Income Inequality, Status Seeking, Consumption and Saving Behavior

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A preliminary version

Abstract

The desire for better social status can be an important motivation for savings when the social status is measured by household wealth. Income inequality can strengthen the incentive to reduce consumption and accumulate wealth so as to improve social status. Using the Chinese urban household survey between 1997 and 2006, we examine the direct effects of income inequality on household consumption and saving behavior. We find that even after controlling families' income, the increase in income inequality among households' reference group significantly discourages households' consumption that excludes education expenditure. Moreover, this effect gets stronger when the family income declines or the head of the family become younger. The increase in income inequality also stimulates more education investment, which is consistent with the fact that the education attainment is an important determinant for the social status. However, there is no salient difference of this effect between the high-income and low-income families. Finally, we find that income inequality has no significant effect on the average real estate investment and it does not stimulate conspicuous consumption.

Key word: income inequality, status seeking, social status, household consumption, conspicuous consumption.

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1 Introduction

The Chinese saving rate has been high and rising during the last two decades. Since the household saving is approximately half of the national savings, what affects household consumption and saving behavior has attracted lot attentions. The Chinese urban household survey data reveals that the average propensity to consume of urban residents has declined from 82% in 1997 to 75% in 2006.[1] The literature has proposed many explanations for the phenomenon, including the economic growth and demographic changes (Kraay, 2000; Modigliani and Cao, 2004), income growth and habit (Horioka and Wan, 2007), precautious savings (Chamon and Prasad, 2008; Kuijs, 2006; Meng, 2003), the change of return rate of investment (Wen, 2008) and the change of sex ratio (Wei and Zhang, 2009). Only a few studies use household survey data, such as Chamon and Prasad (2008), Meng (2003) and Wei and Zhang (2009), and none of the studies consider income inequality as a potential reason for the high and increasing household saving rate.

The existing studies have indicated that income inequality can affect aggregate saving rate. They focus on the heterogeneity in the propensity to consume of families with different income levels, which implies that the income distribution matters for the overall private saving, and most (but not all) of the mechanisms suggest a positive link.[2] Smith (2001) uses cross-country data to confirm that to the extent of credit market imperfection, income inequality has a robust, positive effect on aggregate private saving rates. However, there are also some studies that find no effect of income distribution on the saving rate at the macro level (Schmidt-Hebbel and Serven, 2000).

Few studies focus on the direct effect of income inequality on each household's saving behavior after controlling consumer heterogeneity in regard to income. One

[1] Authors' calculation. The definition of APC is living expense excluding education expenditure divided by disposable income. Chamon and Parsad (2008) gave similar results.

[2] For instance, Musgrove (1980), Menchik and David (1983), Stoker (1986) and Dynan et al. (2004) suggest that due to the differences in the concavity of utility function, precautionary saving, or bequest motivation, the saving rate of high-income families is higher than that of low-income families.

exception includes Alesina and Perotti (1996), who propose that income inequality would increase social tensions, thus increase the risk of investment and reduce private saving rate. This paper emphasizes that income inequality can directly stimulate household savings due to the desire to improve social-status. More specifically, families care about their social status that often depends on the family' rank in the wealth distribution. As a result, in order to ascend the wealth hierarchy or defend the social status in the "Rat Race", families try to accumulate wealth by all means and reducing consumption is one of them. The strict concavity of the utility from social status implies that poor families have a stronger status-seeking incentive to save than rich families do. Rising income inequality can strengthen the incentives of status-seeking savings and results in more private savings and less consumption.

The rapid increase in income inequality in China after the economic reform and the variation of the changes across provinces provide us the opportunity to test the direct effects of income inequality on private consumption and saving behavior resulting from the status-seeking motivation. According to a report by World Bank in 2005, the country's Gini coefficient has risen from 0.33 to 0.47 in the last two decades. Moreover, there is substantial difference in income distribution between provinces. For instance, our calculation illustrate that the Gini coefficient among urban residents in Beijing has risen from 0.19 in 1997 to 0.25 in 2006, while the same measurement in Zhejiang province has changed from 0.23 to 0.32 during the same period. At the same time, several sociology studies have demonstrated that the indicators for social status have been changed from occupations or jobs to income, education and wealth (Lu, 2002).

We use the data from the Chinese urban household survey of 9 provinces between 1997 and 2006 to examine the effects of income inequality on household consumption and savings. The results show that after controlling for the household income, income inequality among the reference group (families in the same province and same age group) still has significant negative effect on household consumption that excludes education expenditure. This implies that income inequality itself stimulates private savings. In ten years (1997-2006), the Gini coefficient within the reference group rises

from 0.23 to 0.29 on average, which causes the consumption of a representative family to decline by 2.1 percentage point and the average propensity to consume (APC) to decline by 1.5 percentage point. Therefore, the rising income inequality can explain about 21% of the drop of the aggregate APC (from 82% to 75%) during the period. Other inequality measures, such as the ratio of the highest 10% income level over the lowest 10%, deliver similar outcomes. Consistent with the status-seeking story, we find that compared with the rich households, the poor restrain larger proportion of consumption as a response to the rising inequality. Also, the income inequality has stronger effect on consumption for the young people than for the old ones.

Some individual consumption goods related to status-seeking deserve more investigation, including education investment, housing investment and the conspicuous consumption. We find that the rising inequality has significant and strong effect on the families' human capital investment, but there is no salient difference between the rich and the poor. This is consistent with the status-seeking stories because education attainment is also an important indicator for the social status, and the rich cannot bequest the education stock but have to invest heavily on children's education to help children win social status. The results also suggest that the rising inequality has no significant effect on the average real state investment but enlarges the gap on housing between the rich and the poor. Finally, we have not found any evidence that income inequality stimulates conspicuous consumption.

Our results show a positive link between income inequality and household saving rate through status-seeking motives, which is on the opposite to the results in Alesina and Perotti (1996). We also provide an explanation for the huge difference in the saving rate between China and India. In China, the social stratification is not based on the origin. Reasonable social mobility can motivate households in low strata to move up the socioeconomic ladders and households in high strata to defend the status by wealth accumulation and education investment. In contrast, the caste system in India makes it much more difficult to get into the high status club, which makes the return of saving much lower in terms of improving social status. This can be an important

reason for the difference in saving rate between the two counties that are quite similar in many other aspects.

The rest of the paper is unfolded as follows. The second section gives a review of the literature and discuss the relationship between status seeking and household consumption and saving behavior; the third section presents our hypotheses and the econometric models; the following section describes our data and result, and the final section concludes and discusses the implications.

2 Status seeking and household consumption and saving behavior

According to Weiss and Fershtman (1998), social status is the ranking of individuals or groups of individuals in a given society, based on commonly agreed indicators such as wealth, education, origin, occupation, and actions. Sociologists have long emphasized that individuals care about social status, and their behavior are often motivated by the desire to improve their ranks in the hierarchy, not less than by pecuniary rewards such as consumption.[3] Early justifications focus on psychological returns of higher status. Cole et al. (1992) give the micro-foundations for putting social status in the reduced-form utility function. They point out that higher status is beneficial because it improves the access to non-market goods that are valued by consumers. As a result, the existence of non-market goods endogenously generates a concern for social status. They highlight some physical benefits of attaining higher social status. The first one is the favorable peer or club effect. Many social activities or opportunities such as marriage and invitation to a party or club only occur within the group of people with the similar status (Corneo and Jeanne, 1999). Weber (1922) introduced the concept of status groups which means that a group of people jointly generate and preserve status. Although members of a status group may rank differently in the hierarchy, they share similar status in society at large and they

[3] See Weiss and Fershtman (1998) for a review on the literature.

discipline and help each other to maintain the group status. The second benefit of improving status is related to the fact that people with high status may have privilege in rationing non-market goods. Also, those with high status can gain trust, countesy, and approval, and build up leadership more easily (Weiss and Fershtman, 1998).

Cole et al. (1992) prove that the existence of non-market decisions can naturally yield a wealth-is-status equilibrium, where social status is determined by the rank in wealth distribution.[4] As a result, the social-status seeking becomes an important motivation for wealth accumulation. People are more frugal in consumption and save more than the case where there is no status-seeking. This saving motivation has recently been explored in a branch of literature on economic growth (Corneo and Jeanne, 2001; Futagamia and Shibatab, 1998; Gong and Zou, 2001; Pham, 2005). Both the poor and the rich tend to over-accumulate in the rat-race of status seeking, but the diminishing marginal utility of status means that the poor get more pleasure from a marginal increase in their relative wealth than the rich, providing a strong incentive for the poor to accumulate (Long and Shimounura, 2004). Similarly, if education attainments is positively correlated with social status, people tend to increase their education investment (Fershtman, Murphy, Weiss, 1996). The status contest may include other indicators such as relative income (Neumark and Postlewaite, 1998).

Corneo and Jeanne (1998) argue that in the presence of incomplete information, people may use conspicuous consumption as a signal of their wealth to acquire acknowledge of the social status. However, if people engage in conspicuous consumption when old, they have to save more when they are young, which leads to more aggregate savings. In addition, for the poor, over-consumption is not sustainable and has little long run benefit. Wei and Zhang (2009) suggest that for marriage, most people believe wealth accumulation is more likely to provide the long-term security than conspicuous consumption does. Thus, the status seeking behavior tends to stimulate saving and investing rather than conspicuous consumption.

[4] They show that this equilibrium seems to be stable than Aristocratic Equilibrium or say status-inherited equilibrium because the latter is not subgame perfect.

The rising income inequality can intensify status-seeking motivation through several channels. First, the increase in income inequality implies that the high-status group controls more proportion of the resource in the society, which makes it more attractive to enter the high-status group. This corresponds to the effect of "status prize" in Corneo and Jeanne (1999). Second, higher inequality also result in more dispersion in the resources distribution, which requires the poor to save more to catch up with the rich and thus stimulate more private savings. Third, dispersion in the income distribution can increase the number of status groups and reduce the inequality within each strata. This raises the marginal returns to save in the social competition, similar to the effect of "increasing segmentation" in Corneo and Jeanne (1999). One extreme example is that in a complete homogenous society, although accumulating a little more wealth can increase an individual's rank, but it may not change his status because he still belongs to the same status group. Even if the individual does distinct himself from the others in terms of status, there is no desirable peer effect and maybe also little prestige attached to the distinction. However, the third channel also indicates that rising income inequality can weaken saving incentives when the marginal status gain achieved by accumulating additional wealth is small or it becomes too hard for the poor to catch up (Corneo and Jeanne, 2001). Therefore, the relationship between income inequality and saving incentives can be hump-shaped rather than monotonic.

Most studies in the literature assume that people care about the rank of the relevant indicator in the entire society. Coleman (1990) suggests that the relative status among peers or the reference group is more relevant because most of the competition for non-market goods comes from the peers. Reference groups are the social or professional groups to which families compare themselves. Bakshi and Chen (1996) introduce reference group's average wealth in the theoretical model and Clark and Oswald (1996) provide empirical evidence for the importance of the reference level of income against which an individual compares himself or herself. Consequently, it is valuable to consider reference group when analyzing the effect of status-seeking on behavior.

3 Hypothesis and model specification

Based on the previous discussions, we propose the following hypotheses.

Hypothesis One: The rising income inequality has a negative impact on consumption, since people have more incentive to accumulate wealth and pursue higher status through consumption restraint.

The model is as follows:

$$\ln(\text{Cons}) = \alpha + \beta * \ln(\text{Income}) + \gamma * \text{Ineq} + \delta * X + \varepsilon \qquad (1)$$

Here, 'Cons' is the household living expenditure excluding education expense; 'Income' is the families' disposable income.[5] We could also examine directly the responses of savings to income inequality, but since the data quality of 'savings' is usually much worse than that of 'consumption', we focus on consumption in our empirical study and deduce the responses of savings based on the results for consumption.

'Ineq' is the measure of income inequality. For the status-seeking behavior, the most relevant rank of social status for individual families is the rank within families living in the same region and in the same age, we calculate the inequality within the reference province-age group. More specifically, we assume that the head cares most about the income distribution within people who live in the same province and are no more than 5 years older or younger than himself or herself. For example, for families with a 31-year-old head, the reference group includes families with head aged 26-36 and in the same province.[6] We mainly consider two inequality measures: the Gini coefficient (Gini) and the average income ratio of richest 10% to poorest 10% (Ratio).[7] The former reflects the average dispersion while the latter focuses on the

[5] The disposable income includes wage, asset income, and transfers, excluding the social security contribution, income tax and accounting subsidy.

[6] We use province instead of smaller regional units to ensure that there are sufficient samples in the group so that the inequality index is reliable. We also tried fixed age groups for all families, for example for families with 30-years-old head and families with 39-years-old, their reference groups are the same: families with head aged 30-39. The results are quite similar.

[7] Though Gini coefficient is the most widely used inequality measure, it has potential problem as it cannot reflect the whole distribution. Two provinces with the same Gini may have very different distributions of income. Also, for status seeking, the distribution at the tails is quite important.

difference on the tails. We also use Theil index and the income ratio of the top 25% to the bottom 25% as robust test. The inequality indexes are all based on income per equivalent person to take into account family scale. We use several measures of family scale, including family size and three kinds of Equivalence Scales (Atkinson et al., 1995). The results presented below use the equivalence scale in which the first adult has weight 1, the other adult weight has 0.7 and the children's weight is 0.5.

X in the equation (1) represents the other control variables, including the province dummies, head's age, age-group fix effect and the year fixed effect. We control five age group dummies, which are under 34, 35-44, 45-54, 55-64, and older than 65 years old. In addition, we control the interaction term between the province and years and that between age groups and years to allow that the linear trend of average consumption varies across provinces and across age groups. Thus the identification of our model relies on the difference in the nonlinear temporal changes in income inequality across age groups and provinces. We also control the average income within the reference group in case that the degree of the inequality might correlate with the income level[8]. In addition, we also control the family characters, such as the family equivalent scale and the head's education level. However, if these characters are not correlated with the group inequality index, the estimation in the baseline model is still unbiased even we do not control them.

In equation (1), γ reflects the impact of the income inequality on consumption, which is expected to be negative, and β is the income elasticity of consumption. The existence of the status-seeking motive means that even after controlling the family income, income inequality still influence individual families' consumption and saving behavior. Thus γ is expected to be significant negative if income inequality reinforces the status-seeking incentives. If the link between income inequality and average consumption works only through consumers' heterogeneity in propensity to consume, then γ should be insignificant particularly after we allow β to vary with income groups. Finally, according to Alesina and Perotti (1996), γ should be positive. Therefore, the regression helps test these there different hypotheses.

[8] The correlation is 0.33.

The status-seeking motive means that even after controlling the family income, income inequality still influence individual families' consumption and saving behavior, thus γ is expected to be significant negative. The concave utility function hypothesis (Menchik and David, 1983; Smith, 2001) suggests that after controlling for income there would be no effect of inequality on consumption, which means that the estimation of γ would be insignificant, while according to Alesina and Perotti (1996), γ would be positive. Our regression would be able to rest all there different hypothesis.

We can transform the equation to get

$$\ln(APC) = \alpha + (\beta - 1) * \ln(Income) + \gamma * Ineq + \delta * X + \epsilon \qquad (2)$$

Hence, γ is now the inequality's impact on APC. Since the saving rate equals 1 minus APC, we can thus infer the impact of income inequality on the saving rate.

Hypothesis Two: Income inequality has greater impact on the poor than on the rich.

Assume that social status is a normal good, the marginal benefit of upgrading would be diminishing with the rising of status. The rich people already have high status, thus they would have lower incentive to upgrade, though they might still have to constrain consumption a little to maintain the status. Hence the status seeking motive means that inequality would have greater effect on the poor households' consumption[9].

We use the interaction of Ineq and the poor household dummy to test the difference of impact on the rich and the poor. We have the following model:

$$\ln(Cons) = \alpha + \beta * \ln(Income) + \gamma_1 * Ineq + \gamma_2 * Ineq * Dpoor + \delta * X + \varepsilon \qquad (3)$$

where Dpoor equals 1 if the family is among the 60% lowest income families within the province-age group. The sign of γ_2 reflects the difference of impact on the rich and the poor. We expect that the poor would be affected more, which means that

[9] On the other hand, larger inequality means that the rich possess larger proportion of the wealth in the society. Their saving rate might increase because of the concavity of the utility function. This might weaken the effect of status seeking motive.

γ_1<0 and γ_2<0. We also put the households into five sub-groups according to their ranks in the province-age group, and use this as the income group dummies to get the more detailed result. In addition to that, we do regression separately using the poor and rich samples.

Hypothesis Three: Income inequality would have greater impact on the young people than on the rich.

The young people would gain greater benefit from upgrading their status compared to the older ones, for they would have more time to enjoy the advantages of high status. Thus we might observe that the households with younger heads restrain more consumption in order to accumulate wealth. However, the bequest motive of saving of the older people might weaken this difference. We use the same model as (3) to test this difference.

Hypothesis Four: The rising inequality might encourage the households to increase human capital investment. It might also affect other investment and conspicuous consumption, but the direction of effect is ambiguous.

Aside from consumption restraint, people have other ways to accumulate wealth or upgrade status directly. One of the ways is education investment, for education generally have strong correlation with income and wealth and education itself can also be an indicator of social status. Thus we exclude education expenditure from the living consumption in our regressions. The difference of inequality's effect on education expense between the poor and the rich may not be salient, since education cannot be passed down to the children. If the high status families want the children to remain in the high status group, they would also have strong incentive in education investment[10].

Buying houses is also a way of investment, especially in China, where the housing price has been rising rapidly in the recent years. However, since real estate investment

[10] If inequality could affect the government's investment in public education or induce the change in the supply side, the relation between inequality and education investment would become more complex.

requires large payment at one time, it may be hard for the poor to invest in this channel. As the rise of inequality in the society, the poor may become poorer, which makes large payment even harder for them. Thus the inequality's impact on the poor's investment in housing is ambiguous. The rising inequality also means that the rich would have more wealth which can be used in buying houses. But their motive of investing in the real estate is unclear, since houses can both provide better living condition and high return in the future. Big houses, which can be the signal of high status, may also serve as conspicuous consumption.

In addition, the income distribution may also affect people's show off behavior, including the consumption of expensive clothes, watches or cars, which are usually the signal of rich people. Owning these goods may also help to build up a person's status. But for the poor families, the effect of show off is mainly in the short run. In the long run, social status is still determined by wealth or education. The rational households would not be short-sighted and spend a lot on those that they cannot afford. But by raising the status temperately, people may enjoy the advantage of high status, which may benefit their wealth accumulation. Hence conspicuous consumption may also serve as a way of investment. The inequality's effect on conspicuous consumption is ambiguous, and would mainly depend on society's recognition on this kind of consumption.

We use model (1) to analyze the effect of inequality on education investment, housing investment and conspicuous consumption, and use model (2) to analyze the difference of impact on difference groups.

4 Data

We use a subset of 9 provinces of the annual Urban Household Survey (UHS) conducted by NBS. The UHS covers all the provinces in China, and is based on a probabilistic sample and stratified design. The UHS is a rotating panel in which 1/2 of the samples in the survey are changed each year and all the samples are changed

every two years. The survey asks the households to keep records of the income and expenses every day, so as to get the detailed information. It provides information on every member of the family, including the demographic characters, such as age, education, occupation, and the detailed income information. We also have the household disposable income, detailed expenditure information and housing conditions. But the information of assets, such as deposit and stock account, is not contained in the data, thus we cannot obtain accurate information on household wealth. The 9 provinces in the subset include Beijing , Liaoning, Zhejiang, Anhui, Hubei, Guangdong, Sichuan, Shanxi and Gansu, which are from different parts of China with different economic conditions.

Since we do not have the information on each member's expenditure in the household, our analysis is based on family consumption. We assume that the head makes most of the consumption decisions of the household[11]. Thus the head's demographic characters, like age and education would affect the household consumption. However, if there are too many members in a household, the decision-making process would become unclear. Hence we drop those households with no less than 6 members, which compose about 0.2% of all the samples. We also drop those families whose heads are under 25 or older than 75, for we cannot find enough families in that age group to calculate the inequality measure. We drop those outliers with annual disposable income less than 100 RMB and the ten highest income families (with annual disposable income more than 500,000 RMB, and the highest income is about 700,000 RMB), and those families whose living expense is 5 times larger than the income or larger than 200,000 and 2 times larger than the income.

In 2002, the questionnaire was adjusted to a large extent. More detailed questions were included and the sample size was expanded from 21000 to 56000. These adjustments may cause the inconsistency of statistics caliber between the data of 2002-2006 and that of 1997-2001. Our estimation is based on the data of 1997-2006.

[11] In UHS, the head is chosen by the surveyor. According to the description of the questionnaire, the head should be the main contributor of the family's income and make the most economic decisions. We find that not every head is chosen based on this principal. But since we are not familiar with the households, we do not change the head of the family.

We also use the data of 2002-2006 as robust check, and the results are similar.

Graph 1 shows the trends of APC of Chinese households and the inequality measures. The APC is calculated based on the living expense excluding education expenditure and the disposable income. The APC is declining rapidly in the ten years, and the amount of decline is about 7%, while the within-province Gini coefficient is rising from 0.23 to 0.29, which is quite similar to the trend of the Gini coefficient within age groups. The trend of Ratio 90/10 is also quite similar.

|Graph 1|

Graph 2 shows the relationship between income inequality and age, which is a hump-shape. The graph of Gini and age group shows that the groups of people around 50-year-old have the largest inequality level. The graph of Ratio reflects the same pattern[12].

We depict the province specific trend and age group specific trend in Graph 2, and there is large variation of the trends between different groups, which is essential for our regression.

|Graph 2|

We describe the more detailed trends of Gini and Ratio in Table 1 and Table 2. The difference of standard deviation is quite large, but there is no large difference in mean or median. Table 3 gives the descriptive statistics of the variables used in the regressions.

|Table 1|

|Table 2|

|Table 3|

[12] There are not so many samples with heads under age 30 or over 65, which may affect the calculation of the inequality measures.

5 Estimation results

5.1 Consumption

5.1.1 Inequality and household consumption

Table 4 reports the effect of the within province-age group income inequality on household consumption. We control the province, year and age group fixed effect and the heads' age in each of the regressions. We also control the province specific and age group specific linear time trend in most of the regressions. The first four columns report the regressions that use Gini as inequality measure. The result of the first regression show that after control for the family disposable income, the within group inequality would cause the drop of household consumption behavior significantly. When Gini increases for 0.1, household consumption would drop 3.6% in average. We add the group average income in the second regression to rule out the possible correlation between group income and inequality and the estimated coefficient of Ineq is even stronger in this specification. In the third column, we report the results of the model in which there is no control for the linear time trends and the result is similar with the first one. We control the family scale and the education level of the head in the fourth regression and the negative effect of inequality on consumption is still significant. We put the households into five income groups according to their income rank in the province-age group, and use the income group dummies to capture the nonlinear effect of household income on consumption. We also try more age group dummies or control more family characters. All these do not change the main results.

|Table 4|

The latter four columns report the results of Ratio 90/10, and the results are quite similar with that of Gini's and are quite robust. When Ratio increases 1, the average household consumption would decrease 1.5%.

|Table 5|

Table 5 reports the results of the regressions using APC as dependent variables. The

results show that income inequality has negative impact on APC and when Gini increases 0.1, APC would decrease 2.4%.

5.1.2 Different income groups and household consumption

In this part, we focus on the difference of inequality's effect on the difference income level households. We divide the households into 5 groups according to the rank of their family disposable income in the province-age group. We define the first three groups (the lowest 60% income households) as the Poor. The first column of Table 6 shows that, as we have expected, the estimator of interaction of the Poor dummy and Gini is significantly negative. When Gini goes up for 0.1, the consumption of the poor would decrease 2.8% more than that of the rich. We also do regressions separately using the poor and the rich subset and find significant impact of inequality on the poor but not on the rich. We then use the 5 income group dummies to identify more detailed difference. Our finding is that the most severe negative impact is on the two poorest groups, while the other three groups are less affected. Generally, as the increase of the income, the negative impact is becoming weaker. We report the Ratio estimations in the latter four columns, which show the similar results.

|Table 6|

5.1.3 Different income groups and household consumption

Table 7 shows the difference impact of income inequality on consumption of different income groups. First we use the five age group dummies and find that the age of the head is not correlated with the degree of the impact among those families with heads under 65. But for those families with head over 65, the impact is apparently weaker. We then do the regressions using the subset of the old (with head over 55) and the young, and find stronger impact on the families with younger heads. We do the same regressions using Ratio and the results are quite similar.

|Table 7|

5.2 Wealth accumulation and other investment[13]

5.2.1 Human capital investment

Since human capital investment is one of the most important ways of upgrading social status, we try to test the effect of inequality on education investment. But education expenditure is strongly correlated with family structure in that for people over 30 there is very little return of education investment. Thus we also consider the families with children under 30 years old. We also exclude the families with more than one student but no education expense. Those students may receive free public education, which cannot reflect the households' human capital investment decisions. Table 8 shows that the Gini coefficient has strong positive effect on household education expenditure. When Gini goes up for 0.1, the average household education expenditure would increase 43%. But the regressions using Ratio show no significant effect, which might mean that the education decision is mainly affected by the average dispersion of income but not the distribution at the two tails.[14]

|Table 8|

We report the regression on different income groups in Table 9. Unlike the results of the effect on consumption, the effect on education expense is not correlated with the household income level. Actually, as the inequality rises, the education investment of the rich would increase more. As we have mentioned, the human capital of the parents cannot be passed down to the kids, and in order to ensure the high status of the kids in the future, the rich people would also invest a lot in education. We have not obtained significant results using the Ratio in the regression.

|Table 9|

[13] We also have the estimations for other investment. The interested readers can ask the author for a copy of these results.

[14] We do find that the results of education investment are more sensitive than that of consumption. This may due to the fact that education expense cannot fully represent the parents' education investment. For example, the parents may buy an apartment near the good public schools for better education.

5.2.2 Housing investment

The information on families' house value is included in the survey after 2002, and we try to test the inequality's effect on the housing investment decision using this information. In our sample, over 80% of the households have their own houses, but the variation of the house value is quite large (the standard deviation is 137259.3. We first use the probit model to test whether inequality would affect the possibility of a household to own a house and find no significant result using either Gini or Ratio. We then test the effect on inequality on house value using the subset of house owners and find that there is no salient impact.

|Table 10|

We report the regressions using the different income group subsets in Table 11 and the rising inequality seems to be widening the gap of the house value between the rich and the poor. The inequality's positive effect on the rich's house value is significantly larger (Column one) and the results in the next two columns show that inequality decreases the poor's house value but increases the rich's. The regression using the 5 income group dummies gives the similar results.

|Table 11|

5.2.3 Conspicuous Consumption

We use three definitions of conspicuous consumption. The first one includes clothes, beauty and jewelry. The second one includes car expenditure and those included in the first one. The third one includes housing expenditure and those included in the second one[15]. Since the information of car expense and housing expense can only be found in the survey after 2002, we use the 2002-2006 data to do the regressions for these two definitions of conspicuous consumption.

|Table 12|

Table 12 shows that no matter what inequality measure we use, the inequality

[15] The housing expenditure here is different from the house value in the above analysis. The housing expense including the rent of the year and the decoration expenditure.

would have negative impact on the conspicuous consumption, and this result is quite robust. This negative effect increases as we include more items in the definition. Table 13 gives the analysis of the effect on different income groups. The negative effect decreases as the rise of family income (the first, third and fourth column), and the poor's conspicuous consumption are strongly reduceed as the inequality goes up (column two) while there is no significant effect on the rich (column three). The regressions using Ratio show the similar results. There is no evidence that the poor people try to purchase things beyond their affordability to seek status.

5.3 Robust test

We assume that inequality would reduce household consumption because of the status seeking motive of saving. But even for status seeking, the households could not reduce the subsistence consumption. Hence the inequality should not affect the consumption for basic human needs. We use the cereals consumption to represent the subsistence expenditure in the robust test. As we expected, the first and fourth columns of Table 4teen show that after control for the income, there is no effect of inequality on cereals consumption. We also use food consumption as dependent variable, and find that food consumption, including cakes, fish and beverages and the expense at restaurants, would be negatively affected.

|Table 13|

We also want to test whether inequality would affect the groups' average income. If so, our estimations would be biased. For instance, if inequality also encourages people to work harder and thus is positively correlated with income, then our estimations would have underestimated the effect of inequality. The third column of Table 14 shows that the within province-age group Gini coefficient has no significant on the average income. And the estimation of Ratio shows the similar results.

|Table 14|

In addition, since there was an adjustment of the survey in 2002, which changed the questionnaire and the sample size, we also report the results of the regressions that

only use the samples of 2002-2006. Table 15 and Table 16 report these results, which show the similar pattern of the estimations using the ten-year data. Hence our main results are not affected by this adjustment.

|Table 15|

|Table 16|

6 Conclusion and discussion

Using the 1997-2006 data of China Urban Household Survey, we find that income inequality significantly reduces the household's consumption (excluding education investment) due to the household's status-seeking motive, and this effect is stronger among poorer and younger people. This result is robust to different inequality measures, using different specifications and applying to different time intervals. During the ten years, the rising of the within province-age group Gini coefficient has caused the household consumption to decline by 2.1% and APC to decline by 1.5%. If the inequality maintains at this level or keeps rising, it would keep giving the household the incentive to restrain consumption and accumulate wealth. We also examine the effect of income inequality on households' education expenditure, housing investment and conspicuous consumption. We find that the rising inequality has strongly encouraged families' human capital investment, and the effect does not differ much between the rich and the poor. The inequality does not affect the housing value on average, but it seems to widen the gap of house investment between the rich and the poor. Our result shows no evidence that income inequality may stimulate conspicuous consumption.

Since social status is based on relative rankings, people's status-seeking behavior may be inefficient because it causes the over-accumulation and over-investment in the society. However, the stimulation on savings and education investment can be beneficial for economic growth. The recent literature on economic growth has demonstrated the positive effect of the status-seeking on growth. However, how

income inequality related to status-seeking has not been fully explored. This warrants future research.

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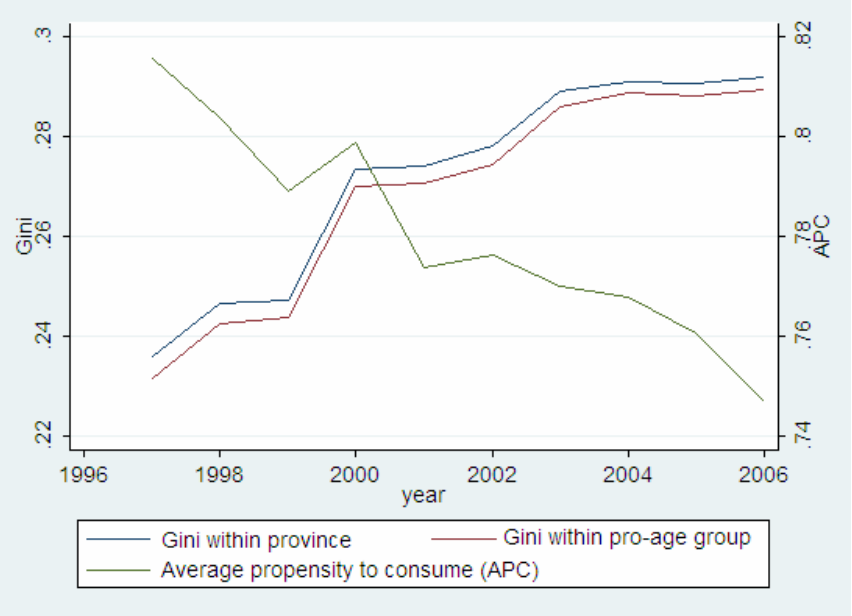
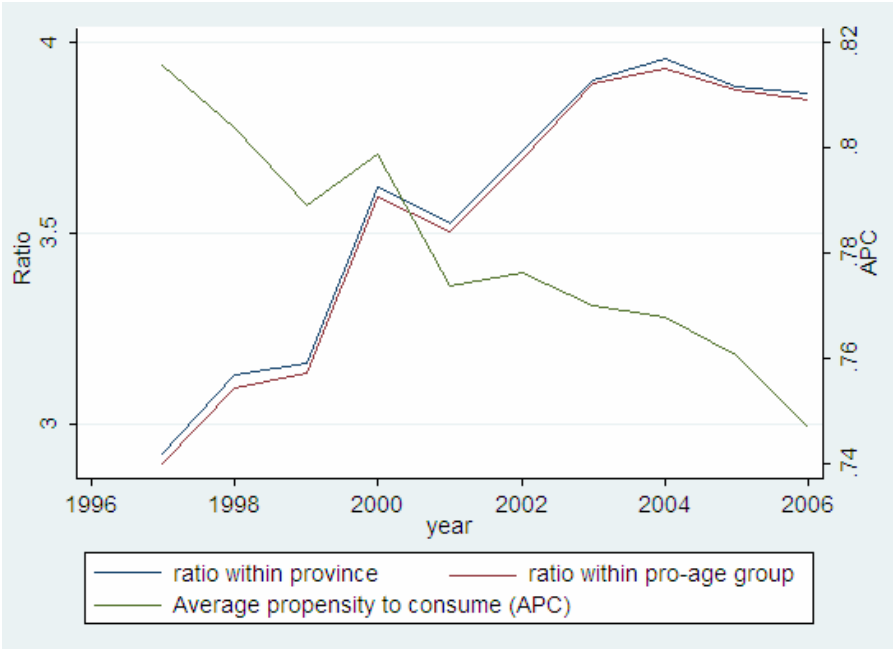
Graph 1 The trend of inequality measures



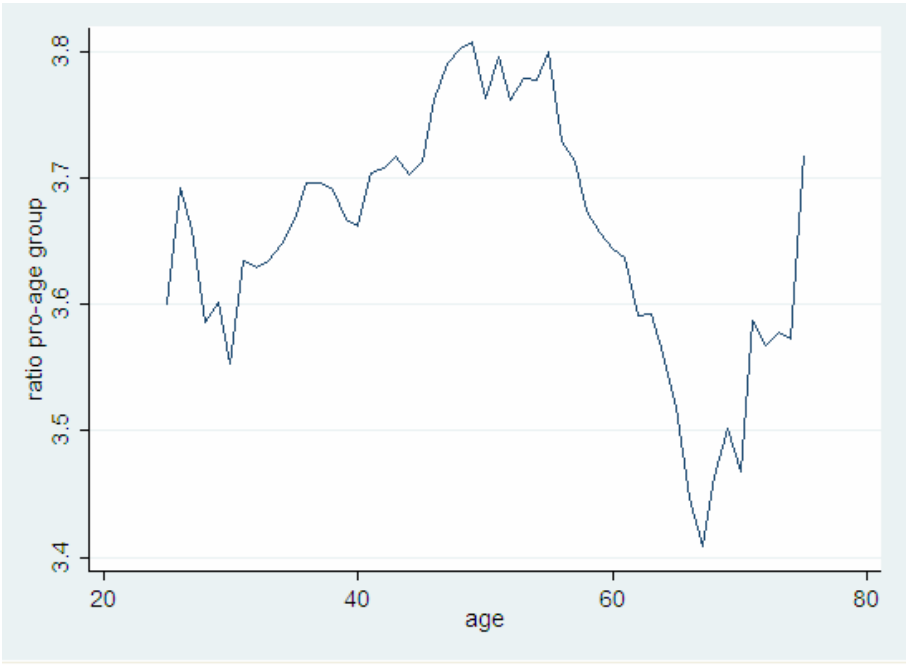
The trend of the Gini coefficients within provinces, the Gini coefficients within province-age group and the trend of APC (average propensity to consume).

The trend of the Ratio 90/10 within provinces, the Ratio 90/10 within province-age group and the trend of APC (average propensity to consume).

Graph 2 The inequality-age profile



The age profile of the Gini coefficients within province-age group



The age profile of the Gini coefficients within province-age group

Table 1 The year trend of Gini within province-age groups

year	mean	N	sd	p50	max	min
1997	.2317012	5392	.0326161	.2328538	.3198668	.105816
1998	.2426512	5382	.0325673	.2394843	.3188807	.1302463
1999	.2438565	5378	.0271629	.2480029	.3117747	.1249687
2000	.2698436	5355	.0338984	.2731574	.3575411	.1737471
2001	.2706291	5378	.0306697	.267853	.3560663	.1256918
2002	.2743814	12878	.0347373	.2666259	.3772863	.1939368
2003	.2859672	14379	.0410726	.2822258	.3711274	.1836003
2004	.2885055	15593	.0383593	.28188	.3847257	.1922648
2005	.2879735	16677	.0372971	.2848288	.369946	.198964
2006	.2891865	16822	.0393361	.2883578	.3791416	.1615333
Total	.2768322	103234	.0406051	.2724907	.3847257	.105816

Table 2 Ratio within province-age group

year	mean	N	sd	p50	max	min
1997	2.894976	5392	.5045616	2.871773	4.829321	1.632242
1998	3.095896	5382	.5270558	3.03298	5.81556	1.821087
1999	3.131403	5378	.4582172	3.109915	5.306972	1.831999
2000	3.591934	5355	.6280485	3.574034	7.694833	2.103938
2001	3.503222	5378	.5605433	3.400592	5.48753	1.760081
2002	3.691034	12878	.7111122	3.502142	6.660141	2.378722
2003	3.888448	14379	.8591642	3.628728	8.466461	2.322723
2004	3.927412	15593	.8182145	3.685752	6.737262	1.629992
2005	3.875377	16677	.7910773	3.716944	6.116529	2.34112
2006	3.848025	16822	.7891223	3.824527	6.898703	2.177175
Total	3.692912	103234	.7991812	3.532216	8.466461	1.629992

Table 3 Descriptive statistics of the regression variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Gini within province-age group	103234	.2768322	.0406051	.105816	.3847257
Ratio within province-age group	103234	3.692912	.7991812	1.629992	8.466461
Income	104664	30106.73	23129.33	1008	344445
Disposable income	104665	28177.58	21101.03	174	327207
Consumption	104550	21857.9	17099.34	1147.8	356010.3
Edu expense	104665	1629.026	3093.645	0	167000
House owner	104665	.6188506	.4856715	0	1
House value	77517	116892.9	137259.3	0	2300000
Show expense	104665	2181.78	2607.465	0	59940.4
Show expense (second measure)	77525	3206.644	9222.763	0	472727.7
Show expense (third measure)	104665	3185.409	9554.991	0	472727.7
Education (year)	104665	11.57663	2.98995	0	19
OECD Scale	104665	2.276206	.493437	1	5.5
Family size	104665	2.996885	.7671796	1	6

Table 4 The OLS estimation of the effect of income inequality on household consumption

	Dependent Variable: ln(consumption)							
	(1)gini base	(2)gini Ave inc	(3)gini No trend	(4)gini scale edu	(1)ratio base	(2)ratio ave inc	(3)ratio No trend	(4)ratio scale edu
Ineq	-0.359***	-0.373***	-0.309***	-0.340***	-0.015***	-0.016***	-0.014***	-0.013***
	(0.088)	(0.089)	(0.083)	(0.088)	(0.004)	(0.004)	(0.004)	(0.004)
ln(dincome)	0.764***	0.763***	0.764***	0.748***	0.764***	0.763***	0.764***	0.748***
	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)	(0.004)
age	-0.001**	-0.001**	-0.001**	-0.001*	-0.001**	-0.001**	-0.001**	-0.001*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Av. inc		0.029				0.033		
		(0.027)				(0.027)		
scale				0.052***				0.052***
				(0.003)				(0.003)
Obs.	103120	103120	103120	103019	103200	103200	103200	103019
Adjusted R^2	0.69	0.69	0.69	0.70	0.69	0.69	0.69	0.70

Note: we control the year, regional and age group fixed effect in every regression. In 'Base' the province specific and age group specific linear time trend are controlled. In 'Ave inc' the average income of the province-age group is controlled. In 'No trend' there is no specific linear time trend. In 'Scale edu' we control the family scale and the education level of the head.

Table 5 The OLS estimation of the effect of income inequality on average propensity to consume

	Dependent Variable: APC (average propensity to consume)							
	(1)gini base	(2)gini ave inc	(3)gini No trend	(4)gini scale edu	(1)ratio base	(2)ratio ave inc	(3)ratio No trend	(4)ratio scale edu
Ineq	-0.244***	-0.269***	-0.194***	-0.232***	-0.010***	-0.011***	-0.009**	-0.009**
	(0.079)	(0.080)	(0.074)	(0.079)	(0.004)	(0.004)	(0.004)	(0.004)
ln(dincome)	-0.169***	-0.169***	-0.168***	-0.180***	-0.168***	-0.169***	-0.168***	-0.180***
	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)	(0.004)
age	-0.001**	-0.001**	-0.001**	-0.001	-0.001**	-0.001**	-0.001*	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Ave inc		0.053**				0.055**		
		(0.023)				(0.023)		
scale				0.032***				0.032***
				(0.003)				(0.003)
Obs.	103112	103112	103112	103011	103112	103112	103112	103011
Adjusted R^2	0.09	0.09	0.09	0.10	0.09	0.09	0.09	0.10

Table 6 The OLS estimation of the effect of inequality on consumption for different income groups

	Dependent Variable: ln(consumption)							
	(1)gini whole	(2)gini poor	(3)gini rich	(4)gini Inc group	(1)ratio whole	(2)ratio poor	(3)ratio rich	(4)ratio Inc group
Ineq	-0.186*	-0.442***	-0.120	-0.560***	-0.006	-0.017***	-0.007	-0.025***
	(0.103)	(0.104)	(0.150)	(0.116)	(0.005)	(0.005)	(0.007)	(0.006)
ln(dincome)	0.749***	0.760***	0.723***	0.724***	0.749***	0.760***	0.723***	0.723***
	(0.005)	(0.006)	(0.010)	(0.011)	(0.005)	(0.006)	(0.010)	(0.011)
Poor	0.072***				0.048***			
	(0.023)				(0.015)			
Poor*Ineq	-0.281***				-0.014***			
	(0.082)				(0.004)			
Incg2*Ineq				-0.120				-0.005
				(0.113)				(0.006)
Incg3*Ineq				0.269**				0.014**
				(0.115)				(0.006)
Incg4*Ineq				0.501***				0.025***
				(0.124)				(0.006)
Incg5*Ineq				0.315**				0.018***
				(0.137)				(0.007)
Obs.	103120	60798	42322	103120	103120	60798	42322	103120
Adjusted R^2	0.70	0.65	0.57	0.70	0.70	0.65	0.57	0.70

Note: we control the year, regional and age group fixed effect in every regression.

Table 7 The OLS estimation of the effect of inequality on household consumption for different age groups

	(1)gini	(2)gini	(3)gini	(1)ratio	(2)ratio	(3)ratio
	Age group	old	young	Age group	old	young
Ineq	-0.458***	-0.430**	-0.537***	-0.020***	-0.014*	-0.022***
	(0.141)	(0.169)	(0.117)	(0.006)	(0.008)	(0.006)
ln(dincome)	0.756***	0.719***	0.768***	0.756***	0.719***	0.768***
	(0.003)	(0.007)	(0.004)	(0.003)	(0.007)	(0.004)
(35-45)*Ineq	0.162			0.010		
	(0.139)			(0.006)		
(45-55)*Ineq	0.074			0.003		
	(0.140)			(0.007)		
(55-65)*Ineq	-0.015			0.002		
	(0.160)			(0.008)		
Over 65*Ineq	0.356*			0.021**		
	(0.187)			(0.009)		
Obs.	103120	27148	75972	103120	27148	75972
Adjusted R^2	0.70	0.66	0.71	0.70	0.66	0.71

Note: we control the year, regional and age group fixed effect in every regression.

Table 8 The OLS estimation of the effect of inequality on households' education expenditure

	Dependent Variable: ln(education expenditure)							
	(1)gini base	(2)gini Ave inc	(3)gini No trend	(4)gini scale edu	(1)ratio base	(2)ratio ave inc	(3)ratio No trend	(4)ratio scale edu
Ineq	4.261***	4.950***	2.709***	3.982***	-0.012	0.063	-0.065*	-0.018
	(0.905)	(0.897)	(0.856)	(0.900)	(0.040)	(0.040)	(0.038)	(0.040)
ln(dinco me)	0.599***	0.641***	0.605***	0.487***	0.596***	0.637***	0.602***	0.483***
	(0.027)	(0.027)	(0.027)	(0.029)	(0.027)	(0.027)	(0.027)	(0.029)
age	-0.129***	-0.129***	-0.128***	-0.118***	-0.127***	-0.128***	-0.127***	-0.117***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Ave inc		-3.624***				-3.603***		
		(0.288)				(0.288)		
scale				-0.307***				-0.307***
				(0.040)				(0.040)
Obs.	69667	69667	69667	69636	69667	69667	69667	69636
Adjusted R^2	0.23	0.24	0.23	0.24	0.23	0.24	0.23	0.24

Table 9 The OLS estimation of the effect of inequality on education expenditure for different income groups

	(1)gini whole	(2)gini poor	(3)gini rich	(4)gini Inc group	(1)ratio whole	(2)ratio poor	(3)ratio rich	(4)ratio Inc group
Ineq	0.000	3.163***	5.699***	3.539***	-0.028	-0.079	0.077	-0.041
	(0.000)	(1.176)	(1.409)	(1.177)	(0.044)	(0.052)	(0.062)	(0.055)
ln(dincome)	0.583***	0.579***	0.597***	0.456***	0.573***	0.562***	0.606***	0.426***
	(0.043)	(0.054)	(0.073)	(0.075)	(0.043)	(0.054)	(0.073)	(0.075)
Poor	-0.276				-0.184			
	(0.185)				(0.123)			
Poor*Ineq	0.698				0.026			
	(0.661)				(0.032)			
Incg2*Ineq				1.488				0.044
				(1.040)				(0.052)
Incg3*Ineq				0.671				0.039
				(1.067)				(0.053)
Incg4*Ineq				0.654				0.034
				(1.060)				(0.053)
Incg5*Ineq				0.161				0.012
				(1.104)				(0.054)
Obs.	69667	41867	27800	69667	69667	41867	27800	69667
Adjusted R^2	0.24	0.22	0.25	0.24	0.24	0.22	0.25	0.24

Note: we control the year, regional and age group fixed effect in every regression.

Table 10 The probit and OLS estimation of the effect of inequality on housing status

Dependent Variable	House owner	House value	House value	House value	House owner	House value	House value	House value
	(1)gini probit	(2) gini base	(3) gini Ave inc	(4) gini scale edu	(5)ratio probit	(6) ratio base	(7) ratio ave inc	(8) ratio scale edu
Ineq	0.025	0.190	0.048	0.209	-0.005	0.016*	0.009	0.018*
	(0.092)	(0.205)	(0.209)	(0.205)	(0.004)	(0.010)	(0.010)	(0.010)
ln(dincome)	0.092***	0.534***	0.532***	0.494***	0.092***	0.534***	0.532***	0.494***
	(0.003)	(0.007)	(0.007)	(0.008)	(0.003)	(0.007)	(0.007)	(0.008)
age	0.006*	-0.000	0.000	0.002	0.005*	-0.000	-0.000	0.001
	(0.003)	(0.001)	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.001)
Ave inc	0.002***		0.223***		0.003***		0.211***	
	(0.001)		(0.064)		(0.001)		(0.065)	
scale				0.009				0.009
				(0.007)				(0.007)
Obs.	76349	66067	66067	66067	76349	66067	66067	66067
Adjusted R^2	0.05	0.44	0.44	0.44	0.05	0.44	0.44	0.44

Table 11 The OLS estimation of the effect of inequality on house value for different income groups

	(1)gini whole	(2)gini poor	(3)gini rich	(4)gini Inc group	(1)ratio whole	(2)ratio poor	(3)ratio rich	(4)ratio Inc group
Ineq	0.754***	-0.112	0.427	-0.734**	0.046***	0.000	0.030**	-0.033**
	(0.229)	(0.273)	(0.306)	(0.295)	(0.011)	(0.013)	(0.014)	(0.014)
ln(dincome)	0.506***	0.474***	0.560***	0.503***	0.505***	0.474***	0.559***	0.499***
	(0.011)	(0.014)	(0.017)	(0.019)	(0.011)	(0.014)	(0.017)	(0.019)
Poor	0.263***				0.180***			
	(0.050)				(0.033)			
Poor*Ineq	-1.016***				-0.053***			
	(0.176)				(0.008)			
Incg2*Ineq				0.551*				0.029**
				(0.305)				(0.015)
Incg3*Ineq				0.800***				0.044***
				(0.300)				(0.014)
Incg4*Ineq				1.097***				0.061***
				(0.298)				(0.014)
Incg5*Ineq				1.864***				0.096***
				(0.299)				(0.014)
Obs.	66067	38003	28064	66067	66067	38003	28064	66067
Adjusted R^2	0.44	0.39	0.44	0.44	0.44	0.39	0.44	0.44

Table 12 The OLS estimation of the effect of inequality on conspicuous consumption

Dep. Var	Show exp1	Show exp1	Show exp1	Show exp2	Show exp3	Show exp1	Show exp1	Show exp1	Show exp2	Show exp3
	(1)gini base	(2)gini Ave inc	(3)gini scale edu	(4)gini base	(5)gini base	(1)ratio base	(2)ratio ave inc	(3)ratio scale edu	4)ratio base	(5)ratio base
Ineq	-0.910***	-0.894***	-0.868***	-1.299***	-1.361***	-0.038***	-0.037***	-0.036***	-0.052***	-0.054***
	(0.219)	(0.222)	(0.219)	(0.252)	(0.266)	(0.011)	(0.011)	(0.011)	(0.012)	(0.013)
lndincome	1.187***	1.187***	1.156***	1.228***	1.205***	1.187***	1.187***	1.156***	1.229***	1.205***
	(0.009)	(0.009)	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)	(0.010)	(0.010)	(0.010)
age	-0.026***	-0.026***	-0.024***	-0.026***	-0.023***	-0.026***	-0.026***	-0.024***	-0.026***	-0.023***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
Ave inc		-0.034					-0.027			
		(0.078)					(0.078)			
scale			-0.024***					-0.025***		
			(0.009)					(0.009)		
Obs.	103234	103234	103133	76349	76349	103314	103314	103133	76349	76349
Adjusted R^2	0.46	0.46	0.46	0.44	0.40	0.46	0.46	0.46	0.44	0.40

Table 13 The OLS estimation of the effect of inequality on different income groups' conspicuous consumption

Dep. Var.	Show exp1	Show exp1	Show exp1	Show exp2	Show exp3	Show exp1	Show exp1	Show exp1	Show exp2	Show exp3
	(1)gini	(2)gini	(3)gini	(4)gini	(5)gini	(1)ratio	(2)ratio	(3)ratio	4)ratio	(5)ratio
	Inc group	poor	rich	Inc group	Inc group	Inc group	poor	rich	Inc group	Inc group
Ineq	-2.745***	-0.903***	-0.094	-3.260***	-3.024***	-0.141***	-0.051***	0.010	-0.160***	-0.142***
	(0.359)	(0.307)	(0.299)	(0.392)	(0.399)	(0.018)	(0.015)	(0.015)	(0.019)	(0.020)
ln(dincome)	1.156***	1.393***	0.901***	1.216***	1.214***	1.143***	1.393***	0.900***	1.205***	1.209***
	(0.027)	(0.020)	(0.019)	(0.029)	(0.029)	(0.027)	(0.020)	(0.019)	(0.029)	(0.029)
Incg2*Ineq	1.338***			1.426***	1.213***	0.077***			0.082***	0.067***
	(0.387)			(0.411)	(0.413)	(0.019)			(0.020)	(0.020)
Incg3*Ineq	2.445***			2.587***	2.149***	0.130***			0.136***	0.111***
	(0.358)			(0.383)	(0.388)	(0.018)			(0.019)	(0.019)
Incg4*Ineq	2.712***			2.796***	2.345***	0.148***			0.150***	0.118***
	(0.362)			(0.388)	(0.401)	(0.018)			(0.019)	(0.020)
Incg5*Ineq	2.471***			2.867***	2.502***	0.146***			0.162***	0.135***
	(0.369)			(0.406)	(0.421)	(0.018)			(0.020)	(0.021)
Obs.	103234	60831	42403	76349	76349	103234	60831	42403	76349	76349
Adjusted R^2	0.47	0.39	0.36	0.44	0.41	0.47	0.39	0.36	0.44	0.41

Table 14 Robust test--The OLS estimation of the effect of inequality on income and food consumption

Dependent Variable	ln(dincome)	ln(cereals exp)	ln(food exp)	ln(dincome)	ln(cereals exp)	ln(food exp)
	(1)gini	(2)gini	(3)gini	(1)ratio	(2)ratio	(3)ratio
Ineq	-0.191	-0.114	-0.155*	0.001	0.005	-0.012***
	(0.129)	(0.168)	(0.082)	(0.006)	(0.008)	(0.004)
scale	0.204***	0.282***	0.119***	0.205***	0.282***	0.119***
	(0.005)	(0.006)	(0.003)	(0.005)	(0.006)	(0.003)
age	0.006***	0.013***	0.002***	0.006***	0.013***	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
ln(dincome)		0.029***	0.494***		0.029***	0.494***
		(0.006)	(0.003)		(0.006)	(0.003)
Obs.	103133	76349	103133	103133	76349	103133
Adjusted R^2	0.39	0.19	0.59	0.39	0.19	0.59

Note: we control the year, regional and age group fixed effect in every regression.

Table 15 The OLS estimation of the effect of inequality on household consumption (2002-2006)

	Dependent Variable: ln(consumption)							
	(1)gini base	(2)gini ave inc	(3)gini No trend	(4)gini scale edu	(1)ratio base	2)ratio ave inc	(3)ratio No trend	(4)ratio scale edu
Ineq	-0.384***	-0.395***	-0.294***	-0.360***	-0.015***	-0.015***	-0.012***	-0.013***
	(0.098)	(0.099)	(0.089)	(0.097)	(0.005)	(0.005)	(0.004)	(0.005)
ln(dincome)	0.763***	0.763***	0.763***	0.746***	0.763***	0.763***	0.763***	0.746***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
age	-0.001**	-0.001**	-0.001**	-0.001*	-0.001**	-0.001**	-0.001**	-0.001*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Ave inc		0.020				0.023		
		(0.030)				(0.030)		
scale				0.053***				0.053***
				(0.003)				(0.003)
Obs.	76241	76241	76241	76241	76241	76241	76241	76241
Adjusted R^2	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69

Table 16 The OLS estimation of the effect of inequality on education expenditure (2002-2006)

	Dependent Variable: ln(education expense)							
	(1)gini base	(2)gini Ave inc	(3)gini No trend	(4)gini scale edu	(1)ratio base	(2)ratio Ave inc	(3)ratio No trend	(4)ratio scale edu
Ineq	5.595***	7.045***	2.933***	5.372***	0.019	0.154***	-0.072*	0.020
	(1.016)	(1.008)	(0.940)	(1.010)	(0.044)	(0.045)	(0.042)	(0.044)
ln(dincome)	0.597***	0.642***	0.601***	0.466***	0.593***	0.638***	0.599***	0.462***
	(0.028)	(0.028)	(0.028)	(0.030)	(0.028)	(0.028)	(0.028)	(0.030)
age	-0.130***	-0.131***	-0.129***	-0.118***	-0.128***	-0.130***	-0.127***	-0.116***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Ave inc		-4.432***				-4.458***		
		(0.328)				(0.333)		
scale				-0.290***				-0.290***
				(0.042)				(0.042)
Obs.	49657	49657	49657	49657	49657	49657	49657	49657
Adjusted R^2	0.23	0.24	0.23	0.25	0.23	0.24	0.23	0.24