	408%
Australia and Oceania	257	391	457	479	466	18%
Total Re-entry	**57,281**	**61,931**	**68,252**	**68,994**	**64,003**	**3%**

Source: Thailand Overseas Employment Administration, Department of Employment, Ministry of Labour.

4.2 Estimated Result of Model

The estimated result is compared to the based case (before the economic crisis) to provide comprehensive changes of the economic crisis through economic linkage on employment. As can be seen in Table 4.5, the low skilled worker of the manufacturing sector in Thailand has severely suffered from the economic crisis by a reduction in employment at about 14 percent. Since manufacturing firms are exporting companies, this supports the hypothesis that the lower demand of the main importers on the Western Continent unarguably reduces the demand for goods.

However, the data in Table 4.1-4.3 implies that the fall in Thai employment is only temporary, and the informal sector, especially in the agricultural sector, is the essential absorber against the unemployment problem.

The low skilled informal workers are assumed substitutable to both unregistered and registered migrants. The wages of low skilled migrants are cheaper than the formal locals, and the intention to employ the low skilled migrant has increased, yet it is limited by the legal quota of work permits.

Table 4.5: Estimated Impact of Economic Crisis on the Employment in Thai Economy: Compare to the Based Case (Percentage)

	Impact of the economic crisis on the growth of employment	Agriculture		Manufacturing		Other sectors	
		High skill	Low skill	High skill	Low skill	High skill	Low skill
Domestics	Formal	-0.5	+2.1	-0.1	*-14.3*	-1.2	*-8.3*
	Informal	-0.1	*+4.8*	+0.3	-3.1	-0.4	+1.1
Migrants	Formal* (Registered)	+0.2	-0.5	+1.4	-0.1	+3.1	-1.1
	Informal (Unregistered, low skilled only)**	-	+0.1	-	-0.1	-	+0.1

Note: *The high skilled migrants are assumed to easily obtain work permits and are more welcomed than low skilled migrants. Thus, the high skilled migrant worker is automatically categorised as the formal employment.
** The unregistered low-skilled migrants or illegal migrant workers are estimated at about 1.5- 2 millions Chantavanich, et al (2007). Note that according to the definition, there is no high skilled worker in this category.

The government attempts to increase its employment in substitute for the fall in employment by the private sector. The constant rate of increase in public employment has substantially increased. Planned employment by the public sector has expanded together with the fiscal stimulus plan or the so called “Thai Khem Kaeng” (Strong Thailand).

The short run adjustment in employment is also found in Vietnam. The Vietnamese government has supported the small and medium enterprises (SME). An unemployment insurance scheme, and financial assistance, was launched on January 1, 2009. Vietnamese workers who signed contracts of at least one year with foreign, government or individual companies will be eligible for unemployment insurance, accounting for 60 percent of the average salary of the employee. Additionally, on February 24, 2009, the Vietnamese government decided to provide interest-free loans to enterprises for paying salaries, social insurances and unemployment subsidies for their workers. (Thi Thuy Van, 2009)

5. Summary and Conclusion and Policy Implication

The concern of the impact of the economic crisis in the West relates to a possible raise in returning migrants from the developed countries to the developing countries. Therefore, this study aims to estimate the effect of the economic crisis in the West on the employment in Thailand.

The analytical framework of this study is Computable General Equilibrium Models (CGE) including the minimum wage and the informal sector. The Difference in Difference method is applied to evaluate the real effects of economic crisis on employment. It also attempts to measure the impact of the crisis on the employment

of registered and unregistered immigrants. The contribution of this study is to evaluate all proxies representing the economic crisis simultaneously, which actually happens in the economic crisis during the decades of globalisation. It is contrary to the partial equilibrium analysis which focuses on the effect of each proxy on employment. Moreover, the impact of economic crisis on each type of workers is explored. The economic crisis is regarded as an external impact. It is carefully measured though global linkages, including the decrease in trade volume, the reduction of capital inflows from the West, and the dynamics of migrant workers.

This study found that during the late 2000s, the total number of Thai workers employed abroad has dropped worldwide, except in Africa, Australia and Oceania. The study found that there was no significance in the number of returning migrants from developed countries. But, it discourages the new registers to apply for work in those countries. Instead, the destination of the new registers to work aboard has scattered to other continents, i.e. Africa, South America, Australia and Oceania. In North America, it is interesting that the number of new registers to work aboard has declined, while the number of re-entrants has changed very little. It implies that once the workers have a chance to be able to legally re-enter, they tend to remain in the labour market, given any economic situation. This situation of the re-entry workers is similar to Europe, where the number of reentry workers remained at the same levels from 2008 to 2010. Yet, the new registered workers were substantially high in 2009, before decreasing in 2010. Overall, the number of Thai workers applying for working permits in Europe has increased. Noticeably, the number of both new registers and re-enters to Asia suddenly decreased in 2009.

To measure the impact of the economic crisis on the labour market in Thailand, the employment and economic status of the year before the economic crisis is assumed to be the base case, where growth does not fluctuate. The employment of various groups after the crisis is estimated and the result is then compared to the actual data with the deduction of the employment in the normal situation (or based case). This comprehensive method attempts to find the actual effects of economic crisis on the various groups of labour and economic sectors. The study found that the low-skilled workers of the manufacturing sectors in Thailand have suffered from the crisis, yet only in the short term. The temporary decrease in employment of this group occurred because the majority of manufacturing firms are exporting companies. The lower demands of the main importers in the West unarguably decrease the demand for goods.
The Thai government plays important roles in maintaining employment levels. Its employment growth was more than 3 percent from 2007 to 2009 and then public employment growth increased to about 8 percent in 2010. Overall private employment shows positive growth; however, the influence sector that encourages private employment is the informal sector.

The recent economic crisis in 2009 has generated a tremendous number of layoffs among exporting firms, which are normally in the manufacturing sector. The share of experienced unemployed persons shows that the sector that suffered the most was the manufacturing sector, because of its sudden increase of unemployment. However, the agricultural sector and informal employment absorbed the worsening impact of the economic crisis in 2009. The combination of the government's objectives to decrease the unemployment rate and the absorption of the informal employment from formal employment helps to dissolve the possible issue of severe

unemployment. However, the increase in informal employment posits the public concerns to systematically improve the poor working conditions of growth after the crisis.

Some limitations must be acknowledged regarding this study. One limitation concerns the disciplinary nature of the CGE model. This model assumes the steady behaviour of all agents in the model. The other limitation is the issue of data limitation. The structure of the production must base on the most updated data of Input-Output (IO) table, which is 2005. The characteristic in the production market is assumed to be the same throughout the 2000s. Further empirical evaluation is suggested in order to update the output structure and compare the findings, i.e. before and after the economic crisis.

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