The great Chinese inequality turnaround

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Abstract

The high inequality in China has been a focus of interest for policy makers and researchers. However limited work has been done to evaluate its latest trend since 2010. With the change of the economic structure and new policy tools carried out recent years, a revisit of the Chinese inequality should give us the latest information about its evolution and the impacts on income distribution of these economic and policy changes. This paper argues that after a quarter century of sharp and sustained increase, Chinese inequality is now plateauing and even turning down. The argument is made using a range of data sources and a range of measures and perspectives on inequality. The evolution of inequality is further examined through decomposition by income source and population subgroups. Preliminary explanations are provided for these trends in terms of shifts in policy and structural transformation of the Chinese economy. The narrative on Chinese inequality now needs to focus on the reasons for this great turnaround.

Keywords: Chinese Inequality Turnaround, Inequality Data, Inequality Trends, Inequality and Structural Transformation, Harmonious Development and Government Policy.

JEL Classification: D31, D63, O15, O53.

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1. Introduction

Alongside the spectacular growth and the extraordinary reductions in poverty, perhaps the most dramatic in human history, the evolution of Chinese income inequality since the start of the reform process in 1978 has been a focus of interest among analysts and policy makers. Table A gives a flavor of this interest by summarizing the most significant studies concentrating on the evolution of income inequality. In their study of the evolution of inequality in China focusing on spatial inequality over the long run, from 1952 to 2000, Kanbur and Zhang (2005) identified two phases of inequality change after the start of reforms in 1978. After an initial and short phase of falling inequality as rural incomes rose in the wake of the liberalizations of the personal responsibility system, inequality rose inexorably as China opened out to the world and explosive growth took place in the coastal regions.

This increase in inequality became an integral part of the narrative on Chinese development\(^1\), with some commentators arguing that this was the inevitable price to be paid for the high rates of growth, with others warning of the social consequences of rising gaps. In any event, “harmonious society” was given center stage at the 2005 National People’s Congress and among rising policy concerns on inequality. As more data has accumulated, greater attention has turned to an examination of the evolution of inequality in China in the 2000s, including in the present decade—the years after 2010. A number of studies which used data from the mid-2000s onwards began to argue that the rise in inequality was being mitigated, and inequality was possibly plateauing and perhaps even turning down.\(^2\)

This paper attempts to provide a comprehensive assessment of what the data show, a deeper look into the patterns of inequality change, and preliminary explanations for the trends observed. Our basic conclusion is that there does indeed appear to be a turnaround taking place in Chinese inequality, and that the explanations lie in policy changes and in the nature of structural transformation in China.

The plan of the paper is as follows. Section 2 sets out the data sources on Chinese inequality on which any assessment will have to be based. Section 3 then presents the basic trends over a twenty-year period from 1995 to 2014. Section 4 examines the patterns of inequality change by looking, respectively,\(^1\) See for example, Appleton, Song and Xia (2014); Chi, Li and Yu (2009); Chi (2012); Goh, Luo and Zhu (2009); Kanbur and Zhuang (2013); Knight (2014); Knight, Li and Wan (2016); Mendoza (2016).

\(^2\) Khan and Riskin (2005); Fan, Kanbur and Zhang (2011); Li et.al. (2016); Alvaredo et.al (2017); Chan et.al (2011); Li and Gibson (2013); Lee (2013); Cheong and Wu (2014); Zhang (2015); Xie and Zhou (2014); Xie et.al. (2015). Even in Alvaredo et.al (2017), whose argument is that China’s inequality is approaching the US and is higher than France, the data shows that in China the top 1% share and the bottom 50% share have been plateauing since 2006. After 2010, the 1% share declined slightly and the bottom 50% share went up a little. In his review Knight (2014), focused on an earlier literature, asked, but did not substantiate, whether inequality had peaked. In Xie and Zhou (2014), the Gini coefficient estimated from various data sources show a plateauing trend from 2010 to 2012 except for the CHFS 2011, which drives the trend to be increasing as an outlier.
at decomposition by income source and by population subgroup. Section 5 presents some preliminary explanation for the observed trends. Section 6 concludes.

2. Data

In this study, we use two kinds of data, household level data from household surveys and provincial level data from the National Bureau of Statistics. Household level data are from two surveys, Chinese Household Income Project (CHIP) and China Family Panel Studies (CFPS). CHIP was carried out as part of a collaborative research project on incomes and inequality in China organized by Chinese and international researchers including Institute of Economics of the Chinese Academy of Social Sciences and School of Economics and Business at Beijing Normal University, with assistance from the National Bureau of Statistics (NBS). There are six waves of cross-sectional data of CHIP, 1988, 1995, 2002, 2007, 2008, and 2013. China Family Panel Studies (CFPS) is a nationally representative, longitudinal survey conducted every two years of Chinese communities, families, and individuals launched in 2010 by the Institute of Social Science Survey (ISSS) of Peking University, China. It covers such topics as economic activities, education outcomes, family dynamics and relationships, migration, and health. Currently, there are three waves of panel data of CFPS, 2010, 2012 and 2014. Our provincial level income per capita and population data is drawn from the National Bureau of Statistics database and multiple provincial statistical year books.

We use household survey data to analyze household income inequality evolution and the attributes from different income sources since it has rich information about different income components in each household. As for the analysis of regional inequality evolution and its decomposition, we make use of the provincial level data. Each data set is described below in greater detail.

The household level data we use covers CHIP 1995, CHIP 2002, and CHIP 2007 (NBS sample), CFPS 2010, CFPS 2012 and CFPS 2014. We did not go back to as early as 1988 because at that time, most places in China were still under a command economy so that the income components in the 1988 survey were quite different conceptually from those in the surveys later. CHIP 2007 and CHIP 2008 are also part of the larger RUMiC (Rural-Urban Migrants in China) survey project. While the public RUMiC part data has a different questionnaire from previous waves of CHIP and has no income component details, CHIP 2007 has a restricted national representative NBS sample data, which is consistent with the previous waves. For this
reason, we drop CHIP 2008 in our analysis and use only the NBS sample from CHIP 2007. The detailed questions about income details included in each wave between 1995 and 2007 of the CHIP data are quite consistent. For CFPS, there are a few differences between CFPS 2010, CFPS2012 and CFPS2014. However, adjusted incomes were provided in CFPS 2012 and CFPS 2014 to make them comparable with CFPS 2010.

There are some differences between CHIP and CFPS in the items included in each income source. For example, rental value of housing equity is included in CHIP 1995 but not in other surveys and medical expenses paid by collective or government is included in transfer income in CHIP but not in CFPS, etc. For the purpose of ensuring consistency as much as possible, we broke down the different sources of income in CHIP and reconstructed them with the items that are included in CFPS only. In addition, there is no “other income” in CHIP 2007, but we constructed it following CFPS’s definition. Eventually, in our decomposition by income sources, we present two results, one with the original household income from CHIP and CFPS, the other with adjusted income from CHIP which is consistent with CFPS definition.

Another issue we need to address is the missing data in income sources. We assume that there exists a fixed hidden distribution for household income, for both rural and urban categories. We approximate the hidden distribution for rural and urban categories from the existing non-missing data. Then we sample new pseudo value from this approximated distribution to fill the missing entries. The pseudo value is a random number drawn from the sample distribution. This approximation for distribution requires sufficiently large sample size which is a condition not satisfied using county level sample. Provincial distribution is not suitable either since the CFPS is not representative on the province level. Hence we use the national distribution.

In addition to the two issues addressed above, there are some observations for which the sum of each income component does not equal the household net income in CFPS. This is due to the fact that for households who did not report their annual net income, the household net income is estimated according to their consumption. To deal with this issue, we rescale each income source using the proportion

\[
\frac{\text{household net income}}{\text{sum of all the income sources}}.
\]

For details of the income component adjustment of CFPS, see Xie, Zhang, Xu and Zhang (2015).

For comparison of the two surveys, see Zhang, Xu, Zhou, Zhang and Xie (2014).
Although the two household surveys have rich information about household income, they have different geographical coverage. Moreover, CFPS’s sampling are not representative on the provincial level. Because of these limitations, we could not apply regional decomposition to the household survey data. Therefore, in our analysis of regional inequality, the provincial level income and population data from the NBS is used.

As Li and Gibson (2013) have noted, previously Chinese yearbooks regularly reported provincial population and per capita economic outputs based on households registered, i.e. the Hukou population, but not residential population. This resulted in a distortion of the estimate of provincial per capita statistics in previous research papers. This distortion grew bigger as migrant workers increased since the 1990s. Recently, the NBS updated the provincial consumption per capita data based on residential population for all provinces from 1993 to 2014. We also obtain population based on residential status from both NBS and various Provincial Year Books 2011 and 2005, in which years, many provinces updated their historical population data based on residence. The fact that the starting year of reporting residential based population is different across provinces brings both disadvantages and advantages to our study. On the one hand, the new NBS data is still not perfect though much improved than before. On the other hand, on the aggregate level, there should not be systematic distortion as there does not exist a cut-off year in which the statistical approach changed for all.

This is the data base for our assessment of Chinese inequality trends in the last twenty years. We proceed now to a description of the overall trends and the decomposition patterns in the data.

3. Trends

We estimate various inequality measures using household survey data from CHIP and CFPS for six points of time covering the twenty-year period between 1995 and 2014. Table 1 presents the Gini coefficient and general entropy indices\(^{5}\) and Table 2 presents income ratios. The CHIP results in Panel A

\[^{5}\text{The general entropy indices are a popular class of measure for inequality. It is derived from information theory as a measure of redundancy in data. GE(0) = } \frac{1}{N} \sum_{i=1}^{N} \ln \left( \frac{y_i}{\mu} \right), \text{ GE(1) = } \frac{1}{N} \sum_{i=1}^{N} \frac{y_i}{\mu} \cdot \ln \left( \frac{y_i}{\mu} \right), \text{ GE(2) = } \frac{1}{2N\mu^2} \sum_{i=1}^{N} (y_i - \mu)^2, \text{ where } y_i \text{ is the income of observation } i \text{ and } \mu \text{ is the mean of income with the distribution F(y).}\]
of each table use original income per capita and those in panel B use adjusted income per capita to keep consistent with CFPS. The level of inequality is rather high compared with many OECD countries, but comparable with BRICs economies. For both income construction methods, we see that the Gini coefficient has an inverted U shape pattern with the turning point at 0.533 in 2010. The general entropy indices show similar trends. For GE(0), the peak appears in 2012 while for GE(1) and GE(2) it is in 2010. The difference of the turning pattern of each index could be a result of the fact that each inequality index captures different characteristics of inequality. For the generalized entropy indices GE(c), the greater c is, the more sensitive it is to the top income groups. That is to say, GE(0) is more sensitive to bottom income groups, while GE(2) is more sensitive to the top income groups.

To have a more detailed picture of income distribution, quantile and decile income shares are presented in Figure 1a, 1b, 2a and 2b. The income share of the top group reached the highest point in 2010, which is above 0.4 for the top 10% and above 0.6 for the top 25%, and then declined ever since. 2010 is also the year when the share of the middle group is the lowest. The narrowing inequality measured by Gini coefficient, GE(1) and GE(2) since 2010 could be attributed to the rising middle group income share and falling top group income share. While the top group’s income share had not been increasing, the bottom group’s share seemed to worsen. We notice that income share of the very bottom (25% in Figure 1a, 1b and 10% in Figure 2a, 2b) went down over the years which could increase income inequality. As a matter of fact, the top-bottom income ratio went up from 1995 to 2012 and declined a little afterwards. As shown in Table 2, the 90-10 ratio was as high as 19.87 in 2012 and then fell to 19.12 in 2014. Meanwhile, the bottom-middle income ratio behaves like a U shape with a small jump in 2010 and reached its lowest point in 2012. The 10-50 ratio fell from 0.259 in 2010 to 0.143 in 2012 and the 25-50 ratio fell from 0.516 in 2010 to 0.451 in 2012. This trend is possibly captured by the turning behavior of GE(0), which peaked in 2012.

The combination of CHIP and CFPS data give us six observations spanning 1995 to 2014, based on household surveys. An alternative data perspective, useful for capturing long term annual trends, was introduced in Kanbur and Zhang (1999, 2005). This method uses NBS data on provincial consumption per capita broken down by rural and urban for each province. Combining this with rural-urban population data for each province (see the discussion on population data in Section 2), we can

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6 A few examples of Gini coefficient for OECD countries according to the World Bank are, US, 41.06 (2013); France 33.1 (2012); Germany 30.13 (2011); UK, 32.57 (2012). And the Gini coefficient for the BRICS are, Brazil, 52.67 (2012); Russia, 41.59 (2012); India, 35.15 (2011); South Africa, 63.38 (2011).
construct a synthetic national consumption distribution which suppresses inequality within rural areas and urban areas of each province. Clearly, this is an understatement of the level of inequality, but the trend over time may nevertheless convey information on the evolution of inequality.

Figure 3 presents the Gini coefficient and GE(1), or Theil’s T, measure of inequality over time for the synthetic distribution so constructed for every year from 1978 to 2014. The patterns of the two indices are quite similar. They went down a little after 1978 and started to climb up slowly after 1985. In 1996, the regional inequality fell a little and showed a climbing trend until 2004. Of course the values of the Gini and GE(1) in Table 11 are not comparable to the corresponding values in Tables 1 and 2—income is used in one and consumption in another, within rural and within-urban inequality is suppressed in one and not in the other, and the data sources are quite different. However, the broad trends after the mid-1990s are similar from the two very different perspectives—there appears to be an inequality turn around sometime towards the end of the first decade of the 2000s.

Overall, then, a careful assessment of the best data sources seems to suggest a plateauing of inequality, with a possible turning point around or just before 2010. To begin building an explanation of the trend, we consider decomposition of inequality, first by income source and then by population subgroup.

4. Decompositions

To unpack the patterns of inequality change, we proceed to decompose inequality, first by income source, and then by population subgroup.

4.1 Decomposition by income sources

To understand the role of different income sources in the evolution of overall inequality, we decompose the Gini coefficient by income source following Lerman and Yitzhaki’s (1985) rule.

\[
G = \sum_k S_k \sum_i \frac{2}{n^2} \mu_k \left( i - \frac{n+1}{2} \right) Y_{ki} = \sum_k S_k \tilde{G}_k = \sum_k S_k R_k \bar{G}_k
\]  

(1)

\[
\text{For the exact value of the indices, please see columns 1 and 2 in Table 11.} \]
where $S_k = \frac{\mu_k}{\mu}$ is the share of kth income component in total income, $\tilde{G}_k$ is the “pseudo Gini”\(^8\), $R_k$ is the Gini correlation of component k with total income, and $G_k$ is the Gini of income component k. The absolute contribution of income source k to total income inequality is

$$v_k(G) = S_k R_k G_k$$  \hspace{1cm} (2)

Its proportion of the total inequality is

$$\tilde{v}_k(G) = \frac{S_k R_k G_k}{G} = \frac{\sum_i (i - \frac{n+1}{2}) Y_{ki}}{\sum_i (i - \frac{n+1}{2}) Y_i}$$  \hspace{1cm} (3)

where $Y_i$ is the income of household i and $Y_{ki}$ is the income from source k of household i\(^9\).

The marginal effect of income source k is

$$\eta_k(G) = S_k (\frac{\tilde{G}_k}{G} - 1)$$  \hspace{1cm} (4)

Table 3 shows the income share of each income source and Table 4 presents the Gini coefficients of each income source. Wage income takes the largest share while its Gini coefficient is the smallest. The share of property income has always been small, which is less than 10 percent, while its Gini coefficient has been very high and stayed above 0.96. The proportionate contribution to total Gini coefficient of each income source $\tilde{v}_k(G)$ and their marginal effects $\eta_k(G)$ are reported in Table 5 and 6 respectively. The largest contribution is from wage income, which ranged between 0.7 and 0.8 over the years, followed by transfer income, which ranged between 0.13 and 0.19. The contribution of other incomes are lower than 0.1. In addition to the high contribution to overall Gini coefficient, wage income also has the largest marginal effect.

Given the importance of wage income, the trends shown in Table 4 are central in understanding the forces underlying the overall inequality trend. Inequality of wage income has fallen sharply, as has inequality of transfers. These are the dominant factors in total income, and so their declining inequality is the dominant factor in inequality change and accounts for the fall in inequality.

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\(^8\) The pseudo Gini is different from the conventional Gini since the weight attached to $Y_{ki}$ corresponds to the rank of individual i in the total income distribution which is, in general, not the same as her rank in the distribution of income source k.

\(^9\) We weighted household income by family size in all calculations.
To see the sensitivity of the results, we also follow Paul (2004)'s extension on the Gini decomposition to decompose Theil’s T index\(^{10}\), i.e. GE(1), by income sources.

\[
T = \sum_k \sum_i \frac{1}{n\mu} \ln(\frac{Y_{ki}}{\mu})
\]

(5)

where \(\mu\) is the mean of population income.

The absolute contribution to income inequality of income source \(k\) is

\[
v_k(T) = \sum_i (\ln Y_i - \ln \mu) Y_{ki}
\]

(6)

When expressed as a proportion of total inequality, it can be written as

\[
\bar{v}_k(T) = \frac{v_k(T)}{T} = \frac{\sum_i (\ln Y_i - \ln \mu) Y_{ki}}{\sum_i (\ln Y_i - \ln \mu) Y_i}
\]

(7)

The marginal effect of income source \(k\) on Theil’s T index is

\[
\eta_k(T) = \frac{1}{\mu n} \sum_i Y_i (S_{ki} - S_k) \ln Y_i
\]

(8)

where \(S_{ki}\) is the share of income source \(k\) in the total income of \(i\)-th household. The decomposition results for Theil’s T index is presented in Table 7 and 8. The results are quite consistent with what we find in the Gini decomposition.

In addition to the level of inequality, the over time change of inequality can also be expressed as a weighted average of over time changes in each income source as stated in Paul et.al. (2012).

Define \(G_{t,t+1} = (G_{t+1} - G_t)/G_t\), which is the proportionate change in household income inequality between year \(t\) and year \(t+1\). It could be written as

\[
\dot{G}_{t,t+1} = \sum_k \bar{v}_k(G_t) \psi_k(G_{t,t+1})
\]

(9)

where \(\bar{v}_k(G_t)\) serves as a weight, and \(\psi_k(G_{t,t+1}) = \frac{v_k(G_{t+1}) - v_k(G_t)}{v_k(G_t)}\). Then the contribution of income source \(k\) to the change of Gini coefficient is \(\bar{v}_k(G_t) \psi_k(G_{t,t+1})\). Similarly, the contribution of income source \(k\) to the change of the Theil’s T index is \(\bar{v}_k(T_t) \psi_k(T_{t,t+1})\).

The results for decomposition of the change of inequality are presented in Table 9 and 10. The greatest contribution of the proportionate increase from 1995 to 2012 of the Gini coefficient and the Theil’s T index were both from wage income, followed by transfer income. And from 2002 to 2007,

\[\text{We choose to decompose Theil’s T index here because for the general entropy class inequality measures GE(c), only when } 0 < c < 2, \text{ the negativity requirement is met as shown in Paul (2004).}\]
property income and operational income were the top two drivers for the proportionate increase of Gini and the Theil’s T index. Wage income became the most important contributor to the dynamic change of inequality again in the period between 2007 and 2010 for both inequality measures. When inequality started to turn down from 2010 to 2012, operational income played the most important role and transfer income also helped to reduce inequality. Later from 2012 to 2014, the contribution to the proportionate change of the Gini coefficient from wage income, operational income and property income are quite close to each other. However for the Theil’s T index, wage income served as the top inequality reducing component.

Overall, then, these accounting exercises are consistent with the hypothesis that it is the narrowing of the wage distribution and the role of transfers which is important in beginning an understanding of the Chinese inequality turnaround.

4.2 Decomposition by subgroups

An alternative perspective on patterns of inequality change is through decomposition by population subgroup. Unequal income distribution between urban and rural sectors is a feature in developing countries for which China is not an exception. Besides the unequal development between rural and urban regions, the disparity between the coastal areas in the east and inland areas in the middle and west is also enormous (Fan, Kanbur and Zhang, 2011). To understand these components of inequality, we use the data underlying Table 11, the synthetic distribution constructed from rural and urban per capita consumption and population.

We further decompose the Theil’s T index by rural-urban subgroups and coastal-inland subgroups respectively as in equation (10).

\[ T = T_w + T_b = \sum_k \left( \frac{N_k}{N} \right) \mu_k T_k + \sum_k \frac{N_k}{N} \mu_k \ln \left( \frac{\mu_k}{\mu} \right) = \sum_k \frac{Y_k}{Y} T_k + \sum_k \frac{Y_k}{Y} \ln \left( \frac{Y_k}{Y / N_k} \right) \] (10)

where N is the total number of individuals and k is an indicator for groups, for example, rural or urban. The first term is the within-group component of the Theil’s T index and the second term is the between-group component.

The rural-urban between component and the coastal-inland between component are reported in Table 11 and graphed in Figure 4. There are three peaks for the rural-urban between component in 1995, 2000 and 2004 respectively. After the third peak, the rural-urban between component kept a declining trend. Notice that 2005 is the year when regional inequality and rural-urban between
components turned down. That is the year when, it has been argued, China passed the Lewis Turning Point (Zhang, Yang and Wang, 2011). That is also the year when the agriculture tax was abolished and the New Countryside Project was initiated. The coastal-inland between component fell in 2001 after a high peak in 2000, then jumped again in 2005. It stayed at a relatively high level until 2009 and showed a steady decline after that, contributing to the narrative of tightening labor markets in inland provinces, and government policy to encourage development in the western regions. These explanations are taken up in the next section.

5. Some Explanations

Our main task in this paper has been to establish the key trends in Chinese inequality over the past twenty years. Based on a number of perspectives, it does seem as though there was a turnaround in Chinese inequality about 10 years ago, with inequality plateauing and even declining after a long period of sharp increase. Explanations for this evolution will have to await detailed investigation from researchers focusing on a range of factors in depth. However, in this section we present a broad framework for such explanations.

A simple way to think of the evolution of national income distribution is to divide the economy up into key sectors and to look at inequality within and between sectors. Given the importance of the structural transformation which is underway in China just now we can begin our discussion in terms of two sectors—rural and urban. The national income distribution is a weighted sum of the rural income distribution and the urban income distribution, the weights being the population shares of the two sectors. Overall inequality will then depend on (i) the inequality within each of the two sectors, (ii) the gap between the means of the two sectoral distributions and (iii) the population share of each sector.

As an illustration, for the GE(0) index, also known as the mean log deviation, denoted L, the national inequality can be decomposed as follows:

\[
L = x L_1 + (1-x) L_2 + \log \left[x k + (1-x)\right] - \left[x \log (k)\right]
\]

(11)

where subscripts 1 and 2 denote rural and urban respectively, \(x\) is the population share of the urban sector, and \(k\) is the ratio of the urban mean to the rural mean. The evolution of national inequality is then composed of (i) the evolution of \(L_1\) and \(L_2\) (ii) the evolution of \(k\) and (iii) evolution of \(x\).
With this framework, we can relate the inequality turnaround to basic economic forces and to policy. First, as Zhang, Yang and Wang (2011) have argued, China has now reached the “Lewis turning point”, where rural to urban migration begins to tighten rural labor markets and hereby mitigate the rural-urban wage differential. In addition, heavy government investment in infrastructure in the rural sector and in lagging regions, a feature of Chinese policy from the 2000s onwards (Fan, Kanbur and Zhang, 2011), will also raise economic activity and incomes in these areas. This will surely lower \( k \) in (11) and hence, ceteris paribus, overall inequality. This is consistent with the evolution of the rural-urban component of inequality shown in Table 11, and it is further consistent with the observed reduction of inequality in the national wage distribution as shown in Table 4.

The narrowing of the wage distribution and the increasing equality of the transfer distribution shown in Table 4 can also be associated with policy changes. For example, in 2004 the Ministry of Labor and Social Security issued a “Minimum Wage Regulations” law and the next decade saw rising minimum wage standards coupled with substantial improvements in compliance (Kanbur, Li and Lin, 2016). Further, a number of social programs were introduced and strengthened from the 2000s onwards. Since 2004 China has introduced new rural cooperative medical insurance, currently covering more than 95% of rural population. Rural social security has also been rolled out since 2009. Although the premiums of the rural medical insurance and social security are still much lower than the urban counterparts, the programs have provided some cushions to rural residents against health risk and elderly care. A combination of tightening labor markets in rural areas, and inequality mitigating transfer and regulation regimes in urban and rural areas, acted through (i) and (ii) to reduce inequality.

The impact of \( x \) on \( L \) as seen through (11) is quite complex. Other factors constant, it can be shown (Kanbur and Zhuang, 2013) that under certain conditions the behavior of \( L \) as a function of \( x \) has an inverse-U shape as hypothesized by Kuznets (1955). Up to a certain point, urbanization increases inequality, and beyond this point further urbanization will decrease inequality. This “Kuznets turning point” sets out the effect of urbanization pure and simple on inequality. The turning point itself depends on the other inequality parameters, but it is shown by Kanbur and Zhuang (2013) that Chinese urbanization has now crossed the Kuznets turning point—further urbanization will reduce inequality through channel (iii) above.

Of course each of these potential explanations needs to be investigated more fully and in greater depth. But they appear to us to be consistent with underlying economic and policy forces which can explain the inequality turnaround we see in the data.
6. Conclusion

We have argued in this paper that the long period of inequality increase in China is coming to an end. The data, seen from different perspectives, seem to indicate a turnaround towards the latter part of the 2000s. The explanations for this turnaround need to be explored further, but there is prima facie evidence for economic forces and government policy tightening labor markets in rural areas, together with government transfer and social policy mitigating inequality in urban and rural areas, which may explain the observed trends. This of course raises the further question of why government policy changed over a twenty-year period from allowing inequality to increase to mitigating it. Although China’s inequality has come to a turnaround, the level is still rather high compared with many countries. More efforts are still needed to keep the momentum. The political economy of the Chinese state (Wong, 2005) may provide an explanation, but that takes us beyond our present remit.
References


Figures and Tables

Figure 1a Quartile Income Share (Original Income)

![Graph showing quartile income share (original income)]

Figure 1b Quartile Income Share (Adjusted Income)

![Graph showing quartile income share (adjusted income)]
Figure 2a Decile Income Share (Original Income)

Figure 2b Decile Income Share (Adjusted Income)
Table 1 Inequality Measures from Household Survey Data

<table>
<thead>
<tr>
<th>Year</th>
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<th>GE(1)</th>
<th>GE(2)</th>
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</tr>
<tr>
<td>2002</td>
<td>CHIP</td>
<td>0.445</td>
<td>0.344</td>
<td>0.340</td>
<td>0.466</td>
</tr>
<tr>
<td>2007</td>
<td>CHIP</td>
<td>0.478</td>
<td>0.446</td>
<td>0.400</td>
<td>0.601</td>
</tr>
<tr>
<td>2010</td>
<td>CFPS</td>
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<td>0.571</td>
<td>1.389</td>
</tr>
<tr>
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<td>CFPS</td>
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<td>0.590</td>
<td>0.496</td>
<td>1.319</td>
</tr>
<tr>
<td>2014</td>
<td>CFPS</td>
<td>0.495</td>
<td>0.566</td>
<td>0.456</td>
<td>0.915</td>
</tr>
</tbody>
</table>

Note1: Panel A uses the original income from each survey. Panel B adjusted CHIP income by excluding the components that are not in CFPS. CHIP 2007 uses the NBS survey data, not RUMiC survey since the latter uses a different questionnaire and sample framework while the former is consistent with previous years.
### Table 2 Income Ratio from Household Survey Data

#### A: Original income

<table>
<thead>
<tr>
<th>Year</th>
<th>Data</th>
<th>p90_p10</th>
<th>p75_p25</th>
<th>p90_p50</th>
<th>p75_p50</th>
<th>p10_p50</th>
<th>p25_p50</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>CHIP</td>
<td>8.719</td>
<td>3.489</td>
<td>2.876</td>
<td>1.880</td>
<td>0.330</td>
<td>0.539</td>
</tr>
<tr>
<td>2002</td>
<td>CHIP</td>
<td>9.109</td>
<td>3.450</td>
<td>3.265</td>
<td>1.954</td>
<td>0.358</td>
<td>0.566</td>
</tr>
<tr>
<td>2007</td>
<td>CHIP</td>
<td>11.968</td>
<td>3.980</td>
<td>2.815</td>
<td>1.805</td>
<td>0.235</td>
<td>0.453</td>
</tr>
<tr>
<td>2010</td>
<td>CFPS</td>
<td>13.361</td>
<td>3.660</td>
<td>3.466</td>
<td>1.888</td>
<td>0.259</td>
<td>0.516</td>
</tr>
<tr>
<td>2012</td>
<td>CFPS</td>
<td>19.873</td>
<td>3.895</td>
<td>2.846</td>
<td>1.755</td>
<td>0.143</td>
<td>0.451</td>
</tr>
<tr>
<td>2014</td>
<td>CFPS</td>
<td>19.122</td>
<td>3.854</td>
<td>2.920</td>
<td>1.765</td>
<td>0.153</td>
<td>0.458</td>
</tr>
</tbody>
</table>

#### B: Adjusted income

<table>
<thead>
<tr>
<th>Year</th>
<th>Data</th>
<th>p90_p10</th>
<th>p75_p25</th>
<th>p90_p50</th>
<th>p75_p50</th>
<th>p10_p50</th>
<th>p25_p50</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>CHIP</td>
<td>4.820</td>
<td>2.262</td>
<td>2.266</td>
<td>1.532</td>
<td>0.470</td>
<td>0.677</td>
</tr>
<tr>
<td>2002</td>
<td>CHIP</td>
<td>8.319</td>
<td>3.296</td>
<td>3.099</td>
<td>1.907</td>
<td>0.372</td>
<td>0.579</td>
</tr>
<tr>
<td>2007</td>
<td>CHIP</td>
<td>13.192</td>
<td>4.269</td>
<td>2.945</td>
<td>1.849</td>
<td>0.223</td>
<td>0.433</td>
</tr>
<tr>
<td>2010</td>
<td>CFPS</td>
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<td>3.660</td>
<td>3.466</td>
<td>1.888</td>
<td>0.259</td>
<td>0.516</td>
</tr>
<tr>
<td>2012</td>
<td>CFPS</td>
<td>19.873</td>
<td>3.895</td>
<td>2.846</td>
<td>1.755</td>
<td>0.143</td>
<td>0.451</td>
</tr>
<tr>
<td>2014</td>
<td>CFPS</td>
<td>19.122</td>
<td>3.854</td>
<td>2.920</td>
<td>1.765</td>
<td>0.153</td>
<td>0.458</td>
</tr>
</tbody>
</table>

**Note:** Panel A uses the original income from each survey. Panel B adjusted CHIP income by excluding the components that are not in CFPS.

**Note2:** CHIP 2007 uses the NBS survey data, not RUMiC survey since the latter uses a different questionnaire and sample framework while the former is consistent with previous years. Income ratio is the ratio of the incomes at the top versus the bottom. For example, the P90-P10 ratio is the upper bound value of the 90th percentile to that of the 10th percentile.

### Table 3 Share of Income by Source

<table>
<thead>
<tr>
<th>Year</th>
<th>Wage Income</th>
<th>Operational Income</th>
<th>Property Income</th>
<th>Transfer Income</th>
<th>Other Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>0.503</td>
<td>0.381</td>
<td>0.008</td>
<td>0.080</td>
<td>0.030</td>
</tr>
<tr>
<td>2002</td>
<td>0.580</td>
<td>0.242</td>
<td>0.005</td>
<td>0.122</td>
<td>0.050</td>
</tr>
<tr>
<td>2007</td>
<td>0.639</td>
<td>0.137</td>
<td>0.032</td>
<td>0.172</td>
<td>0.020</td>
</tr>
<tr>
<td>2010</td>
<td>0.680</td>
<td>0.142</td>
<td>0.022</td>
<td>0.111</td>
<td>0.045</td>
</tr>
<tr>
<td>2012</td>
<td>0.693</td>
<td>0.106</td>
<td>0.031</td>
<td>0.132</td>
<td>0.038</td>
</tr>
<tr>
<td>2014</td>
<td>0.710</td>
<td>0.086</td>
<td>0.025</td>
<td>0.153</td>
<td>0.025</td>
</tr>
</tbody>
</table>

**Note:** To be as consistent with possible across the two datasets, we excluded some components from CHIP that are not in CFPS. In addition, the income sources are re-calculated in CHIP according to CFPS definition. Table 4-8 follows the same construction of income by source. Wage income is labor income including bonus, allowances & subsidies, and remittance from migrant worker family members. Operational income includes net income from sale of farm products, net income from private enterprises, and gross value of self-consumption of farm products. Property income, etc. Property income is income from rental or sales of properties. Transfer income includes social security, pension, subsidies, etc. Other income is mainly money and gifts from relatives or friends.
Table 4 Gini of Income by Source

<table>
<thead>
<tr>
<th>Year</th>
<th>Wage Income</th>
<th>Operational Income</th>
<th>Property Income</th>
<th>Transfer Income</th>
<th>Other Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>0.675</td>
<td>0.570</td>
<td>0.964</td>
<td>0.911</td>
<td>0.813</td>
</tr>
<tr>
<td>2002</td>
<td>0.659</td>
<td>0.628</td>
<td>0.992</td>
<td>0.900</td>
<td>0.885</td>
</tr>
<tr>
<td>2007</td>
<td>0.618</td>
<td>0.806</td>
<td>0.977</td>
<td>0.834</td>
<td>1.128</td>
</tr>
<tr>
<td>2010</td>
<td>0.602</td>
<td>0.784</td>
<td>0.981</td>
<td>0.916</td>
<td>0.914</td>
</tr>
<tr>
<td>2012</td>
<td>0.609</td>
<td>0.798</td>
<td>0.969</td>
<td>0.886</td>
<td>0.950</td>
</tr>
<tr>
<td>2014</td>
<td>0.583</td>
<td>0.834</td>
<td>0.960</td>
<td>0.853</td>
<td>0.963</td>
</tr>
</tbody>
</table>

Table 5 Contribution to Total Gini by Source (%)

<table>
<thead>
<tr>
<th>Year</th>
<th>Wage Income</th>
<th>Operational Income</th>
<th>Property Income</th>
<th>Transfer Income</th>
<th>Other Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>78.18</td>
<td>3.91</td>
<td>1.5</td>
<td>12.57</td>
<td>3.84</td>
</tr>
<tr>
<td>2002</td>
<td>73.83</td>
<td>1.65</td>
<td>0.86</td>
<td>18.15</td>
<td>5.51</td>
</tr>
<tr>
<td>2007</td>
<td>70.08</td>
<td>4.62</td>
<td>4.85</td>
<td>17.81</td>
<td>2.64</td>
</tr>
<tr>
<td>2010</td>
<td>69.51</td>
<td>8.01</td>
<td>3.24</td>
<td>14.35</td>
<td>4.88</td>
</tr>
<tr>
<td>2012</td>
<td>72.69</td>
<td>4.7</td>
<td>3.88</td>
<td>14.89</td>
<td>3.73</td>
</tr>
<tr>
<td>2014</td>
<td>73.11</td>
<td>3.86</td>
<td>3.07</td>
<td>17.43</td>
<td>2.54</td>
</tr>
</tbody>
</table>

Table 6 Marginal Effects on Gini

<table>
<thead>
<tr>
<th>Year</th>
<th>Wage Income</th>
<th>Operational Income</th>
<th>Property Income</th>
<th>Transfer Income</th>
<th>Other Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>0.279</td>
<td>-0.341</td>
<td>0.007</td>
<td>0.046</td>
<td>0.009</td>
</tr>
<tr>
<td>2002</td>
<td>0.158</td>
<td>-0.223</td>
<td>0.003</td>
<td>0.060</td>
<td>0.005</td>
</tr>
<tr>
<td>2007</td>
<td>0.062</td>
<td>-0.0091</td>
<td>0.017</td>
<td>0.006</td>
<td>0.006</td>
</tr>
<tr>
<td>2010</td>
<td>0.015</td>
<td>-0.062</td>
<td>0.010</td>
<td>0.032</td>
<td>0.004</td>
</tr>
<tr>
<td>2012</td>
<td>0.034</td>
<td>-0.059</td>
<td>0.008</td>
<td>0.017</td>
<td>-0.001</td>
</tr>
<tr>
<td>2014</td>
<td>0.021</td>
<td>-0.048</td>
<td>0.006</td>
<td>0.021</td>
<td>-0.000</td>
</tr>
</tbody>
</table>

Note: Marginal Effect is the impact that a 1% change in the respective income source will have on inequality.

Table 7 Contribution to Theil’s T by Source (%)

<table>
<thead>
<tr>
<th>Year</th>
<th>Wage Income</th>
<th>Operational Income</th>
<th>Property Income</th>
<th>Transfer Income</th>
<th>Other Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>88.74963</td>
<td>-20.0216</td>
<td>1.42695</td>
<td>23.34312</td>
<td>6.50188</td>
</tr>
<tr>
<td>2012</td>
<td>77.86283</td>
<td>0.04842</td>
<td>4.83796</td>
<td>13.7037</td>
<td>3.43804</td>
</tr>
<tr>
<td>2014</td>
<td>76.99019</td>
<td>-0.81455</td>
<td>3.76823</td>
<td>17.43009</td>
<td>2.62604</td>
</tr>
</tbody>
</table>
Table 8 Marginal Effects on Theil’s T

<table>
<thead>
<tr>
<th>Year</th>
<th>Wage Income</th>
<th>Operational Income</th>
<th>Property Income</th>
<th>Transfer Income</th>
<th>Other Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>0.511</td>
<td>-0.608</td>
<td>0.017</td>
<td>0.064</td>
<td>0.016</td>
</tr>
<tr>
<td>2002</td>
<td>0.307</td>
<td>-0.442</td>
<td>0.009</td>
<td>0.112</td>
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<tr>
<td>2007</td>
<td>0.081</td>
<td>-0.163</td>
<td>0.081</td>
<td>-0.011</td>
<td>0.012</td>
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<tr>
<td>2010</td>
<td>-0.015</td>
<td>-0.063</td>
<td>0.040</td>
<td>0.032</td>
<td>0.007</td>
</tr>
<tr>
<td>2012</td>
<td>0.086</td>
<td>-0.105</td>
<td>0.018</td>
<td>0.005</td>
<td>-0.003</td>
</tr>
<tr>
<td>2014</td>
<td>0.060</td>
<td>-0.094</td>
<td>0.013</td>
<td>0.021</td>
<td>0.001</td>
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Table 9 Contribution to The Change of Gini Coefficient by Source (%)

<table>
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<th>Year</th>
<th>Change</th>
<th>Wage Income</th>
<th>Operational Income</th>
<th>Property Income</th>
<th>Transfer Income</th>
<th>Other Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995-2002</td>
<td>27.3</td>
<td>15.8</td>
<td>-1.8</td>
<td>-0.4</td>
<td>10.5</td>
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</tr>
<tr>
<td>2002-2007</td>
<td>7.5</td>
<td>1.5</td>
<td>3.3</td>
<td>4.4</td>
<td>1.0</td>
<td>-2.7</td>
</tr>
<tr>
<td>2007-2010</td>
<td>11.6</td>
<td>7.5</td>
<td>4.3</td>
<td>-1.2</td>
<td>-1.8</td>
<td>2.8</td>
</tr>
<tr>
<td>2010-2012</td>
<td>-5.6</td>
<td>-0.9</td>
<td>-3.6</td>
<td>0.4</td>
<td>-0.3</td>
<td>-1.4</td>
</tr>
<tr>
<td>2012-2014</td>
<td>-1.7</td>
<td>-0.8</td>
<td>-0.9</td>
<td>-0.9</td>
<td>2.2</td>
<td>-1.2</td>
</tr>
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</table>

Table 10 Contribution to The Change of Theil’s T by Source (%)

<table>
<thead>
<tr>
<th>Year</th>
<th>Change</th>
<th>Wage Income</th>
<th>Operational Income</th>
<th>Property Income</th>
<th>Transfer Income</th>
<th>Other Income</th>
</tr>
</thead>
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<tr>
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<td>17.8</td>
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<td>11.8</td>
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<td>-2.7</td>
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<tr>
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<td>42.7</td>
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<td>13.7</td>
<td>-2.4</td>
<td>4.4</td>
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</tr>
<tr>
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<td>-13.2</td>
<td>1.2</td>
<td>-7.8</td>
<td>-2.0</td>
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<td>-2.2</td>
</tr>
<tr>
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<td>-8.1</td>
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<td>-1.4</td>
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<td>-1.0</td>
</tr>
<tr>
<td>Year</td>
<td>Gini</td>
<td>GE(1) (Theil’s T)</td>
<td>Rural-Urban</td>
<td>Coastal-Inland</td>
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<td></td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td>-------------------</td>
<td>-------------</td>
<td>---------------</td>
<td></td>
<td></td>
</tr>
<tr>
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<tr>
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<td>0.236</td>
<td>0.100</td>
<td>7.941</td>
<td>0.436</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1983</td>
<td>0.226</td>
<td>0.090</td>
<td>6.920</td>
<td>0.468</td>
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<tr>
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</tr>
<tr>
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<td>0.105</td>
<td>7.549</td>
<td>0.645</td>
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<tr>
<td>1987</td>
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<tr>
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<td>7.703</td>
<td>0.888</td>
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<tr>
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<td>0.136</td>
<td>8.713</td>
<td>0.742</td>
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<td></td>
</tr>
<tr>
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<td>0.140</td>
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<td></td>
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<tr>
<td>1992</td>
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<td>0.148</td>
<td>9.638</td>
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</tr>
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<td>1993</td>
<td>0.307</td>
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<td>10.689</td>
<td>0.819</td>
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<tr>
<td>1994</td>
<td>0.311</td>
<td>0.170</td>
<td>10.989</td>
<td>1.141</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td>0.324</td>
<td>0.181</td>
<td>12.037</td>
<td>1.762</td>
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</tr>
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<td>1996</td>
<td>0.303</td>
<td>0.158</td>
<td>9.917</td>
<td>1.274</td>
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</tr>
<tr>
<td>1997</td>
<td>0.308</td>
<td>0.163</td>
<td>10.369</td>
<td>1.341</td>
<td></td>
<td></td>
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Note: Data is from NBS and various Provincial Statistical Year Books
Figure 3 Regional Inequality in Consumption Per Capita

Figure 4 Between Component of GE(1)
## Table A: Summary of Studies on China’s Inequality Trends

<table>
<thead>
<tr>
<th>Author &amp; year</th>
<th>Years covered</th>
<th>Data source</th>
<th>Income concept</th>
<th>Inequality measure</th>
<th>Population coverage</th>
<th>Trend of inequality established</th>
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<tbody>
<tr>
<td>Alvaredo et.al 2017</td>
<td>1978-2014</td>
<td>World Wealth and Income Database</td>
<td>Pre-tax national income</td>
<td>Top 1% income share and bottom 50% income share</td>
<td>National</td>
<td>Increased a lot since 1978 and plateaued after 2006</td>
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<td>Knight, Li, and Wan 2016</td>
<td>2002, 2013</td>
<td>CHIP</td>
<td>household wealth and household income</td>
<td>Gini</td>
<td>21 in 2002 and 14 in 2013</td>
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<td>Li et.al. 2016</td>
<td>1984-2012</td>
<td>Ravallion and Chen (2007) and NBS 2003-2012</td>
<td>income per capita</td>
<td>Gini, urban rural income ratio</td>
<td>27 provinces</td>
<td>increased from 1984 to 1994, then decreased until 1997, then increased until 2005 and decreased afterwards</td>
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<td>Appleton, Song and Xia, 2014</td>
<td>1988, 1995, 2002, 2008</td>
<td>CHIP</td>
<td>household income per capita</td>
<td>Gini; General Entropy Index, Atkinson Index; income ratio</td>
<td>12-16 provinces, urban</td>
<td>sharp increases in inequality largely due to changes in the wage structure</td>
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<td>Source</td>
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<td>Methodology</td>
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<td>Lee, 2013</td>
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<td>Statistical Yearbook of China’s Prices, Income and Expenditure Survey in the Urban Households</td>
<td>grouped provincial disposable per capita income of urban households</td>
<td>Gini, L (GE(0))</td>
<td>National, urban</td>
<td>Increased since 2000 and peaked in 2005 and 2008, then went down from 2008 to 2010</td>
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<td>Year(s)</td>
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<td>Measure</td>
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<td>Chan, Zhou and Pan</td>
<td>1995-2011</td>
<td>China Statistical Yearbook for Regional Economy</td>
<td>Grouped income per person from each decile</td>
<td>26 provinces</td>
<td>Big peak in 2002 and went down 2009-2011</td>
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<td>Chi, Li and Yu</td>
<td>1987, 1996, 2004</td>
<td>NBS urban household survey</td>
<td>Total individual income</td>
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<td>National increasing</td>
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<td>Goh, Luo and Zhu</td>
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<td>CHNS</td>
<td>Per capita household income</td>
<td>Gini</td>
<td>8 provinces</td>
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<td>Khan and Riskin</td>
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<td>CASS survey of households</td>
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<td>11 provinces in the urban sample and 19 provinces in the Both rural and urban inequality decreased,</td>
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<td>real income and real net expenditure</td>
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