

Wage and Youth Employment in Thailand

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1 Overview of Youth Employment

The Thai youth labour market has indicated a relatively high rate of youth unemployment even when the rate of growth of youth population has been on a decline and the school enrolment rate on the increase. The youth employment problems are accentuated when the economy experiences a recession. The effects of economic downturn are felt in all sectors, and more so by young workers with fewer skills and less experience.

While business cycles influence the extent of youth employment and unemployment, other factors can play a role in determining the youth labour market. This paper aims to examine the effect of wages on the Thai youth labour market. Attention will be given to the statutory wage, which is especially important with regard to youth employment.

This paper adopts the United Nations and the International Labour Organization definition and defines youth as persons between the ages of 15 and 24 years. The definition will also be broken down into teenagers aged between 15-19 years and young adults between the ages of 20-24 years. The definition adopted here is also in line with the new law that requires workers from 1999 onward to be at least 15 years of age. Reference will not be made to workers below 15 years old who were a part of the official labour force before the new law was put into effect.

In general, the paper utilises statistics from the labour force survey conducted in August, representing the height of the agricultural season. Account will not be taken of survey results conducted in other times of the year, nor will attempts be made to average different surveys into an annual figure, as survey intervals are not regular. Thus the analysis that follows must be interpreted with caution as it is based on the peak employment time of the year.

2 Youth in the Labour Force

Population Growth

The growth of Thai population has been declining over the last two decades. The average rate of growth over the past 15 years amounts to about 1.3 percent per annum, with the annual rate falling from almost 2.0 percent in the latter half of the 1980s to barely 1 percent in the year 2000. The fall in the population growth rate has been the result of the effective birth control programme initiated in the 1970s, improved education for women, and rising labour force participation rate of women, among others. As a result, the younger population from 1980s onward has been growing very slowly, with the youth population (aged between 15 to 24) growing since 1985 at an average rate of only 0.09 percent per year, while the teenage population declined in absolute number.

Thanks to the slow growth rate, the proportion of youth population has been declining over the years. In 1985, youth accounted for 22 percent of the total population. By 2000,

youth consisted of a little over 18 percent, with teenagers and young adults sharing an approximately equal proportion of 9 percent of the total population each.

Table 1 Youth Population

	Youth Population as a Percentage of Total Population	Male Youth Population as a Percentage of Female Youth Population	Urban Youth Population as a Percentage of Total Youth Population
1985	22.05	103.01	17.45
1990	21.57	103.64	17.11
1995	19.45	103.40	21.08
1996	19.28	103.56	21.23
1997	18.87	103.40	21.30
1998	18.88	103.36	21.60
1999	18.64	103.24	21.81
2000	18.35	103.17	21.90

Source: National Statistical Office, Labour Force Survey

In absolute numbers, there were 11.5 million youth in 2000, with 5.7 million teenagers and 5.8 million young adults as against 6.1 million teenagers and 5.2 million young adults in 1985. Contrary to the overall proportion of male to female population, which saw a falling percentage from 101 percent in 1985 to 99 percent in 2000, the proportion of male to female youth population remained constant throughout the period, staying around 103 percent.

In 2000, almost 22 percent of the youth population resided in urban areas, a compatible proportion with that of adult population, defined as persons over 24 years of age. However, there appears to have been an increasing migration of youth into the urban area over the years, either to take advantage of better schooling facilities or better job opportunities in the cities, as the youth population in urban areas was only 17 percent in the middle of the 1980s.

School Retention

Historically the compulsory education was set at 4 years until the Primary Education Act of 1980 was promulgated. The Act raised the compulsory education to 6 years. If we assume that all six-year-old children are to enter into primary school as it is compulsory by law, statistics indicates that in 1992, 90 percent managed to finish their six-year primary education. The figure was over 95 percent in 1996-97. The school drop-out comes generally from the rural areas where the opportunity cost of keeping children at home away from school is believed to outweigh the expected return from the compulsory education provided to young people.

A little fewer than half of those finishing primary schools enrolled in secondary school in 1985, with 42.5 percent being able to complete their 3-year lower secondary education (or grade/level 9). It was not until after 1995 that over 90 percent of those who completed their

primary education enrolled in the secondary level. This must be taken as a significant achievement in the drive toward quality labour force in Thailand.

With the enactment of the National Education Act of 1999, the compulsory education was further raised to 9 years. The effect of this in terms of the labour force will be felt in the future.

Labour Force

The Thai labour force has grown from 27.1 million in 1985 to 34.0 million in 2000 representing an average growth rate of 1.53 percent per year, in line with the growth of population. The youth labour force, on the other hand, increased from 8.6 million in 1985 or about three quarters of the total youth population, reaching its peak of 9.6 million in 1989, and persistently declined thereafter to a mere 6.1 million or a little over half of the youth population in 2000. The decline in youth labour force is attributable mainly to the sharp fall in the teenage labour force, while that of young adults (aged 20-24) showed a relatively small decline. This phenomenon partly reflects the success of the extended compulsory education policy.

Table 2 Youth Labour Force

	Youth Labour Force as a Percentage of Total Labour Force	Male Youth Labour Force as a Percentage of Female Youth Labour Force	Urban Youth Labour Force as a Percentage of Total Youth Labour Force
1985	31.79	109.77	11.78
1990	29.71	109.12	12.07
1995	22.44	114.85	16.83
1996	21.43	117.85	17.08
1997	20.21	117.84	18.58
1998	19.66	124.38	17.32
1999	18.52	122.98	17.23
2000	18.01	122.26	17.33

Source: National Statistical Office, Labour Force Survey

In the 1980s and the early 1990s, about 12 percent of the youth labour force were in the municipal areas as against 18 to 19 percent for the adult labour force. However, in the latter part of the 1990s with the economic recession and financial crisis, there was 17 percent of the youth labour force in the municipal areas as compared with 21 percent of the adult labour force.¹ As will be demonstrated later, this has resulted in a much higher rate of youth unemployment compared with adult unemployment.

¹ In absolute number, youth labour force in municipal areas increased from 0.9 million in 1985 to a peak of 1.3 million in 1997 before stabilizing at a lower level of 1.1 million in the three years that followed. With the decline in the overall youth labour force in absolute terms, from 8.6 million in 1985 to 6.1 million in 2000, the

There were more males than females in the labour force and the proportion of male youth labour force has been increasing due partly to declining agricultural employment and partly to extended education that kept female population in school, who previously would be more likely to leave school than male in low income families. In the second half of 1980s, the ratio of male to female labour force averaged 106 percent. The figure increased to 112 in the early 1990s and stood at over 120 percent in the latter part of 1990s. This phenomenon resulted from a rapid decline in the female relative to male labour force, especially after the economic crisis of 1997, which saw a large withdrawal of female workers from participating in the labour market particularly in the rural areas.

In absolute terms, the urban areas have seen a relatively stable youth labour force, whereas the rural youth labour force has witnessed a sharp decline after the success of the extended education policy. The stable urban youth labour force is probably the result of the negative effect of compulsory schooling and the positive effect of migration from the rural areas. The latter is motivated largely by reduced prospects in agricultural employment. Thus, the proportion of urban-to-rural youth labour force increased from 12 percent in 1985 to 21 percent in 2000.

Labour Force Participation

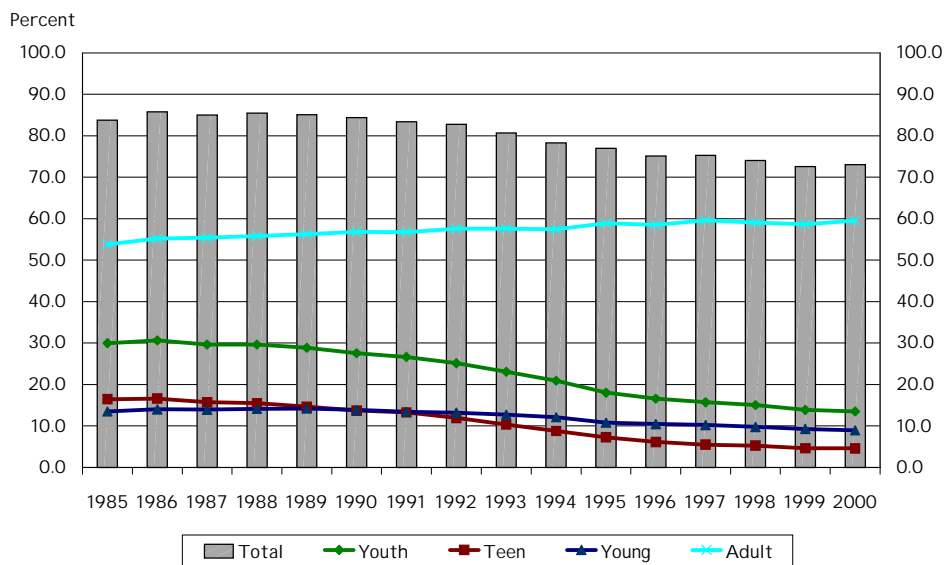
After reaching its peak in 1986, the total labour force participation rate—defined as a ratio of economically active population over population aged 15 and above—has been declining since. The rate stood at 73 percent in the recession year of 2000 against 85 percent during the boom years in the late 1980s. The declining rate is primarily the result of a fall in the participation rate of youth as the adult labour force participation rate has increased over the years.

The youth labour force participation rate has declined steadily, from 30.0 percent in 1989 to 13.5 percent in 2000. The participation rate for teenage workers which was a little higher than that of young adults in 1989 (about 13 percent) has declined much faster and stood at only 4.6 percent in 2000—about half of the young adult rate. The participation rates of male and female youth were more or less equal, registering 14 and 13 percent respectively in 1985 and slowly declined to 7 and 6 percent in 2000. However, there is a noticeable drop in participation of female teenagers at a rate much faster than that of male teenagers, especially during the recession. The participation rate of female teenage workers was only 1.8 percent in 2000, compared to 2.4 percent for their male counterparts.

It should be noted that the female participation rates are lower than those of their male counterparts. While the difference exists in all age groups, it is not considerably larger for youth.

percentage of youth labour force in the municipal areas in total youth labour force has, therefore, shown an increase.

Figure 1 Labour Force Participation Rate

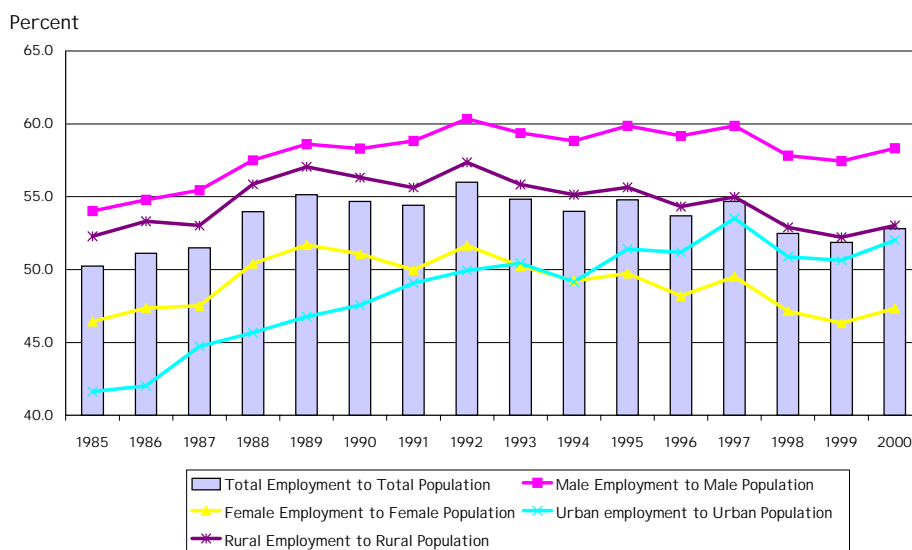


Source: National Statistical Office, Labour Force Survey

Trends in Employment

About 50-plus percent of total population was employed during 1985-2000. The extent of employment is subject to the state of the economy, being low in time of recession and high during the boom years. The proportion of employment to population was only 50.2 percent in 1985 when the economy was slack, and stood at 56 percent in 1992 following the height of the economic boom. It registered at only 52-53 percent after the 1997 crisis.

Figure 2 Proportion of Employment to Population



Source: National Statistical Office, Labour Force Survey

There is a clearly rising trend of the male employment to male population proportion, while the proportion of female employment to total female population is lower with a declining trend. Female employment tends to be more sensitive to changes in economic conditions relative to male employment.

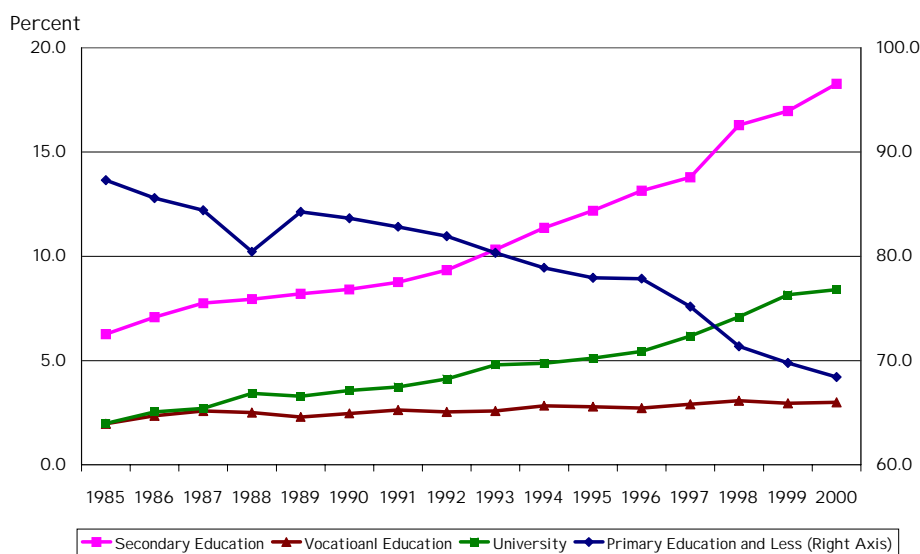
The proportion of rural employment to rural population appears to have been rather steady, being around 50 percent for the 15-year period. On the other hand, urban employment increases in relation to total urban population, rising from 42 percent in 1985 to 52 percent in 2000.

Employment by Education

There has been an improvement in the quality of workers as reflected in their education over the years. The percentage of workers with only a primary education declined from 87.3 percent in 1985 to a low of 68.4 percent in 2000. On the other hand, the percentage of workers with a secondary education almost tripled over the same period, from 6.3 percent in 1985 to 18.3 percent in 2000. This success story can be attributed to the extended education policy mentioned earlier. The contribution of university graduates to total employment also increased from 2.0 percent in 1985 to 8.4 percent at the end of 2000.

There was little improvement in the proportion of workers with vocational education, which increased from 1.9 percent in 1985 to about 3 percent in 1999-2000. Most of these workers were employed in urban areas. Partly responsible for a relatively slow increase in vocational workers is the fact that an increasing proportion of vocational school graduates enroll in colleges and universities. The kind of education offered in the vocational school may also provide an explanation, which is elaborated in the latter part of this report.

Figure 3 Employment by Education



Source: National Statistical Office, Labour Force Survey

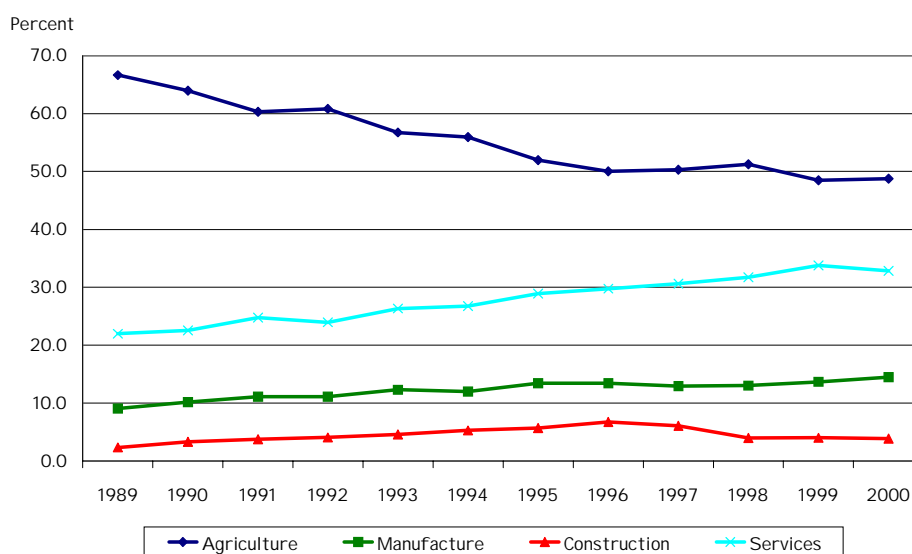
Employment by Industry

The majority of workers was employed in the primary sector, although the figure has been rapidly falling, resulting from increasing mechanization and decline in relative importance of the sector in overall economic activities. In 1989, 66.6 percent of total workers or 15 million in number was in agriculture. Employment in this sector decreased to 48.8 percent of total employment in 2000.

The manufacturing sector accounted for 9.1 percent of total employment in 1989. As the sector grew, accounting for about 40 percent of total gross domestic product in the year 2000, it took up 14.5 percent of total employment.

The construction sector employed 2.4 percent of workers in 1989 and accelerated to a peak in 1996, fueled by an inflated property market, taking in 6.7 percent of total employment. The sector shrank thereafter as the property market crashed. The sector employed 3.9 percent of the total labour force in 2000.

Figure 4 Employment by Industry



Source: National Statistical Office, Labour Force Survey

The service sector (commerce, transport and other services) enjoyed an expansion in employment, increasing from 22 percent of total employment in 1989 to 32.9 percent in 2000.

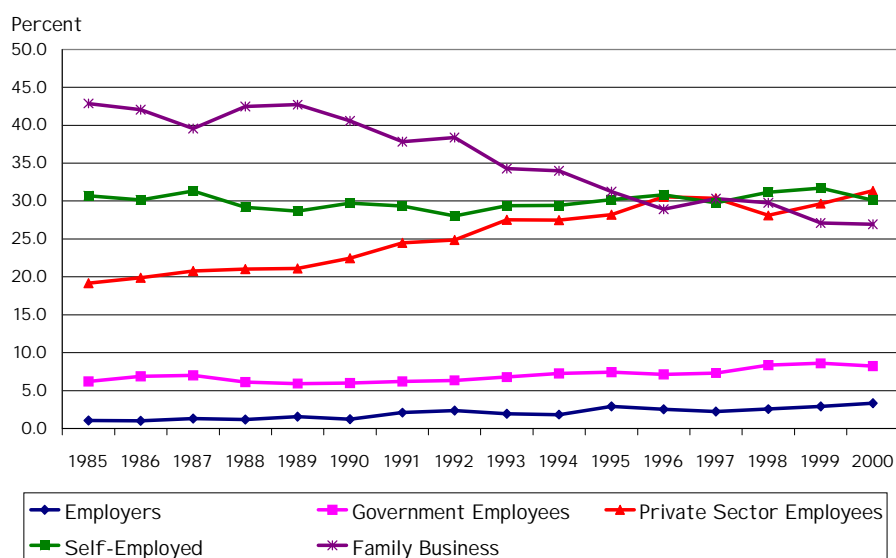
A higher percentage of female workers engaged in agricultural activities than male workers, save the period after the 1997 crisis, which saw reversed migration by retrenched male workers. However, in absolute number, more men than women were employed in agriculture. Commerce and other services provided employment opportunities to more women than men both in absolute terms as well as in relation to the respective work force. Female workers were also employed in manufacturing in a higher proportion than their male counterparts.

Employment by Status

Self-employed workers accounted for about 28 to 30 percent of total employment during 1985-2000. There was a noticeable increase in the percentage during the economic recession as more relied on themselves to make a living.

In the past few decades, gaining employment in the private sector has become important in the Thai labour force, largely at the expense of helping out family businesses. The proportion of private sector employees to the total employment steadily increased from 19 percent in 1985 to 31 percent in 2000, although slacking off somewhat in 1998 and 1999. It should be noted that in 2000, employment in the private sector is the most predominant type of employment, surpassing self-employment, which has maintained its share, and working for family business has become less prevalent since 1985. The percentage of people working for family business sharply declined from 43 percent of total employment in 1985 to 27 percent in 2000.

Figure 5 Employment by Status



Source: National Statistical Office, Labour Force Survey

Status as employer, which accounted for only 1 percent of total employment in 1985, increased its share to 3.4 percent in 2000. The civil servants segment saw its share in total employment increase from 6.2 to 8.2 percent during the same period.

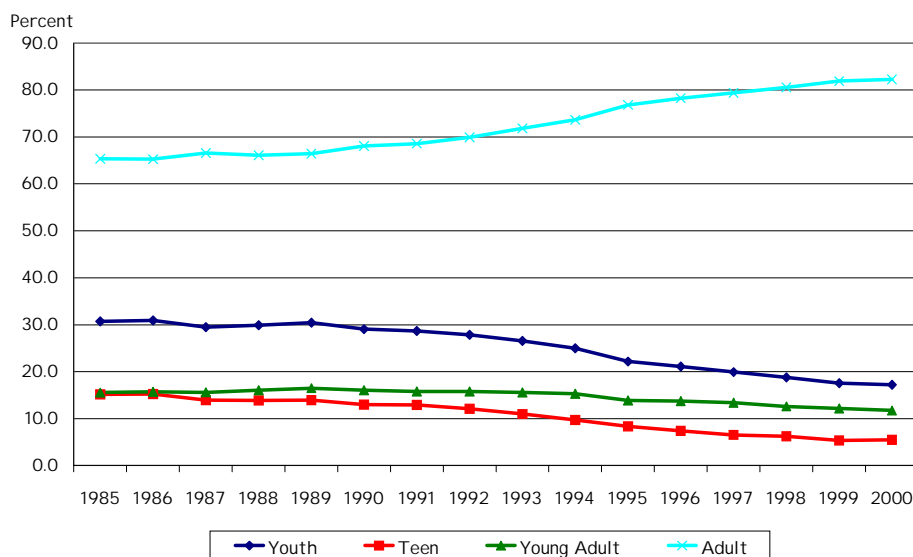
Employment of Teenagers and Young Adults

There were 5.7 million youth workers in the year 2000, comprising 1.8 million teenagers and 3.9 million young adults. The figures reflect a decline in youth employment since 1985 when over 7.9 million youths secured jobs.

The level of economic activities has played a major role in determining the extent of youth employment. As the economy surged from the early 1980s recession, youth employment reached a peak of 9.3 million in 1989. The 1997 crisis appears to have

decelerated the growth of youth employment. On the other hand, the drive to extend schooling for the young has led to a reduction in youth labour force participation, causing a fall in youth employment in absolute number.

Figure 6 Youth Employment as a Percentage of Total Employment

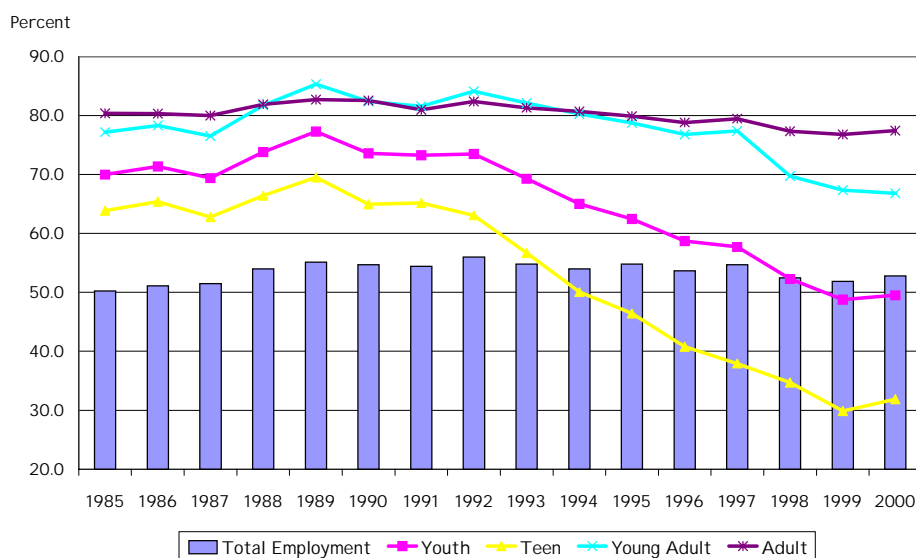


Source: National Statistical Office, Labour Force Survey

In relative terms, youth accounted for 17.2 percent of total employment in 2000, down from 30.7 percent in 1985. The share of teenage workers in total employment, which stood at 15.2 percent in 1985, fell down sharply to only 5.5 percent in 2000. The proportion of young adult employment to total employment also saw a decline to 11.7 percent in 2000 from 15.5 percent in 1985. It must be pointed out that the fall in the proportion of youth employment reflects a relative increase in adult employment, which witnessed an expansion in its share from 65 percent in 1985 to 82 percent in 2000.

It appears that youth employment is more sensitive to economic activities, especially on the downside, than adult employment. This is particularly true for the employment of teenagers. Although the extended schooling may keep teenagers away from job markets, it merely postpones the market entrance of young workers for a few years into the future. While extended schooling is expected to reduce the number of teenagers who are working, it is unlikely that compulsory education alone can explain the sharp drop in teenage employment. It is then the economic downturn in the late 1990s, became a major cause for an absolute as well as relative decline in the employment of teenagers.

Figure 7 Employment of Various Groups as a Percentage of Own Population



Source: National Statistical Office, Labour Force Survey

Figure 7 shows percentages of employment to population of various age groups. The total employment to total population percentages varied from 50.2 in 1985 to 56 in 1992 and 52.8 in 2000. The percentage of youth employment to youth population reached a peak of 77.3 in 1989 and fell to a low of 48.8 in 1999. The rapid reduction in the percentage was caused mainly by a decrease in the teenage employment to teenage population ratio, which stood at 31.9 percent in 2000—a figure less than half of that in 1989. The adult employment to population percentage slightly fluctuated over the economic cycles and varied between 77 to 83 percent.

The urban-to-rural youth employment proportion, which indicated the size of youth employment in municipal areas relative to that in non-municipal areas, was 21 percent in 2000, up from 12 percent in 1985. This is consistent with the increasing urban-to-rural youth population proportion.

As shown in Table 3, it appears that female youth workers are disadvantaged in their employment. The ratio of male to female youth employment, which stood around 110 percent during the height of the late 1980s economic growth, registered an increase to over 120 percent after the 1997 recession. This reflects mainly in the increase of the ratio of teenage male-to-female workers, from 102 percent in 1985 to the peak of 130 percent in 1999, while the ratio of young adult male to female workers remained stable at 118 percent. Apparently, female teenage workers were negatively affected more than their male counterparts in employment during the recession. Female teenage workers left the labour force either to stay in school longer or to stay home as discouraged workers.

Table 3 Youth Employment

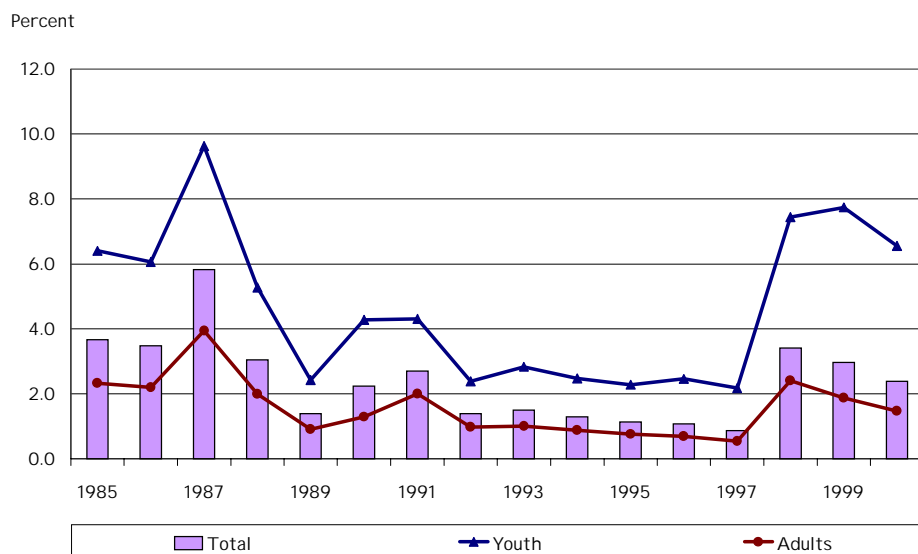
	Per cent	
	Male to Female Youth Employment Ratio	Urban-Rural Youth Employment Ratio
1985	110.49	12.05
1990	109.04	13.57
1995	114.81	20.25
1996	117.78	20.41
1997	116.92	22.77
1998	121.71	20.50
1999	121.61	20.52
2000	120.71	21.03

Source: National Statistical Office, Labour Force Survey

Incidence of Youth Unemployment

Figure 8 shows historical movement of the youth unemployment rate. It is evident that the youth unemployment rate moved closely with the overall unemployment rate. The youth unemployment rate was much higher than the average rate during the boom in 1992, being almost 3 times higher during recession. On average (1985-2000), the youth unemployment rate is 4.67 percent while that of adults was 1.58 percent. The world average of youth unemployment was approximately twice the adult rate. It is the high unemployment rate of youth population that contributes to the high rate of unemployment for the whole country. While it may be normal for the youth unemployment rate to be higher than that of adults as it reflects transition from school to work, exceptionally high rates may mirror the severity of employment problems that need to be addressed. As a consequence, greater attention must to be given in youth labour market to successfully tackle unemployment problems. Failure to mitigate the youth unemployment problems may lead to erosion of skills and loss of self-esteem for the concerned individuals and opportunity cost for the society as a whole, not to mention the cost of social problems associated with unemployed youth.

Figure 8 Youth Unemployment



Source: National Statistical Office, Labour Force Survey

Relative and Absolute Unemployment of Teenagers and Young Adults

Table 4 shows unemployment of various age groups. Teenagers and young adults shared an average rate of unemployment of 4.7 percent over the period between 1985-2000.

Although the youth population was approximately one-fifth of the total population and the youth labour force as a percentage of total labour force was less than 20 percent in 2000, unemployment among the youth in absolute terms was more or less the same as that of the adults. In the earlier years, youth unemployment was even greater than adult unemployment in absolute number.

Rural youth unemployment was 2 to 5 times as high as that in municipal areas. During the height of the economic growth during 1988, the ratio of rural-to-urban youth unemployment rate registered at 185 percent, the lowest in the 15-year span since 1985.

Female youth appear to be at a disadvantage in obtaining employment as compared to male youth especially during the economic downturn. During the upswing, there seems to have been more employment opportunities for female youth. As economic performance picked up in the late 1980s, the rate of female youth unemployment appeared lower than that of male unemployment. But when the economy was in other phases of the cycle, the phenomenon reversed itself. The rate of female youth unemployment could be as high as 170 percent of that the male counterpart.

Table 4 Unemployment by Age Group

	Teenage	Young Adult	Youth	Adult	Total
1985	244.4 (5.74)	308.4 (7.05)	552.8 (6.41)	405.6 (2.33)	994.6 (3.67)
1990	183.4 (4.35)	220.5 (4.23)	403.9 (4.28)	277.3 (1.30)	710.0 (2.24)
1995	66.8 (2.40)	102.1 (2.21)	168.9 (2.28)	193.1 (0.76)	375.1 (1.14)
1996	70.3 (2.86)	102.4 (2.25)	172.7 (2.46)	176.1 (0.69)	353.9 (1.08)
1997	47.7 (2.14)	99.9 (2.19)	147.6 (2.18)	143.8 (0.54)	292.5 (0.87)
1998	153.2 (7.09)	334.9 (7.61)	488.1 (7.44)	640.5 (2.41)	1,137.9 (3.41)
1999	180.7 (9.44)	295.4 (6.98)	476.1 (7.74)	503.1 (1.87)	985.7 (2.97)
2000	131.0 (6.69)	270.7 (6.50)	401.4 (6.56)	406.5 (1.47)	812.6 (2.39)

Note: Figures in thousand persons. Figures in parenthesis denote percent
Source: National Statistical Office, Labour Force Survey

Because unemployed persons are defined as those "who during the survey week did not work even for one hour...", the figures may underestimate the opportunity cost of underutilised labour. Although the published statistics on underemployment do not cover youth labour force, an examination of the country's underemployment trends may provide some insight into the youth underemployment, bearing in mind severity of youth unemployment in relation to that of adults'.

Table 5 shows the underemployment rate, with "underemployed person" defined as persons who works fewer than 35 hours per week but are available for more work. It is evident that after the economic crisis of 1997, the underemployment rate accounted for somewhat higher than the unemployment rate itself, averaging 2.7 percent of the total labour force against 2.4 percent unemployment for the period. Using earlier survey results covering employment of persons over 13 years, it appears that the underemployment rate has increased since the 1997 crisis, which supports the argument that there tends to be work sharing among workers in Thailand during an economic recession.

Table 5 Underemployment Rate

	Underemployment Rate	Unemployment Rate
1997	1.71	0.87
1998	2.75	3.41
1999	3.50	2.97
2000	2.82	2.39

Source: National Statistical Office, Labour Force Survey

As noted, youth are quite vulnerable to external shocks. Apparently they would be the very first among unskilled and semi-skilled workers to be retrenched. Protection from retrenchment is also low, as the cost of doing so to firms as stipulated by law is either

minimal or nil. Indeed, the severance pay based on the number of years of work is much smaller for youth than adults. The fact that they have less education and experience also contributes to greater difficulty in gaining reemployment.

Table 6 demonstrates the relationship between unemployment and economic activities. As increase in economic activities generates demand for workers while a fall thereof does not, an increase in the unemployment rate should be associated with a decrease in gross domestic product. Thus, there is an indirect relationship between the unemployment rate and economic growth. Using data from 1985 to 2000 Table 6 summarizes this Okun relationship as applied to Thailand. Changes in the unemployment rate among various age groups are explained by percentage changes in real GDP. For every percentage increase in the real GDP growth rate, growth in the unemployment rate would typically decline by 0.13 percentage point. On the contrary, should real GDP fall by one percentage point, there would be an increase in the growth of unemployment by the same degree. It should be noted that the youth unemployment rate is three times more sensitive to change in GDP than that of the adult, and is also two times higher than the national average.

Table 6 Regression Results: 1988-2000

Change in Unemployment Rate	Constant Term	Growth Rate of GDP88	R-squared / Durbin-Watson
Teenage	1.15 (1.42)	-0.22 (-2.35)	0.33 2.01
Young adult	1.34 (2.11)	-0.26 (-3.65)	0.55 1.85
Youth	1.56 (2.28)	-0.26 (-3.53)	0.56 1.98
Adult	0.38 (1.34)	-0.09 (-2.87)	0.43 1.68
All	0.53 (1.38)	-0.13 (-2.95)	0.44 1.64

Note: Figures in parenthesis are t statistics.

Causes of Youth Unemployment

There are a number of possible explanations of the existence of high and persistent unemployment among young people. These include the relative size of the youth population, the mismatch of demand and supply with regards to skills, and the demand deficiency and wages facing young workers. In attempting to address youth unemployment problems, it is imperative to understand and determine the relative effect of these factors on youth unemployment. While this paper aims to examine in greater detail the wage factor, a short discussion on some of the other factors affecting youth unemployment will be briefly discussed below.

Relative size of youth population

Intuitively, rapidly growing youth population leads to employment problems, other things being given. While this has been a concern in many developing countries recently, the

issue is of relatively less importance as the size of youth population has been declining compared with the rapidly increasing size of old-age population. As noted earlier, the absolute number of youth in Thailand has indeed been declining since 1985. So has the percentage of youth to total population during the same period.

The extension of mandatory education also postpones the employment problem to the future, reducing meanwhile the youth labour supply pressure until the youth leave school. Although the youth labour force participation rate was relatively large in the 1980s being about 55 percent of the adult rate, the youth participation rate has fallen rapidly. The ratio of youth to adult labour force participation rate stood at only 22.7 percent in 2000.

However, while the relative size of youth does not appear to generate employment problems for the country in general, the spatial distribution of youth may constitute some concern. There has been an increasing size of youth population in urban areas and a shrinkage of youth population in rural areas. This suggests rural-to-urban migration among youth. This dynamics has led to an increase in urban youth labour force in recent years. Either more jobs need to be created in the rural areas to keep the youth there or they must be created in the cities to lessen social problems.

Mismatch of Demand and Supply

Although the Thai labour force has experienced an increase in the proportion of workers with increasingly higher education, the process has been somewhat slow. Consequently there has been a considerable concern that this may not be sufficient to support the growth of the economy. The drive toward industrialization, modernization and globalization requires an educational improvement in the quality of labour force far greater than the current educational system can provide.

As the process of improving the quality of labour force is slow, a larger proportion of workers concentrates around low-skill level. A study by Thailand Development Research Institute (TDRI: 1998) indicates a surplus of unskilled workers with education no more than secondary level, while there appears to be a shortage of personnel at the upper end. The trend persists through 2006, the end period of the projection.

While the improvement in education has been achieved in the form of extended schooling, although the coverage is rather slow, the quality of the education has not been a real concern until only recently. The National Education Act of 1999 put pressure on schools to adopt the concept of student-centered learning process in their teaching. Emphasis is to be also placed on the preparation for students for life-long learning activities, in contrast to learning by rote method widely adopted in the past.

At the vocational level, the kind of education being provided leaves much to be desired. Workers with vocational education are also unemployed at a much higher rate than their secondary education counterparts. More and more graduates from vocational schools also apply for admission to the university to pursue a university degree.

Curricula currently adopted by higher learning institutes are too rigid to quickly adapt to the market demand for labour. For instance, business administration curricula, both at the undergraduate and graduate level, put emphasis on managing business for big conglomerates. Little emphasis, if any, is placed on providing knowledge to manage and start up smaller

businesses. It is through the number of the so-called small and micro enterprises that a larger proportion of youth employment could be absorbed.

Aggregate Demand Deficiency

Aggregate demand directly determines employment and hence unemployment in general. The so-called "jobless growth" is unlikely to take place in a country like Thailand because labour-intensive technologies are still widely used and labour is quite abundant with wages remaining relatively low. Thus, a fall in aggregate demand, e.g., the recession currently experienced by the Thai economy, would lead to a fall in demand for labour, young and old alike.

However, having low level of skills and experience, young workers are very likely to be retrenched before others. Streamlining the work force by laying off young workers generally costs the firm less than otherwise, since severance pay is by law based on the number of years employed and little, if any, has been invested by the firm in terms of training and personnel development for these young workers.

During periods of inadequate aggregate demand when job openings are few, it is also difficult to secure a job, especially for those with low skill and little experience, as is the case for young workers. As a result, slack aggregate demand period will not only induce unemployment in general but also create youth unemployment in a larger proportion than the adult counterparts.

Wage

Economic theory clearly states that, given factor mobility, there cannot be unemployment if wages are set at the level where demand for any kind of labour equates its supply. However, if cost of hiring labour is raised above its market clearing level, then a portion of the labour supply will be rendered unemployed.

Arguments have been put forth that often factors of production are not so mobile as assumed in the economic theory. This could happen if, for example, skills are obsolete or not in demand elsewhere, or if employers have monopsonistic power over the hiring of labour. If such is the case, firms may set wages at the level below the marginal productivity of labour, which is also below the level where the market clears. This would result in unemployed labour. Under these circumstances, an imposition of a minimum wage or its increase will lead to a rise in employment.

Young workers generally lack work experience, skills and training, and work discipline required in the trade. Worst of all, in the case of Thailand most are equipped with only few years of education. Their jobs, therefore, centre on low-paying ones, which are subject to minimum wage. This leads to a closer look at the issue of wages in the next section.

3 Wages and Youth Labour Market

Theoretically, there exist links between wages and employment. The direction of causation is, however, not clear.

If wages are maintained above the market-clearing rate, labour tends to be more expensive relative to other factors of production. There is an incentive, then, for employers to substitute other factors such as capital for labour. Employers may also substitute skilled for unskilled workers, if they are obliged to pay them at the comparable rate. Firms may also reduce the scale of operation due to high costs of operation. Thus, lowering the wage rate will lead to an increase in employment.

On the other hand, if employers are operating under monopsony, where the marginal productivity of labour is below the firm's marginal revenue product, the wage could be set below the market-clearing rate. Then an increase in the rate could lead to an increase in employment, as this would induce workers to substitute income for their leisure.

The conflicting theoretical conclusion stems from the assumptions behind the analysis. These include the extent to which labour is in fact substitutable, the coverage of the legal wage, the degree of its compliance, and whether employers have influence on wage setting. Therefore, it is empirical evidence that could shed some light on the direction of the link between wage and employment.

Review of International Evidence on the Relationship between Wages and Youth Employment

The relationship between wages and employment has caught attention of many labour economists as doubts exist whether labour markets are operating under a competitive situation. Recent evidence indicates that increases in minimum wages have led not only to reduced poverty but also to increased employment. Yet, other empirical evidence has shown to the contrary.

D Card and A B Krueger in 1994 examined employment effects of an increase in the minimum wage of a number of U.S. states above the national minimum level in the late 1980s and early 1990s. They concluded that increasing the minimum wage had no negative impact on employment while generating more employment to the states involved. Their analysis employs the concept of demand for labour under monopsonistic firms, which enables them to pay workers below their marginal productivity, keeping the marginal cost of labour below the marginal revenue product.

J Dolado et al in 1996 analyzed the effects of minimum wage in selected European countries and found little or no evidence of a negative employment effect of a minimum wage. The result was confirmed in the following year by S Machin and A Manning in their study in OECD countries.

In contrast, negative employment effects of minimum wages have been reported in other studies. For example, an increase in the minimum wage for France during the 1980s reduced youth employment (S Bazen and N Skourias: 1997 and J Abowd et al: in their 1997 study). D Neumark and W Washer in 1999 using pooled cross section time series data for sixteen OECD countries also found that minimum wages not only caused employment losses

among youth but also that the employment effects of minimum wages appeared to be considerable although varied across countries.

For less developed countries, N C Lustig and D McLeod in 1997 found that increases in minimum wages resulted in increased unemployment in four African and five Asian countries, including Thailand, although they had an effect of lowering poverty in these countries. They did not, however, prescribe to the use of minimum wage to reduce poverty. But it appears that reducing minimum wage would also affect the poor in general while increasing youth employment.

With conflicting evidence, Youcef Ghellab (1998) concluded that minimum wages may have either a negative or positive effect on youth employment and employment in general. The direction of influence depends on such factors as the relative level of the statutory wage to the average wage and the structure of the labour market, as well as the country involved.

For Thailand, Warangkana Imudom of the Bank of Thailand (2000) looked at changes in the real minimum wage and employment in the non-agriculture sector during 1991 - 1999, concluding that the effects of minimum wage on overall unemployment could hardly be traced. This is probably due to non-compliance to the statutory wage. However, flexibility in the adjustment of average wages has contributed to lower unemployment and the agricultural sector has absorbed a turnover of workers resulting from an increase in minimum wage.

Wages and Youth Employment in Thailand

Wages facing youth, who comprise mainly recent school graduates possessing little, if any, work experience, are often at the lower end of the wage scale. The minimum wage is likely to be applied to these workers.

A minimum wage was first enacted in April 1973 with the aim of providing social protection and distributing benefits from growth. The coverage was limited initially to Greater Bangkok areas and then extended to the whole country in October 1974. The rate, however, is not applied to the agricultural sector, nor to the public sector and public enterprises.

Three levels of minimum wage are adopted to accommodate differences in the level of economic development among provinces. The highest rate applies to the most developed provinces, known as Zone 1. The medium level is effective for less developed provinces or Zone 2, while the lowest rate is applied to the rest of the country. These rates are adjusted more or less annually, save the three years following the 1997 crisis.

The new labour protection law, which came into effect in September 1998, decentralises minimum wage setting, allowing each province to recommend its own rate adjustment. Sluggishness in administrative procedures coupled with the 1997 crisis prevented early implementation of the law with respect to provincial minimum wage adjustment by each province.

In spite of the law, a large proportion of firms failed to comply with it, although the percentage has been declining in recent years. Table 7 shows that half of the surveyed establishments did not comply with the statutory wage in the early 1990s. The degree of non-

compliance has, however, declined to 33.2 percent in 1999. Over a quarter of large enterprises with 100 or more employees avoided paying some of their employees what the law requires. The major reason for non-compliance given by enterprises surveyed is that workers do not have enough experience to deserve the minimum wage (27.2 percent of the sample).

Table 7 Percentage of Employers and Employees Paying and Receiving Less than Minimum Wage

	Percent of Enterprises Paying Less than Minimum Wage	Percent of Employees Receiving Less than Minimum Wage
1993	52.00	6.12
1994	52.22	6.24
1995	41.13	4.48
1996	39.77	6.39
1997	39.12	5.90
1998	38.73	6.38
1999	33.20	6.00

Source: Department of Labour Protection and Welfare

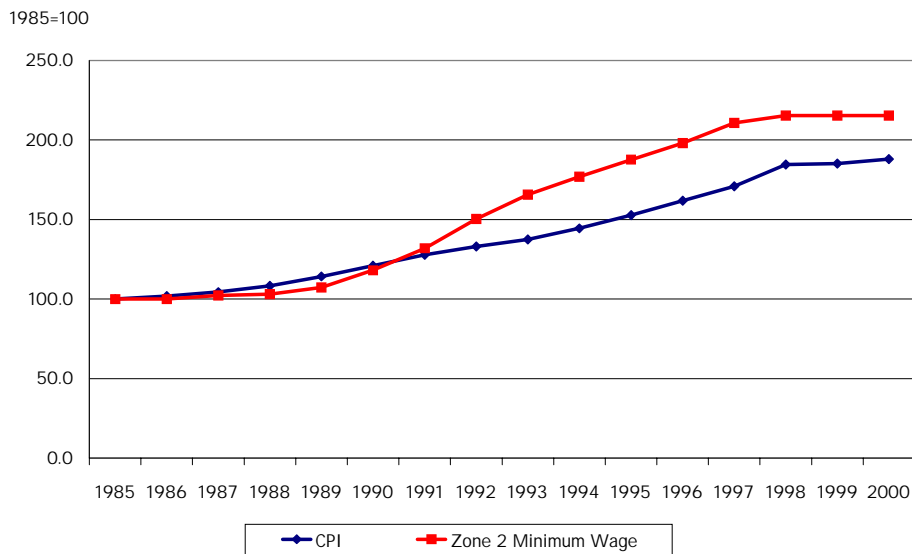
Despite the large incidence of non-complying firms, the proportion of workers receiving less than minimum wage is relatively low, being around 6 percent for the whole country during the period under consideration. However, the figures varied from 20.0 percent for the Northeast region to 1.9 percent for the vicinity of Bangkok in 1999.

Trends in Average Earnings and Minimum Wage

Figure 9 plots minimum wage against the consumer price index, with 1985 set to equal 100. The minimum wage increased relatively slowly in the late 1980s, as compared with the increase in the consumer price index, resulting in a fall in the real wage. The minimum wage, however, increased rather fast in the 1990s. On average, the minimum wage grew over 8 percent per year between 1990 and 1998 against 5.3 percent per year between 1985 and 2000. The rate of increase outpaced inflation as measured by the consumer price index, especially in the early 1990s. As the economy experienced recession followed by an increase in unemployment since 1997, the minimum wage was frozen for three consecutive years, before being allowed to rise in the year 2001. Consequently, the real minimum wage exhibited negative growth during this period.

Average wages of employed persons provided by the Labour Force Survey, grew faster than the minimum wage, from 2,715 baht per month in 1989 to 6,628 baht in 2000, with an average increase of 8.64 percent per year for the period. The average wage registered a decline of 1.6 percent in 1999 and 1.1 percent in 2000, as employees experienced wage cuts following the economic crisis. Deflating the average wage with the consumer price index measures the growth of real average wages of 3.8 percent per year during the period.

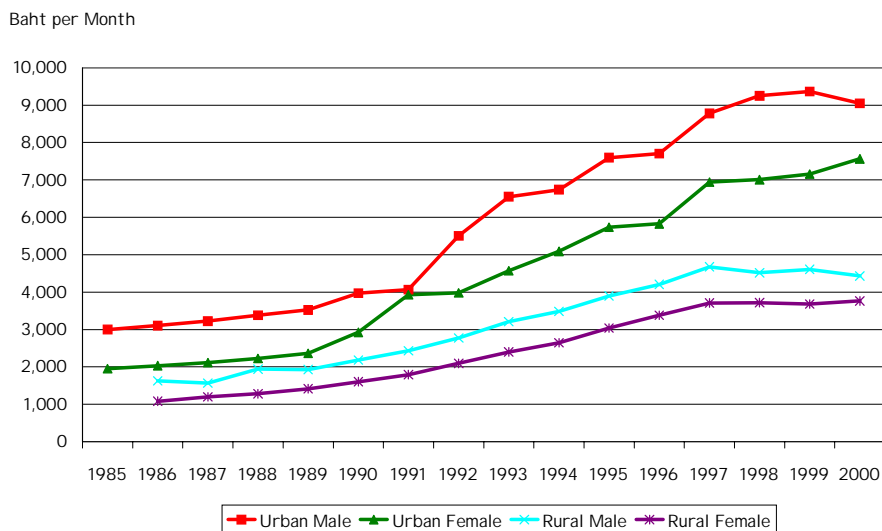
Figure 9 Zone 2 Minimum Wage and Inflation



Source: Department of Internal Trade and Ministry of Labour and Social Welfare

It should be noted that if one allows for an upward bias in the calculation of the consumer price index, the increase in real wage rate, average or statutory, is even higher than the figure indicates.

Figure 10 Average Wage by Sex and Location



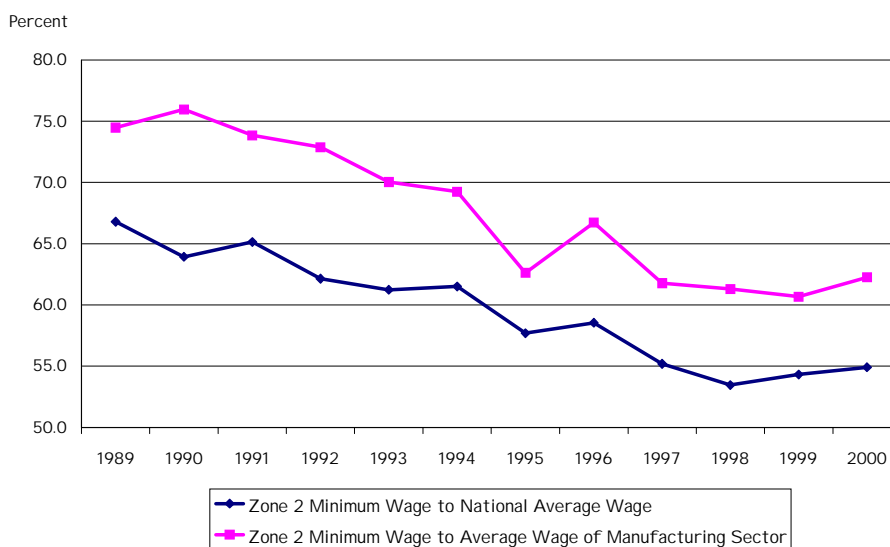
Source: Department of Social Protection and Welfare

Figure 10 shows the wage trends of male and female workers in the rural and urban areas. It is evident that female workers in Thailand are on the lower end of the minimum wage, especially if they hold jobs in the rural areas. There is also a gap between male and female wages in the municipal areas in favour of male workers.

As Figure 11 shows, comparing the minimum wage to the national average wage, it appears that the percentage of minimum wage to national average wage has been falling, from 66.8 percent in 1989 to a low of 53.5 percent in 1998 before a small increase in the two years that followed. This percentage seems high compared with that experienced by other countries. For example, the minimum-to-average wage proportion stood at 30 percent for the Republic of Korea in 1997, 33 percent for Chile, and 25 to 27 percent for Argentina and Mexico, respectively (See Andres Marinakis, 1999).

In Thailand's case, the falling percentage signifies that the average wage has been increasing faster than the minimum wage. As the minimum wage was maintained in 1998 to 2000, an increase in the percentage of minimum to average wage reflects downward wage flexibility during a high unemployment period. However, the pegging of minimum wage during this period may also have interfered with further downward wage adjustment, causing excessive unemployment during the period.

Figure 11 Movement of Minimum to Average Wage



Source: Department of Labour Protection and Welfare

If the percentage is calculated with the denominator being the average wage in the manufacturing sector, the minimum wage appears to be even closer to the manufacturing wage, averaging 67.7 percent between 1989 through 2000.

This high minimum-to-average wage percentage gives an indication that most workers, especially the youth who possess less skill and experience, are earning the minimum wage or less. It has been demonstrated that wages, minimum and average, have outpaced the inflation rate, resulting in increasing real wages. To see if the growth in real wage has really been high, it is necessary to compare its growth with the growth of labour productivity. Table 8 traces the productivity wage gap, using national income account data² from 1985 to

² Labour productivity is defined to be the ratio of output to the number of workers or y/N , where y is the real gross domestic product and N is the number of workers. Define W to be nominal wage rate and P to be price level or GDP deflator. Thus

1999. The table shows that during the latter part of the 1980s, wages grew at a rate less than that of productivity. The picture changes in the decade of the 1990s, when real wages rose much faster than productivity, resulting in an average productivity wage gap of 2.81 percent per year over the decade. Given the wage trend in relation to the improvement in productivity, it is likely that employment will be affected, as firms often adopt capital intensive technology, and as a result create more unemployment.

Table 8 Percentage Difference Between Labour Productivity and Real Wage

	Total	Agriculture	Industry	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	-4.93	-17.20	-4.98	-1.14
1994	0.06	10.19	-2.51	1.41
1995	-3.85	-2.68	-2.86	-5.32
1996	-0.90	-3.60	-2.09	0.66
1997	-3.19	-8.35	-4.39	-2.05
1998	-3.33	-4.61	-1.81	-6.89
1999	-2.16	-22.48	2.79	-2.20
1990-1999 Average	-2.81	-5.67	-2.76	-1.93
1985-1999 Average	-1.17	-1.86	-1.18	-0.37

Source: National Economic and Social Development Board

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

Taking total differential of the above

$$d(y/N) = W/P * d(y*P / N*W) + (y*P / N*W) * d(W/P)$$

Dividing the result by y/N or $(y*P / N*W) * W/P$

$$d(y/N) / y/N = d(y*P / N*W) / (y*P / N*W) + d(W/P) / W/P$$

That is, the growth of labour productivity (y/N) equals the sum of the growth of nominal output-wage bill ratio ($y*P / N*W$) and the growth of real wage rate (W/P). In other words, the difference between the growth of labour productivity and that of real wage rate is reflected in the growth of the nominal output-wage bill ratio. If the latter is positive, the productivity increase outpaces the increase in real wage, and vice versa.

In 2001 Katharit Sithikul from the Bank of Thailand examined the total factor productivity³ between 1980 and 1996 and found that labour had contributed only 11 percent of GDP growth, while capital contributed 60.7 percent over the period. The total factor productivity, which reflects technological improvement, embedded in the human workforce or otherwise, accounted for only 28.3 percent or a little over a quarter of the GDP growth. The contribution of labour was less than one percent during the period of 1990 to 1996, whereas capital and technology contributed 76 and 23 percent, respectively.

Minimum Wage and Youth Employment

In an attempt to quantitatively test if a link exists between wages and employment, a simple regression model was used. It is assumed that employment per population depends on the real minimum wage and the real GDP growth rate. Using data between 1986 and 2000, the regression result is given in Table 9.

The empirical results indicate a negative relationship between youth employment and the real minimum wage. This relationship is rather robust for teenage employment, but exhibits a weak link for young adult and adult workers. The coefficients point to a small effect on employment of changes in real wage. This is probably because of widespread non-compliance of minimum wage.

Table 9 Employment per Population as a Function of GDP Growth and Real Minimum Wage 1986-2000.

	Constant	GDP Growth Rate	Real Minimum Wage	R Squared Durbin Watson
Teenage	116.30 (6.28)	0.97 (2.69)	-0.03 (-4.00)	0.76 0.84
Young Adult	77.17 (7.02)	0.62 (2.88)	-0.001 (-0.30)	0.46 0.95
Youth	95.66 (6.71)	0.79 (2.85)	-0.02 (-2.65)	0.67 0.88
Adult	82.60 (25.31)	0.19 (3.03)	-0.002 (-1.18)	0.57 1.25

Note: t-statistics in parenthesis

It is recognized here that determinants of employment are much more complex than represented in a simple model such as the one above. Non-wage factors must be taken into account such as school retention rates, changes in the productivity of youth workers, especially for the young adult age group, many of whom possess a college education. However, this result of weak linkages between employment of older age groups and wages

³ The total factor productivity is the residual after accounting for growth of output or GDP by growth of each input weighted by its income share. The concept is used to measure productivity arising from an increase in all factor inputs, in contrast to partial productivity such as labour productivity or capital productivity, which examines the productivity of a given factor of production holding other factors constant.

might suggest a possible substitution of older workers for younger ones, as wages rise. Lack of deeper analysis prevents a firm conclusion on the matter.

Minimum Wage and Youth Unemployment

As seen above, an increase in wage rates has a negative effect on youth employment as employment of workers may shrink due to a negative scale and or a substitution effect. But the linkage between wage and unemployment cannot be as readily established as in the case of that between wage and employment. Attempts to quantitatively examine this have not given a satisfactory result. This is because the relationship may not be so straightforward as anticipated.

On the demand side, an increase in wage may not result in an immediate increase in unemployment as firms may try to improve productivity and/or reduce other costs. As noted earlier, in the case of the 1997 economic crisis, the pattern of adjustment has not only been in the wage reduction before retrenchment but also in the work-sharing scheme. Underemployment has increased at a significant rate.

On the supply side, an increase in wage rates may attract more labour to the market, which would create even more unemployment, as no additional jobs are available to these new workers. On the other hand, it is also possible that jobs become harder to find and some would be discouraged in the search for jobs and hence withdraw from the labour force. The extent of unemployment would therefore depend on the net effect of the movement of the labour force.

It is then the interplay between the behavior of the labour force and the productivity adjustment in times of growth and work-sharing patterns in periods of recession that must be taken into consideration in determining the impact of wages on unemployment. Various constraints, however, prevent such an elaborate examination to establish the linkage in this paper.

Incidence of Minimum Wage

The Department of Labour Protection and Welfare survey⁴ on wages of non-agricultural activities shows that 19.5 percent of private sector employees nationwide received the minimum wage or less in 1991, of which 13.2 percent were paid the minimum wage while 6.3 percent received less. In 1995, those receiving the minimum wage or less were over 40 percent of the total employees in the surveyed enterprises. In 1999, 25.9 percent of the employees were paid the minimum wage or less. Those receiving the minimum wage rose to 20 percent while those receiving less than the legal wage remained approximately the same as in previous years.

Statistics from the labour force survey also indicate that a large proportion of workers are paid the minimum wage and below. In 1999, the survey reported that there were 3.7 million private sector workers out of a total of 9.5 million, or 38 percent of the total, earning

⁴ The Department of Labour Protection and Welfare, Ministry of Labour and Social Welfare has been conducting on an annual basis, surveys on wages, earnings and working hours of all enterprises with various sizes located nationwide, except those in agriculture. The survey gathers information as of March each year from employers and not from concerned workers.

up to 3,600 baht per month. This rate of earning is approximately the same as the minimum wage using the Zone 2 minimum wage rate of 140 baht per day and 26 working days in a month, which amounts to 3,640 baht.

Table 10 Percentage of Workers Receiving Wages Relative to Minimum Wage

	Less than Minimum Wage	Minimum Wage	More than Minimum Wage
1988	5.6	2.0	92.4
1991	6.3	13.2	80.5
1995	4.5	36.2	59.3
1996	6.4	23.0	70.6
1997	5.9	18.0	76.1
1998	6.4	21.7	70.8
1999	6.0	19.9	73.3

Source: Department of Labour Protection and Welfare

It appears then that during the 1990s decade, a larger proportion of workers was receiving the minimum wage or less. As the minimum wage is adjusted upward, those receiving the minimum wage in law-abiding establishments will increase their wages. Workers earning wages just a little higher than the legal wage may also have an increase up to the minimum wage level, if the increase in minimum wage is large. These workers will now join the ranks of workers earning the minimum wage, thus raising the proportion of workers earning minimum wage.

This is confirmed by statistics from the Department of Labour Protection and Welfare, which reveal that almost 80 percent of the workers receiving a minimum wage or less have been working for more than one year. Forty percent have been on the job for at least three years. As many as 5 percent have been working for more than ten years.

Table 11 Percentage of Workers Receiving Minimum Wage and Less by Number of Years on the Job

Number of years on the job	Less than Minimum Wage	Minimum Wage
Less than 1 year	36.13	21.26
1-2 years	37.75	41.99
3-4 years	14.12	19.86
Over 4 years	12.00	16.89
Total	100.00	100.00

Source: Department of Labour Protection and Welfare

At the same time, the proportion of workers earning more than the minimum wage would become increasingly smaller. This effect, known as wage compression, implies that workers who possess skills and experience once rewarded by a higher wage, are now being paid the minimum wage, a rate meant for new recruits.

There is a larger concentration of female wage earners around the minimum wage level than their male counterparts. Statistics show that in 1999, 46 percent of female workers, compared with 32 percent of male workers received minimum wage or less despite the fact that the proportion of workers having an education as high as the secondary level was about the same for both sexes. Over half of the workers in non-municipal areas against only 15 percent of workers in municipal areas received the minimum wage level or below.

Implications on Youth Employment

With 30 to 40 percent of workers receiving the minimum wage or less, and a youth labour force of around 20 percent of total labour force, it is very likely that youth, especially teenagers, are paid wages at the lower level.

The growth in real wage, average as well as minimum, has outpaced the growth in productivity. This may induce employers to turn to capital-intensive techniques as a substitute for high labour costs. If skilled labour is more complementary to capital than unskilled labour, it is likely that capital would be substituted for unskilled rather than skilled workers. Thus, youth are more apt to be replaced by capital than adults. Employers may prefer highly skilled labour to new recruits when the cost of hiring them is about the same. This would have a negative impact on youth employment.

When the minimum wage is frozen as in the 1997 recession, a downward adjustment of the average wage may not fall as much as would be the case without the minimum wage, contributing to unemployment especially among teenage workers.

From this simple quantitative analysis, there appears to be linkage between the wage rate and youth employment, especially for teenage employment. The linkage is somewhat weak for adults, suggesting that there may be some substitution of adult for youth workers as wages rise.

Policy Implications

It emerges from the study that the major cause of the fluctuations in youth employment is the state of the economy. Changes in the macroeconomic performance are statistically significant in determining both changes in youth employment and youth unemployment. While changes in economic growth affect employment in general, youth employment is more sensitive to economic fluctuation than adult employment. The major instrument in alleviating youth employment problems must, then, be macroeconomic policy.

A decline in the rate of population growth, coupled with extended compulsory education should provide for improved work opportunities. But this, however, is subject to costs of labour in relation to its productivity. The trend in the 1990s exhibits a wage productivity gap, which, if allowed to continue, may lead to greater substitution of capital for labour, and skilled workers for less skilled youth workers. This substitution has taken place

to a certain extent during the period under study, intensifying the youth unemployment problem.

Partly responsible for the wage productivity gap is the rapid growth of the minimum wage. This has contributed to wage compression, increasing the concentration of wage earners around the minimum wage level. The compression of the wage structure suggests the substitution of skilled for unskilled workers. As workers with years of experience are hired, the probability of securing a job for youth is lower.

However, as the objective of the minimum wage is a means of social protection and distribution of benefits from growth, manipulation of the minimum wage to achieve employment objectives may not be consistent with poverty policies. A sub minimum wage level for youth workers, as instituted in many countries, may not be the answer. This is because it may intensify the problem of non-compliance known to widely exist.

On the other hand, attempts at increasing the share of labour in overall output through a rapid increase in wages, at the expense of other production factors, will create instability in the system and must be avoided.

Another factor that is responsible for the wage productivity gap is the slow growth in the productivity itself. The increase in productivity must be sought as this will not only improve the earnings of workers but will also assure growth for the economy and steady the employment for all concerned.

Young workers consist mainly of persons with no prior experience. Although extended compulsory schooling has been successful, it does not provide work experience. Neither does university education. The quality of education offered in vocational schools also leaves much to be desired. There is a need, then, for practical work experience and training to be included in formal education, and life-long learning needs to be instilled in students to enable them to improve their productivity on a continuous basis.

Special attention must also be given to female youth workers, especially teenage workers, as they are found to be at a disadvantage vis-a-vis male youth in securing jobs and in obtaining remuneration.

References

Apichai Puntasen, Pongsathorn Tantirittisak and Kanokpan Shumsasein. "Youth Employment in Thailand (1985-2000) and Its Future Prospects," Draft paper prepared for the International Labour Office, October 2001.

Department of Labour Protection and Welfare. *Report on the Wage Survey*. Various issues.

Ghelleb, Youcef (1998). *Minimum Wages and Youth Unemployment*. Employment and Training Department, International Labour Office:Geneva.

Gosah Arya (1999). "An Empirical Evaluation of Minimum Wage," in *Wage Policy and Labour Competitiveness in Thailand: Technical Note*. International Labour Office, East Asia Multidisciplinary Advisory Team.

International Labour Organization (2000). Paper for the Symposium on Strategies to Combat Youth Unemployment.

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

Marinakos, Andres (1999). "Wage Developments and Minimum Wage Policy in Thailand," in *Wage Policy and Labour Competitiveness in Thailand: Technical Note*. International Labour Office, East Asia Multidisciplinary Advisory Team.

National Statistical Office. *Labour Force Survey*. Various issues.

Neumark, David and Wascher, William. "A Cross-National Analysis of the Effects of Minimum Wages on Youth Employment," NBER Working Paper 7299, National Bureau of Economic Research, August 1999.

Office of the National Education Commission, Office of the Prime Minister. "Thailand Student Enrolment Projection 1999-2016," Bangkok, August 2000.

O'Higgins, Niall (2001). *Youth Unemployment and Employment Policy: A Global Perspective*. International Labour Organization.

United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) (2000). *Youth in Thailand: A Review of the Youth Situation and National Policies and Programmes*. New York:UN.

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