The Current Status of Income Distribution in China --the case of Zhejiang Province[1]

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ABSTRACT: *The income distribution in China has become much more unequal between rural and urban areas, coastal regions and inland regions, and different industry sectors. Taken Zhejiang as an example, this paper studies Zhejiang's current status income distribution and finds that Zhejiang's income gap is relatively low compared with the national level, and the inomce differences is experiencing an shrinked tendency in recent years. The results of this study can serve as a useful reference for policy makers in terms of income distribution reform and achieving economic growth.*
Keywords: Income distribution, China, Zhejiang, Theil Index

I. INTRODUCTION

The issue of income inequality in China has attracted world wide attentions. The income distribution in China has become much more unequal between rural and urban areas, coastal regions and inland regions, and different industry sectors. For example, in 1990, the income per capita for urban households was 1,516 yuan, which was 1.53 times that of rural households. However, this urban and rural inequality increased to 2.75 in 2014. The Gini coefficient was only 0.16 before China's reform and opening up policies were implemented in 1978. According to the National Bureau of Statistics' recent report, the Gini coefficient was 0.49 in 2008 and 0.47 in 2014, both of which crossed the international warning line, which implies that China's inequality is becoming dangerously severe.

Zhejiang province, as one of the most developed provinces in China, is always stepped in the forefront of China's reform and modernization. The reform in the field of income distribution experiences great in Zhejiang. What's the current status of income distribution in Zhejiang? How about the income gap among different industries, between urban and rural housheold and in different regions? The following paper tries to answer these questions. The second part studies Zhejiang's income distribution among different industry sectors, between rural and urban areas, and in different cities. This is followed by a Theil index of income distribution which investigate the overall income distribution situation as well as Zhejiang's 11 cities' in the third part. Finally, a discussion of Zhejiang's income distribution and policy implications are given in the final part.

II. THE INCOME DISTRIBUTION IN ZHEJIANG

2.1 Income gap among different industries

Judging from the annual average wages of employees in different industries of Zhejiang Province, employees in the financial sector enjoy the highest average pay during 2005-2014 while those in lodging & catering industries obtain the lowest average pay. The absolute income difference between industries with the highest and lowest incomes is gradually widening. As illustrated by Table 1 which shows the average income of urban employees in Zhejiang Province, the average income difference between financial sector and lodging & catering industries is 35,000 yuan in 2005. That number rose to 73,500 yuan in 2010 and 90,100 yuan in 2014. Nevertheless, the ratio between income differences is shrinking: in 2010 the annual average income of the industry with the highest salary is 3.98 times as much as that of the industry with the lowest salary, while in 2014 that ratio lowered to 3.24. In addition, compared to the national level, the income gap between different industries in Zhejiang is relatively low. Nationally speaking, the financial sector is also the industry with the highest income, while people hired in farming, forestry, animal husbandry, and fishery industry obtain the lowest incomes. In 2014, the ratio between the above two is 3.82 in China, higher than that number (3.24) of Zhejiang Province.

Table 1. The annual average wages of employees in different industries of Zhejiang

Industry	2005	2010	2014
Farming, forestry, animal husbandry, and fishery	24,410	34,088	50,469
mining	18,756	28,330	49,626
Manufacturing	16,446	29,671	51,295
Electricity gas and water production and supply i	46,311	77,180	103,547
construction industry	18,837	28,595	46,149
Transportation, warehousing and postal service	29,218	48,359	70,156
Information transmission computer services and software	54,870	77,125	114,908
Wholesale and Retail Trade	26,150	39,901	60,533
Lodging & catering	15,973	24,679	40,210
Financial sector	50,972	98,135	130,337
Real estate	29,200	42,290	61,529
Leasing and Commerical Service	22,939	32,450	57,268
Scientific research technical services and geological exploration	37,031	56,621	90,368
Water conservancy environment and public facilities management	24,368	32,462	50,161
Resideng Services and Other	23,834	35,127	46,508
Education	36,644	63,693	80,038
Health, social security and social wlefare	39,757	62,508	95,067
Culture, Sports and Entertainment	37,564	56,313	78,311
Public Management and Social Organization	44,413	64,667	85,414
Total	**25,696**	**40,640**	**61,572**

Data source: CSMAR database.

2.2 Income gap between urban-rural households

Judging from the disposable incomes per capita, the incomes of urban and rural areas in Zhejiang Province are gradually increasing: in 2014 the per capita disposable incomes in urban and rural areas reached 19,373 yuan and 40,393 yuan respectively, 1.37 times and 1.96 times as much as the national average. If calculated based on the constant price of 2002, the per capita disposable income of Zhejiang's rural area increased by 1.82 times from 2002 to 2014, with an average annual growth rate of 9.01%; the per capita disposable income in urban area increased by 1.59 times, with an average annual growth rate of 8.26%. Observation into the urban-rural income gap shows that, since the start of the twenty-first century, the ratio between per capita urban income and per capita rural income follows the pattern of an inverted "U". The ratio of per capita urban-rural incomes was 2.37 in 2002. After that, the urban-rural income gap gradually expanded and rose to 2.71 in 2006. Together with the advancement of income distribution reform initiated in 200 8, the ratio gradually shrank to 2.28 in 2014 (calculation based on the constant price of 2002 ,see Figure 1).
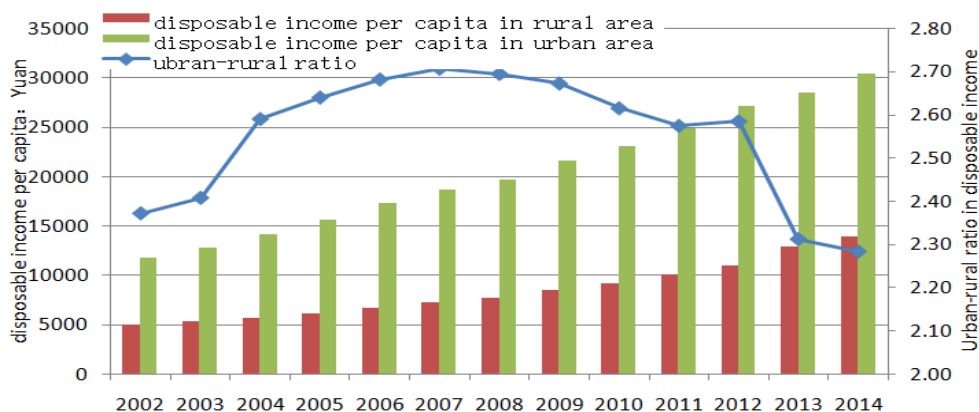

Figure 1. per capita disposable incomes between urban and rural areas in Zhejiang Province

Data source: National Statistics Bureau. Zhejiang Statistic Yearbook by National Statistics Bureau (2015). adjusted based on CPI with the constant yuear of 2002. Compared with the other 30 provinces (municipalities or autonomous regions), Zhejiang has a relatively small difference in terms of urban-rural income distribution. Table 2 reveals the gap in urban-rural disposable incomes which are calculated based on the current prices. Judging from this, Tianjin enjoys the smallest urban-rural income gap, with the urban-rural income ratio in 2014 at 1.852; Zhejiang is ranked at the second place, with the ratio in 2014 at 2.0852. The urban-rural income gap in other provinces are also revealed in Table 2.

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[2] Note: This ratio is calculated based on the current price; in the above passage that ratio in 2014 is 2.28. This new number is modified according to the respective CPI number of 2014 in urban and rural areas in Zhejiang Province relative to the data of 2002.

Table 2. The urban-rural ratio of disposable income in China's 31 province

No.	Region	2013 year	2014 year
1	Tian Jin	1.888	1.852
2	**Zhejiang**	**2.120**	**2.085**
3	Ji Lin	2.181	2.154
4	Hei Longjiang	2.225	2.163
5	Hu Bei	2.339	2.291
6	Jiang Su	2.336	2.296
7	Shang Hai	2.336	2.305
8	He Bei	2.419	2.370
9	He Nan	2.424	2.375
10	Jiang Xi	2.434	2.403
11	Fu Jian	2.470	2.429
12	Shan Dong	2.515	2.459
13	Hai Nan	2.546	2.470
14	An Hui	2.575	2.505
15	**Bei Jing**	2.606	2.572
16	Si Chuan	2.652	2.593
17	Liao Ning	2.627	2.599
18	Guang Dong	2.669	2.625
19	Hu Nan	2.697	2.641
20	Chong Qing	2.715	2.650
21	Xin Jiang	2.688	2.661
22	Shan(山) Xi	2.800	2.732
23	Ning Xia	2.826	2.769
24	Guang Xi	2.911	2.841
25	Inner Mongolia	2.894	2.842
26	Tibet	3.112	2.992
27	Qing Hai	3.150	3.063
28	Shan（陕） Xi	3.151	3.072
29	Yun Nan	3.340	3.259
30	Gui Zhou	3.487	3.380
31	Gan Su	3.556	3.474

Data source: Author calculated based on the data in China Statistic Yearbook by National Statistics Bureau(2015). China Statistics Press

Further observation into the urban-rural income ratio in the 11 prefecture-level cities of Zhejiang Province indicates that the ratios of urban-rural disposable incomes in Ningbo, Jiaxing, Huzhou, and Zhoushan are all below 2.0, far lower than the national average. In 2014, that ratio in these four cities are 1.991, 1.870, 1.904, and 1.909 respectively. Relatively speaking, Lishui and Jinhua have the largest urban-rural income gaps, with their urban-rural income ratio at 2.442 and 2.350 (Table 3).

Table 3. the ratio between urban-rural income in Zhejiang's 11 cities(2002-2014)

region/year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Zhejiang Province	*2.372*	*2.407*	*2.590*	*2.640*	*2.681*	*2.706*	*2.694*	*2.672*	*2.615*	*2.574*	*2.584*	*2.312*	*2.283*
Hangzhou	2.063	2.047	2.275	2.340	2.406	2.469	2.474	2.469	2.461	2.311	2.284	2.266	2.075
Ningbo	2.250	1.857	2.049	2.403	2.395	2.413	2.426	2.352	2.285	2.257	2.242	2.213	1.991
Wenzhou	2.866	2.867	3.102	3.122	3.100	3.038	3.034	3.014	2.952	2.605	2.575	2.549	2.287
Jiangxin	2.080	1.558	1.628	2.181	2.145	2.058	2.015	1.947	2.067	2.050	2.085	2.074	1.870
Huzhou	2.254	1.719	1.792	2.304	2.262	2.285	2.228	2.150	2.092	2.074	2.089	2.074	1.904
Shaoxing	2.065	1.731	2.019	2.426	2.396	2.427	2.357	2.296	2.322	2.279	2.269	2.249	2.008
Jinhua	2.710	2.740	3.009	3.010	3.124	3.097	2.843	2.766	2.651	2.719	2.717	2.686	2.350
Quzhou	2.595	2.512	2.822	2.893	2.922	2.935	2.898	2.894	2.902	2.808	2.665	2.642	2.181
Zhoushan	2.358	1.934	2.394	2.330	2.346	2.318	2.276	2.148	2.099	1.995	2.003	1.996	1.909
Taizhou	2.378	2.519	2.911	2.954	2.916	2.903	2.891	2.811	2.600	2.527	2.539	2.505	2.249
Lishui	3.391	3.517	3.887	3.880	4.579	4.623	3.849	3.895	3.486	3.254	3.234	3.160	2.442

Data source: Author calculated based on the data in Zhejiang Statistic Yearbookby National Statistics Bureau(2015). China Statistics Press

2.3 Income gap in different regions

In terms of residents' per capita disposable incomes, every prefecture-level city of Zhejiang Province has witnessed an evident rise since the 21st century. Except Quzhou and Lishui, the gap between different regions of Zhejiang Province proves to be insignificant (Figure 2.4). For example, in 2015 Hangzhou and Ningbo boast the highest per capita disposable incomes, which are 48,316 yuan and 47,852 yuan respectively; while Lishui and Quzhou have the lowest per capita disposable incomes, which are 32,875 yuan and 33,212 yuan respectively.

Table 4. The disposable income per capita in Zhejiang's 11 cities.Unit：Yuan

Region/year	2002	2005	2011	2012	2013	2014	2015
Hangzhou	11,778	16,601	32,434	35,704	39,310	44,632	48,316
Ningbo	12,970	17,394	34,321	38,043	41,657	44,155	47,852
Wenzhou	14,591	19,805	31,749	34,820	37,852	40,510	44,026
Jiangxin	11,504	16,189	31,520	35,696	39,087	42,143	45,499
Huzhou	11,388	15,561	29,367	32,987	36,220	38,959	42,238
Shaoxing	11,749	17,319	33,273	36,911	40,454	43,167	46,747
Jinhua	11,264	15,387	29,729	33,164	36,423	39,807	43,193
Quzhou	9,330	13,006	24,900	26,232	28,883	30,583	33,212
Zhoushan	10,985	15,524	30,496	34,224	37,646	41,466	44,845
Taizhou	11,817	18,313	30,490	33,979	37,038	39,763	43,266
Lishui	9,901	12,846	23,391	26,309	29,045	30,413	32,875

Data source: National Statistics Bureau. Zhejiang Statistic Yearbook(2015). China Statistics Press.

III.　THE ASSESSMENT OF ZHEJIANG'S INCOME INEQUALITY

Many indexes can be used to assess income inequality. Among them, Theil Index is relatively sensitive to the income fluctuation of high-income groups and low-income groups. Besides, the urban-rural income gap in China mainly reflects income changes at both ends (Cao Yu, et al., 2010). Hence, this research adopts Theil Index to analyze the income distribution gap between different regions. Theil Index can be illustrated by the following formula (1):

$$TL_{it} = \sum_{j=1}^{2} \left[\frac{p_{i,j,t}}{p_{i,t}} \right] \ln \left[\frac{p_{i,j,t}}{p_{i,t}} \bigg/ \frac{z_{i,j,t}}{z_{i,t}} \right] \qquad (1)$$

In the above formula, t denotes "year", and i refers to "region" whose valve ranges from 1 to 11 signifying the 11 prefecture-level cities; j refers to urban/rural regions, with j=1 signifying urban region and j=2 signifying rural region. pij denotes the total income of urban area (j=1) and rural area (j=2) in region i, which is calculated by the product of population×per capita income; and pi refers to the total income of region i. zij signifies the urban (j=1) or rural (j=2) population in region i, and zi signifies the total population of region i. The lower Theil Index becomes, the smaller the income gap is.Considering the CPI difference in different years and in urban/rural regions, the writer has adjusted the data concerning residents' per capita disposable incomes. With the year 2002 as the basis, the CPI of urban and rural areas has been correspondingly modified. After this modification, the changing trend of Theil Index which can reflect the urban-rural gap in Zhejiang Province is illustrated in Figure 2. From this figure, it can be observed that this trend, in consistency with the ratio of urban/rural per capita disposable incomes, takes on an inverted "U" pattern.
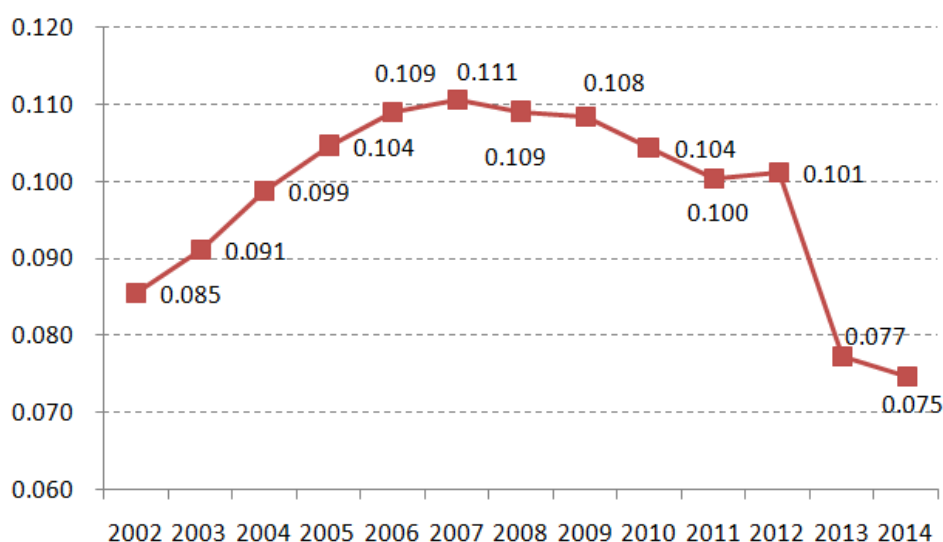

Figure 2. The Income gap tendency with Theil Index in Zhejiang(2002-2014）

Data source: By authors

In terms of the income distribution in different regions, cities like Jiaxing, Huzhou and Zhoushan have the lowest income gap, with their Theil Index at 0.041, 0.044 and 0.045 respectively; while Jinhua and Lishui have the largest income gap, with their Theil Index at 0.073 and 0.070.

Table 5.The Theil Index in Zhejiang's 11 cities（2002-2014）

Region/year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Zhejiang Province	0.085	0.091	0.099	0.104	0.109	0.111	0.109	0.108	0.104	0.100	0.101	0.077	0.075
Hangzhou	0.065	0.064	0.074	0.079	0.084	0.087	0.084	0.083	0.082	0.070	0.067	0.065	0.051
Ningbo	0.080	0.046	0.056	0.087	0.086	0.087	0.087	0.082	0.077	0.074	0.072	0.070	0.051
Wenzhou	0.076	0.122	0.132	0.136	0.135	0.129	0.128	0.128	0.124	0.093	0.090	0.087	0.066
Jiangxin	0.061	0.023	0.024	0.068	0.065	0.057	0.053	0.048	0.058	0.056	0.058	0.057	0.041
Huzhou	0.079	0.035	0.034	0.077	0.074	0.075	0.069	0.064	0.059	0.058	0.059	0.058	0.044
Shaoxing	0.055	0.033	0.051	0.087	0.085	0.087	0.081	0.081	0.077	0.080	0.076	0.073	0.053
Jinhua	0.108	0.114	0.128	0.129	0.140	0.137	0.114	0.109	0.101	0.106	0.105	0.102	0.073
Quzhou	0.091	0.085	0.101	0.109	0.119	0.119	0.115	0.117	0.118	0.110	0.097	0.096	0.058
Zhoushan	0.091	0.054	0.086	0.081	0.082	0.079	0.075	0.065	0.061	0.052	0.053	0.052	0.045
Taizhou	0.073	0.086	0.109	0.114	0.111	0.110	0.108	0.103	0.086	0.080	0.081	0.078	0.059
Lishui	0.153	0.167	0.185	0.188	0.248	0.250	0.186	0.192	0.158	0.139	0.135	0.128	0.070

Data source: By authors

IV. DISCUSSION AND POLICY IMPLICATIONS

This paper studies Zhejiang's current status income distribution among different industries, between urban and rural housheold and in different cities. Mainly, we can get the following conclusions of Zhejiang's income distribution. First, compared with the national level, Zhejiang's income gap is relatively low and the inomce differences is experiencing an shrinked tendency in recent years. Second, the absolute income gap in different industries sectors are large, but the ratio between income differences in various sectors is shrinking. In addition, compared with other 30 provinces in China, the income equality in Zhejiang exhibits very well with a much lower urban-rural income gap. Third, the income gap in different cities of Zhejiang is not large. Among the 11 cities, the income inequality of Jinhua and Lishui is the largest.

The history experiences shows that the economic growth and economic inequality would exhibit an reverse "U" shape (Kuznets, 1955). Zhejiang, with the GDP per capita at US.\$ 6047.82(2005 as constant year, World Bank,2014) in 2014, is experiencing an increasing economic growth and decreasing income inequality. However, the income inequality would not be decreased automatically by the market. Further reform on helping reducing the income inequality should be taken as the the high and rising inequality would dampen domestic consumption and generate pressures on the exports(Wang,et al, 2014). Current, the whole China's economic growth is experiecing an decreasing economic growth rate and it is imporatant to stimulate the domestic consumption in the content of global weak consuption. The reform of China's strict household registration system should be taken to help increase the urbanizaition rate and further increase the initial income distribution for the people who stay and live in the urban areas but without "hukou".

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