

Unemployment, Income Inequality, and Structure Change: The Case of Taiwan

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Abstract

In the past fifty years, Taiwan is widely known for her high economic growth rate, low unemployment rate and mild income inequality. However, since the change of government in 2000, Taiwan has faced troubling predicaments: a low economic growth rate, a high unemployment rate, and a worsen income distribution. When the annual growth rate dropped to -2.18% in 2001 as the only negative figure in the past fifty years, the unemployment rate went up from 2.99% to 4.57% in the same year for two reasons: one is a lower economic growth rate, the other being a significant structure change. When most dislocated workers are those low-skilled, the higher unemployment rate also results in widening income inequality.

In this study, we survey the trend of structure change of Taiwan in the past ten years and its impact on the job market. Next, we examine the unemployment structure and investigate the relation of unemployment and economic performance in Taiwan. Finally, we discuss the change of income distribution and examine the relationship of income inequality with the sharply increased unemployment rate.

Key words: unemployment, income inequality, structure change

1. Introduction

Taiwan is reputed for her high economic growth rate, low inflation rate, low unemployment rate, and mild income inequality for the past fifty years. The average real growth rate of GDP from 1951 to 2000 is 8.4% per year, the average inflation rate is 5.6%, the average unemployment rate is around 2% and never higher than 3%, and the average Gini coefficient is around 0.300. However, the so called "economic miracle" has changed since May 2000 when a new government came into power. The year of 2001 was the worst year Taiwan has ever experienced in terms of economic performance. The GDP growth rate dropped to -2.18% which was the only year that Taiwan had a negative economic growth rate. The unemployment rate rose from 2.99% in 2000 to 4.57% in 2001 which was a record high, too. In the meantime, the Gini coefficient also increased from 0.326 to 0.350 in one year¹. For the year of 2002, though the economic growth rate is better (3.45%), the unemployment rate is still on a high level (5.17%) and so is the income inequality.

The reasons for the poor economic performance in 2001 were very clear, which include among others a sharply dropped domestic investment, a low growth rate of consumption, and a negative growth rate of exports and imports.² The question is why the unemployment rate and income inequality goes hand in hand with the negative economic growth rate. Moreover, the economic growth rate has turned to positive in 2002, but why the unemployment is still very high and so is the Gini coefficient? Is the high unemployment rate

caused simply by poor economic performance (i.e. cyclical unemployment) or caused by both cyclical unemployment and structural unemployment? Furthermore, is the widened income inequality a temporary phenomenon or a permanent one? The answers for these questions are not only important in terms of academic research, but could also provide critical policy implications for the government.

In this paper, we first discuss the structure change of Taiwan's economy during the past tens years, including its direct external investment to China and its impact on Taiwan's labor market. We will then investigate the unemployment structure, by examining workers' characteristics including age, education, and sex. Further, we will analyze the income distribution for both household income and workers' earnings. We will pay specific attention to explain the relationship of the high unemployment rate and the widened income inequality after 2001. In the conclusion, we like to provide some policy suggestions to deal with the high unemployment rate and the widened income inequality.

2. Direct Foreign Investment and Structure Change

The Mainland China shifted to an open-door policy in 1979, and its labor-intensive industries started in gaining its share in the world market. On the other hand, the western countries hold their comparative advantages in producing high-tech products in the growing knowledge-based economy. In the face of the two-pronged competition from Mainland China in traditional labor-intensive goods and from the developed countries in high-tech products, Taiwan has experienced a severe economic environment entering 1980s.

¹ The ratio of the average household income of the top 25% families to the lowest 25% families has also increased sharply from 5.55 to 6.39 and 6.16 for 2000, 2001, and 2002, respectively.

² Cheng, Liang, and Lin (2003) provide a detail discussion about Taiwan's economic performance after 2000.

Table 1: Taiwan's DFI Structure: by Regions

| year | Unit: %, US\$billion | | | | | | | Total Amount |
|-----------|----------------------|-------|---------|--------|---------|--------|-------------|--------------|
| | Mainland China | Asia | America | Europe | Oceania | Africa | Other Areas | |
| 1952-1991 | 3.55 | 40.91 | 51.02 | 3.58 | 0.32 | 0.62 | 0.00 | 4.9 |
| 1992 | 21.78 | 32.62 | 39.59 | 4.05 | 0.48 | 1.49 | 0.00 | 1.1 |
| 1993 | 65.61 | 13.74 | 15.33 | 5.30 | 0.02 | 0.01 | 0.00 | 4.8 |
| 1994 | 37.31 | 21.69 | 38.32 | 0.86 | 1.09 | 0.73 | 0.00 | 2.6 |
| 1995 | 44.61 | 19.09 | 32.13 | 2.44 | 0.55 | 1.18 | 0.00 | 2.4 |
| 1996 | 36.21 | 19.49 | 42.51 | 0.35 | 0.54 | 0.62 | 0.28 | 3.4 |
| 1997 | 59.96 | 11.33 | 26.51 | 0.81 | 0.39 | 0.00 | 1.01 | 7.2 |
| 1998 | 38.17 | 10.90 | 49.47 | 0.63 | 0.16 | 0.68 | 0.00 | 5.3 |
| 1999 | 27.71 | 18.50 | 5.15 | 1.35 | 0.91 | 0.91 | 0.47 | 4.5 |
| 2000 | 33.93 | 11.08 | 52.65 | 0.77 | 1.92 | 0.09 | 0.82 | 7.7 |
| 2001 | 38.80 | 11.36 | 48.23 | 0.64 | 0.88 | 0.08 | 0.02 | 7.2 |
| 2002 | 66.61 | 5.23 | 24.53 | 1.22 | 1.91 | 0.17 | 0.33 | 10.1 |
| Total | 43.39 | 14.94 | 38.67 | 1.55 | 0.92 | 0.37 | 0.33 | 61.3 |

Source: MOEA (2003), *Monthly and Annual Statistical Reports of Overseas Chinese and Foreign Investment in the ROC, Outward Investment and Technical Cooperation from the ROC, and Indirect Investment in Mainland China*, 2003, Executive Yuan, ROC.

In order to utilize those cheap production factors in Mainland China and in South East Asian countries, one of the methods is to invest abroad. The accumulated outward direct foreign investment (DFI) of Taiwan amounts to US\$4.9 billions from 1952 to 1991 and 91.93% of these DFI is in American and Asian countries, as shown in Table 1. However, the investment share of DFI to Mainland China has increased sharply after 1992.³ For example, in the year of 2002 the share of DFI from Taiwan to Mainland China is 66.61% of total investment to the world. Table 1 shows that Mainland China has become the most important area for Taiwan's outward DFI.

In the early stage, Taiwan's DFI abroad is concentrated in manufacturing sector. For example, Table 2 shows that the share of Taiwan's DFI in manufacturing industry accounted for 74.99% of total DFI. However, the share of Taiwan's DFI in manufacturing industry quickly dropped to 52.27% and 29.63% for the year of 1990 and 2000. In the meantime, Taiwan's DFI has largely shifted to service industry since 1990.

³ Taiwan's investment to Mainland China started from the year of 1987 when Taiwan government abolished her martial law and allowed her citizens to visit Mainland China. For the details analyzing Taiwan investment in Mainland China, see Kao et al. (1992, 1995).

Table 2: Taiwan's FDI structure: by Industries

Unit: %

| Total FDI | Secondary Industry | Third Industry | Light Industry | Petroleum and Chemical Industry | Machinery and Metal Industry | Electronic, Electric, and Precision Industry | Manufacturing |
|---|--------------------|----------------|----------------|---------------------------------|------------------------------|--|---------------|
| 1950 | 78.65 | 18.54 | 38.84 | 33.41 | 0.82 | 5.17 | 78.23 |
| 1960 | 83.18 | 15.61 | 14.69 | 19.76 | 6.53 | 36.61 | 77.59 |
| 1970 | 79.22 | 20.37 | 14.07 | 13.67 | 14.73 | 32.52 | 74.99 |
| 1980 | 72.47 | 27.27 | 11.47 | 21.24 | 16.02 | 23.16 | 71.89 |
| 1990 | 52.96 | 47.03 | 5.14 | 9.77 | 10.93 | 26.43 | 52.27 |
| 2000 | 32.72 | 67.15 | 2.74 | 3.28 | 4.48 | 19.12 | 29.63 |
| DFI to Overseas, Excluding Mainland China | | | | | | | |
| 1950 | 100.00 | 0.00 | 100.00 | 0.00 | 0.00 | 0.00 | 100.00 |
| 1960 | 96.71 | 3.11 | 74.67 | 6.78 | 7.36 | 7.02 | 95.83 |
| 1970 | 85.68 | 12.72 | 33.84 | 36.67 | 2.98 | 8.89 | 82.38 |
| 1980 | 68.92 | 30.75 | 5.18 | 39.22 | 2.56 | 19.67 | 66.63 |
| 1990 | 39.15 | 60.56 | 9.29 | 6.15 | 5.90 | 17.10 | 38.44 |
| 2000 | 28.12 | 71.85 | 1.64 | 3.09 | 2.36 | 20.99 | 28.09 |
| DFI to Mainland China | | | | | | | |
| 1990 | 91.93 | 7.23 | 25.00 | 21.81 | 16.39 | 28.31 | 91.51 |
| 2000 | 91.03 | 8.60 | 9.93 | 16.86 | 14.43 | 49.38 | 90.60 |

Source: See Table 1.

In contrast, Taiwan's DFI to Mainland China is still concentrated in the manufacturing sector. For instance, the share of manufacturing industry of Taiwan's DFI to Mainland China accounted for 91.51% and 90.60% for the year of 1990 and 2000, as shown in Table 2. The result demonstrates clearly that the main reason for Taiwanese firms investing to Mainland China is for production purpose.

The heavy investment to Mainland China's manufacturing industries has caused a significant impact on Taiwan's industrial structure and exporting structure. Traditionally, Taiwan is a typical small-open economy and is known for its strong exporting sector. The ratio of total exports to total GDP is around 40% to 50% during the past forty years. However, the export structure has undergone a significant change. The

export share of light industry (mainly labor-intensive industries) to total export has decreased from 38.31% in 1981 to 11.98% in 2002. On the other hand, the export share of electric and electronic industry has increased sharply from 18.99% in 1981 to 40.32% in 2002.

The similar phenomenon happens on the industrial structure change in Taiwan. In the beginning of 1980s, the production share of manufacturing sectors accounted for 36.22% of total GDP. In the year of 1987, the share reached its peak at 39.04%. After 1988 when Taiwanese firms started investing to Mainland China, the share of manufacturing sector to total GDP has dropped at a fast speed. The share shrunk to 24.85% for the year of 2002. Furthermore, the manufacturing sector itself also has faced a significant

change within. The output share for light industry to total output of manufacturing industries dropped from 15.02% in 1980 to 4.73% in 2002. On the other hand, the output share of electric and electronic industry to total output of manufacturing industry increased from 4.36% in 1980 to 34.29% in 2002.

The reason for the significant change on export structure and on industrial structure is the same, i.e. Taiwan's investment to Mainland China. Since most investment from Taiwan to Mainland China are concentrated on manufacturing sector, it causes the production share of manufacturing sector to total GDP in Taiwan to shrink quickly.⁴ Moreover, since most of Taiwan's DFI to Mainland China is concentrated on labor-intensive goods, it has shifted most production in labor-intensive goods from Taiwan to Mainland China and therefore the output share of light industry in Taiwan has dropped quickly, too. On the other hand, the output share of electric and electronic industry has risen quickly to replace the light industry, thanks to Taiwan's significant technology improvement. In other words, the industrial structure of Taiwan has gone through a significant upgrading process after Taiwan's heavy DFI to Mainland China.

3. The Rising of Unemployment Rate

Benefiting from the expanded labor-intensive industry, the unemployment rate in Taiwan has been very low since 1960s. Even in the face of the second energy crisis, the unemployment in 1979 was still as low as 1.3%. The unemployment rate of Taiwan had climbed to its first peak at 2.92% in 1985, but it gradually slid back to 1.45% in 1994. Since late 1980s, when a lot of labor-intensive firms have moved to Mainland China, certain amount of unskilled labor in Taiwan was made redundant. On the other hand, Taiwan's industrial structure quickly shifted to

capital-and- technology intensive industry and service sector. However, the high-tech industry does not provide too many job opportunities simply because they are not labor-intensive. In the meantime, some unemployed workers did transfer to the service sector and most of them are young and better educated. It turns out that those left out are some older and less educated workers who lost their jobs from the traditional labor-intensive firms and could not get new jobs in other places. Thus, the unemployment rate starts to rise from mid-1990s. The unemployment rate rose from 1.56% in 1994 to 2.60% in 1996, and again to 2.99% in 2000.

What is crucial is that, though the unemployment is rising, it is climbing at a very slow rate and it is never higher than 3%. However, in the year of 2001, the first full year under the new government, the unemployment rate in Taiwan suddenly rose to 4.57%, which is a record high for the past fifty years. In 2002, the unemployment is even higher at 5.17%. In the first seven months of 2003, the unemployment rate is still as high as 5.06%.

Since 1996, the unemployment rate of male workers has been higher than female workers and both of them keep growing. Even for the first seven months, as the average unemployment rate dropped from 5.11% in the same period last year to 5.06% this year, the unemployment rate for male workers dropped from 5.93% to 5.67%, but the unemployment rate for female workers increased from 3.93% to 4.62%. It means that the unemployment situation for female workers is still worse than before.

For those non-newly-entered unemployed workers, 30.00% of them are from manufacturing industry and 17.80% from construction and housing industry. There is no doubt that employment situation in these two industries are far more severe than other sectors.

In comparison with 2000, the total number of employees in 2001 decreased for manufacturing

⁴ While someone may call this situation as a "hollowing out" problem, but more people prefer to call it as a "de-industrialization".

industry (2.64%), mining industry (18.18%), construction and housing industry (15.38%), and agriculture and fishing industry (5.15%). The unemployment situation in Service industry is quite different among industries within the service sector. For example, for some industries the total number of workers decreased, including real estate and leasing industry (6.06%), telecommunication and warehouse industry (0.42%), and wholesale and retail industry (0.35%). On the other hand, there are more industries in the service sector that were hiring more workers, including restaurant and hotel industry (16.00%), technology service industry (15.20%), medical industry (15.08%), public administration (12.39%). The total number of workers in service sector increased by 5.40%. With all industries combined, the annual growth rate of total number of employees for Taiwan as a whole is only 0.14%, which is much lower than the average for the period from 1990 to 2000 (1.37% per annum).

The average growth rate of labor supply is 1.51% per year between 1990 and 2000, while it dropped to 0.87% from 2000 to 2003. It shows that the growth rate of labor supply has been on the decrease.

However, either before or after 2000, the average growth rate of employment in the same period, is lower than the growth rate of labor supply. Since the average growth rate of labor supply is 1.51% between 1990 and 2000 while the growth rate of employment is 1.37%, it means that for each new labor there is 0.91 job opportunity for him/her. However, the average growth rate of labor supply between 2000 and 2003 is 0.87% while the average growth rate of employments 0.14% only. It indicates that for each new labor there is only 0.16 job opportunity waiting for him/her. In other words, the basic reason why the unemployment is growing so quickly is mainly because the growth rate of employment is much lower than that of labor supply.

Now, we will examine with more detail about the unemployment structure by unemployed worker's characters after 2000. Table 3 and Table 4 demonstrate that the unemployment rate for male worker is 3.36% in 2000, but rose to 5.91% in 2002. Meanwhile the unemployment rate for female workers increased from 2.44% to 4.10% in the same period of time.

Table 3: Taiwan Unemployment Structure: 2000

| | Total | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | >65 |
|-----------------------------------|-------|-------|-------|-------|-------|-------|------|
| Male | 3.36 | 8.42 | 3.60 | 2.69 | 2.51 | 1.72 | 0.28 |
| Junior High and Below | 3.55 | 8.83 | 4.29 | 3.58 | 3.19 | 1.93 | 0.26 |
| Senior High and Vocational School | 3.71 | 8.34 | 3.58 | 2.50 | 2.00 | 1.42 | 0.42 |
| College and Above | 2.62 | 8.01 | 3.18 | 1.63 | 1.49 | 0.82 | 0.37 |
| Female | 2.44 | 6.45 | 2.57 | 1.21 | 0.78 | 0.36 | 0.09 |
| Junior High and Below | 1.47 | 7.73 | 2.33 | 1.32 | 0.79 | 0.39 | 0.10 |
| Senior High and Vocational School | 2.83 | 6.29 | 2.22 | 1.21 | 0.82 | 0.27 | 0.00 |
| College and Above | 3.04 | 6.34 | 2.99 | 1.01 | 0.65 | 0.00 | 0.00 |

Source: DGBAS (2000), *Yearbook of Manpower Survey Statistics, Taiwan Area, 2000*, Executive Yuan, ROC.

Table 4: Taiwan Unemployment Structure: 2002

| | Total | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | Unit: % >65 |
|-----------------------------------|-------|-------|-------|-------|-------|-------|----------------|
| Male | 5.91 | 14.05 | 8.22 | 4.95 | 4.88 | 2.83 | 0.15 |
| Junior High and Below | 6.57 | 15.82 | 8.82 | 6.55 | 6.11 | 3.38 | 0.10 |
| Senior High and Vocational School | 6.60 | 13.76 | 7.09 | 4.78 | 3.84 | 2.18 | 0.89 |
| College and Above | 4.21 | 12.90 | 4.52 | 3.21 | 3.03 | 0.99 | 0.00 |
| Female | 4.10 | 10.21 | 4.41 | 2.39 | 1.73 | 0.70 | 0.05 |
| Junior High and Below | 2.59 | 11.91 | 5.11 | 2.18 | 1.78 | 0.74 | 0.05 |
| Senior High and Vocational School | 5.02 | 10.75 | 4.43 | 2.78 | 1.24 | 0.68 | 0.00 |
| College and Above | 4.38 | 9.11 | 4.22 | 2.04 | 1.12 | 0.33 | 0.00 |

Source: DGBAS (2002), *Yearbook of Manpower Survey Statistics, Taiwan Area, 2002*, Executive Yuan, ROC.

Compared to 2000, the unemployment rates for all groups including different age and education level increased in 2002, except for the group of age above 65 years old. In terms of unemployment ratio, Table 5 shows that the total unemployment rate of 2002 is 1.73 times as high as the total unemployment rate in 2000. For male workers, the unemployment ratio is 1.76 and it is 1.68 for female workers. It shows that the unemployment situation is worse for male workers. Moreover, for male workers, the most severe unemployment rested in the 25 to 34 age group, whereas it is in the older age female group from 45 to 54 that had a starker prospective.

Next, we turn to the unemployment structure with

age and education at the same time. We find that for male workers the worst unemployment groups are the group with education level under junior high school and aged from 25 to 34 and the group with age over 65 and under senior high level. In the meantime, for female workers the worst unemployment groups are the one with education under junior high with age from 25 to 34 and from 45 to 54 and the one with education under senior high with age from 35 to 44 and from 55 to 64. Generally speaking, Table 5 shows that the unemployment rate is worse for the groups with lower education and with the young and older workers, and unfortunately they are the ones who have less production skill in the beginning.

Table 5: The Ratio of Unemployment Rate of 2000 and 2002

| | Total | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | Unit: % >65 |
|-----------------------------------|-------|-------|-------|-------|-------|-------|----------------|
| Male | 1.76 | 1.67 | 2.28 | 1.84 | 1.94 | 1.65 | 0.54 |
| Junior High and Below | 1.85 | 1.79 | 2.06 | 1.83 | 1.92 | 1.75 | 0.37 |
| Senior High and Vocational School | 1.78 | 1.65 | 1.98 | 1.91 | 1.92 | 1.54 | 2.13 |
| College and Above | 1.61 | 1.61 | 1.42 | 1.97 | 2.04 | 1.21 | 0.00 |
| Female | 1.68 | 1.58 | 1.71 | 1.97 | 2.23 | 1.95 | 0.56 |
| Junior High and Below | 1.77 | 1.54 | 2.19 | 1.65 | 2.25 | 1.89 | 0.53 |
| Senior High and Vocational School | 1.77 | 1.71 | 1.99 | 2.29 | 1.50 | 2.55 | N.A. |
| College and Above | 1.44 | 1.44 | 1.41 | 2.03 | 1.73 | N.A. | N.A. |

Source: See Table 3 and 4.

As for the change of the unemployment structure, we find that the unemployment situation is consistent with industrial structure change in Taiwan. When there is a huge amount of DFI to Mainland China combined with decreasing labor-intensive job opportunities in Taiwan, it is noted that the unemployment rate is higher for unskilled labor in Taiwan. Moreover, when there is less capital formation in Taiwan, there are less job opportunities created for labor intensive industry and for unskilled workers. It follows that the unemployment rate for the unskilled becomes even higher.

The sharply increased unemployment rate does not only cause lots of social problems, it also enlarges the income inequality at the same time. For those unemployed workers most of them are in the low and middle income families since they have less production skill to start with. Now that they have to face a higher unemployment rate, their average family income tends to go even lower comparing to the high income families. In the following section, we will discuss the relationship between the rising unemployment rate and the widening income inequality in more details.

4. The Widened Income Inequality

Kuznets (1955) stated a famous “inverted U-shape” hypothesis describing the relationship between income distribution and economic development. Kuznets (1955) argues that income inequality will be widened when an economy starts to develop and then the income discrepancy will narrow down after certain point of time. In other words, if one puts the Gini coefficient on the vertical axis and puts time on the horizontal axis, he will find that the Gini coefficient will increase first and then decrease later. However, this famous hypothesis is not suitable for Taiwan. Table 6 shows that, in 1970, the Gini

coefficient in Taiwan was 0.294 and then dropped to 0.277 in 1980. In fact, the Gini coefficient had reached its lowest level at the year of 1980. After 1980, the Gini coefficient started to increase gradually. The same phenomenon happens on both the ratio of income share of the highest 20% to that of the lowest and the ratio of income share of the highest 10% to that of the lowest 10%⁵.

However, what interested us is the fact that the speed of the widening of income inequality becomes much faster than before, especially in the year of 2001. Table 6 shows that the ratio of income share of the highest 20% to that of the lowest 20% for the year of 2001 is 6.39 times which is much higher than the previous year (5.55). In fact, it takes twenty years for the above ratio to increase from 4.17 (1980) to 5.55 (2000). For the ratio of income share of the highest 10% to that of the lowest 10% is even worse. It increased from 38.87 to 61.33 from 2000 to 2001. Again the speed of the widening of income inequality is much faster than before. Now, our question is why the income distribution registered such a huge discrepancy in one year. Since the social demographic composition will not change drastically, the shift in income inequality should be mainly owing to economic reasons.

⁵ There are some papers studying the reasons why the inverted U-shape hypothesis is not suitable for Taiwan, for example Chu (1991) and Chu and Jiang (1994).

Table 6: Income Inequality Indices of Households' Disposable Income

| | 5/1(a) | 10/1(b) | Gini Coefficient |
|------|--------|---------|------------------|
| 1970 | 4.58 | - | 0.294 |
| 1976 | 4.18 | 16.09 | 0.280 |
| 1980 | 4.17 | 15.77 | 0.277 |
| 1985 | 4.50 | 15.14 | 0.290 |
| 1990 | 5.18 | 19.28 | 0.312 |
| 1995 | 5.34 | 23.93 | 0.317 |
| 2000 | 5.55 | 38.87 | 0.326 |
| 2001 | 6.39 | 61.33 | 0.350 |
| 2002 | 6.16 | 51.90 | 0.345 |

Source: DGBAS (2003), *National Income in Taiwan Area of The Republic of China, 2003*. Directorate-General of Budget, Accounting and Statistics, Executive Yuan, Republic of China.

Notes: (a) Ratio of income share of the highest 20% to that of the lowest 20%.

(b) Ratio of income share of the highest 10% to that of the lowest 10%.

The first, and the most, important reason for the income discrepancy is due to the rising of the unemployment rate. As we have mentioned in the previous section that the unemployment rate had increased sharply from 2.99% in 2001 to 4.57% in 2001. It reached 5.17% in 2002, setting the highest record in Taiwan. Furthermore, most of the workers who have lost their jobs are traditional unskilled labor either with less working skill (i.e. less educated workers) or with less experience (i.e. young workers). For those unskilled workers, they are in the bottom of the income distribution in the beginning, and now with some of them having been laid off, the average income for this group of people will be even lower.

Table 7 has shown the income inequality of the number of people for income recipients in different categories by the workers characteristics including gender, age, education, and living areas. We use the population share as the indices. For instance, the ratio of people share of the highest 20% male income earners to that of the lowest 20% is 1.4308 in 2000, which means that the number of male income earners in the highest 20% group is 1.4308 times as much as the number of male income earners in the lowest 20% group. On the other hand, the same index is 0.4669 in 2000 for female earners. The result shows that there are more high income earners for male earners than that of female earners.

Table 7: The Income Inequality Indices of the Number of People for Income Recipients in Different Categories

| | 2000 | | 2001 | | 2002 | |
|----------------------|---------|---------|---------|---------|---------|---------|
| | 5/1(a) | 10/1(b) | 5/1 | 10/1 | 5/1 | 10/1 |
| By Gender: | | | | | | |
| Male | 1.4308 | 0.3556 | 1.3811 | 1.2937 | 1.3962 | 1.3213 |
| Female | 0.4669 | 0.4504 | 0.4989 | 0.4940 | 0.5085 | 0.4999 |
| By Age: | | | | | | |
| Under 25 | 0.0476 | 0.0662 | 0.0344 | 0.0000 | 0.0459 | 0.0432 |
| 25-29 | 1.1614 | 1.8216 | 1.0498 | 1.5704 | 1.0643 | 1.5998 |
| 30-34 | 2.7506 | 4.0150 | 2.6781 | 5.5263 | 2.6033 | 4.3938 |
| 35-39 | 3.0516 | 6.2563 | 3.2077 | 5.9746 | 2.8489 | 5.1386 |
| 40-44 | 3.1907 | 6.0643 | 3.1430 | 6.0524 | 2.6573 | 5.3821 |
| 45-54 | 2.0853 | 3.5567 | 1.9577 | 3.3258 | 2.1933 | 3.4186 |
| 55-64 | 0.5203 | 0.5462 | 0.5416 | 0.5378 | 0.5796 | 0.6575 |
| Over 65 | 0.0891 | 0.0437 | 0.0750 | 0.0455 | 0.0667 | 0.0339 |
| By Education: | | | | | | |
| Illiteracy | 0.0123 | 0.0054 | 0.0154 | 0.0062 | 0.0143 | 0.0091 |
| Primary school | 0.1697 | 0.1242 | 0.1510 | 0.0989 | 0.1742 | 0.1408 |
| Junior High | 0.5971 | 0.5924 | 0.6031 | 0.7175 | 0.4670 | 0.5347 |
| Senior High | 1.6983 | 1.7047 | 1.4895 | 1.4087 | 1.3921 | 1.4384 |
| Vocational School | 1.4312 | 3.5735 | 1.3731 | 2.4629 | 1.2122 | 2.1407 |
| College | 4.6233 | 8.9729 | 4.7209 | 10.7318 | 4.4660 | 7.0399 |
| University | 7.8568 | 10.5493 | 7.4021 | 11.4362 | 7.7026 | 13.5954 |
| Graduate School | 23.7828 | 42.0691 | 21.6787 | 27.2625 | 30.1891 | 32.6540 |
| By Farm and Non-Farm | | | | | | |
| Farmer | 0.1774 | 0.1391 | 0.2276 | 0.1702 | 0.2062 | 0.1683 |
| Non-Farmer | 1.2696 | 1.2948 | 1.2369 | 1.2541 | 1.2289 | 1.2521 |
| By Area: | | | | | | |
| City | 1.6347 | 1.7807 | 1.5817 | 1.6695 | 1.4919 | 1.5648 |
| Township | 0.5813 | 0.4831 | 0.4576 | 0.3442 | 0.4998 | 0.4264 |
| Village | 0.2321 | 0.1652 | 0.1727 | 0.1427 | 0.2287 | 0.1681 |

Source: See Table 6.

Notes: (a) Ratio of people share of the highest 20% income earners to that of the lowest 20%.

(b) Ratio of people share of the highest 10% income earners to that of the lowest 10%.

Now, for the earners under age of 25, the ratio of people share of the highest 20% income earners to that of the lowest 20% is 0.0476 in 2000. It shows that the people share of the highest income for the earners under age of 25 is much less than that of the people share for the lowest income earners. Moreover, the ratio dropped from 0.0476 to 0.0344, implying that there are more low income earners than high income earners for the earners under age of 25. The situation is similar for the age group 25-29 (1.1614 vs. 1.0498) and for the age group 30-34 (2.7506 vs. 2.6781). On the contrary, the ratio of people share of the highest 20% of income earners to that of the lowest 20% is higher for the age group 35-39 and 55-64.

The above situation is even clearer for different education groups. For income earners with lower education level, the ratio of people share of the highest 20% income earners to that of the lowest 20% dropped from 2000 to 2001. For instance, the ratio for earners with a level of primary school dropped from 0.1697 to 0.1510 and it dropped from 1.6983 to 1.4895 for senior high. For earners with graduate degree, the ratio dropped from 23.7828 to 21.6787 from 2000 to 2001, but it then jumped to 30.1891 in 2002. The results indicate that there are more low income earners for the group with lower education level than before, and there are higher income earners for the group with higher education level than before. These findings are consistent with the change of unemployment structure that has been shown in the previous section of this

study.

The second reason for widened income discrepancy in 2000 and 2001 may be explained by the sharply dropped interest rate in Taiwan. For example, the interest rate for one-year time deposit dropped from 5.04% in 2000 to 2.41% in 2001, and it went even lower at 1.86% in 2002. As the interest rate decreased, the people whose income depends mainly upon interest earning were hurt more seriously. To add to the misfortune, most of those people are older and retired pensioners. In Table 7, we could see that the ratio of people share of the highest 20% income earners to that of the lowest 20% for earners over age of 65 has dropped quickly from 0.0891 to 0.0750 and 0.0667 in 2000, 2001, and 2002.

Table 8 combines the above two reasons for the widening of income discrepancy after 2000. The ratio of wage income share of the highest 20% to that of the lowest 20% increased from 10.30 to 11.62 for 2000 and 2001. The ratio of wage income share of the highest 10% to that of the lowest 10% also increased from 67.24 to 76.48. The situation for net property income is even worse. For net property income, the ratio of income share of the highest 20% to that of the lowest 20% increased from 5.00 to 6.73, which again shows that some interest earners' income has dropped sharply. Finally, the ratio of distributed factor income share of the highest 20% to that of the lowest 20% increased from 9.76 to 11.97 in two years and it is even higher for 10% income group (39.04 vs. 61.33).

Table 8: The Income Inequality Indices of the Average Income for Income Recipients

| | 2000 | | 2001 | | 2002 | |
|---------------------------|--------|---------|-------|-------|-------|-------|
| | 5/1(a) | 10/1(b) | 5/1 | 10/1 | 5/1 | 10/1 |
| Compensation of Employees | 10.30 | 67.24 | 11.62 | 76.48 | 11.18 | 87.86 |
| Entrepreneurial Income | 7.96 | 18.72 | 9.84 | 28.00 | 10.09 | 28.86 |
| Net Property Income | 5.00 | 8.75 | 6.73 | 11.94 | 6.06 | 11.14 |
| Interest Payment | 2.46 | 3.20 | 2.40 | 2.93 | 2.65 | 4.26 |
| Distributed Factor Income | 9.76 | 39.84 | 11.97 | 61.33 | 11.17 | 51.90 |

Source: DGBAS (2002), *Report on the Survey of Family Income and Expenditure in Taiwan Area, 2002*, Executive Yuan, ROC.

Notes: (a) Ratio of income share of the highest 20% to that of the lowest 20%.

(b) Ratio of income share of the highest 10% to that of the lowest 10%.

5. Conclusion

Taiwan is famed for her high economic growth rate, low inflation rate, low unemployment rate, and mild income inequality for the past fifty years. The average real growth rate of GDP from 1951 to 2000 is 8.4%, the average inflation rate is 5.6%, and the average unemployment rate is around 2% and never higher than 3%, and the Gini coefficient is around 0.300. However, the so called "economic miracle" has withered since May 2000 when the new government took power. The year of 2001 was the worst year that Taiwan has ever experienced in terms of economic performance. The GDP growth rate dropped to -2.18% which was the only year that Taiwan had a negative economic growth rate. The unemployment rate rose from 2.99% in 2000 to 4.57% in 2001 which was a record high, too. The Gini coefficient also increased from 0.326 to 0.350 in on year. For the year of 2002, though the economic growth rate is better (3.45%), the unemployment rate is still at a high level (5.17%) and so is the income inequality.

The indicators for poor economic performance in 2001 were clearly demonstrated by a sharply dropped domestic investment, a low growth rate of consumption, and a negative growth rate of exports and imports.

The capital formation of private sector in 2001 decreased by NT\$483.6 billion, i.e. 32.5% of investment of 2000. The new job creation has also dropped by about 200,000 jobs for 2001 and 2002, which accounted for about 2% unemployment rate. At the same time, there are lots of jobs having been shifted to the Mainland China owing to a huge amount of direct investment from Taiwan to Mainland China. Since most of the lost jobs are concentrated on low-skilled and labor-intensive jobs, the unemployment rate in Taiwan is higher for unskilled and labor-intensive jobs. When one looks carefully for the unemployment structure, it is clear that most unemployed workers are either the older or the young workers with lower education and lower production skill.

Meanwhile, for those unskilled workers whose income are lower than others in the beginning, now their income is even lower because some of them have lost their jobs and have earned nothing. Therefore, the income inequality is even widened. On the other hand, the interested rate for one-year time deposit has dropped from 5.04% in 2000 to 2.41% and 1.86% for 2001 and 2002. The lower interest rate had made some retired households' income dropped sharply, too. Here the income inequality has added another worsening

factor for widening the gap again.

In fact, Taiwan has created plenty job opportunities for skilled labor in the knowledge-based economy and average salary for skilled labor is higher than before even when Taiwan was suffering a serious economic recession. However, for unskilled workers they have faced lower wage with less job opportunities. This is the basic reason why the income inequality is widened for the past three years. In order to narrow down the discrepancy the best way is to create more jobs for unskilled workers. Since most traditional labor-intensive firms have moved from Taiwan to the Mainland China and the unskilled workers in Taiwan could not compete with their competitors across the Taiwan Strait because of their high labor cost in Taiwan, it is not economically feasible to create manufacturing labor-intensive jobs in Taiwan. What Taiwan should do is to create some labor-intensive jobs on non-tradable goods industries mainly in service sector including tourism industry, medical-care industry, and so on. In the meantime, Taiwan government should put more attention on higher education to help the young workers obtain more working skill so that they can better fit in the knowledge-based economy in the future.

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