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The Impacts of Economic Transition on Income Inequality of China

Suet Ming Jessica[1a],

Yingying Li[2b*],

Yunhan Qiao[3c],

Yilin Shan[4d]

[1]International School of Qingdao, Qingdao 266041, China
[2]Guangzhou ULink College, Guangzhou 511466, China
[3]School of management, Shandong University, Jinan 250100, China
[4]Fuzhou No.1 High School, Fuzhou 350000, China
[a]jessica090604@outlook.com
[b*]yinli2592@gmail.com
[c]q142423@foxmail.com
[d]2582886284@qq.com

Abstract:

This paper focuses on the impact of China's sectorial reform on income inequality within the country and between USA. We found that when we look at the full period (1991-2020), as the employment in the primary sector decreases, income inequality within the country is undeterminable. However, when we examine time periods 1991-2007 and 2008-2020, we found that income inequality had intensified in the first period and had decreased in the second period. The income gap between China and USA had been a constant decrease no matter looking at GNI or GNI per capita. Through this research, we hypothesize that agrarian policies may play a crucial role for further decrease in income inequality in China.

Keywords: Economic Transition, Income Inequality, China.

1. Introduction

After China started to enter in a period rapid development, income equality became a more serious social problem. Also, the share of primary sector GDP of China and the share of primary employment from 1991 to 2020 the Gini coefficient of China increased continuously from 1991 to 2008 while it started to decline from 2008 to 2020. The share of primary sector GDP of China and the share of primary sector employment of China failing rapidly. In this paper, we want to investigate whether economic transition is always beneficial to a country and the impacts of economic transition on income inequality of China. Excessive disparities in income distribution discourage low-income people from working and lower economic growth. To achieve sustainable economic development of a country, income equality is critical issues need to be addressed.

Our paper going from two time periods to investigate the impacts of economic transition on income inequality of China. So, it is essential to collect the summary data of the income distribution of China and we collect Gini coefficient of China from 1991 to

2020. Furthermore, for economic transformation, we are mainly concerned with a country's development from primary to secondary and tertiary industries so to show the evolutionary trend of the share of primary sector, we do the collection of data-the share of primary sector employment of China and share of primary sector GDP and employment of China from 1991 to 2020. After collecting the possible factors that may influence the income inequality within a country, we decide to choose two control variables that affect the income equality they are unemployment rate of China and economic growth rate of China. In addition, we wanted to identify the differences in data and trends in income inequality between developed and developing countries in the context of economic development. Consequently, we choose USA as a simple of developed country and make a summary data of GNI of USA, GINI coefficient of USA, the share of primary sector and the gap in GNI between China and USA.

After we collect and analyze the data, the main result is that from 1991 to 2007 there was a negative correlation between share of primary sector. And it was because of in the early stage of rapid economic development, many lower classes moved into the middle class, and the middle class moved into the upper class. However, the underclass still exists and especially the people lack education who cannot seize the opportunity of economic development. Even though the country's economy is developing at a rapid pace, it has not had much impact on their income and living standards. Therefore, income equality will increase between 1991 to 2007. But after 2007 it was a positive correlation between the share of primary sector and GINI coefficient in China. So, the main result is that income inequality within China from 1991 to 2020 had increase at first and decrease from 2008 to 2020 when the economic transition took place. Moreover, between USA and China, it was a positive relationship between share of primary sector of employment and the GNI gap between the USA and China from 1991 to 2020.

Our essay is divided into six sections. For the next section, we introduce some literature about income inequality and economic transition and find what's they focus on and what's the relationship between their research and ours. And for the third section- data, we used the GINI index to measure the income inequality in China from 1991 to 2020. Also collect the data of GNI to compare the income differences Between the U.S. and China. Our main results are in section 4, we found that from 1991 to 2007 the income inequality continue to increase until 2008. 2008 was a peak of GINI index and the income inequality of China started to decline from 2008 to 2020. While another result is that as the share primary sector of employment gets smaller, the GNI gap between USA and China gets smaller as well. In the penultimate section, we discuss the relationship between the share of primary sector and GINI index, from 1991 to 2007 it shows the negative relationship, however it shows the positive relationship between them. In section 6, we show the significant of the impact of sectorial transition on income inequality of China and make a conclusion of the relationship between the share of primary sector and GINI index into two period which are 1991 to 2007 and 2008 to 2020. Also, the relationship between the gap in Income Inequality between China and the United States and the effective policy interventions for relieving income equality.

2. Literature review

There has been much research about income inequality. In the essay named Income Inequality during China's Economic Transition [1], they focus on both urban and rural inequality. They found that in rural areas, two main factors influence the income inequality are inequality in non-agricultural self-employment and Slow growth of agricultural incomes. In urban areas, however, it is the declining role of subsidies and benefits, wage inequality and downsizing measures during the period of restructuring in many enterprises that have exacerbated income inequality. Another thing is that education plays and important role in people both rural and urban areas. It is related to their living standard and income in the future. After their research, to solve the income inequality in both rural and urban, China needs to adopt a redistributive tax system that both supports a social safety net to finance public goods and allows the wider society to share in the apparent wealth generated at the top of the income distribution. While for this literature, they analyze the causes of rural-urban income inequality and suggest new policies that China needs to establish. What they fail to notice is the increase in income inequality across the country because of China's rapid growth and changes in the structure of the economy. In the essay Economics transition and changing relation between income inequality and mortality in Taiwan: regression analysis, they want to explore the relationship between changes in income inequality and mortality at different stages of economic development in Taiwan. And they found that Relative income has a greater impact on population health than absolute income after a country change from a developing to a developed economy.

Through the period of 1990-2020, China's sectorial distribution of employment had changed dramatically. Following this dramatic change, there are a lot other things that happened such as the intensify of income inequality. In our research, we want to tackle this problem and we looked at several past papers discussing about this top-

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ic. For example, Ravallion and Chen's (2021) discussed whether the Kuznets curve exhibited in China's evolution was caused by the Kuznets Hypothesis. Measured through both the MLD and Gini Index, they were able to prove that the Kuznets curve displayed in China had no relation with the Kuznets Hypothesis. There were other more important factors such as agrarian reforms that helped to lower the inequality rate. In our data, it also formed a Kuznets curve, and this paper inspired us to think about the same question.

Another paper we read is China's Retreat from Equality: Income Distribution and Economic Transition [2]. The paper investigates several factors that influence income inequality in the transition countries. This paper provides an overview of the evolution of income inequality in China from 1987 to 2002, employing three series of data sets. And they focus is on both urban and rural inequality. And one of Factors related to the change of employment structure. Also, one of our control variables is unemployment rate. Transition economies often experience shifts in labor market structures. From 1990 to 2020 these 30 years. The share of primary sector increase and more and more people work in secondary and tertiary sector. However, people in the secondary and tertiary sectors generally earn more than those in the primary sector. The share of secondary employment of China rises from 23.20% to 31.59%. And the share of tertiary employment increase from 18.90% to 44.81%. And the unemployment in China of total labor force continue to rise from 2.37 percent to 4.59 percent. In conclusion, from both the literature and the paper we write the increase in unemployment and the rise in share of secondary and tertiary sector has big impacts in increase income inequality.

The third paper is Economics transition and Changing Relation Between Income Inequality and Mortality in Taiwan[3]: regression analysis. For this literature, it distinguishes between developed countries and countries in transition. Because the uneven distribution of income, or income inequality, has several reasons. And for the essay we write we also select two countries to compare which are China and USA- one is developing country, and another one is developed country. The data collected by the author involves all the transition countries from 1990 to 1998. And for us, we collected the data from 1991 to 2020. And both these two papers use Gini coefficient to show the income inequality of a country. From the results of literature, income inequality is likely to decrease as the transition process continues. And these results are consistent with our findings. After the guidance of Deng Xiaoping's "Southern Dialogue" and the spirit of the 14th CPC National Congress in 1992 China grew rapidly, the share of primary sector GDP and employment of China decrease over the years. From 1991 to 2007, the Gini coefficient continue to rise until 2008 and the Gini coefficient peaked in 2008. Then Gini coefficient has been gradually decreasing since 2008. In conclusion, income inequality increases from the beginning of economic development, but after a country reaches the peak of its Gini coefficient, income inequality declines and stabilizes from year to year.

3. Data

To measure income inequality within China, we used the Gini Index. We looked at the Gini Index of China from 1991-2020 from the World Bank and we also looked at the percent of employment in the primary sector from 1991-2020. To compare the income inequality between China and USA, we used GNI (billions of USD) and GNI per capita (constant 2015 USD)[4].

We got a complete data set for the percent of employment in the primary sector of China (from years 1991-2020), GNI of China (from years 1991-2022), GNI of USA (from years 1991-2022), GNI per capita of USA (from years 1991-2022). When we gathered the Gini Index of China, there was not a complete data set. All the missing years were whether gaping one year or two years; there were not any data missing three years in a row. So, for the ones that skipped one year, we used the mean between the previous year (one year before the missing year) and the next year (the year after the missing year). For data that were missing two consecutive years, we used 0.6666*the previous year + 0.3333*the next available year (which is two years after the missing year) to find the first missing year, and 0.3333*data two years ago (the same year as the "previous year" used in the first missing year) + 0.6666*the next year (the "next available year" used in the first missing year). We were also missing data for China's GNI per capita from years 1991-1994. Therefore, we compared China's and USA's GNI per capita from years 1995-2022. Something to point out is that to more easily compare the GNIs and GNI per capita, we changed them into the logarithm form.

Summary Statistics

Summary Statistics of Variables

Variables	N	Mean	SD	Max	Min
1991-2020					
Primary Sector Employment	30	0.42	0.11	0.60	0.24
Economic Growth	30	0.09	0.03	0.14	0.02
Unemployment Rate	30	3.99	0.80	5.00	2.37
Gini Index	30	39.05	3.17	43.74	32.78
1991-2007					
Primary Sector Employment	17	0.50	0.05	0.60	0.41
Economic Growth	17	0.11	0.02	0.14	0.08
Unemployment Rate	17	3.52	0.78	4.58	2.37
Gini Index	17	38.12	3.48	42.28	32.78
2008-2020					
Primary Sector Employment	13	0.31	0.05	0.40	0.24
Economic Growth	13	0.08	0.02	0.11	0.02
Unemployment Rate	13	4.60	0.16	5.00	4.31
Gini Index	13	40.27	2.31	43.74	37.09
Summary Statistics of Variables					
Variables	N	Mean	SD	Max	Min
1991-2022					
Log of GNI USA	32	4.11	0.18	4.41	3.79
Log of GNI China	32	3.49	0.53	4.26	2.67
China and USA GNI log gap	32	0.62	0.36	1.12	0.15
1995-2022					
GNI per capita USA log	28	4.73	0.05	4.81	4.61
GNI per capita China log	28	3.64	0.29	4.06	3.21
China and USA GNI per capita log gap	28	1.07	0.24	1.48	0.75

4. Results

Table 1

Overall Relationship Between the Gini and Primary Sector

independent variables	GINI			
	(1)	(2)	(3)	(4)
Primary Sector employment	-11.433**	20.255***	-16.723**	18.160***
	(4.990)	(4.684)	(6.532)	(5.698)
Unemployment rate		5.361***		5.275***
		(0.647)		(0.667)
Economic Growth			33.646	10.100

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			(27.158)	(15.290)
R square	0.158	0.762	0.203	0.766
N	30	30	30	30

Table 1 shows the relationship between the Gini and primary sector for the overall period (1991-2020). The first column shows the relationship between the Gini and primary sector without any control variables. The second column shows the relationship between the Gini and primary sector with the control variable unemployment rate. The third column shows the relationship between the Gini and primary sector with the control variable economic growth. The last column shows the relationship between the Gini and primary sector with both control variables (unemployment rate and economic growth). For tables 1, 2, and, 3, the columns show the same relationship. The R square for the first column is 0.158; the R square for the second column is 0.762; the R square for the third column is 0.203; and the R square for the last column is 0.766. For all four columns, there are 30 observations.

Table 2

1991-2007

independent variables	GINI			
	(1)	(2)	(3)	(4)
Primary Sector employment	-58.115***	-10.873	-58.148***	-13.055
	(9.639)	(12.827)	(9.118)	(11.565)
Unemployment rate		3.570***		3.407***
		(0.833)		(0.752)
Economic Growth			-33.994	-27.752*
			(20.447)	(13.284)
R square	0.708	0.874	0.756	0.905
N	17	17	17	17

Table 2 shows the relationship from 1991-2007. The R square for the first column is 0.708; the R square for the second column is 0.874; the R square for the third column is 0.756; and the R square for the last column is 0.905. For all four columns, there are 17 observations.

Table 3

2008-2020

independent variables	GINI			
	(1)	(2)	(3)	(4)
Primary Sector employment	42.238***	42.025***	36.031***	40.112***
	(3.262)	(3.199)	(6.417)	(11.133)
Unemployment rate		-1.322		-0.991
		(1.089)		(2.163)
Economic Growth			17.860	5.657
			(15.962)	(31.385)
R square	0.938	0.946	0.945	0.947
N	13	13	13	13

Table 3 shows the relationship from 2008-2020. The R square for the first column is 0.938; the R square for the second column is 0.946; the R square for the third column is 0.945; and the R square for the last column is 0.947. For all four columns, there are 13 observations.

Table 4

independent variable	China and USA GNI Log Gap		
	1991-2022	1991-2007	2008-2022
Primary Sector employment	3.023***	2.562***	2.014***
	(0.080)	(0.193)	(0.120)
R square	0.979	0.921	0.959
N	32	17	14

Table 4 shows the relationship between China and USA's GNI log gap and the primary sector employment for different periods. The first column shows the relationship between primary and GNI log gap for the full period; the second column shows the relationship from years 1991-2007; and the third column shows the relationship from years 2008-2022. The r square of full period is 0.979; the r square of years 1991-2007 is 0.921; and the r square of years 2008-2022 is 0.959. The number of observations are variating for different periods: for years 1991-2022 there are 32 observations, for years 1991-2007 there are 17 observations, and for years 2008-2022 there are 14 observations.

Table 5

independent variables	China and USA GNI per capita (2015 USD) Log Gap		
	1995-2022	1995-2007	2008-2022
Primary Sector employment	2.264***	2.863***	1.567***
	(0.08)	(0.374)	(0.057)
R square	0.971	0.854	0.985
N	28	12	14

Notes: The numbers that are the same row with the independent variables are the coefficients. The numbers with parentheses below the coefficient are the standard errors; the parentheses do not represent the negative sign. ***: p value is < 0.01 **p-value is<0.05 *p-value is <0.

Table 5 shows the relationship between China and USA's GNI per capita log gap and the primary sector employment. The first column shows the relationship from 1995-2022; the second column shows the relationship from 1995-2007; and the last column shows the relationship from 2008-2022. We can see the r square for years 1995-2022 is 0.971; the r square for years 1995-2007 is 0.854; and the r square years 2008-2022 is 0.985. The number of observations are for years 1995-2022, 1995-2007, 2008-2022 are 28, 12, and 14 respectively. We can see that all of the numbers are significant because there are three stars given.

When we examine the relationship between the Gini index and the employment of the primary sector for the overall period (1991-2020), we find a mix relationship. As shown in table 1, the coefficients are not constant: columns one and three displays a negative relationship while columns two and four displays a positive relationship with the employment of the primary sector. So, to find a more specific relationship between the primary sector of employment and the Gini index, we divided the data into two parts (1991-2007 and 2008-2020).

Now, when we look at the relationship between the Gini index and the primary sector of employment from 1991-2007, we can see that the coefficient is always negative, despite that not all of them is so significant. When the coefficient is negative, it means that as the amount of people working in the primary sector decreases, the Gini index would increase, which means that there would be more income inequality. Our explanation to this phenomenon is that when farmers first begin moving to other sectors, they might not have the skill to master the work of other sectors. Since in the primary sector, workers are often doing low-skill but labor intensive work; whereas in the secondary and tertiary sector, jobs may often require workers to

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master different skills. Therefore, for those who have not acquired the skill of their new job, it may widen the income gap.

Then looking at table 3, we can see that the coefficients are all positive and significant. This means that from the period of 2008-2020, as people move out of the primary sector, the Gini index would decrease thereby closing the income gap. The reason why we thought that the year 2008 was a turning point because there was a global financial crisis. To recover from the 2008 financial crisis, the Chinese government focused on a series of infrastructure projects, public works, and boosting domestic consumption. Therefore, it created a lot of new jobs that would allow people from the primary sector to move into and that had higher wages. The Chinese government also increased its focus on improving social welfare programs, including unemployment insurance and social security. They had also taken action such as rising the minimum wage.

Not only the new implemented policies had helped to decrease the income gap, by the time of 2008, the off springs' of the first generation workers who moved out of the primary sector would probably reach the working age. In this case, the second generation would not have to go through the period of acquiring a new skill since they started working in the secondary and tertiary sector. Now, if we think about the problem from another perspective, there is another reason to explain the closing up gap. Since the 2000s, China focused on developing agriculture technology. Therefore by 2008, new farming technologies were put it use and it largely increased productivity which otherwise increased the income of the farmers.

Finally, when we look at the income inequality between China and USA, we find that no matter looking at GNI log gap or GNI capita log gap, the coefficients are always positive. This means when China's primary sector of employment's population decrease, the income gap between China and USA is also decreasing. This matches with our hypothesis because in the past 50 years China has experienced a remarkable economic growth and at the same time millions of people moved out of the primary sector to higher-income sectors (secondary and tertiary).

5.Discussion

In summary, through our research we found that the decrease of the primary sector showed a mix relationship with the Gini index when we look at the data over the full period (1990-2020). By a mix relationship, we mean that with different control variables, the coefficient may perform differently. For example, when we examine the data without any control variables, the coefficient is negative; however, when we add the control variable unemployment rate, the coefficient becomes positive. So, we decided to separate the sample into two time periods, the first period is before the financial crisis in 2008, the other is after the financial crisis.

When we examined the first period, we found that the relationship between the primary sector and the Gini index had a negative correlation despite of the impact of control variables. On the other hand, there was a positive relationship for all indicators when we examined the second period. Our interpretation to this result is that to recover from the financial crisis, China hired a lot of people working in the primary sector to build infrastructure and the Chinese government increased its focus on improving social welfare programs, including unemployment insurance and social security. Furthermore, the government implemented new policies such as raising the minimum wage and tax policies which improved the standard of living and reduced the income inequality between the rich and the poor.

In short, through our study we realized that during the first period income inequality had risen. Then, after the financial crisis, income inequality forms a decreasing trend. However, the rate of decreasing is much slower than the rate of rising during the first period. From past papers (Ravallion and Chen, 2021) [5], we learned that the government plays a very crucial role in closing the income inequality gap. So, we thought some policies could be made to further close the gap. For example, the government could provide subsidies for people working in the primary sector or facilitate farming technologies.

6.Conclusion

As mentioned earlier, this article conducted a study on the impact of China's sectoral reforms on income inequality in China and the United States. This study is based on two different time periods and examines social development through economic indicators. The aim is to study whether economic transformation is always beneficial for the country, as well as the impact of economic transformation on income inequality in China, in an attempt to explore the sustainable development of the Chinese economy. This has practical significance in the current era of China's domestic economic system reform.

To this end, this article collected income distribution data (gross national income, per capita gross national income) and China's Gini coefficient, referred to three relevant literatures in the field, and conducted regression analysis. Four tables were created through quantitative analysis, including data from 1991-2020, summary data from 1991-2007, summary data from 2008-2020, and summary statistical data on the GNI gap between China and the United States in different periods.

Through the analysis of the data, firstly, we can see that the economic transformation has brought higher income to China, reducing the income gap between China and the

United States. Secondly, we can see that income inequality in China initially intensified and gradually decreased during the long-term economic transformation.

We believe that there are still some avenues worth exploring in future research based on this article. Firstly, we can conduct research on the impact of more policies such as taxation and social security on income inequality. Secondly, we can expand the scope of our research by comparing and analyzing China with other representative countries and regions, which not only helps to broaden our perspectives but also leads to more universal conclusions.

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Jessica Li, Kathy Li, Jason Qiao and Yilin Shan contributed equally to this work and should be considered co-first authors.

References

[1] Benjamin, D., Brandt, L., Giles, J., & Wang, S. (2005). Income Inequality During China's Economic Transition. https://www.economics.utoronto.ca/public/workingPapers/BBGW.pdf

[2] Parris, K. D. (2002). China's Retreat from Equality: Income Distribution and Economic Transition (review). China Review International. https://doi.org/10.1353/cri.2003.0112

[3] Chiang, T. . (1999). Economic transition and changing relation between income inequality and mortality in Taiwan: regression analysis. *BMJ*, *319*(7218), 1162–1165. https://doi.org/10.1136/bmj.319.7218.1162

[4] World Bank. (2024). World Bank Open Data. World Bank. https://data.worldbank.org/

[5] Ravallion, M., & Chen, S. (2021, August 1). Is that Really a Kuznets Curve? Turning Points for Income Inequality in China. National Bureau of Economic Research. https://www.nber.org/papers/w29199