

Lund University
Centre for East and South-East Asian Studies
Masters Programme in Asian Studies
South-East Asian track
March 11, 2005

Unemployment Problems and Economic Stability A Case study of Thailand

Author: Worahtai Tangsatitkul
Supervisor: Dr. Christer Gunnarsson

Abstract

This thesis provides an overview of the unemployment problems and economic stability in Thailand. The purpose of this study was the relation of different factors that indicating the level of employment and unemployment, wage labour, movement of labour from rural area to urban area, migration of labour (domestic and international) and the natural rate of unemployment. It calculates non-accelerating inflation rate of unemployment (NAIRU) and make a forecast for employment and unemployment. The analysis is based on official statistics from the labour force survey carried out by the National Statistic Office during 1985 and 2001.

Table of Contents

Abstract	ii
Table of Contents	iii
1. Introduction.....	1
1.1 Background.....	1
1.2 Purpose and research question.....	2
1.3 The Analytical Framework and Methodology.....	2
2. The factors indicating unemployment and employment.....	5
2.1 Wage.....	5
2.2 The compensation of the working and labour productivity.....	9
2.3 The demand for labour.....	11
2.4 Indicating factor of unemployment.....	13
2.5 The contradiction between demand and supply for labour	16
3. The prediction of employment and unemployment and the natural rate of unemployment	23
3.1 The prediction of employment and unemployment.....	23
3.2 The Natural Rate of Unemployment.....	28
4. The Summary and Suggestion	33
References.....	39

1. Introduction

1.1 Background

During the past ten years, Thailand's economic performance has been remarkable. In a very short time it became a newly industrialized country. Thailand has become a leading exporter of medium-high technology manufactured goods and continues to supply the world market with agricultural products.

The economy started to slow down from two-digit growth since the early 1990s, but it was still quite high. A sign of trouble emerged in the mid of 1996. The bubble economy burst during the administration of Prime Minister Chatchai Choonhavan nine years ago. Thailand's economic crisis and the turmoil that followed the baht floatation in July, 1997. The slow down of the Thai economy in 1996 and recession in 1997 would definitely open unemployment rate.¹

The lack of employment and educational opportunities in rural areas and labour market segmentation in urban areas push factors which have driven men and women to work overseas. Labour shortages and changing attitudes toward (menial) unskilled and low-paid work among the Thai labour force led the Thai authorities to accept low-skilled economic refugees from neighbouring countries. The number of illegal migrants increased rapidly in 1996.²

The labour market dilemma shifted when the bubble economy burst. The impacts of the economic recession on labour market in 1998 are clear. The tight labour market is disappearing very quickly. There is now a surplus of low- and medium- skilled labour, while shortages in the areas of science and technology have persisted.³

It is expected that unemployment may be worse as almost a million of illegal migrants from neighbouring countries still work in the country, with the expectation that more will enter will be laid-off and also looking for, but unable to find job.

Although Thailand's unemployment rate is difficult to determine, government officials currently estimate that it has reached two million, with at least 2,000 workers losing their jobs every day. The International Labour Organization (ILO) predicts that the unemployment rate could rise to three million, or ten percent of the labour force, by the end of 1999.⁴ This represents at least a three fold increase over 1997, and most economists predict that the full impact of unemployment has yet to be felt. Many of Thailand's wealthier citizens have supplemented their incomes by selling their cars, clothing and other personal items. For the poor, however, the possibilities are more limited.

The Asian financial crisis has particularly affected the employability of recent college graduates. The University Affairs Ministry has said that there will be 48,000 unemployed graduates by the end of the year.⁵ These recent graduates, most with little

¹ Yongyuth Chalamwong, "Economic Crisis, International Migration and the Labour Market in Thailand", TDR Quarterly Review, 13(1), 1998

² 1998 Suchitra Punyaratabandhu, "Thailand in 1997: Financial Crisis and Constitutional Reform", Asian Survey, February

³ Siamwalla, Ammar and Orapin Sopchokchai, "Responding to the Thai Economic Crisis", Bangkok; United Nations Development Program (1998)

⁴ Nukul Commission Report, "Analysis and evaluation of the facts behind Thailand's economic crisis", Bangkok; Thailand development research institute, 1998

⁵ Chalongphob Sussangkarn, "ASEAN Beyond AFTA: Initiatives in Labour Market Co-operation and Integration", TDR Quarterly Review, 12(3), 1998 September.

job experience, cannot compete with recently unemployed, experienced white collar workers who are willing to work for a fraction of their former earnings.

Thai legislation does provide for severance pay when workers lose their jobs, but in practice it is rarely paid. A new labour protection law that came into effect in August 1998 provides better protection for employees and limits daily working hours. The new legislation is intended to bring Thai legislation into conformity with labour standards established by the International Labour Organization (ILO).

1.2 Purpose and research question

The aim of the research is to study the relation of different factors that determine the level of employment and unemployment, wage labour, movement of labour from rural area to urban area, migration of labour (domestic and international) and the natural rate of unemployment. The result of the research will be use for determining policy of labour and plan methods for solving the unemployment problem that might occur in the future.

This research will emphasize on analysis of cause and factors that directly effect employment and unemployment. The analysis is divided and considered in four ways.

- ❖ Cause of demand
- ❖ Cause for supply of labour
- ❖ Rate of wage distort
- ❖ The demand and supply from labour market unconfomable

Since 1996 the financial institution has had problem and followed by the financial crisis in mid 1997, a lot of companies have had to stop running business because of economy decrease and the problem of debt that has increase rapidly. The number of unemployment had quickly increased.

From the description above there will be several of (issues) questions for explanatory such as:

- ❖ What is the main reason for unemployment?
- ❖ What are the cause and factors that indicating the level of employment and unemployment?
- ❖ When is beginning definite open unemployment rate?

This research will show factors in the economy system that effect employment and unemployment of the population in the country and the natural rate of unemployment of Thailand. Also, the research will contain a forecast of employment and unemployment in the future based on the theory of economic and on different cases of hypothesis, which in turn is based on past experiences of the economy system in Thailand.

1.3 The Analytical Framework and Methodology

Since the economic crisis in 1997, a lot of literature has been written about employment and unemployment problems in Thailand. Unemployment and economic stability is the subject of this research, both theoretically and empirically. The research has two overriding purposes. The first task is to find out the factors that determine the level of employment and unemployment. The second task is to use this information to forecast future employment, unemployment and Natural rate of unemployment. The analysis is based on official statistics from the labour force survey carried out by the National Statistical Office during 1985 and 2001. The reason

why the statistic comes from the period 1985 until 2001 is that 1985 was the beginning of the economic boom in Thailand. Thailand's economy is defined by more than a decade of sustained and rapid economic growth beginning in 1985, followed by a severe recession that started in late 1997⁶. During the boom years, economic growth averaged more than 7 percent annually, one of the highest rates in the world. The crisis of 1997 and 1998 wiped out some of the gains of the boom and forced major adjustments in Thai industry and economic policy.

Many different factors contributed to the rapid growth of Thailand's economy. Low wages, policy reforms that opened the economy more to trade, and careful economic management resulted in low inflation and a stable exchange rate. These factors encouraged domestic savings and investment and made the Thai economy an ideal host for foreign investment. Foreign and domestic investment caused manufacturing to grow rapidly, especially in labour-intensive, export-oriented industries. These industries also benefited from a tremendous expansion in world trade during the 1980s.

In the early 1990s a series of economic policy reforms introduced by the Thai government made it easy and attractive for foreign banks to offer loans to Thai banks. The Thai banks used the capital to lend money to domestic finance companies, property developers, and other investors, stimulating an investment boom. In an atmosphere of great optimism about continued rapid growth, the resulting investment boom created a "bubble economy" based on speculation in urban property and stocks.⁷ The bubble burst in 1996 and 1997, when stock and property prices declined steeply. As speculators in these sectors failed to repay loans, many Thai banks became unable to service their foreign debt, causing investor confidence to fall sharply. The consequent outflow of capital caused the Thai banking system to crash in mid-1997. The resulting credit shortage drove many companies into bankruptcy and created a large pool of unemployed workers.⁸

The economic crisis that emerged in 1997 caused many structural changes in the Thai labour market. The number of employ person suddenly declined by one million persons between 1997 and 1998. The actual reduction in the industrial sector was already more than one million, but some laid off workers seemed to be absorbed by the agricultural and service sectors. Most of the low-skilled workers had to return to their agricultural hometowns since jobs in the cities were not easily found. Despite of its long-run declining trend, the level of employment in the agriculture was rather stable since the beginning of the crisis. At the same time, the high-skilled workers who did not have the agricultural background needed to find job in the informal market such as the service sector to earn a living, resulting in the higher employment in the service sector.

The major problem existed in the labour market suddenly reversed from the shortage one to the excess supply problem. The unemployment rate rose to an unprecedented level. Wages received by employees significantly reduced. The wage level in 1998 after the inflationary adjustment was 6.6% lower than the level in the

⁶ Nukul Commission Report, "Analysis and evaluation of the facts behind Thailand's economic crisis", Bangkok; Thailand development research institute, 1998

⁷ 1998 Suchitra Punyaratabandhu, "Thailand in 1997: Financial Crisis and Constitutional Reform", Asian Survey, February

⁸ Behrman, Jere R; Deolalikar, Anil B; Pranee Tinakorn, "The effect of the Thai Economic outcomes", Thailand Development Research Institute Foundation, TDRI Quarterly Review; 16(3), 2001

previous year.⁹ Hours worked were substantially reduced as employers tried to lower their costs of production. The pattern of counter-mobility could be detected easily. In fact, these laid off workers, who either returned to the agriculture or switched to the service sector, helped diffusing the crisis impacts to all other Thai people. As they entered the agricultural and service sectors, they also cut the marginal benefits enjoyed by workers previously in those sectors.

The research regulation is divided into three parts:

- Elicitation and collecting of data
- Categorization and analysis of collected data
- Forecasting employment, unemployment and the natural rate of unemployment using the result of the analysis and relevant data from various economy areas.

Elicitation and collecting of data

- Data collection macro:

- ❖ Secondary data collection
 - Data about labour force, employment from labour force survey by the National Statistical office.
 - View all about economic data such as national income, economic data report from the National Economic and Social Development Board (NESDB), Ministry of commerce, Bank of Thailand, Ministry of labour and the National Statistical official.
 - Data about population of country by the National Statistical Office.
 - Other data about labour such as labour training, and skill development by use of data from the Department of skill development and Ministry of Labour and Social welfare.
 - A causal model of unemployment problems and economic stability in Thailand based on essentially qualitative data at macro level.

Categorization and analysis of collected data

The categorization and analysis will be divided into four parts.

- ❖ Rate of wage compared to labour effective
- ❖ Demand of labour
- ❖ Important factors that effect unemployment
- ❖ Problem of unconformity between demand for labour and supply of labour

Forecasting

- ❖ Forecasting employment, unemployment and the natural rate of unemployment using the result of the analysis and relevant data from various economy areas.

⁹ Thailand Development Research Institute Foundation, "A model to forecast quarterly employment and unemployment", Human resources and social development program (HRS), 2001

2. The factors indicating unemployment and employment

2.1 Wage

1) Minimum wage

Legislation on minimum wage in Thailand was first passed in April 1973, in Bangkok and expanded all over the country in October 1974. The determinate minimum wage is used for industrial employment and private services sector but exclude agricultural employ sector and government employed. Its purpose is to serve social equality and fare share from economy prosperity.

The minimum wage was first determined into 3 rates diversified by the level of each province's development, which was divided into 3 zones; the highest rate for the most developed provinces, the sub-highest rate for the second most developed provinces, and the lowest rate for the rest. Between 1974-1996; before the economic crisis, there was annual negotiation for adjusting minimum wage by representatives from employers, employees and government sector. The three party panels were cooperated to be a wage committee. However, there was no obviously fixed start date of the enforcement. As the result, for some years, there has been more than one adjustment. Nevertheless, the adjustment was obtained between 1998-2000.

In September 1998, the new labour law is launched. The core of the law is to let the committee decide and determine as followed:

- 1) The average minimum wage rate and the minimum wage rate should be in accordance with economic and social conditions.
- 2) The determined minimum wage enforces only particular or all types of business, or in one area.
- 3) The minimum wage rate must not be lower than the average wage rate.
- 4) In the area where there is no determinate minimum wage, the average wage rate will be used instead.

Because of the economic crisis and tardy management, the enforcement of the law has not yet been successfully achieved. Moreover, the determining minimum wage had been divided to many rates according to local condition of each.

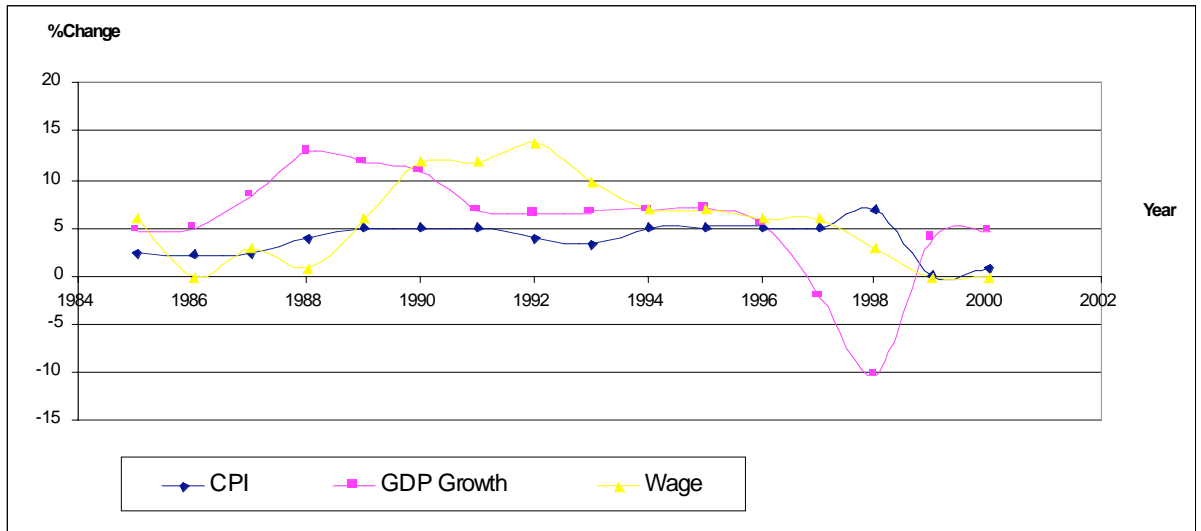
The minimum wage rate in zone 1 was raised from 70 baht per day or 1820 baht per month (26 workdays per month) in 1985. In 2001, it raised to 165 baht per day or 4,290 baht per month or 5.6% per year. At the moment, the inflation rate evaluated by consumer price index raises 4.2% per year. The real minimum wage rate raised 1.4% per year. The lowest minimum wage rate of the average wage rate was 133 baht per day. (Figure 2.1)

2) The wage excerpted from labour force survey

According to the labour force survey, the average wage for private and government employees raised from 2,232 baht per month in 1985 to 6,568 baht per month in 1998, or 8.7% per year on average. During the economic crisis in 1999-2000, the average wage increased 0.5% and 0.7%, respectively, according to

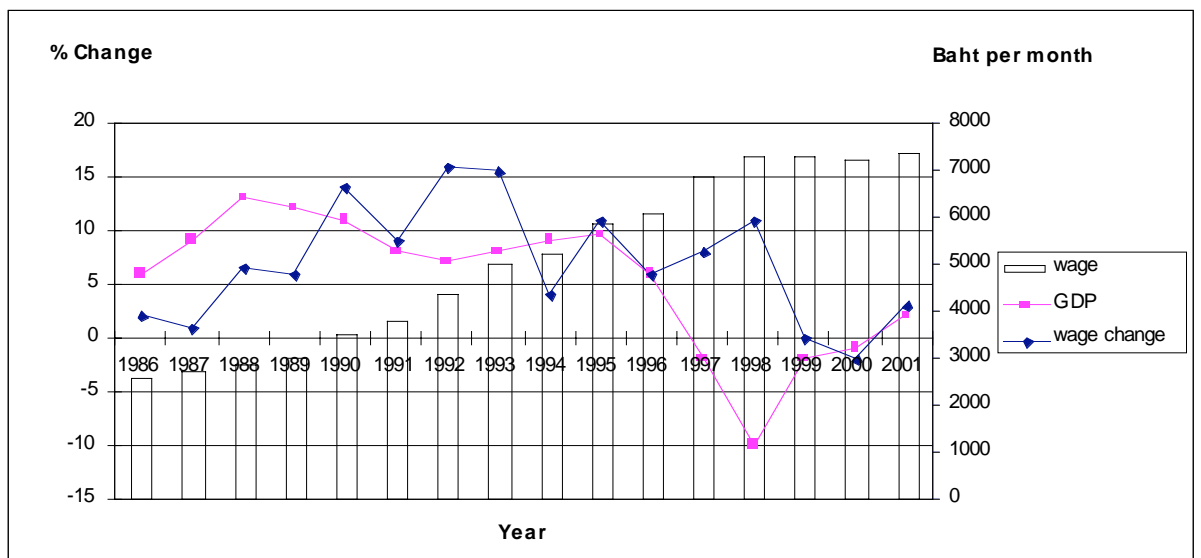
decreasing private wage. However, in 2001 it slightly increased to 6,633 baht per month. Between 1986-2001, the wage increased by an average of 7.2% per year. Moreover, the real wage increased 3.0% per year adjusted by consumer prices index that increased 4.2% per year at the moment. (Figure 2.2)

Figure 2.1 The rate of economic expanding, the minimum wage and CPI



Source: The National Statistical Office

Figure 2.2 The wage from the survey and the expansion of economic



Source: The National Statistical office

During 1985-2001, the wage provided for employees of public utility, transportation and communication, services and trade sectors were 2.1, 1.5, 1.3 and 1.2 times, respectively, more than the average wage all over the country. The wage of

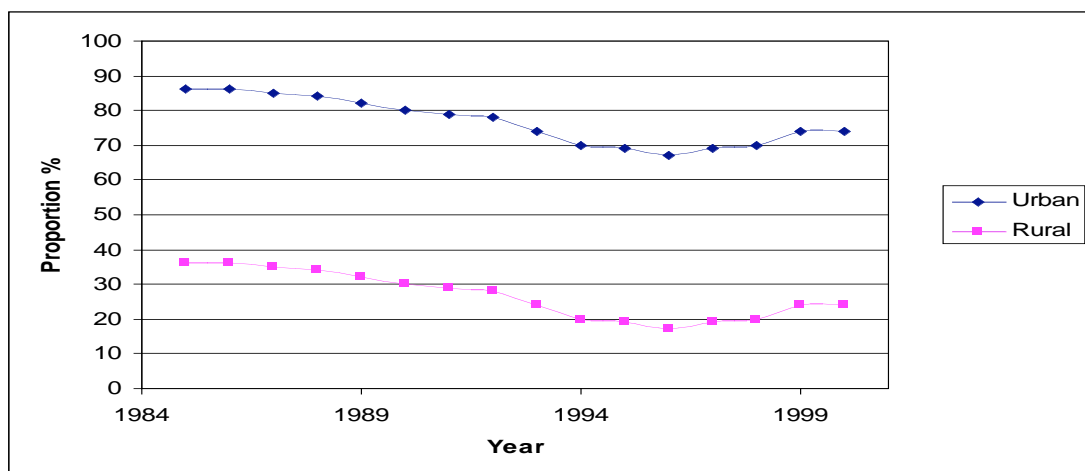
industry and handicraft, construction and agricultural sectors were 0.9, 0.8 and 0.5 time more than the average wage, respectively.

According to the survey, the average wage is higher than the minimum wage by 60%, it was also higher than agricultural wage by 70%. For construction sector, the wage is close to minimum wage. Moreover, the wage is higher than minimum wage by 30% in industries and handicraft and 80% in commerce. For services, transportation and communication, and public utility, the wage is 2.1, 2.5 and 3 times, respectively, more than the average wage.

3) The number of employees that have equal to and less than the minimum wage

Since the enforcement of minimum wage law is successfully prescribed at a level, including the expansion of manufacturing during the boom period of economic, the proportion of employees earned equal to and less than minimum wage¹⁰ per number of all employees tended to decrease rapidly from 77.4% in 1985 to 57.9% in 1997. However, the proportion increased in the following years to 64% in 2000 because of the economic crisis. The number of employees decreased from 20.23 millions in 1988 to 17.81 million in 1998, then increased to 19.88 million in 2000.

Figure 2.3: The proportion of employees earned lower than minimum wage in urban and rural area

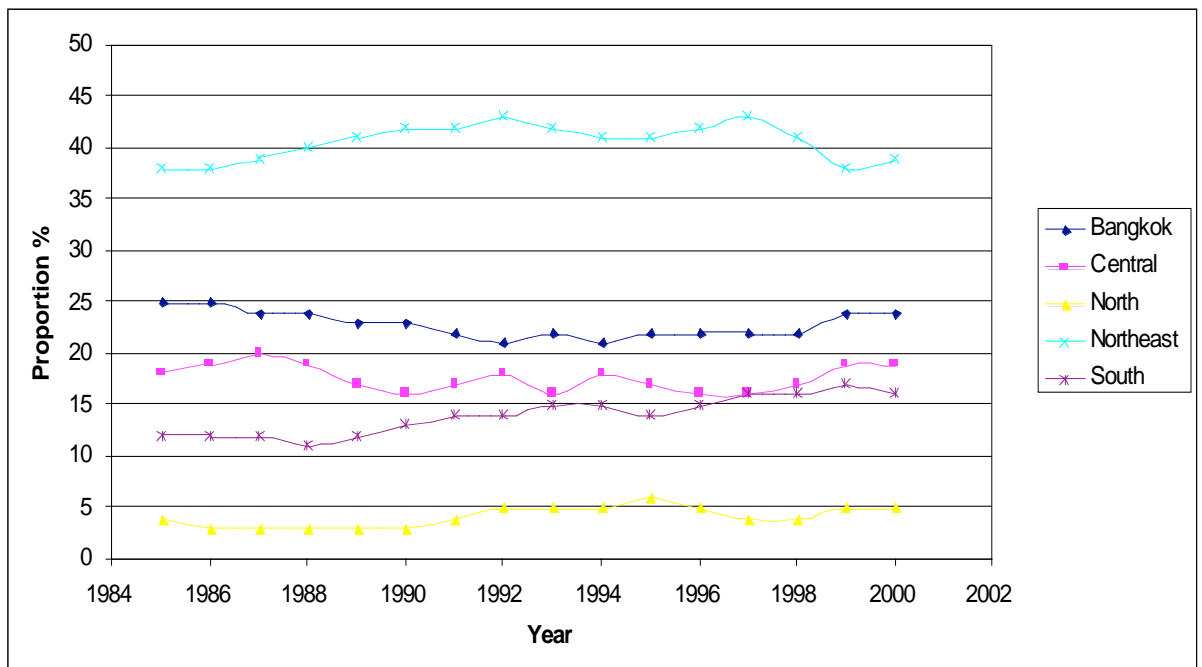


Source: The National Statistical Office

¹⁰ The analysis using the data from labour survey by income per month level group that is divided into many levels, for example, less than 750 baht, between 750-1500 baht, between 1,501-2,000, etc. The division of income that is lower or higher than minimum wage can be done by adapting the minimum wage at the lowest level and enforced in local area, to be monthly income (considering 26 days working in one month). If the minimum monthly wage is on any level from the survey, it will be considered that the number of the employment balanced by the difference between minimum monthly wage and the beginning wage of the period per the differential of the wage, add the number employees in the former income level and is the number of employees earned equal to and higher than minimum wage. For example, in 1986, the minimum wage rate in Bangkok and suburban was about 70 baht per day or 1820 (70*26) baht per month that is in the level of 1,500-2,000 baht. According to the statistic of employment leveled by income equal to and lower than minimum wage is $188.6 + 465.0 + (1820-1500) / (2000-1505) * 417.6$ or equals 920.9

3.1) The proportion of employees in rural area earned minimum wage is three times more than the proportion in urban area and the proportion of woman employees obtained lower than minimum wage is more than male employees are. In average of 1985-2000, the proportion of employee earned less than minimum wage per employee is about 68% in total, 74% for women employee, 64% for male employee. The number of the employee live in urban area was about 1.3-1.8 million (7.5% of all the country). The proportion of total employees in urban area was 27.5%, 16.1% for male employee, 35.6% for woman employee. In rural area, the number of male employees who lack opportunity was higher than the female by 15.6%. (Figure 2.3)

Figure 2.4: The proportion of employees earned less than minimum wage by region group



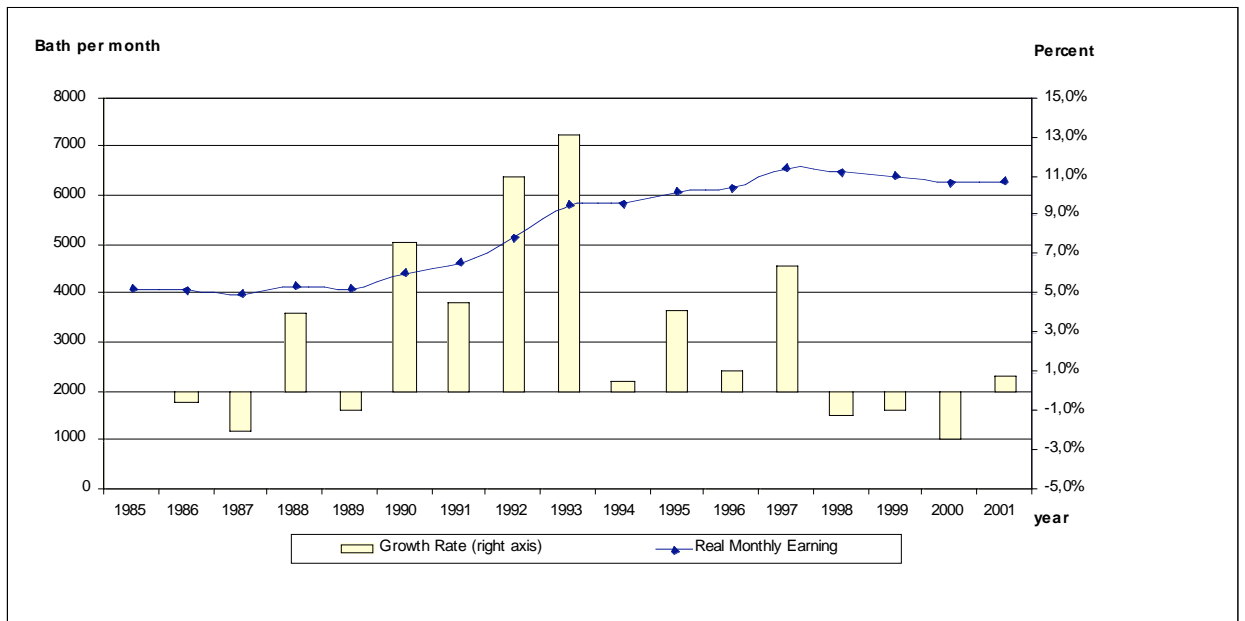
Source: The National Statistical Office

3.2) The number of employee earned less than minimum wage in the Northeast was about 40% of the country, followed by 24% for the North, 18% for the South and 13%, 5% for Bangkok and suburban area, respectively. The proportion of each region employees earned less than minimum wage in the Northeast and the North was 86.01% and 79.6%, 68.1% for the South, 56.5% for the Central, 30.3% for Bangkok and suburban area (Figure 2.4)

2.2 The compensation of the working and labour productivity

The compensation of average working adjusted by customer price index rose from 4,121 baht in 1985 to 6,406 baht in 2001; on average of 3.0% per year (Figure 2.5). During 1990-1993, it increased 9.15 per year, compared to after the economic crisis's period, which averagely reduced 1% per year.

Figure 2.5: The compensation of the real working



Source: The National Statistical Office

The increment of compensation for working adjusted by the inflation rate shows higher living standard of the employees. However, to answer if the increment for compensation is permanent and stable, we have to compare it with the alteration of labour productivity.

This study considers that labour productivity is equal to product per labour unit, or y / N . y is the gross domestic product and N is the amount of labour, W is average wage rate and P is price level or GDP deflator, therefore:

$$\begin{aligned} y / N &= (y / N) * (W / W) * (P / P) \\ &= (y * P / N * W) * W / P \end{aligned}$$

It is to be said that labour productivity equals the multiplication of product price proportion ($y * N$) per compensation of working and the real compensation rate (W/P). Therefore, the alternation of labour productivity equals the variable of the multiplicity, it is:

$$\Delta(y / N) = W/P * \Delta(y * P / N * W) + (y * P / N * W) * \Delta(W / P)$$

When dividing the correlation at both sides with y / N or $(y * P / N * W) * W / P$, the result will be:

$$\Delta(y / N) / (y / N) = \Delta(y * P / N * W) / (y * P / N * W) + \Delta(W / P) / (W / P)$$

or the changing rate of labour productivity is equal to the changing rate of product price proportion per wage. This study uses the data from National income account from National Economic and Social Development, using product price at current market prices or nominal GDP as product price indicator ($y * P$) and compensation of employees as wage indicator ($N * W$). Table 2.1 shows the difference between labour productivity and real wage during 1995-2001 from the above calculation.

Table 2.1: the difference between the changing rate of labour productivity and the real wage

Years	Country	Agricultural	Industrial	Services
1985	0.85	-8.09	3.85	2.30
1986	0.77	6.73	3.01	-1.03
1987	2.90	11.77	-3.26	6.24
1988	4.45	8.89	2.18	5.29
1989	1.63	9.53	4.08	0.94
1990	-1.93	-3.27	-2.47	2.55
1991	-1.44	1.69	-0.54	-2.32
1992	-6.43	-6.39	-8.73	-4.01
1993	-5.18	-19.66	-4.85	-1.15
1994	0.09	10.21	-2.63	1.51
1995	-3.75	-1.77	-2.73	-5.32
1996	-0.97	-3.23	-2.51	-0.78
1997	-2.94	-9.53	-4.01	-1.56
1998	-1.91	-3.39	1.70	-7.00
1999	-1.12	-22.81	5.62	-2.68
2000	0.35	1.53	1.93	-0.44
2001	-0.84	1.87	-0.71	-1.15
Average 1985-2001	-0.91	-1.52	-0.59	-0.42
Average 1985-1989	2.12	5.77	1.97	2.75
Average 1990-1996	-2.80	-3.20	-3.50	-1.14
Average 1997-2001	1.29	-6.47	0.90	-2.57

During 1985-1989, labour productivity raised in higher speed rate than the wage. However, the rapid economic growth during 1990-1996 increased the labour demand and it enabled rapid increment of wage rate, compared to the increment of productive capacity. Nonetheless, in the late period of the economic crisis in 2003, the difference between labour productivity and wage rate tended to increase, before the tendency changed its direction in 2001 when the economic condition turned to its normal. By an average of 17 years, between 1995-2001, the labour productivity increased to be lower than real wage rate for nearly 1% (0.92). The wage of services increased higher than the productivity for almost 0.5% (0.45%), 1.5% in agricultural sector and 0.6% in industry.

The rapid increase of wage with product capacity probably negatively affects ability of external marketing competition because it enables increasing capital per unit. This phenomenon probably is an important factor encouraging the economic crisis if Thailand in 1997.

In terms of labour market, the rapid increase of labour cost compared to the manufacturer productivity, definitely effects negatively the employment. In the past, there was a study on the importance of productive factors about how much they play the role on Thailand's economic expansion. For example, according to Katsit Sitikun's¹¹ research, between 1990-1996 the economic expansion was caused by use of investment and technology by 73% and 23%, respectively. However, the labour had only 1% of productive increasing which also reflected labour efficiency.

2.3 The demand for labour

This part of the study is about quantitative experiment to find out for the demand for labour using a simple model under a hypothesis that the labour needs is directly in correlation of economic condition which we use the gross national product as the variable. Moreover, it relatively reversed with the real wage. This study uses results of the labour survey compensation per labour balance of employees in government and private sector. The study uses annual data between 1986-2001, therefore the average compensation rate of the study in February and October according to the data used in this study.

The test may use minimum wage on average of the whole year. According to enforcement adjusted by consumer price index on average of the country represents the employers, in case there is some reasonable belief that minimum wage should be more suitable variable. For example, the teenager labour which is lack of experience and skilful.

The adjustment of labour market against changing economic condition and wage probably was not completely carried on in a period of time though it is

¹¹ Katharit Sithikul "Total Factor Productivity," BOT Working Paper, WP/02/2001, Bank of Thailand, 2001

considered to be last for one calendar year. Therefore, demand for labour of the former period will also be used to explain the present demand of labour.

The relation of variable is formed to be log linear

Table 2.2 shows the less equation of mass and juvenile labour, except child's labour needs which even is in same direction but lacks of statistic significant.

In terms of policy, the acceleration of economic growth rate to be higher rate but still remain its stability probably is not enough to respond the employment of the increasing labour force (1.7% per year in average, dusting 1985-1989). The emphasis on production technique, which uses labour as a major production aspect probably, is a suitable choice. This reduction of inflation pressure causes reversing employment negatively because the compensation of real work will be decreased.

Table 2.2: The coefficient of labour needs equation

	Constant Term	Real GDP	Lagged Real Wage	Lagged Dependent	R squared and Durbin Watson
Total Employment	5.324 (3.5357)	0.1895 (2.8754)	-0.0882 (-1.8849)	0.4138 (2.2017)	0.9754 1.6972
Total Employment*	5.9988 (4.0994)	0.2218 (3.3362)	-0.1578 (-2.4185)	0.3270 (1.8161)	0.9786 1.9309
Employment of Teenagers* (15-19 years)	3.7085 (4.2425)	0.1863 (1.3462)	-0.5507 (-3.0231)	0.6708 (7.0673)	0.9878 2.0954
Employment of Young Adults (20-24 years)	5.3022 (4.7856)	0.1617 (2.2580)	-0.4221 (-3.8712)	0.6480 (6.8779)	0.9461 2.1019
Employment of Young Adults* (20-24 years)	3.2806 (4.1127)	0.2454 (2.2439)	-0.3229 (-3.2641)	0.5610 (4.3749)	0.9358 1.8302

Remark: * Use minimum wage

Number in bracket is t statistic

According to table 2.2, the compensation of labour or wage after being adjusted by the cost of living significantly influenced negative employment. If the compensation of labour increases 1%, the mass labour need will approximately decreases 0.09% and it will decrease labour during 20-24 years old needs for 0.42%.

When using minimum wage to explain changing employment needs, it is found that the increment of minimum wage decreased aggregate employment by 0.16% and the needs of 20-24 year-old-labour employment by 0.32% and teenager (15-19 years old) employment by 0.55%.

In term of policy, the increment of wage, especially minimum wage, not only considered for labour capacity, cost of living, economic condition and so on stated in the Labour Protection Act, 1998 but also negatively effect employment, especially teenager labour which is negatively effected more than the others.

2.4 Indicating factor of unemployment

As stated above, the movement of wage negatively effects employment. Employers may reduce in direct labour needs or increase use of means of production to replace labour that is more expensive, while economic development plays a role to encourage expanding labour needs. This part of the study will analyze some factors influencing unemployment using same variable with one indicating labour need. Economic condition and wage are in important factors in changing unemployment. The good economic condition (reflecting from constant domestic aggregate products has a role to reduce unemployment. While the increasing wage will raise unemployment with the analysis during 1986 and 2001 and the correlation is in logarithmic form under the hypothesis that the market adjustment will take more than 1 year. It is probably because of the boom of economic; the employees may not immediately increase employment, as the wage increment probably does not lead to immediate dismissing. The employers probably try to improve their capacity and reduce first the other capital. Therefore, the correlation includes former unemployment, which is another good example.

Table 2.3 summarizes the correlation between aggregate unemployment, teenager unemployment, unemployment of 20-24 years old labour and economic and compensation per labour. Although the ability to explain changing unemployment measured by R squared was not much, the correlation between wage and unemployment carried on as expected.

The increment of domestic aggregate product at constant price of 1% results mass unemployment reduced by 1.5%, while teenager unemployment decreased 2.5%. The 1% wage increment make 2% unemployment, approximately. For teenager labour, the unemployment responds changing minimum wage, which is statistic cash rather than main wage adjusted by inflation. The increasing wage by law increased 1.7% of unemployment.

Table 2.3: The coefficient of unemployment equation

	Constant Term	Real GDP	Lagged Real Wage	Lagged Dependent	R squared and Durbin Watson
Total Unemployment	-2.4508 (-0.5918)	-1.15815 (-3.0873)	2.0921 (2.7974)	0.5301 (2.6906)	0.7036 1.5094
Unemployment of Teenagers* (15-19 years)	14.3574 (3.7865)	-2.5266 (-3.2515)	1.6966 (2.1642)	0.4613 (2.0740)	0.8192 2.0107
Unemployment of Young Adults (20-24 years)	-3.1058 (0.9050)	-1.5640 (-3.3571)	2.0787 (3.2063)	0.5382 (2.9896)	0.7787 1.5302

Remark: * Use minimum wage that is money

Number in bracket is t statistic

The same direction correlation between wage and employment that was found conformed to the summary of Warankana Imudom,¹² in Thai's National Bank's study. It is the study on changing real wage and non-agricultural regional unemployment during 1991-1999, and found that they are in direct association.

However, there is an international study stating that the increment of wage rate might produce reducing unemployment and increasing employment. For example, D card and AB Krueger found that the increment of minimum wage in many states in the USA does not negatively effect employment but even increases employment. It is probably because there is the relocation of labour from non-increasing wage rate state. Or from the state that increasing wage is lower than average compared to the higher wage state.¹³ In this study, we will study if domestic labour market's behaviour will become the same as in the USA, by region group.

The limitation of regional product statistic data confines the survey to 1989-2000. Moreover, the used wage is the average compensation wage of employees in private and government sector according to the survey of February and August, without considering the inflation effect.

¹² Warangkana Imudom. "The Role of Minimum Wage in Thailand," BOT Working Paper, Bank of Thailand, 2001

¹³ David Card and Alan B. Krueger, "Minimum Wages and Employment: A case Study of the Fast Food Industry in New Jersey and Pennsylvania," American Economic Review, September 1994

Table 2.4: The coefficient from regional unemployment equation (1989-2000)

	Constant Term	Real GDP	Lagged Nominal Wage	R squared and Durbin Watson
Bangkok and suburban	221.7780 (9.3771)	-0.0003 (-10.5335)	0.0301 (12.6831)	0.9480 2.6247
The Central	279.1716 (10.8675)	-0.0013 (-7.9965)	0.1301 (8.0659)	0.8791 2.0155
The North	596.3519 (5.6206)	-0.0023 (-3.6370)	0.0385 (2.2192)	0.6438 2.6829
The Northeast	1547.674 (10.6918)	-0.0063 (-804276)	0.2269 (7.8250)	0.8888 2.3022
The South	81.7498 (2.5648)	-0.0005 (-2.2512)	0.0246 (3.5515)	0.6658 2.3850

Table 2.4 summarizes result of the computing of correlation through less equation of regional unemployment that is a variable and regional product and wage is free variable. It is not found that the changing compensation reversed with unemployment as it happened in the USA. The increment of wage will increase regional unemployment.

The wage that increased compared to other area that was probably a result of the minimum wage's policy, encouraging the relocating of labour to that area. It also increased unemployment rate, in case the wage was achieved and enforced by law, to be even higher than before.

The result from the study indicates that the increasing wage in a region does not effect the region's employment, because the regional wage that responds excessive labour demand enables the expansion of employment. However, if the relocating labour is more than increasing labour needs, it will also effect the increasing unemployment.

2.5 The contradiction between demand and supply for labour

The unemployment condition happens not only because of the reversing economic condition, but also the unaccordance between demand and supply for labour in the labour market. It is related to the efficiency of government and private sector in employment, services and labour market management. The preparing of labour force for labour market that is not in accordance with the demand enables qualification of job seekers and wanted qualification of employers for available positions.¹⁴ However, today the government plays a major role in job providing, training and skill development to support present and future labour needs. The responsible major sectors are Department of Employment and Department of Skill Development, Ministry of Labour, which expand its service for the job seekers all over the country.

In the current study, the unaccordance between demand and supply for labour focuses on mission, role and achievement of the related government sector to link demand and supply together.

The important mission is to provide job both in the country and abroad in various ways via offices overall the country as followed.¹⁵

- ❖ Provide normally jobs at the office
- ❖ Provide special job for specific target, e.g. scrippled people, reverse troops soldiers, hill tribe people and students, etc.
- ❖ Moving job providing for people in remote villages.
- ❖ Co-operate relocating labour to employment area, between the Central and regions and the regions themselves.
- ❖ Provide job fairs to let employee and employers meet.

The achievement of Department of Employment from 1994-2001

Domestic job providing

- 1) The number of job seekers via the Department mostly from the normal job

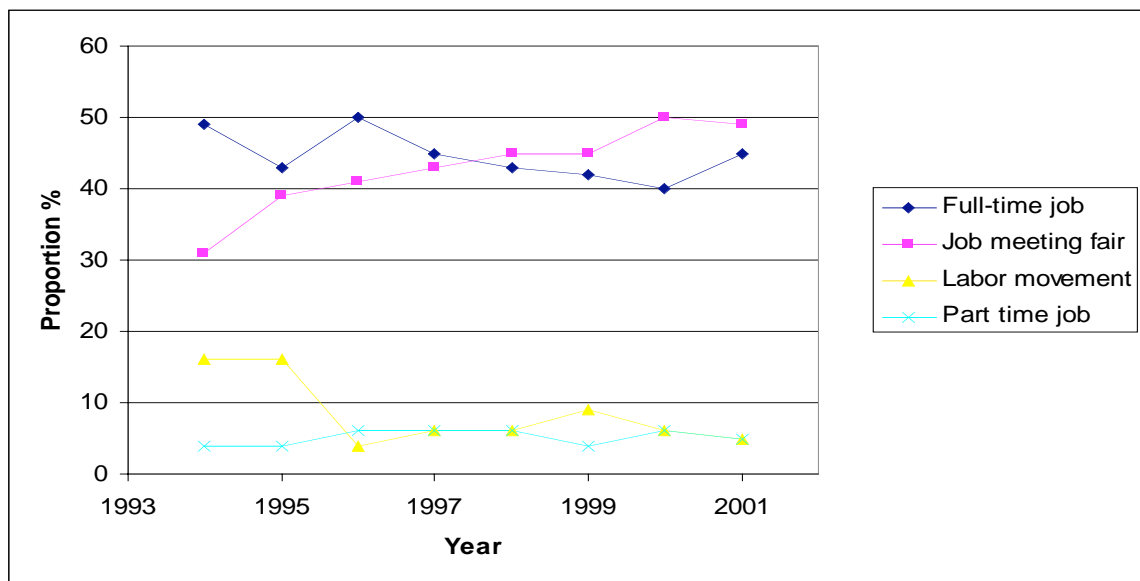
¹⁴ Phirul Marukhatat. "Labour Market and Vocational Guidance," the Department of Employment, the Ministry of Labour

¹⁵ 8 Years Anniversary of the Department of Employment, the Ministry of Labour

providing and job meeting fair which is on average of 44.3% and 42.6% of the whole new applicants (1994-2001) which is almost 180,000 in 1994. It rose to 250,000 in 2001 by the normal job and from 120,000 to 270,000 by the job fair. However, since 1997 the number new applicants via job fair has tended to increase more than the normal ones, because The Department increases the frequency of launching job fairs from 128 times in 1996 to 861, 827 and 726 times in 1999, 2000, 2001, respectively.¹⁶ To provide job fair is considered to be a popular way for providing the jobs of many department. The number of the applicants is regularly increased, not only the new graduated but also some that want to change the jobs (Figure 2.6).¹⁷

2) The number of applicants employed by the normal job providing is 120,000 per year. In the first period, it was slightly reduced from 120,000 in 1994 to 90000 in 1996, then highest raised in 1998 to 140,000 and then slowed down to 110,000 in 2001. The number of the applicants employed by job fairs raised from 40000 in 1994 to 120000 in 1999 and then slowed down to 80000 in 2001 (Figure 2.7)

Figure 2.6: The proportion of new applicants group by The Department of employment's way

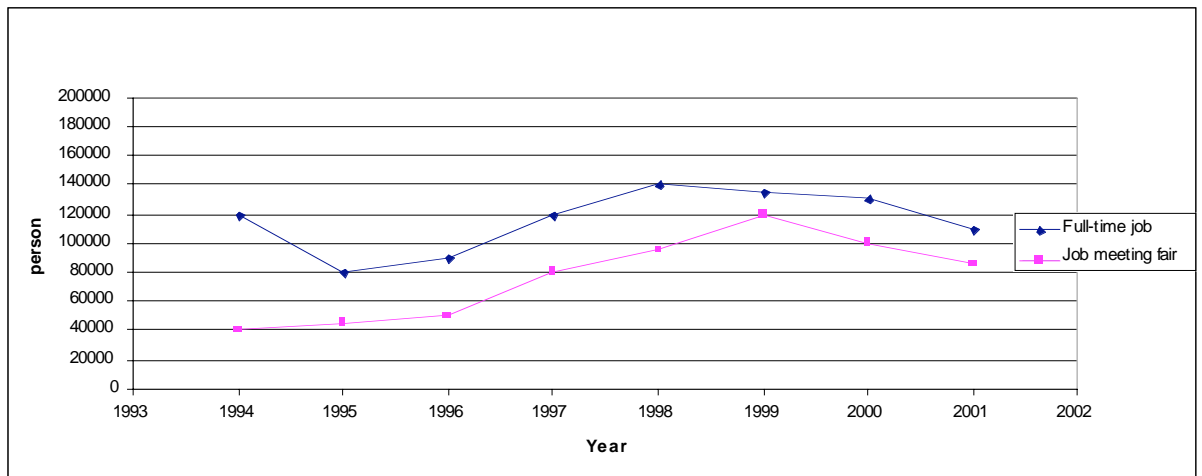


Source: Department of Employment, the Ministry of Labour

¹⁶ Annual Report of the Department of Employment, 1996, 1999, 2000, 2001

¹⁷ Nitchanan Srisiri. "The Problem and Obstacle for National Job Providing of Employment Agency," Bangkok 1-9 the Department of Employment, Ministry of Labour

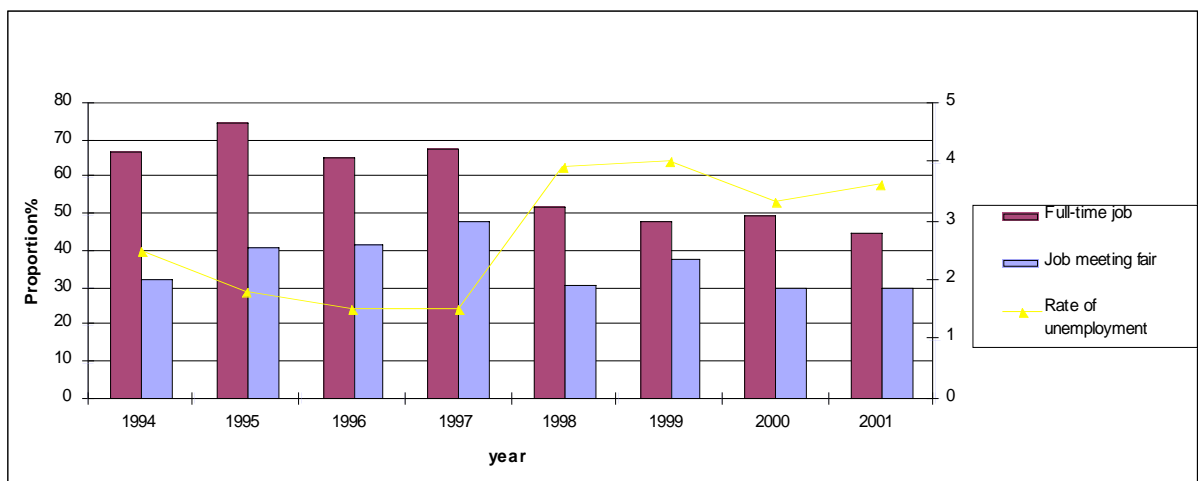
Figure 2.7: The number of labour filled by normal job and job fair



Source: Department of Employment, the Ministry of Labour

The number of assigned applicant compared to the number of new applicants in the normal jobs was more than the job fair 55.4% on average for normal job and 35.4% for job fair. However, when the unemployment tended to reduce from 2.61% in 1994 to 1.5% in 1997, the employed applicants per new applicants tended to increase from 66.4% to 66.9% for normal job and from 33.1% to 47.2% for job fair. When the unemployment rate rose from 1.5% in 1997 to 3.66% in 2001, the proportion of employed applicants tended to reduce from 66.9% and 47.2% to 45.1% and 30.5%, respectively. This type of job providing as stated above does not help any increasing employment, especially when the country's unemployment condition increased. Moreover, the proportion of employed especially from the job fair was still lower than the normal one that reversed increasing job fair by the government. (Figure 2.8)

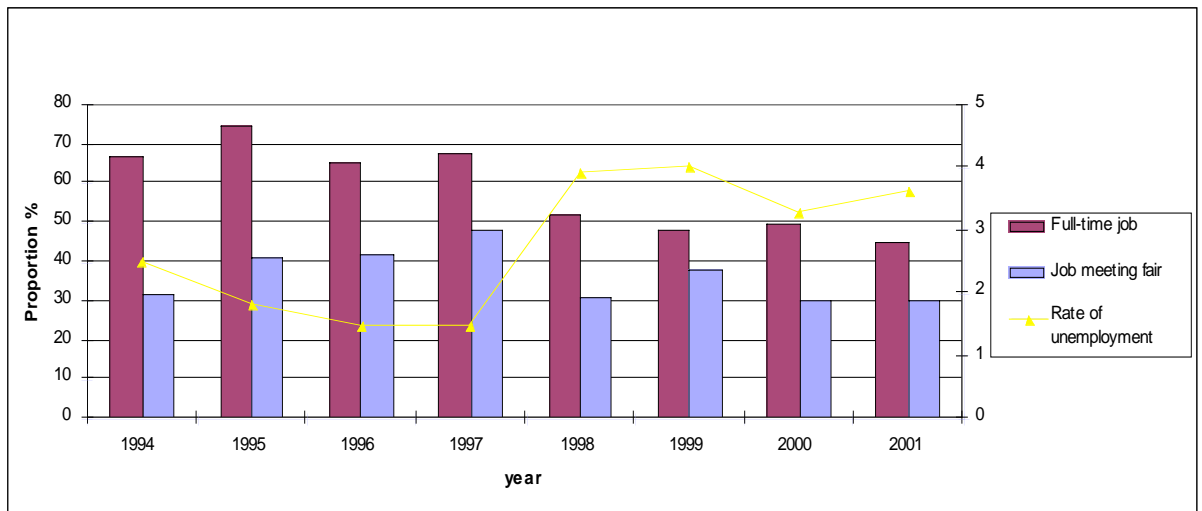
Figure 2.8: The proportion of employed applicants compared to the number of applicants and the unemployment rate.



Source: Department of Employment, the Ministry of Labour

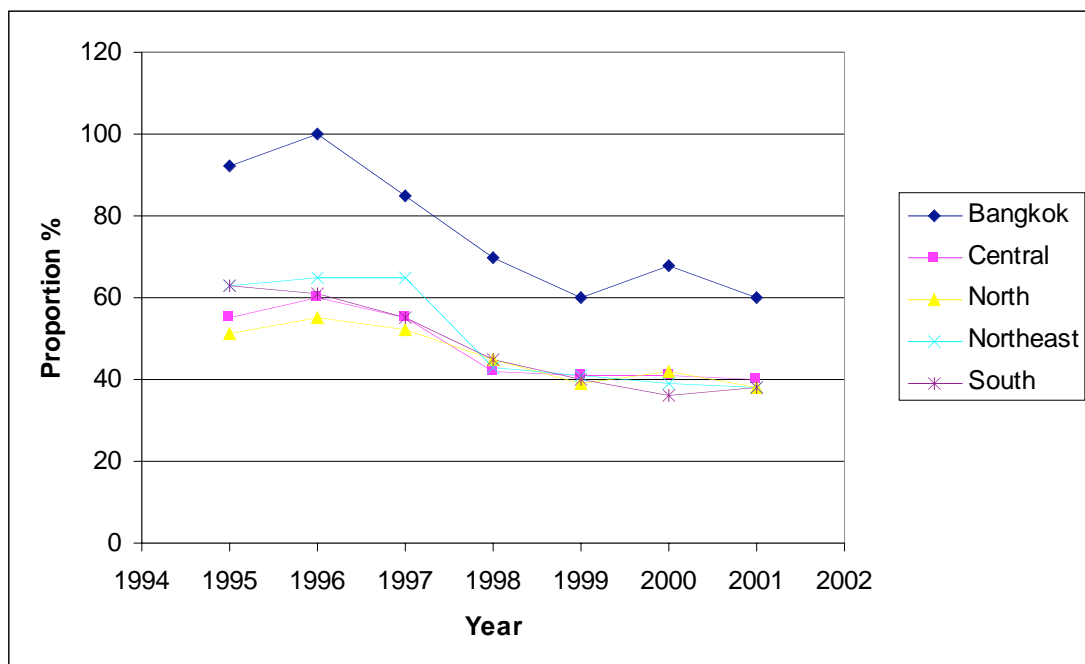
3) The age of new applicants of 15-24 years old is the most by 55%, followed by 41% for 25-39 years old and 4% for the above 40 years old of the normal application, in accordance with unemployment rate of 8%, 3% and 1.5% by age group, respectively. However, the number of employed applicants amongst the 25-39 year old applicants was an average of 53%, which was higher than 15-24 year old at 51% and above 40 year old which did not concord with the 3 age group unemployment rate (Figure 2.9)

Figure 2.9: The number of employed applicants by age group and unemployment rate



Source: Department of Employment, the Ministry of Labour

Figure 2.10: The number of employed applicants per applicant by region group

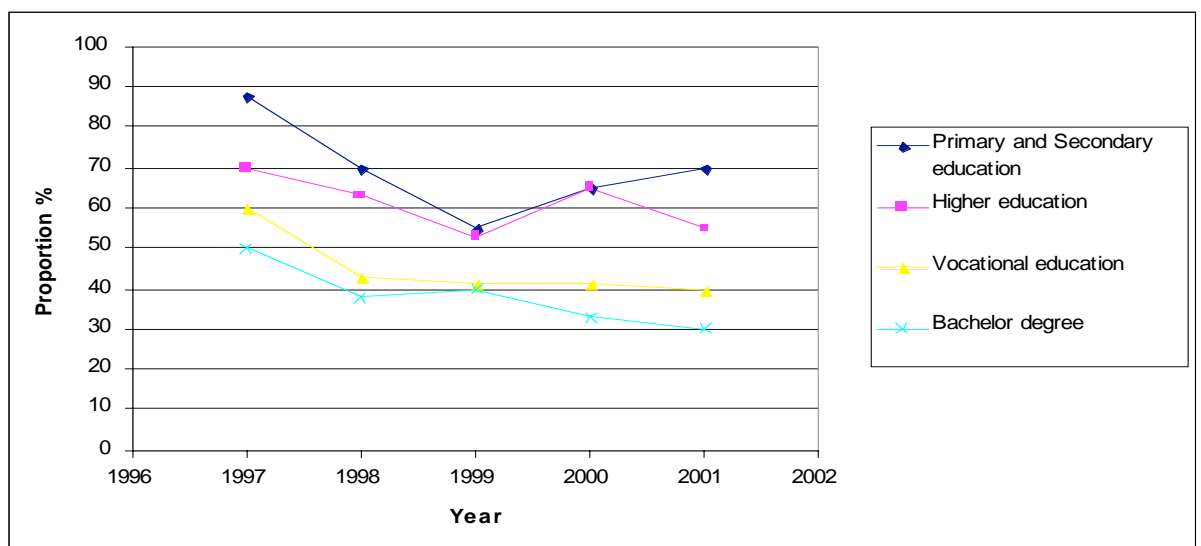


Source: Department of Employment, the Ministry of Labour

4) The job providing by region, the highest number of new applicant was averagely in Bangkok and suburban area for 35%, followed by the Central for 21%, the Northeast and the North for 17% and the South for 11%. The number of employed applicants was highest in Bangkok and suburban area for 77% since the positions available mostly in Bangkok and suburban area, followed by the Northeast for 52%, the Central for 48%, the South for 47% and the North for 46% that is not in accordance with unemployment in the Northeast and the North that were 5% and 3.2% and higher than the others (Figure 2.10)

5) About education level, the number of employed applicants amongst primary and secondary graduated were 66% and 59%, 44% and 36% for vocational educated and higher educated. The proportion of employed applicants reversed with unemployment rate. The highest is vocational education by 55%, and the lowest is primary and below education by 3.2% and in the vicinity for secondary education by 4.5% and 4.3%, respectively (Figure 2.11)

Figure 2.11: The number of employed applicants per application by education level group



Source: Department of Employment, the Ministry of Labour

Abroad job providing

1) The role of the Department of Employment for working abroad are as followed:

- ❖ Support the efficiency of labour export, for example, to reduce steps for labour export, to cooperate international collaboration in order to exchange the international labour's information.
- ❖ Control the implement of private job provider to be legal by law
- ❖ Protect, help and preserve the advantages for Thai labours working abroad

2) For working abroad of Thai labours, the government sector plays an important role to send labour abroad because of the defrauding and over service prices of the service of the private job agent. However, more than 50% of the labours go abroad via a private company, followed by those who go by themselves and the third option is being brought abroad by an agent. The proportion of the Department's management is more than the government sector. For example, there are more position available, faster transportation of labour expected by the foreign employers.

3) However, sending labour to abroad solve unemployment of primary graduated more than vocational and higher graduated which have higher employment rate.

The causes of the contradiction between demand and supply for labour

From the mission of the Department of job providing and the Department of skill development, it basically indicates that the type of providing jobs and the training as the major mission for the unemployment still are not quite in accordance with the demand for labour in the market. However, it must be accepted that the economic crisis from 1997 is another cause enabled the decreased employment tendency and it makes unaccordance of demand and supply. However from observing of the role of job providing, training and skill developing of the government department, which are related to these factors as followed:

1) Although the number of the attendants of job providing and training services via the Department of employment and the Department of the skill development increased, the proportion compared to the labour force is very less, for only 1%. From the study it is found that the majority prefer to search for the job via other media than the governments. It is probably because the government lacks of good advertising and many of job seekers don't know the roles and missions of the service and the training launched by the government that will be useful for them. Moreover, the number of the information centre of labour market¹⁸ is not enough for the services¹⁹.

2) The government's form of job providing and training focuses on the unemployment in the regions than Bangkok and suburban area, while the unemployment positions mostly are in Bangkok and suburban. Therefore, the large budget of the government on job providing and training in the regions while yet there are still not enough positions available probably cannot solve the relocating of labour problem.

¹⁸ Labour Market Information Center, the Ministry of Labour that make the register of labour force, analyze and report the need of labour's situation, and the lack of labour in responsible area, which are Bangkok, Ratchburi, Lumpang, Khonkan and Songkla

¹⁹ Phirul Marukhatat, "Labour Market and Vocational Guidance" the Department of Employment, the Ministry of Labour

3) The job providing via government sectors are too slow in progress for the employers needs because of the number of the officers and government system. Therefore the employers prefer find their employees via other media.

4) The employers and the local organizations do not play role to determine the curriculum and wanted mechanic department. Therefore the graduated mechanics are not in correlation with the employers needs. Moreover, the skill development of labour to meet modern technology that is changing rapidly is quite difficult because of the limited budget, and lacking of equipment, modern instrument and trainees²⁰.

5) The lack of close and regular cooperation with the employers and organizations enable wrong labour information about labour's needs. For example, the employers do not give true information such as wage, employment condition and the other welfare for the employees. Some employers post many available positions but accept less than the informed number and most of employers do not inform the filling position results to the officers.

6) The number of the attendants for working abroad via the government sectors is very less compared to the private agency since:

- ❖ The abroad positions from the government sectors are less and the government does not have policy on purchasing the abroad positions because of limited budget.
- ❖ The sending of labour abroad is too slow for the demand of foreign employers
- ❖ The need of labour abroad mostly focuses on non-craftsmanship and undereducated career such as workers and coolies, etc. the opportunity for the vocational and higher graduated is difficult.

7) The government budget for domestic and external job providing is quite limited and not in accordance with the increasing tendency of unemployment rate. (Table 2.6)

Table 2.6: The budget for job providing

Budget Year	Domestic job providing	+, - %	Abroad job providing	+, - %
2000	353.3		33.4	
2001	330.1	-6.6	31.9	-4.5
2002	300.1	-9.1	27.4	-14.1
2003	315.1	5.0	28.8	5.1

²⁰ Prasong Yudee, "The study on the results of the training for work preparing" National Institute of Development Administration

3. The prediction of employment and unemployment and the natural rate of unemployment

3.1 The prediction of employment and unemployment

To be in accordance with the last chapter's analysis, the prediction of employment and unemployment will use statistic data as stated in the last chapter, using the correlation between employment and unemployment with economic condition and the compensation per working as the baseline. We scope only prediction of employment and unemployment. The unemployment related in the same direction as the gross national product at constant price and reverse with the compensation per employment adjusted by the consumer price index. The labour force is equal to employment plus unemployment and unemployment adjusted by the number of labour in Seasonally Inactive group, that is²¹

$$\begin{aligned}E &= E(y, w) \\U &= U(y, w) \\LF &= E + U + I\end{aligned}$$

By: E = Employment U = Unemployment LF = Labour Force
I = seasonally inactive labour force
y = gross national product at consumer price
w = average wage divide by the consumer price index
 $E_y, U_w, > 0$ and $E_w, U_y, < 0$

Under the hypothesis that the correlation in Logarithmic form and the adjusting of employment and unemployment per the changing of free variable probably does not successfully achieve in one time period and during 1986-2001, the correlation is:

$$\ln(E_t) = 5.3240 + 0.1895 * \ln(y_t) - 0.0882 * \ln(w_{t-1}) + 0.4138 * \ln(E_{t-1})$$

$(3.5357) \quad (2.8754) \quad (-1.8849) \quad (2.2017)$

$$R^2 = 0.9754 \quad DW \text{ Statistic} = 1.6972 \text{ Prob (F Statistic)} = 0.0000$$

$$\ln(U_t) = -2.4508 - 1.5815 * \ln(y_t) + 2.0921 * \ln(w_{t-1}) + 0.5301 * \ln(U_{t-1})$$

$(-0.5918) \quad (-3.0873) \quad (2.7974)$

$$R^2 = 0.7036 \quad DW \text{ Statistic} = 1.5094 \text{ Prob (F Statistic)} = 0.0017$$

And $LF = E + U + I$

²¹ The correlation economic dimension-like in the previous chapter, in the article of 3.3 and 3.4 according to labour, unemployment and wage data are from the labour survey of the National Statistical Office, on average of February and August, also the gross product data from the National Economic and Social Development and price index from the Ministry of Commerce.

Before the further prediction, the ability of the prediction was tested with the data in 2002 and found that the basic equation group give the result that the number of employment that is lower than the number in 2002 and the higher unemployment of the year. It is probably because in 2002 there is public finance inside and outside the budget that effect a lot upon product and costs of low economic group. It encouraged employment and decreasing unemployment. The policy consists of extending of paying debt in agricultural, the village's funds, providing credits for small borrower, the health program, etc. Therefore, the constant of both equations is adjusted to reflect the policy's result. Moreover, they increase constant employment equation for 0.025% and decreased to 0.15% in 2002 only.

In the prediction of unemployment and employment for 2003-2005, we will use hypothesis that Thai economic will be expanded for 5.0%, 0.5% and 4.5%, respectively. While the inflation rate adjusted by consumer price product will be up to 1.75%, 2.00% and 2.00%, respectively.

The central hypothesis of the growth rate of economic and inflation in 2003 is central rate that the Office of the committee of economic and social development has predicted in the middle of 2003. The data used for 2004 prediction when Thailand will launch general election upon the hypothesis that the economic will still be expanded at the good rate by public finance policy's force (low capital policy). Especially the encouragement from public finance's policy with internal and external budget costs. Although the world economic in the middle of 2003 was not recovered and it probably take some period of time before turning into its normal, that is expected to be in 2005.

In the high and low level of prediction, we use central hypothesis baseline and add and minus by 0.5 respective with the economic growth rate and inflation rate as stated above.

In the first year of prediction, the increment of compensation per work was at 2% per year. After that we use the same rate with inflation rate back for 1 year and back for 3 years for the seasonally inactive labour force as the indicator.

Table 3.1, 3.2 and 3.3 shows the prediction result in case that the economic with middle, low and high expansion

Table 3.1 The prediction for the case that the economic is averagely expand

	2001	2002	2003*	2004*	2005*
Employment (thousand)	31,964.3	32,837.3	32,736.1	32,990.9	33,381.4
Unemployment (thousand)	1,239.4	842.1	711.9	606.0	516.3
Non-seasonally inactive labour force (thousand)	646.1	367.4	555.4	523.0	481.9
The gross labour force (thousand)	33,849.8	34,046.8	34,003.4	34,119.9	34,379.6
The gross national product (million baht)	3,063.7	3,244.6	3,385.9	3,555.2	3,715.1
The consumer price index (1988 = 100)	103.54	104.20	106.02	108.14	110.31
The compensation for labour (baht/month)	6,632.8	6,561.3	6,692.5	6,809.6	6,945.8
Unemployment (%)	3.66	2.47	2.09	1.78	1.50
The gross national product (million baht)	1.94	5.25	5.00	5.00	4.50
The consumer price index (%)	1.66	0.64	1.75	2.00	2.00
The compensation for labour (baht/month)	2.26	-1.08	2.00	1.75	2.00

Remark: * = Forecast number

Table 3.2 the prediction for the case that the economic is highly expanded

	2001	2002	2003*	2004*	2005*
Employment (thousand)	31,964.3	32,837.3	32,765.6	33,069.8	33,512.2
Unemployment (thousand)	1,239.4	842.1	706.6	591.5	495.8
Non-seasonally inactive labour force (thousand)	646.1	367.4	555.4	523.0	481.9
The gross labour force (thousand)	33,849.8	34,046.8	34,027.6	34,184.3	34,489.9
The gross national product (million baht)	3,063.7	3,224.6	3,402.0	3,589.1	3,768.6
The consumer price index (1988 = 100)	103.54	104.20	106.28	108.68	111.12
The compensation for labour (baht/month)	6,632.80	6,561.25	6,692.48	6,826.32	6,979.92
Unemployment (%)	3.66	2.47	2.08	1.73	1.44
The gross national product (million baht)	1.94	5.25	5.50	5.50	5.00
The consumer price index (%)	1.66	0.64	2.00	2.25	2.25
The compensation for labour (baht/month)	2.26	-1.08	2.00	2.00	2.25

Remark: * = Forecast number

Table 3.3 the prediction for the case that the economic is lowly expanded

	2001	2002	2003*	2004*	2005*
Employment (thousand)	31,964.3	32,837.3	32,705.6	33,911.8	33,250.5
Unemployment (thousand)	1,239.4	842.1	717.3	620.9	537.8
Non-seasonally inactive labour force (thousand)	646.1	367.4	555.4	523.0	481.9
The gross labour force (thousand)	33,849.8	34,046.8	33,979.2	34,255.6	34,270.2
The gross national product (million baht)	3,063.7	3,224.6	3,369.7	3,521.4	3,662.2
The consumer price index (1988 = 100)	103.54	104.20	105.76	107.61	109.77
The compensation for labour (baht/month)	6,632.80	6,561.25	6,692.48	6,792.86	6,911.74
Unemployment (%)	3.66	2.47	2.11	1.82	1.57
The gross national product (million baht)	1.94	5.25	4.50	4.50	5.00
The consumer price index (%)	1.66	0.64	1.50	1.75	2.00
The compensation for labour (baht/month)	2.26	-1.08	2.00	150	1.75

Remark: * = Forecast number

The employment per labour force in 2003-2005 tends to be higher from 93-94% after the economic crisis to 96-97% for all the 3 cases. It is a result from the stable economic growth as the hypothesis. The unemployment rate was between 2.07% - 2.11% per year in 2003 and will be between 1.73-1.82% in 2004. In 2005 that is the last year of prediction, the unemployment rate will be up to 1.44% to 1.57%. However, although the unemployment rate will be low, the number of unemployment will be up to 495.8 thousand that is more than the start year of the economic crisis that is the lowest number in 1997 (488 thousand)

3.2 The Natural Rate of Unemployment

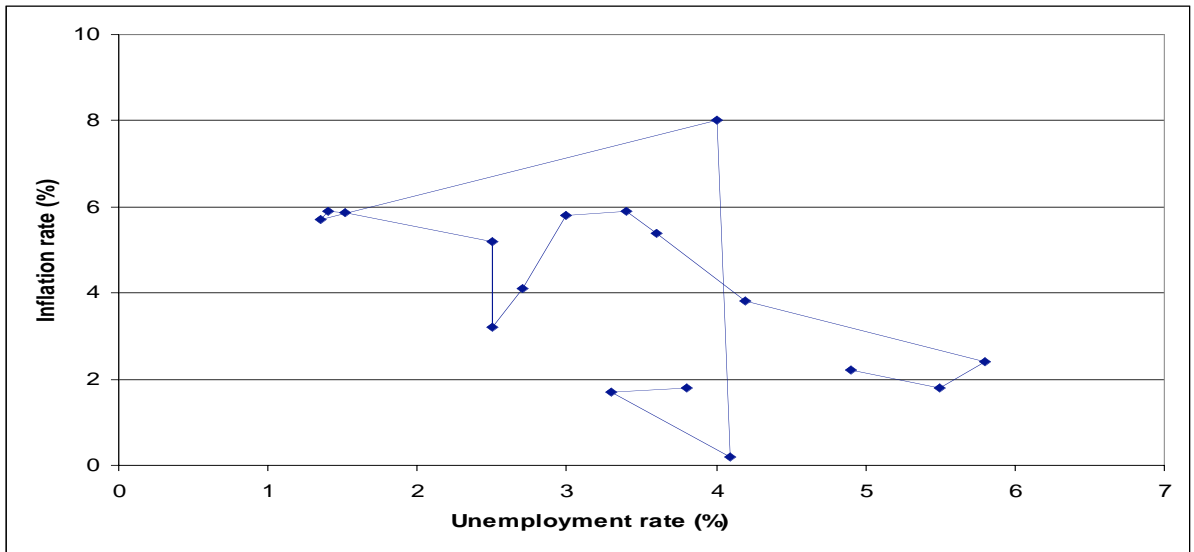
The rate of natural unemployment is introduced by M Friedman's article in 1968 that study the role of finance policy in economic management. Friedman notices that Philip Curve shows reverse correlation between unemployment rate and the changing rate of wage for only the short period and should not have long consequence, except labour has forever "Money Illusion". Therefore, the implement of finance policy probably affects the decreasing unemployment rate to be only in a level. Moreover, if this policy will be longer implemented, it will cause the rapid increasing of prices level and wage rate and cannot reduce the unemployment rate anymore. The rate of unemployment is called the natural rate of unemployment. Therefore the natural rate of unemployment will be changing of prices which are constant rate. It leads to the concept of non-accelerating inflation rate of unemployment or NAIRU.

Although the concept of the natural rate of unemployment started at the analysis of efficiency of gross supply management policy, this concept also can be applied for other analysis of economic condition such as the analysis of gross product capacity and the comparison between the differential between the real unemployment and the natural unemployment.

As the result, the natural rate of unemployment becomes very interesting for economists. They try to evaluate the rate for many businesses and period of time but the evaluation is difficult to handle, especially the late of 1977s. It is probable because of the rapid structural economic changing. The correlation between the unemployment rate and the changing rate of price level, therefore, is not straightforward as stated in the theory.

Figure 3.1 and 3.2 shows the example of the unobvious of the correlation between the unemployment rate and changing rate of inflation of Thailand during 1995-2001

Figure 3.1 The unemployment rate and the changing rate of price level

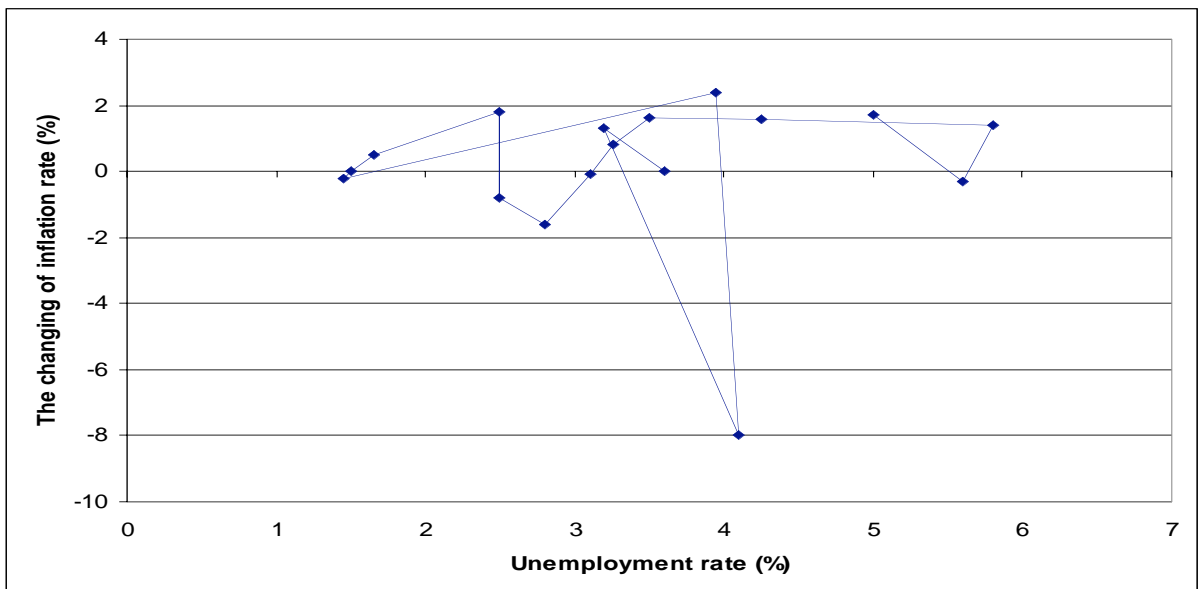


Source: The National Statistical Office and Minister of Finance

The reasons why the correlation between the natural rate of unemployment and the changing rate of prices are not carried on as Philips's observing are as followed:

- 1) The correlation between the unemployment rate and the changing rate of the price is in the same direction, which is the result of the changing supply (the increasing prices is a result from the reducing of supply and it causes shrunken economic and increasing unemployment). The analysis is excluded in the correlation.

Figure 3.2: The unemployment rate and the changing of inflation.

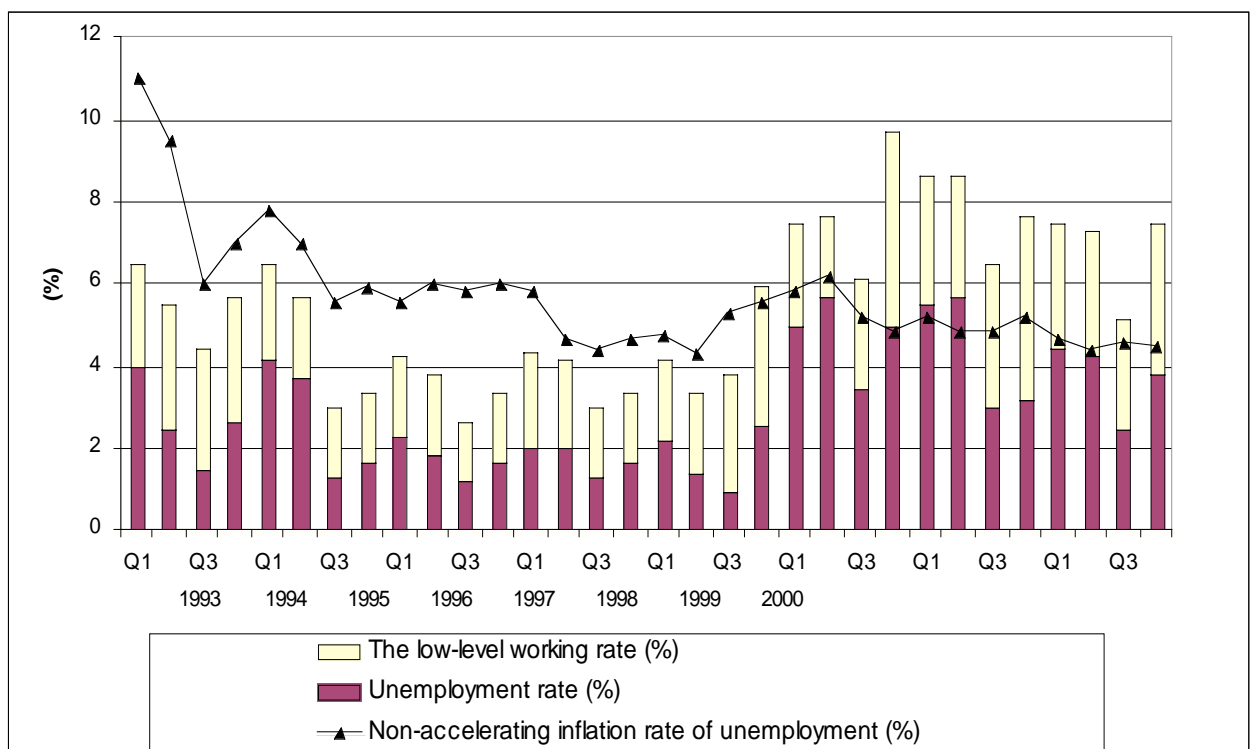


Source: The National Statistical Office and Minister of Finance

- 2) The natural rate of unemployment does not have only one rate but it is the period of the unemployment rate at the increasing rate of constant price.
- 3) The real unemployment rate and the natural rate of unemployment changes in same direction, since the long period of unemployment may causes declining skill of labour because they are not able to follow the new technology, therefore, the natural rate of unemployment will also be increased.

Parhusan Janhom and the team evaluated the non-accelerating inflation rate of unemployment (NAIRU) of Thailand in the seminar article of the National Bank in 2001, in order to use it as another factor for the evaluation of the differential between potential output and real product, during first trimester in 1993 to trimester 4 in 2000. In the evaluation according to normal correlation, they found that the result of NAIRU is not constant but will change according to time. The coefficient of unemployment rate including low level working (which inflation is a variable) is positive in some period. Therefore, they use model adapting the coefficient reverse by time and Kalman Filter's way to evaluate. The result is, before the economic crisis in 1997 compared to the real unemployment rate (including the low-level working) is lower than NAIRU and reversed after the crisis. (Figure 3.3)

Figure 3.3: The natural rate of unemployment and the real one



Source: Parhusan Janhom and the team

This study is on the evaluation of non-accelerating inflation rate of unemployment using annual data and use the way of J Elmeskov from OECD to evaluate NAIRU which is easy and uncomplicated and will be able to easily make further evaluation.

The J Elmeskov's way starts from the correlation of Philips curve that indicate changing of inflation rate that is in proportion with the difference between real unemployment rate and natural rate of unemployment. The hypothesis is that the correlation will not change in a short period, as followed:

$$\pi_t - \pi_{t-1} = -a (u_t - u^*)$$

By: π_t = the inflation rate in t time

u_t = the real rate of unemployment in t time

u^* = the natural rate of unemployment

a = parameter result

The correlation (1) shows that if the real unemployment rate equals the natural rate of unemployment ($u=u^*$), the inflation rate at the current year will equal rate in the past. However, if the real wage unemployment is higher than the natural rate of unemployment ($u>u^*$), the inflation rate will decrease from the former period. If the real unemployment rate is lower than the natural rate of unemployment ($u<u^*$), it will pressure the inflation rate to be higher than in the past.

The correlation (1) should be displayed in another as followed:

$$\Delta \pi_t = a (u^* - u_{t-1})$$

By Δ is the changing

From the hypothesis that the correlation will not change in the short period shows the correlation as (2) for time t-1 as followed

$$\Delta \pi_{t-1} = a (u^* - u_{t-1})$$

Therefore, the difference between the correlation (2) and (3) is

$$\Delta \pi_t - \Delta \pi_{t-1} = a (u_{t-1} - u_t) = -a \Delta u_t$$

We can evaluate for a as followed

$$a = (\Delta \pi_{t-1} - \Delta \pi_t) / \Delta u_t$$

When we replace a from the equation (5) in the correlation (2) it will be

$$\Delta \pi_t = (\Delta \pi_{t-1} - \Delta \pi_t) (u^* - u_t) / \Delta u_t$$

The result of the natural rate of unemployment can be found in equation (6) as followed

$$u^* = u_t + (\Delta \pi_t) (\Delta u_t) / (\Delta \pi_{t-1} - \Delta \pi_t)$$

4. The Summary and Suggestion

The advance of doctoral science and the successful of family planning enable long ages of Thais and the rate of population gradually decreased. Because of the demand for labour from rapid economic growth and the increasing compensation for work, labour force and the employment expand higher than the rate of increasing population of the country (on average of 1.7% and 2.0% per year, respectively, compared to the expanding of population 1.3% per year during 1985-2001)

However, since the high rate of population expanding in the past, during 1985-2001 the number of population in working age (more than 15 years old) still increased 2.4% per year. The expanding of compulsory education from 4 years to 6 years in 1970 and to 9 years in 1999 and today that is going to expand to 12 years, including the opportunity for higher education, enables the working aged population spend more time in education. The expanding of labour force, therefore, paused especially the early period of law enforcement. These factors make the proportion of labour force per population who are more than 15 years old or the collective of labour force was reduced from 79.9% in 1975 to 72.1% in 2001.

However, when the expanding of compulsory education is perfectly achieved, the labour force will continue to enter the market in the next 3-5 years.

To approach to the education, it makes the quality of labour force measured by higher educational level significantly. The primary or lower educated labour force per gross labour force reduced from 89.9% in 1985 to 65.9% in 2001, but for the secondary and higher educated increased from 6.1% and 4.1% to 19.1% and 11.6%, while vocational educated labour increased from 2.2% to 3.2%. At the same period, secondary, higher and vocational educated employment averagely increased 8.7%, 8.6% and 4.6% per year. The quality of male employees at middle and low level was higher than the quality of woman employees but the quality of woman employee was higher than the quality of male employees.

The country's employment increased on average from 2.0% per year in 1985 to 31.96 million in 2001, that in Bangkok and suburban, the Central and the South expanded higher than the average rate. As the result, the country's proportion of employment raised from 10.9%, 21.2% and 12.6% in 1975 to 13.2%, 23.8% and 13.1% while in North and Northeast the rate reduced from 22.6% and 32.6% to 19.0% and 30.9%.

The employment of the country increased 2.0% per year, from 23.4 million in 1985 to 31.96 million in 2001, that in Bangkok and suburban, the Central and the South expanded higher than the average rate. Therefore, the proportion of employment all over the country increased from 10.9%, 21.2% and 12.6% in 1975 to 13.2%, 23.8% and 13.1%. The employment in the North and Northeast reduced from 22.6% and 32.6% to 19.0% and 30.9%

The proportion of juvenile employment per gross employment reduced 30.7% in 1985 to 16.6 in 2001, but the employment of 25-39 year of age and above 40 increased from 39.9% and 29.4% to 42.2% and 41.2%

The employment focused on the quality of labour. During 1975-2001, the employment of primary and lower graduated did not change the number, and it makes the proportion of this level employment reduced from 86.0% in 1975 to 66.0% in 2001. However, the employment of secondary, higher and vocational graduated averagely increased 8.7%, 8.6% and 4.6% per year, respectively. It caused the proportion of employment increased from 6.5%, 4.1% and 2.1% to 18.9%, 11.6% and 3.3%.

The 33% of higher and vocational graduated employment were in Bangkok and suburban, followed by the Central, the Northeast, the North and the South, respectively. The 36% of primary graduated employment were in the Northeast and the lowest was in Bangkok.

On average of agricultural sector employment was 52.4%, 18.7% for industry, 28.9% for services compared to a value added of production per person per year on average of agricultural sector 21.6% of the average and 2.2 and 1.6 times more for industry and services.

The proportion of private employees, freelances and household business were close to each other for about 29-31%, 7.5% and 2% for government officers and employers

At the period of expanding economic, the employment by private and government sector observing from the labour force survey (excluding bonus and non cash wage) during 1985-2001 increased 7.2% on average per year (adjusted by inflation rate and the real wage increased 3.0% per year), increased 8.7% per year during 1985-1998 and then reduced 1% per year during 1999-2000.

The proportion of the employees earned equal to and less than minimum wage per all employees increased from 77.4% in 1985 to 57.9 in 1997 and then increased to 63.7 in 2000. On the average of during 1985-2000, these employees equal 68% of all the employees, 64% for male employees and 74% for woman employees in upcountry area which was 3 times more than in the city, 86.1% and 76.9% for the Northeast and North, 68.1% and 56.5% for the South and the Central and 30.3% in Bangkok.

For the unemployment, on the average of 1985-2001, the rate of the country was 3.45 (3.0% for male and 3.9% for female). The lowest rate was at the South for 1.8%, followed by 2.4% and 3.0% in the Central and Bangkok, 3.2% and 5.0% in the North and the Northeast. In 1987 is the year with highest rate of unemployment for 1.63 million, the unemployment is 5.9%. The lowest rate was in 1997 for 0.49

million, the rate was 1.5% but increased to 1.3 million in 1998 because of the economic crisis, the rate of unemployment was 4.0% and the number of unemployment was constant at 1.1-1.3 million until 2001.

The unemployment in juvenile group (15-24 years old) had the highest rate on average of 6.9% compared to 25-39 age groups for 2.9%, above 40 for 1.4%. In 2001, there were unemployed juvenile 555,000 and 44.8% of the gross unemployment in total of 9.2%, 25-39 age group for 440,000 and the rate was 3.1%, above 40 for 240,000 and the rate was 1.8%. The number of unemployed male labour was 699,000 more than female for 29.2% because of terminated construction contract work.

In juvenile group, the unemployed male was more than female, but for the above 25 age group, the unemployed female was more than male on average, excluding from 1998 unemployed male was more than female for 25-39 age group.

The unemployment condition in upcountry was more serious than in the city. On average of 1985-2001, the number of unemployment in the city was 16% of overall country; the rate is 2.9% while the rate in upcountry area was 3.5%.

On the average of primary and lower unemployment was for 72.5 and 14.7%, 8.4% and 4.2% for secondary, higher and vocational graduated, respectively. However, the rate of vocational unemployed was the highest for 5.2%, and 4.3%, 4.0% and 3.2%, respectively.

In searching for job, 38.4% took more than 5 weeks, 31.5% took 5-14 weeks and 29.6% took more than 15 weeks. In the city, people put effort more than in the upcountry area to search for the job while women tried harder than males.

The 91.7% of the whole employees had the full time working (more than 35 hours per week) by 53.8% working more than 50 hours per week and in the low level 83% which 4.1% work more than 20-29 hours per week.

The result of the natural rate of unemployment indicates that during the rapid economic growth during 1987-1992, the real unemployment rate always lower than the natural rate unemployment and was not significantly different. After the economic crisis in 1997, the rate of unemployment was higher before adjusted to together in the next following years.

The relocating of labour happened because the different of structure and expanding of the economic, wage and opportunity for job in each region.

In the country, the region with net relocation is Bangkok and suburban area, the Central, South and the region with net relocation is the North and Northeast.

Because of the familiar reasons of the relocation in the country, the different of economic condition and wage of each country is an important factor enables relocation of Thai labour. The international labour market is changed from Middle East to be new industrial countries in Asia. Mostly they work in position that the local labour do not want such as peril, dirty and complicated works. The problem for Thai labour going abroad is the defrauding from the job agencies.

Thailand is encountering with illegal foreign labour from neighbourhood countries, the encouraging factors such as domestic politic problem, Thai's geography which have border close to neighbour countries and convenient communication both land and water way, and is easy for illegal immigration.

The procedure to prevent illegal immigration of the government is controlling quantity and scope workforce and career and determinate time of deadline for employers who have illegal labour, in order to protect Thai labour and preserve labour for not lacking in some careers.

For the stable growth of Thai economic, the unemployment rate must not in high level. The result of the analysis about labour and economic conditions is able to form as labour policy as followed:

1) For macro policy, the preserving of high economic growth rate and remain its stable is an important tool to preserve the employment in high rate, but probable not enough to support the employment of labour force in the market that tends to be higher each year. However, the expansion of 12 years education is implemented and the new labour to the market will be slowed down in the period that some of new labour will still be in education. However, there must be some procedure for this labour when they graduate and move to the labour market. The emphasizing on production technique relies on labour as an important means of production may be another suitable choice for Thailand. It also decreases pressure from the inflation caused by the stimulation of growth for the unstable economic. The raising price or inflation reversely effects upon employment negatively because it will decrease the compensation of the real working.

2) For wage policy, it is very important to preserve the increasing wage not to be higher than labour productivity. The increment of wage especially minimum wage must consider the efficiency of labour, cost of living, and economic conditions and so on as stated in an Act of Legislation of 1998. It also has to emphasis on unskilful labour like teenager labour (15-19 years old) that will be affected more than the others

From the study during 1985-1989, the labour productivity increased in rapid more than the wage. However, in 1990-1996 in the rapid economic growth

makes the expansion of labour's needs and the wage is adjusted to the high rate rapidly compared to productive capacity. On the average of 1985-2001, the labour productivity increased to be lower than the real wage for 0.92%. The wage of services rapidly increased than the productivity for 2.72%, the wage of agricultural sector increased faster than the productivity for 1.74% and the wage of industry increased more than the productivity for 0.59%

The rapid increment of wage compared to the productive capacity should negatively effect upon the ability in international market competition because the capital per unit increases. This phenomenon should be another factor leading Thailand to the economic crisis in 1997. Moreover, the rapid increment of wage compared to the product productivity also negatively effects upon the employment. It is because the dealers may change the productive technique, to emphasis on high cost technology in order to cut the labour cost.

Moreover the increment of wage which is different from each region is another cause of the problem about the labour relocating. The wage in an area is higher than another probably because of minimum wage policy which encourage the labour relocating in the area and also increases unemployment rate (if the wage is implemented by law) to be even higher.

Although the study indicates that the increasing wages of a region will increases unemployment in the region, it does not mean that the increment of wage in that area will decrease the employment in the area. It is because the increasing of wage in the area may cause by the labour condition in the area to encourage the labour from other area to relocate to support supply of excessive labour. It causes expansion of employment. At the moment, if the labour relocates more than the increasing labour's needs may cause the increasing unemployment.

3) Now the problem about unaccordance between demand and supply can be little solved. The effort to solve the problems by the Ministry of Labour via job providing activities both inside and outside the country, skill development and labour skill test, are not successfully achieve. The number of the attendants for the activities and training compared to labour force. The proportion is very small which only 1%. The suggestions for consideration are as followed:

1. The Department of Employment should develop close cooperation with private business in the local, for the shared advantages as followed:
 - ❖ For the prefect and advance of employer's needs of labour data
 - ❖ For the cooperation to determine the curriculum and mechanic department for skill development in accordance with the demand.
 - ❖ To enhance the labour skill to accord with productive process that rapidly changes and quite difficult in process because of limited budget, may be success because of the cooperation from the private.

Moreover, to focus on unemployment in the region of Ministry of Labour to provide jobs and train the labour while the most available positions are in Bangkok and suburban area and probably cannot solve the real problem.

2. To provide jobs abroad via government sectors, the government should change its role and control the private agency's implement. The number of applicants is very less compared to the number of applicants via private job agency, since the position provided by the government is not many and too tardy for the foreign employer's needs because of the limited budget, the number of officer and government system.
3. For the problem on alien labour that most of them are illegal. Although the government is trying to solve the problem via registration, it is not successfully achieved because it lacks of cooperation from employers and is solving the problem at its end. The suggested procedure is to officially accept these labours under conditions determinate by the state in familiar with the foreign countries take in action with Thai labours, for the convenient of follow and control.
4. The study on natural rate of unemployment not only tells about the condition of labour market but also reflects the correlation between inflation rate and the natural rate of unemployment. Moreover, the decrease of a unaccordance between demand and supply and will also decrease the natural rate of unemployment.

References

1. Yongyuth Chalamwong, "Economic Crisis, International Migration and the Labour Market in Thailand", *TDRI Quarterly Review*, 13(1), 1998.
2. Suchitra Punyaratabandhu, "Thailand in 1997: Financial Crisis and Constitutional Reform", *Asian Survey*, February.
3. Siamwalla, Ammar and Orapin Sopchokchai, "Responding to the Thai Economic Crisis", Bangkok; United Nations Development Program (1998).
4. Nukul Commission Report, "Analysis and evaluation of the facts behind Thailand's economic crisis", Bangkok; Thailand development research institute, 1998.
5. Chalongsob Sussangkarn, "ASEAN Beyond AFTA: Initiatives in Labour Market Co-operation and Integration", *TDRI Quarterly Review*, 12(3), 1998 September.
6. Behrman, Jere R; Deolalikar, Anil B; Pranee Tinakorn, "The effect of the Thai Economic outcomes", Thailand Development Research Institute Foundation, *TDRI Quarterly Review*; 16(3), 2001.
7. Thailand Development Research Institute Foundation, "A model to forecast quarterly employment and unemployment", Human resources and social development program (HRS), 2001
8. Katharit Sithikul "Total Factor Productivity," BOT Working Paper, WP/02/2001, Bank of Thailand, 2001
9. Warangkana Imudom, "The role of minimum wage in Thailand" BOT working paper, Bank of Thailand, 2001
10. David Card and Alan B. Krueger, "Minimum Wages and Employment: A case Study of the Fast Food Industry in New Jersey and Pennsylvania," *American Economic Review*, September 1994
11. Phirul Marukhatat, "Labour Market and Vocational Guidance" the Department of Employment, the Ministry of Labour
12. 8 Years Anniversary of the Department of Employment, the Ministry of Labour
13. Annual Report of the Department of Employment, 1996, 1999, 2000, 2001
14. Nitchanan Srisiri, "The Problem and Obstacle for National Job Providing of Employment Agency", Bangkok 1-9 the Department of Employment, Ministry of Labour
15. Labour Market Information Center, the Ministry of Labour that make the register of labour force, analyze and report the need of labour's situation, and the lack of labour in responsible area, which are Bangkok, Ratchburi, Lumpang, Khonkan and Songkla
16. Prasong Yudee, "The study on the results of the training for work preparing" National Institute of Development Administration
17. "The Tendency and Opportunity of Employment for Future Graduate" the Department of Labour Market's Analysis, the Department of Labour Market Analysis, *Labour Market News*, trimester 1, 2003
18. Elmeskov, J. "High and Persistence Unemployment: Assessment of the Problem and its Causes," *OECD Economic Review*, 58 (1), 1993