

## **CHAPTER 3. Income Inequality and Social Welfare in Taiwan**

As we known, theoretical arguments over the impact of income inequality on social welfare spending are inconclusive. The main purpose of this study is to find out whether the situation in Taiwan is for median voter hypothesis (positive impact) or capital market imperfection (negative impact). Before the model estimation, it is helpful to know more about the real situation of income inequality and social welfare spending in Taiwan. Therefore, the income inequality and social welfare spending situations of Taiwan will be introduced in this chapter.

### **3.1 Income Inequality in Taiwan**

#### **3.1.1 Income Inequality trend of the whole Taiwan**

Large income inequality may cause a lot of social problems like robbery, suicide, mental disease, divorce, child abuse and so on, and all of those problems will harm social security. Therefore, governments always take income inequality as a serious problem. And it is also a popular discussion issue in the academic circle.

Export-oriented economy was the power for Taiwan to progress rapidly from 1964 to 1980 (see Figure 6).<sup>31</sup> In that time, fast wealth accumulation and effective distribution mechanism made Taiwan's Gini index decrease from 32.1% to 27.7% from 1964 to 1980. There existed economic growth and social equality in Taiwan in that period. However, income inequality problem has become more and more serious from 1980 to 2001 in Taiwan (see Figure 6) and Gini index even reached 35% in 2001. The reason that caused the high value of Gini index in 2001 might be the negative

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<sup>31</sup> In Figure 5, Gini index was plotted from 1964 because there's a lack of official Gini index before 1964.

economic growth rate of 2001.<sup>32</sup> Fortunately enough, Gini index has turned to decrease since 2001.

According to the *Report on the Survey of Family Income & Expenditure* of Taiwan, the reasons that caused Gini coefficient decrease from 2002 to 2004 are as follows.

1. Economic growth: Economic growth rate of Taiwan has increased from -2.17% in 2001 to 6.15% in 2004.
2. Policies for helping employment: Programs, such as diverse employment development program, re-enhancing professional ability program, micro-enterprises, and loans for the youth to start an enterprise and so on, help the unemployment rate decreased from 5.17% in 2002 to 4.44% in 2004.
3. Maintaining equal opportunity to receive education: Programs, like education first area, help the 5-year-old disadvantaged children receive education, were driven step by step.
4. Increasing social welfare expenditure: Increasing social welfare expenditure served its function of caring disadvantaged household and eased the unequal income distribution.

Furthermore, Table 4 lists Gini indexes of some countries. Since definitions of income are different among countries, inter-country comparisons of income inequality do not have much meaning. Yet at the same time, trends of Gini index of different countries are still meaningful and have values for reference. It can be seen in Table 4 that all Gini indexes of the 5 countries have an increasing trend. The Gini index of Singapore and United States increased 7% and 6% from 1995 to 2005 respectively.

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<sup>32</sup> The economic growth of Taiwan was -2.17% in 2001.

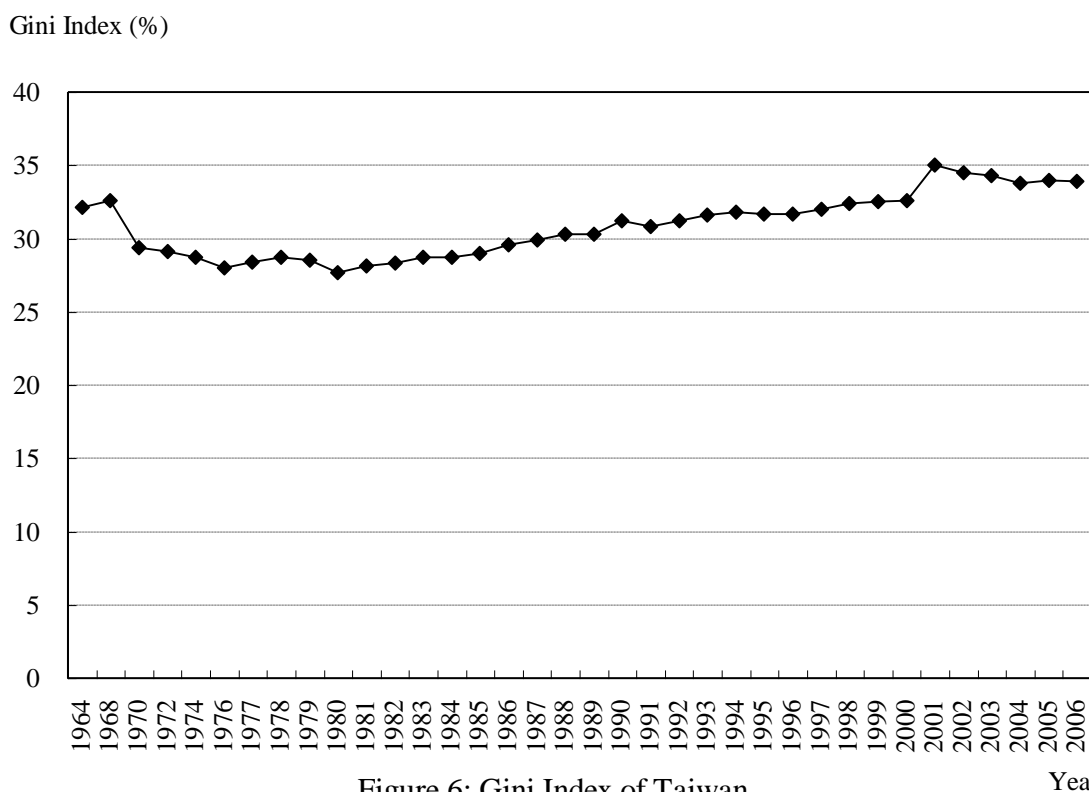


Figure 6: Gini Index of Taiwan

Year

Source: *Report on the Survey of Family Income & Expenditure*

And the Gini index of South Korea increased 7% from 1993 to 2000. Moreover, the Gini index of Taiwan increased 3.1% from 1991 to 2006, and that of Japan increased 3% from 1994 to 2004. Contrast with other countries, the deterioration of the Gini index of Taiwan is not so serious. Furthermore, Gini index of Taiwan even shown an improvement after 2001, but that of Singapore and United States shown an aggravation in recent years. Reasons for the increasing trend brought up by *Report on the Survey of Family Income & Expenditure* of 2006 are division of labor of the global world, development of the knowledge economy, aging of population, popularity of nuclear families and so on.

### 3.1.2 Income Inequality trend of Cities/ Counties of Taiwan

As mentioned in 2.1, this study uses the calculation in Song and Chen (1983) to compute Gini coefficient. By using the concept of Lorenz curve and mean difference

in statistics, the calculation formula brought up by them is:

$$G = \frac{2}{N(N-1)} \left[ (N+1) \sum_{i=1}^N (N-i+1)Y_i \right] \frac{1}{2\bar{Y}} \quad (3-1)$$

where  $G$  is the Gini coefficient of the household,  $N$  is the total number of households,  $Y_i$  is the income of  $i$ th household and  $\bar{Y}$  is the mean income of all households. Huang and Liu (2005) also used the same formula to calculate the Gini coefficient. Apart from using the calculation, this study also takes weight into consideration to make the measurement more accurate.<sup>33</sup> Gini indexes of cities and counties of Taiwan this study computed are listed in Table 5.

In Table 5, dotted lines separate cities and counties by the area they lie in into four parts: north area, middle area, south area and east area from the top to the bottom. Besides, numbers in the parentheses are the rank of income inequality of the cities and counties. In other words, the first, with 1 in parentheses, represents the most equal city/ county of the year. The last, with 23 in parentheses, represents the most unequal city/ county of the year. In addition, shadow parts are the most equal 5 cities/ counties of every year, so those 5 cities/ counties have the lowest Gini indexes in every year.

It is shown in Table 5 that Taipei county, Taipei city, Taoyuan county and Taichung county, Keelung city and Hsinchu county have been the top five for 12, 11, 10, 10, 7 and 7 times during these 13 years respectively. Except for Taichung city, all of them are located in the north area of Taiwan, so it might be concluded from the data that income inequality problem is less serious in the north area of Taiwan. However, there are still cities and counties with high Gini index, relative to other regions, in the north area, like Yilan county and Hsinchu city.

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<sup>33</sup> Huang and Liu(2005) did not take weight into consideration when computed Gini coefficient. The weight means how many households are the same with an observation. Namely, if the weight equals to 10, it means that the observation represents 10 households and the income status of those 10

Table 4: Gini Index of Some Countries

Year	Gini Index				
	Taiwan	Japan	South Korea	U.S.A	Singapore
1991	30.8	–	–	–	–
1992	31.2	–	–	–	–
1993	31.6	–	28.0	–	–
1994	31.8	28.0	–	–	–
1995	31.7	–	–	36.0	45.0
1996	31.7	–	30.0	37.0	–
1997	32.0	–	–	38.0	44.0
1998	32.4	–	–	38.0	45.0
1999	32.5	30.0	–	–	47.0
2000	32.6	–	35.0	–	49.0
2001	35.0	–	–	41.0	49.0
2002	34.5	–	–	41.0	51.0
2003	34.3	–	–	39.0	51.0
2004	33.8	31.0	–	40.0	52.0
2005	34.0	–	–	42.0	52.0
2006	33.9	–	–	–	–

Source: *Report on the Survey of Family Income & Expenditure*

Note: 1. Gini index is the Gini coefficient expressed as a percentage. That is, Gini index is equal to the Gini coefficient multiplied by 100.

2. This table is a collection of official data from different countries' government. The definition of income is varied among countries. The income definitions of Taiwan and U.S.A are both the disposable income of the whole household, but in U.S.A capital gains and non-cash transfers are also included in income. In Japan, income is defined as the average disposable income of the household. And one person households are not included before 1999. In South Korea, one person households, agricultural households and fishing households are not included. In Singapore, income is defined as total income of the whole household before 2000 and personal average income after 2000. Moreover, social welfare transfer and tax expenditure are not included, so Gini index is larger in Singapore.

It also can be found that income inequality problem is more serious in the south area than in the middle area since the top 5 only happened once in the south area.<sup>34</sup> It also can be found that income inequality problem is most serious in the east area. It is

<sup>34</sup> It happened in Tainan city in 1994.

because all Gini index of east area are be ranked above 15, except for the data of Hualien county in 2005. As a whole, the more prosperous cities and counties in Taiwan, like Keelung city, Taipei city, Taipei county, Taichung county, Taichung city and so on, have more equal income distribution. Yet at the same time, the more languishing cities and counties, like Yilan county, Hualien county, Chiayi county, Tainan county, Penghu county, Taitung county, Yunlin county and so on, have more unequal income distribution.

As for the change of income inequality from 1994 to 2006, only 5 cities and counties of Taiwan showed an improvement, a decrease in Gini index. They are Taoyuan county (-0.84%), Hsinchu county (-0.76%), Nantou county (-0.39%), Yunlin county (-0.38%) and Keelung county (-0.28). The other 18 cities and counties all had an increase in Gini index. Among them, both Hualien county (2.37%) and Chiayi city (2.04%) had an increase in Gini index over 2%. The increase of Gini index in Chiayi county (1.76%), Taipei city (1.45%), Tainan county (1.13%), Penghu county (1.13%), Tainan city (1.09), Kaohsiung city 1.07%) and Changhua county (1.01%) were over 1%.

As for the difference between the highest value and the lowest value of Gini index, only in 1994 was the difference below 3%. Furthermore, the difference between the highest value and the lowest value of Gini index is even 6.1% in 2004. The latest data of 2006 also showed a high difference, 4.18%, between them. In addition, more and more Gini index has been above 30% since 2001, and it might because of the negative economic growth rate and the aggravation of the whole macroeconomic environment of 2001.<sup>35</sup> The situation showed that since the obvious deterioration of income inequality problem in 2001, the Gini index has kept high till

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<sup>35</sup> The economic growth of Taiwan was -2.17% in 2001.

now continuously.

Table 5: Gini Indexes of Cities/ Counties in Taiwan (1994–2006)

unit: %

Cities/ Counties	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Keelung City	30.0(15)	28.0(2)	29.3(9)	29.6(9)	28.4(1)	29.2(7)	28.7(2)	29.2(1)	29.6(5)	29.5(4)	29.1(2)	30.1(8)	29.7(8)
Taipei County	28.7(4)	28.7(5)	28.6(3)	28.9(4)	28.5(2)	29.0(3)	28.8(3)	29.5(4)	29.5(4)	29.5(3)	29.1(3)	29.0(3)	29.7(7)
Taipei City	28.1(2)	28.7(6)	28.5(1)	28.2(1)	28.7(4)	29.1(5)	28.9(5)	29.6(5)	29.9(6)	29.6(5)	29.5(5)	29.7(5)	29.5(5)
Yilan County	30.4(17)	31.0(21)	29.6(12)	29.2(7)	29.7(13)	30.7(19)	29.8(13)	31.0(16)	30.2(9)	30.3(13)	29.9(8)	31.1(18)	30.4(11)
Taoyuan County	29.5(9)	28.6(3)	28.8(5)	28.7(3)	29.3(7)	28.7(2)	29.2(7)	29.4(2)	29.2(3)	29.1(2)	28.5(1)	28.9(2)	28.7(2)
Hsinchu County	29.8(14)	28.7(4)	28.9(6)	29.7(12)	29.2(5)	28.4(1)	29.0(6)	29.4(3)	28.6(1)	30.2(12)	29.6(6)	29.4(4)	29.0(3)
Hsinchu City	30.7(19)	30.4(20)	30.1(18)	30.5(21)	31.0(21)	31.5(21)	30.4(19)	31.7(19)	31.4(22)	30.9(18)	34.6(23)	31.8(22)	31.3(17)
Miaoli County	30.6(18)	29.1(9)	30.6(20)	29.8(13)	28.7(3)	29.4(9)	30.4(18)	30.9(15)	30.4(13)	29.9(7)	30.9(16)	30.5(13)	31.0(16)
Taichung County	28.0(1)	27.9(1)	28.5(2)	29.1(5)	29.5(10)	29.2(6)	28.4(1)	29.9(7)	29.1(2)	29.1(1)	29.3(4)	28.9(1)	28.4(1)
Taichung City	29.0(5)	29.4(15)	28.7(4)	28.7(2)	29.7(12)	29.1(4)	28.9(4)	30.7(14)	30.4(12)	30.9(17)	29.9(7)	29.8(6)	29.6(6)
Changhua County	29.6(11)	29.3(14)	29.4(11)	30.1(17)	29.8(14)	29.2(8)	29.3(9)	30.2(12)	30.6(18)	30.8(15)	30.8(14)	30.6(14)	30.7(14)
Nantou County	31.9(23)	29.1(7)	31.6(23)	30.9(22)	30.1(17)	29.8(13)	29.6(12)	31.1(17)	30.4(14)	30.2(10)	31.5(19)	30.5(12)	31.5(19)
Yunlin County	31.0(21)	29.8(17)	30.6(21)	29.2(6)	30.0(16)	29.6(10)	30.2(15)	32.2(21)	30.1(8)	29.7(6)	30.7(13)	31.1(19)	30.7(13)
Chiayi County	29.7(12)	30.4(19)	29.9(16)	30.0(16)	32.2(23)	29.9(15)	30.8(20)	31.4(18)	30.6(17)	31.0(20)	31.8(21)	32.2(23)	31.5(18)
Chiayi City	29.5(8)	29.3(10)	29.8(14)	30.1(19)	30.3(18)	30.5(18)	30.2(14)	29.9(8)	30.5(15)	30.2(11)	31.0(18)	30.9(17)	31.5(20)
Tainan County	29.7(13)	29.3(13)	29.8(15)	29.8(14)	29.7(11)	30.2(16)	30.4(16)	30.5(13)	30.3(11)	31.4(21)	30.8(15)	31.3(20)	30.9(15)
Tainan City	28.4(3)	29.1(8)	29.8(13)	29.3(8)	29.2(6)	29.8(14)	29.5(10)	29.7(6)	30.1(7)	30.0(8)	30.0(9)	30.8(15)	29.5(4)
Kaohsiung County	29.5(7)	29.3(11)	29.4(10)	29.9(15)	29.9(15)	29.7(11)	29.3(8)	30.1(11)	30.5(16)	30.5(14)	30.4(11)	30.0(7)	30.2(10)
Kaohsiung City	29.6(10)	29.5(16)	29.0(7)	29.7(11)	29.3(8)	29.7(12)	30.4(17)	30.0(10)	30.3(10)	30.1(9)	30.4(12)	30.4(11)	30.6(12)
Pingtung County	29.2(6)	29.3(12)	29.1(8)	29.7(10)	29.4(9)	30.3(17)	29.6(11)	30.0(9)	30.8(20)	30.9(19)	30.0(10)	30.2(9)	29.8(9)
Penghu County	31.2(22)	30.1(18)	30.3(19)	30.4(20)	30.5(19)	30.8(20)	31.8(21)	32.7(23)	31.7(23)	30.9(16)	30.9(17)	30.9(16)	31.6(21)
Taitung County	30.8(20)	31.4(22)	31.5(22)	30.1(18)	30.6(20)	31.7(22)	31.9(22)	32.7(22)	31.4(21)	32.3(23)	32.4(22)	31.6(21)	31.9(22)
Hualien County	30.2(16)	31.6(23)	30.0(17)	30.9(23)	31.0(22)	31.7(23)	32.0(23)	32.2(20)	30.6(19)	31.8(22)	31.6(20)	30.3(10)	32.6(23)
Taiwan	31.8	31.7	31.7	32.0	32.4	32.5	32.6	35.0	34.5	34.3	33.8	34.0	33.9

Source: calculated by this study

Notes: 1. Dotted lines separate cities and counties by the area they lie in into four parts: north area, middle area, south area and east area from the top to the bottom.

2. Numbers in the parentheses are the rank of income inequality. The first, with 1 in the parentheses, represents the most equal city/ county with the lowest Gini index.

3. Shadow parts are the most equal 5 cities/ counties of every year.



### 3.2 Social Welfare in Taiwan

Since candidates for county magistrates and city mayors usually took social welfare policy as a tool of the election in 1993, there had been more and more social welfare policies and budget of Taiwan, such as farmer insurance, national health insurance and so on. (see Table 6) As a result, the period of the data covered by this study is 1994-2006. Moreover, the proclamation of *Self-Government Law for Provinces and Counties* (1994), *Municipal Self-Government Law* (1994), *Local Government Act* (1999), and *The Law of Subdivision of Financial Income and Expenditure* (1999) affected the division of social welfare policy between the central government and local governments and laid a good foundation for self-government of local governments.<sup>36</sup>

At the current stage, social welfare policies of Taiwan are based on *The Social Welfare Policy Guidelines*, which is amended and proclaimed in 2004. The guideline addresses that the purpose of social welfare policy is to ensure peoples' basic livelihood, promote stability and harmony in the family, cooperation and solidarity in society, and enhance quality in the work force and accumulation of economic capital and stability of democratic polity. Based on international convention,<sup>37</sup> historical tradition and the present practice of social policy in Taiwan, social welfare policy of Taiwan are composed of six main items: social insurance & social allowance, social assistance, welfare services, employment security, social (public) housing & community development, and health care (see Figure 7).<sup>38</sup> The main purposes of

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<sup>36</sup> The central government gave right and money to local governments in *Local Government Act* and *The Law of Subdivision of Financial Income and Expenditure* respectively.

<sup>37</sup> Based on international convention, the main contents of social welfare policy are social insurance, social assistance, social services, health care, employment services, social (public) housing and education.

<sup>38</sup> Executive Yuan (2004), *The Social Welfare Policy Guidelines*.

Table 6: Rules and Regulations Applicable to Social Welfare

Rules & Regulations	Time of Promulgation	Time of Last Revision
Educational Association Law	1931	1985
Cooperative Law	1934	2002
Law of Citizen's Organization	1942	2002
Measure for the Uniform Donation Movement	1942	
Regulations governing Labor Insurance in Taiwan Province	1950	
Servicemen's Insurance Plan	1950	
Law of the Red Cross Society, China	1954	2000
Occupational Labor Insurance Plan for Taiwan Province	1951	
Fishermen's Insurance Plan	1953	
Insurance Program for Army, Navy and Air Force Personnel	1953	1956
Government Employees Law	1958	
Labor Insurance Act	1958	2002
Insurance Plan for Retired Employees	1964	
Servicemen Insurance Provisions	1970	
Law of Commercial Organization	1972	2002
Child Welfare Law	1973	2002
Law of Industrial Organization	1974	2002
Comprehensive Safety Insurance for Students in Taiwan Province	1975	
Senior Citizen Welfare Law	1980	2002
Insurance Provisions for Teachers and Employees of Private Schools	1980	
Social Relief Law	1980	
Act of Protecting Physically & Mentally Disabled People	1980	2001
Public Assistance Act	1980	2000
Labor Standards Law	1984	2002
Health Insurance for Spouses of Retired Government Employees	1985	
Health Insurance for Spouses of Retired Private School Teachers, employees and Their Spouses	1985	
Youth Welfare Law	1989	2002
Farmers' Health Insurance	1989	
Statute of Farmers' Health Insurance	1989	2000
Temporary Provisions for Family Health Insurance	1990	
Health Insurance for the Disabled and Handicapped	1991	

Table 6: Rules and Regulations Applicable to Social Welfare (continued)

Rules & Regulations	Time of Promulgation	Time of Last Revision
Work Outline of Community Development	1991	1999
Employment Service Act	1992	2002
Statute of Handling Compensation for the Victims in the “228” Incident	1995	2001
National Health Insurance	1995	2006
Anti-Juvenile Prostitution Law	1995	
Child and Youth Sexual Prevention Act	1995	2005
Sexual Assault Prevention Act	1997	2005
Social Worker Act	1997	2002
Low of Credit Union	1997	2002
Domestic Violence Prevention Act	1998	
Statute of Assisting Women & Families in Dire Condition	2000	
Voluntary Service Law	2001	
Gender Equality in Employment Law	2002	
Temporary Act for Welfare Subsidies to the Elderly	2002	
Children and Youth Welfare Law	2003	
Gender Equality Education Law	2004	
Sexual Harassment Prevention Act	2005	
National Pension Act	2007	

Source: Department of social affairs, ministry of interior (2006) and Laws and regulations database of the Republic of China

those items are as follows.

1. Social insurance & social allowance: The aim of social insurance is to prevent economic risks people face due to ageing, illness, birth, death, disability, industrial accidents, unemployment or retirement and to cover workers’ compensation, health insurance, pensions and unemployment insurance. Except for national health insurance, almost other things covered by social insurance are related to profession. The social allowance is a scheme for those contingencies of the social insurance fail

to cover, and design for the citizens special need, not based on income tested. The social allowance is mainly for the old, agricultural workers, military officers, government officials and educational personnel.

2. Social assistance: The aim of social assistance is to maintain acceptable subsistence of people in their residence area.
3. Welfare services: Because of differences in age, sex, condition in body, race, religion, marital status, sexual orientation among the features of social population, the aim of welfare services is to take care of their diversified health, protection, education, employment, social participation, development and to meet their requirement by getting united with families and the civil society, providing appropriate service as to improve their development in body and/or mind.
4. Employment security: The aim of employment security is to tie up with education and job training, benefit the manpower and capital, promote employment matching, protect laborers from employment discrimination, prevent industrial injury, ensure those who are vulnerable in the labor market, and promote the vocational training, employment service of aboriginal races and their diversified groups.
5. Social (public) housing & community development: The aim of social (public) housing & community development is to ensure all people a proper house to live in.
6. Health care: The aim of health care is to construct healthy cities and towns which is good for residents in body and mind.

Figure 8 shows the social welfare spending and its proportion to total expenditure of the central government of Taiwan. Except for 2001, 2002 and 2004, social welfare spending of the central government all showed an increase, contrast

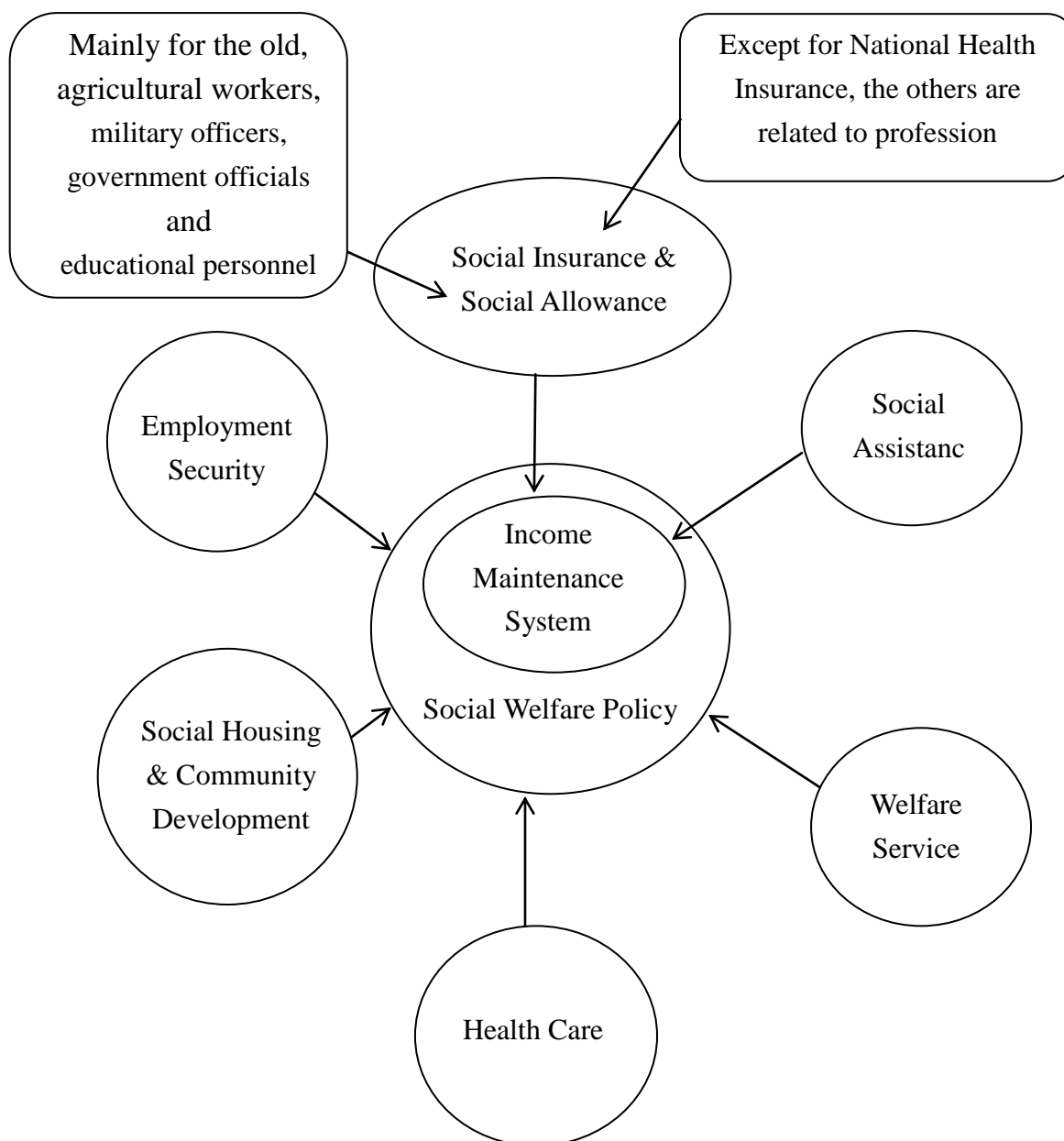


Figure 7 : The Structure of Social Welfare in Taiwan

Source: Huang and Kang (2007)

with the previous year, in other years from 1994 to 2006. However, the proportion of social welfare spending showed increases in 1995, 2000, 2001, 2004, 2004, 2005 and 2006, and decreases in 1996, 1997, 1998, 1999 and 2002. In 1996, 1997, 1998 and 1999, an increase in spending went with a decrease in proportion, so the reason that caused the increase of social welfare spending might be the expansion of the total

central expenditure, not the expansion of the government spending on social welfare itself.

Furthermore, it can be seen that there are two great increases of social welfare spending and its proportion on total expenditure of the central government of Taiwan in 1995 and 2000. The reasons for these two increases are national health insurance in 1995 and 921 earthquake in 1999 respectively. Besides, it is also shown that both social welfare spending and the proportion of social welfare spending to total central expenditure have kept rising in recent years.

Figure 9 shows the social welfare spending and its proportion to total expenditure of all local governments of Taiwan. Except for 2000, 2002 and 2003, social welfare spending of all local governments of Taiwan all showed an increase, contrast with the previous year, in other years from 1994 to 2006. However, the proportion of social welfare spending showed increases in 1995, 1996, 1999, 2001, 2005 and 2006, and decreases in 1997, 1998, 2000, 2002, 2003 and 2004. The spending and the proportion went inversely in 1997, 1998, 2004 and 2006. It is interesting that the social welfare spending increased only 2.38%, but the proportion of it decreased 30.03% from 1997 to 1998. Therefore, the increase of social welfare spending might not represent that the government spend more on social welfare.

Furthermore, it can be seen that there is a great increase of social welfare spending in 2001. If we further investigate the data of Table 7, it can be found that the proportion of social welfare spending to total local expenditure of Taichung county and Nantou county increased the most from 2000 to 2001 among all cities and counties. Therefore, the great increase of social welfare expenditure in 2001 might caused by 921 earthquake. Though the social welfare proportion line of all the local

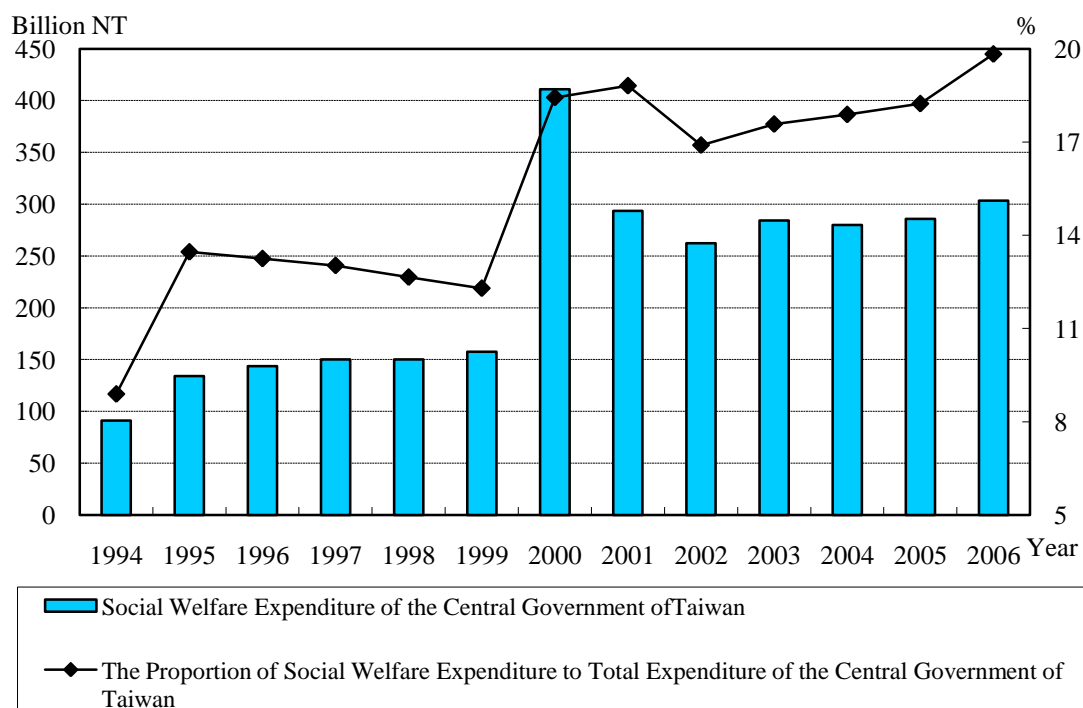


Figure 8: Social Welfare Spending of the Central Government  
Source: Government Finance Statistics Yearbook

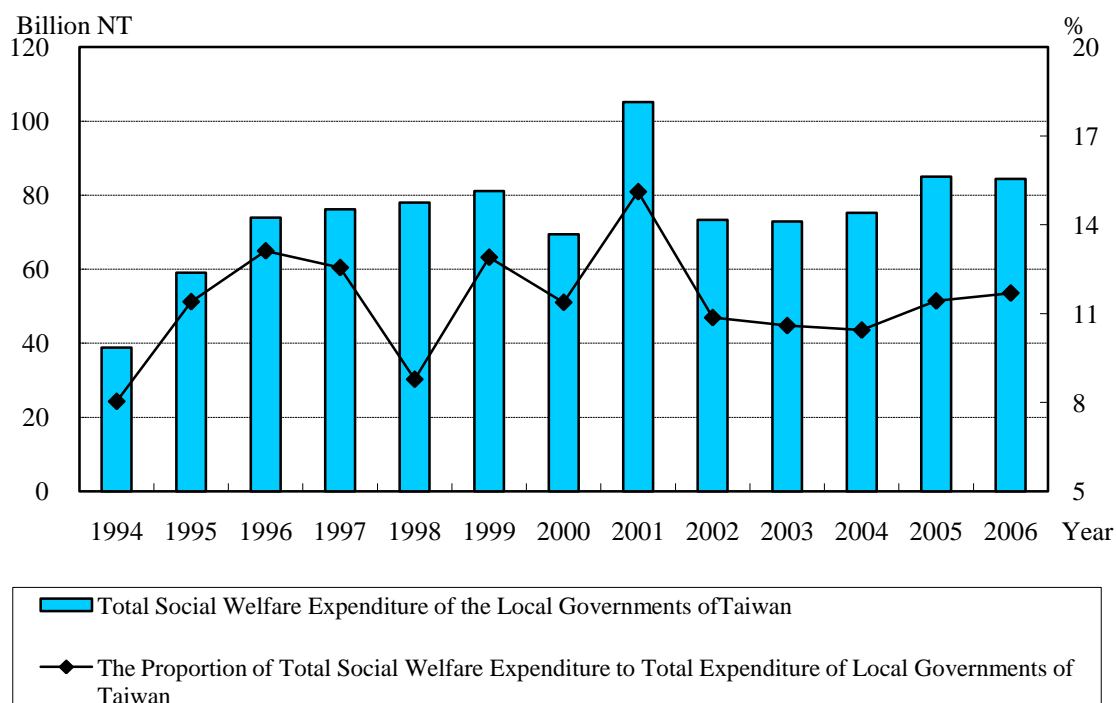


Figure 9: Total Social Welfare Spending of Local Governments  
Source: Ministry of Audit, Republic of China

governments of Taiwan does not have a significant rising pattern, the proportion of total social welfare expenditure to total local expenditures of local governments still has an increasing trend from 2004 to 2006.

Table 7 lists the social welfare spending in percent of total local expenditure of cities and counties of Taiwan. The same with Table 5, dotted lines separate cities and counties by the area they lie in into four parts: north area, middle area, south area and east area from the top to the bottom. Besides, numbers in the parentheses are the rank of the proportion of social welfare spending to total local expenditure of the cities and counties (SW). In other words, the first, with 1 in parentheses, represents the city/county with highest SW of the year. The last, with 23 in parentheses, represents the city/county with lowest SW of the year. The shadow parts are the 5 cities/counties with the highest SW of every year.

As for the change of SW from 1994 to 2006, only 4 cities and counties of Taiwan showed a decrease. They are Chiayi city (-3.65%), Tainan city (-1.6%), Yilan county (-0.89%), and Kaohsiung city (-0.8). The other 19 cities and counties all had an increase in SW. Among them, both Changhua county (6.77%) and Penghu county (26.4%) had an increase in SW over 6%. Both Yunlin county (5.21%) and Hsinchu county (5.1%) had an increase over 5%. The increase of SW of Hsinchu county (4.44%), Taipei city (3.79%), Chiayi county (3.9%), Pingtung county (3.88%) and Hualien county (3.09%) were over 3%.

As for the difference between the highest value and the lowest value of SW, only in 1994 was the difference below 10%, there are differences over 10% in 1995 to 2006. The difference between the highest value and the lowest value of SW was even 41.01% in 2001. The highest SW in 2001 happened in Nantou county, and the SW is 47.37%. It means that the government of Nantou county spent 47.37% of its total



local expenditure on social welfare spending in 2001, and it is because of the 921 earthquake in 1999.

It is also shown in Table 7 that Hsinchu county, Taipei city, Keelung city and Penghu county have been the top five with higher SW for 13, 12, 6 and 6 times during these 13 years respectively. Except for Penghu county, all of them are situated in the north area of Taiwan, so it might be concluded from the data that cities and counties in north area tend to spend more on social welfare. However, there are still cities and counties with low SW, relative to other regions, in the north area, like Yilan county and Hsinchu city. As we mentioned above, income inequality problems of Yilan county and Hsinchu city are more serious than the other cities and counties in north area. Therefore, data of north area might imply a negative link between income inequality and social welfare spending.

On the other hand, SW of east area seems to be lower than north area in Table 7. However, as we mentioned above, Table 5 shows that income inequality problem is most serious in the east area, then there shows a positive link between income inequality and social welfare spending from the data of east area. It is guessed that the positive link is caused by the U-shaped relationship of income inequality and redistribution brought up by Benabou (2000). In other words, it might be that the income inequality problem of the east area of Taiwan is so serious that the impact of income inequality on social welfare turns to be positive because of the skewness effect.

Table 7: Social Welfare Spending in Percent of Total Local Expenditure of Cities/ Counties in Taiwan (1994-2006)

unit: %

County/ City	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Keelung City	10.08(8)	11.31(8)	12.10(8)	14.32(6)	17.52(2)	15.82(3)	12.97(3)	16.02(5)	14.11(3)	11.89(5)	10.55(10)	11.38(11)	11.97(7)
Taipei County	8.65(13)	10.97(11)	11.53(9)	14.70(5)	17.40(3)	12.71(6)	8.90(12)	7.37(21)	7.74(20)	6.99(22)	9.12(17)	9.23(19)	9.95(18)
Taipei City	12.03(3)	16.99(2)	18.21(2)	15.31(4)	15.68(5)	17.20(2)	17.27(2)	15.08(7)	14.57(2)	14.25(3)	13.02(3)	15.90(2)	15.82(2)
Yilan County	10.68(7)	11.14(9)	8.80(17)	9.69(16)	9.84(12)	8.34(16)	6.96(17)	9.21(19)	7.35(21)	8.20(18)	8.88(18)	10.34(14)	9.79(19)
Taoyuan County	6.82(19)	7.66(19)	11.20(10)	15.64(3)	16.73(4)	13.15(5)	10.17(9)	12.56(9)	7.92(19)	7.23(21)	7.50(20)	8.38(20)	7.47(20)
Hsinchu County	15.39(1)	21.91(1)	19.51(1)	19.99(1)	21.70(1)	20.67(1)	19.13(1)	18.69(3)	18.70(1)	20.84(1)	18.79(1)	19.00(1)	19.83(1)
Hsinchu City	5.83(22)	7.07(21)	7.42(21)	6.86(21)	9.43(13)	10.44(10)	9.60(10)	8.48(20)	11.12(10)	11.70(7)	7.67(19)	10.15(16)	10.93(15)
Miaoli County	8.23(15)	9.59(15)	10.59(14)	10.37(12)	12.77(7)	13.61(4)	11.02(7)	9.23(18)	8.73(17)	9.14(16)	10.41(11)	10.33(15)	10.99(13)
Taichung County	7.65(18)	7.22(20)	8.66(18)	10.79(11)	11.77(9)	7.49(18)	5.43(22)	31.63(2)	9.61(15)	8.92(17)	9.92(13)	9.46(18)	10.60(16)
Taichung City	6.12(21)	6.95(22)	6.07(23)	4.72(23)	5.14(23)	7.76(17)	9.27(11)	7.30(22)	6.44(22)	7.46(20)	7.45(21)	7.05(22)	7.24(21)
Changhua County	5.41(23)	5.92(23)	6.28(22)	6.36(22)	5.78(22)	5.52(23)	5.85(20)	9.29(17)	9.65(14)	10.32(13)	9.88(14)	10.44(13)	12.19(6)
Nantou County	9.90(9)	12.27(7)	14.95(3)	15.99(2)	14.50(6)	8.92(14)	6.17(19)	47.37(1)	9.59(16)	9.90(14)	9.95(12)	11.60(10)	10.97(14)
Yunlin County	6.52(20)	7.99(18)	8.38(19)	7.80(19)	7.62(19)	9.34(11)	10.72(8)	15.98(6)	12.38(7)	11.38(8)	11.45(8)	11.86(8)	11.72(10)
Chiayi County	9.52(11)	11.00(10)	11.14(11)	9.88(15)	9.41(14)	9.18(12)	7.93(23)	13.73(8)	12.49(6)	14.02(4)	15.84(2)	15.49(3)	13.42(4)
Chiayi City	10.87(5)	8.81(16)	7.54(20)	7.37(20)	6.73(21)	5.90(22)	5.83(21)	9.89(16)	8.12(18)	8.06(19)	6.68(22)	7.70(21)	7.22(22)
Tainan County	9.89(10)	13.81(5)	12.50(7)	12.65(7)	12.55(8)	11.90(8)	11.81(5)	11.58(10)	9.90(12)	11.04(10)	11.58(7)	13.13(4)	11.51(12)
Tainan City	8.13(16)	10.19(14)	9.02(16)	7.95(18)	7.98(18)	7.20(20)	6.29(18)	6.36(23)	4.58(23)	4.92(23)	5.38(23)	4.94(23)	6.47(23)
Kaohsiung County	12.62(2)	14.26(3)	13.89(5)	11.75(9)	9.09(15)	9.16(13)	8.35(13)	10.07(15)	11.00(11)	10.77(11)	9.87(15)	11.26(12)	12.77(5)
Kaohsiung City	11.28(4)	14.09(4)	14.04(4)	12.06(8)	10.79(10)	10.92(9)	11.61(6)	10.36(14)	9.80(13)	9.68(15)	9.18(16)	9.84(17)	10.48(17)
Pingtung County	7.91(17)	8.67(17)	9.11(15)	9.59(17)	8.40(17)	7.43(19)	7.35(15)	11.12(11)	11.21(9)	10.55(12)	10.59(9)	11.67(9)	11.78(9)
Penghu County	8.31(14)	10.65(12)	11.08(12)	9.92(14)	10.44(11)	12.13(7)	11.87(4)	17.21(4)	13.36(4)	14.29(2)	11.61(6)	12.96(5)	14.71(3)
Taitung County	8.81(12)	10.31(13)	10.81(13)	10.14(13)	9.06(16)	8.43(15)	7.69(14)	10.88(13)	12.71(5)	11.82(6)	12.10(4)	12.64(6)	11.90(8)
Hualien County	10.85(6)	12.99(6)	13.60(6)	11.18(10)	7.07(20)	6.96(21)	7.11(16)	11.05(12)	11.92(8)	11.30(9)	11.92(5)	12.29(7)	11.61(11)
Taiwan	8.89	13.46	13.25	13.03	12.65	12.29	18.43	18.81	16.9	17.57	17.88	18.23	19.83

Source: Ministry of Audit of Republic of China and Department of Budget, Accounting and Statistics of County/ city government.

Notes: 1. The order of Cities/ counties is the same as Table 5 for the convenience of comparison.

2. Shadow parts are the 5 cities/ counties with the highest proportion of social welfare expenditure to total local expenditure of every year.

3. To keep consistency of the data, expenditure for sinking fund has been excluded from all total local expenditure from 1994 to 2006.