MPRA

Income Inequality, Status Seeking, and Consumption

Jin, Ye and Wu, Binzhen and Li, Hongbin

Tsinghua University

1 May 2010

Income Inequality, Status Seeking, and Consumption

Ye Jin   Hongbin Li   Binzhen Wu[*]

Tsinghua University

Abstract

Using the Chinese urban household survey data between 1997 and 2006, we find that income inequality has a negative (positive) impact on households' consumption (savings), even after we control for family income. We argue that people save to improve their social status when social status is associated with pecuniary and non-pecuniary benefits. Rising income inequality can strengthen the incentives of status-seeking savings by increasing the benefit of improving status and enlarging the wealth level that is required for status upgrading. We also find that the negative effect of income inequality on consumption is stronger for poorer and younger people, and income inequality stimulates more education investment, which are consistent with the status seeking hypothesis.

Key words: income inequality; social status; consumption and savings; status seeking; education investment

JEL classification: D12; D91 ; E21; O16

1 Introduction

The Chinese consumption has been low and declining during the last two decades. According to the Chinese urban household survey data, the average propensity to consume of urban residents has declined from 82% in 1997 to 75% in 2006.[1] Several explanations have been proposed for this phenomenon, including demographic changes (Kraay, 2000; Modigliani and Cao, 2004), high income growth and habit (Horioka and Wan, 2007), precautionary savings (Chamon and Prasad, 2008; Kuijs, 2006; Meng, 2003), the change of return rate of investment (Wen, 2009), and the increasing sex ratio (Wei and Zhang, 2009).

In this paper, we explore another potential cause of declining consumption: the rising inequality. Rising inequality could reduce consumption in two ways. First, if the propensity to consume decreases with income, then at the *macro* level, we will find that consumption decreases with inequality.[2] Second, we propose another explanation that is based on people's desire to improve their social status. More specifically, people care about their social status that is associated with pecuniary and non-pecuniary benefits. Social status often depends on a family' rank in the wealth distribution or indicators such as the education attainment, which is closely associated with wealth when the credit market is imperfect. As a result, in order to ascend in the status hierarchy or keep the social status in the "Rat Race", families try to accumulate wealth by increasing savings. When income inequality increases, the benefit gap between the high-status and low-status groups widens, which in turn strengthens the incentives of

---

[1] Authors' calculation. The definition of APC is living expense excluding education expenditure divided by disposable income. The change of the APC we find is quite similar to that in Chamon and Prasad (2009), although the level of APC in our paper is higher than that their paper. The difference in the levels comes from the fact that they include transfer expenditures as savings while we do not.

[2] Inequality may also leads to a decline of savings. Alesina and Perotti (1996) propose that income inequality would increase social tensions, thus increasing the risk of investment and reducing private saving rate.

status-seeking savings. Furthermore, rising income inequality also raises the entry wealth level for the high-status group, which means that more savings are needed for one to enter the high-status group.

The first, or the "macro", reason for the inequality-consumption link is caused mechanically by the non-linear association between consumption and income at the micro, or household, level. If only the macro mechanism is at work, then inequality should not affect consumption at the household level, once household income is well controlled for. In contrast to the macro mechanism, the status-seeking hypothesis implies that given household income, rising income inequality can still discourage (stimulate) households' consumption (savings).

We develop a simple model, which illustrates that households tend to save more when the income gap widens, i.e., when it becomes harder to move up to the high-status group. Moreover, income inequality has a larger effect on consumption and savings for poorer and younger people, because they have stronger incentives for moving up. Finally, the model also shows that people at the bottom may simply give up on savings when the income gap is too large.

The rapid increase in income inequality in China and the large variation across regions and groups provide us an opportunity to test the status-seeking hypothesis. According to a report by the World Bank in 2005, China's Gini coefficient has risen from 0.33 to 0.47 in two decades. Moreover, there is a substantial variation across regions and time. For instance, our calculation illustrates that the Gini coefficient among urban residents in Beijing has risen from 0.19 in 1997 to 0.25 in 2006, while the measurement in Zhejiang province has changed from 0.23 to 0.32 during the same period.

Drawing on the Chinese Urban Household Survey data in 9 provinces between

1997 and 2006, empirical results show that income inequality within a reference group (families in the same province and same age group) has a negative effect on household consumption after we control for household income. This implies the existence of mechanisms at work other than the "macro" mechanism and is consistent with the status-seeking hypothesis. In our sample, the Gini coefficient in urban areas rose from 0.23 in 1997 to 0.29 in 2006, which implies a decline of the average propensity to consume (APC) by 1.63 percentage points, about 23% of the decline of the APC during the period. In addition, we find that inequality has a larger impact on consumption of the poor and the young, but we do not find the poor in our sample giving up probably because the urban sample does not include the poor people most of whom live in rural China. We also find that rising inequality has a strong positive effect on families' investment in education, which is an important indicator of social status. Finally, our main results remain in a series of robustness checks.

To our best knowledge, we are the first to find micro evidence that rising inequality could be a reason for declining consumption. Existing studies emphasize the link as a "macro" phenomenon, and do not consider the micro mechanism—the impact of inequality on an individual household's consumption or saving behavior given one's income.[3] Alesina and Perotti (1996) propose a micro mechanism of how income inequality could increase social tensions, thus increasing the risk of investment and reducing private saving rate, but their empirical evidence is based on cross-county data at the macro level. We are also among the first to show, both theoretically and empirically, the importance of status-seeking for increasing savings. The recent

---

[3] 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 motive, the saving rate of high-income families is higher than that of low-income families. 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 aggregate saving rate (Schmidt-Hebbel and Serven, 2000).

literature on economic growth has demonstrated that the status-seeking saving motive can be beneficial for economic growth (Corneo and Jeanne, 2001; Futagamia and Shibatab, 1998; Gong and Zou, 2001; Pham, 2005), but there is little direct micro evidence to confirm the importance of the status-seeking motive.

The rest of the paper is unfolded as follows. The second section discusses how status-seeking motive can lead to a direct effect of income inequality on household consumption and saving behavior. Section 3 describes a model that derives testable hypotheses for the empirical analysis. Section 4 introduces our econometric specifications. Section 5 describes the data and presents some descriptive statistics. Section 6 and 7 report empirical findings and robustness tests. Section 8 concludes.

2   Status Seeking and Household Consumption and Saving Behavior

According to Weiss and Fershtman (1998), social status is the rank of an individual or a group of individuals in a given society, based on commonly agreed criteria such as wealth, education, origin, occupation, etc. In addition, social status is often associated with a particular group, and shared by all members of the group, regardless of their individual characteristics.

Sociologists have long emphasized that individuals care about social status, and human behaviors are often motivated by the desire to improve ranks in the hierarchy, which is no less important than pecuniary rewards such as consumption.[4] Early justifications focus on psychological returns of higher status. Cole et al. (1992) and Corneo and Jeanne (1999) emphasize the advantages of the high status in accessing non-market resources, and show that people care about their status in equilibrium even if social status does not directly enter the utility function. They highlight some social rewards of attaining higher social status. First, there is a favorable club effect. Many

---

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

4

social activities or opportunities such as marriage and invitation to a party or club only occur within the group of people with the same social status. Second, benefit of improving status is related to the fact that people with high status may have privilege in rationing non-market goods. Furthermore, those with high status can gain trust, courtesy, and approval, and build up leadership more easily.

Because of these rewards, individuals try to improve their social status through investments in assets (including physical, human, and social capital), group affiliation, and an appropriate choice of actions, among which the status-seeking saving motive has been the focus in the literature (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 the wealth distribution.[5] As a result, 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. The connection between wealth and social status can be indirect. For example, the status contest may directly depend on indicators such as education, but to afford better education, families need to accumulate wealth in the first place.

Rising income inequality can intensify the status-seeking motive through several channels. First, the increase in income inequality usually makes it more attractive to enter the high-status club because the difference in (financial and non-financial) resources between the high- and low-status groups enlarges. This corresponds to the effect of "status prize" in Corneo and Jeanne (1999). Second, higher inequality implies a larger wealth gap between the high- and low-status groups, which means that

---

[5] They show that this equilibrium seems to be more stable than aristocratic equilibrium or say status-inherited equilibrium because the latter is not subgame perfect. Social status also depends on other indicators such as education, occupation, and relative income (Fershtman, Murphy, Weiss, 1996; Neumark and Postlewaite, 1998).

low-status families need to save more to join the high-status club.[6] These channels lead to a positive effect of income inequality on household savings. However, when the dispersion of wealth becomes so large that the marginal status gain achieved by accumulating additional wealth declines or it becomes infeasible for the low-status to move up, it is possible that rising income inequality weakens status-seeking saving incentives (Corneo and Jeanne, 2001).[7] Therefore, the relationship between income inequality and saving incentives is essentially an empirical question, and it can be hump-shaped rather than monotonic.

3 Model

We construct a simple model to illustrate how income inequality could affect consumption due to the status-seeking motive. In our model, an individual lives for two periods, and there is some exogenously given income in the first period, Y_1. He consumes C_1 and saves $S=Y_1-C_1$ in the first period, and consumes $C_2=S$ in the second period. A unique feature of the model is that the individual also derives utility from a high social status.[8] Suppose that there are two social clubs (H) in the society: $H=1$ if it is a high-status club and $H=0$ if it is a low-status club. The high-status club membership is associated with both pecuniary and non-pecuniary benefit, which is denoted B, while the low-status club pays nothing. Thus, utility derived from social status is simply $B*H$.

Assume that the social status for the first period is given, which for simplicity is

---

[6] In addition, the dispersion in the income distribution may increase the stratification of the society and intensify the competition for social status. This raises the marginal returns to save in the social competition, similar to the effect of "increasing segmentation" in Corneo and Jeanne (1999).
[7] Corneo and Jeanne (2001) consider the effects of increasing inequality on initial wealth. They conclude that the dispersion of initial wealth distribution reduce status-seeking savings.
[8] Cole et al. (1992) has proved that we can directly analyze the reduced form problem in which families directly gain utility from the social status, and the results are the same as those in a more complicated model where people do not directly care about social status but do care in the equilibrium because social status brings in some financial and non-financial benefits.

assumed to be 0, but the individual can change his second-period social status by accumulating wealth. There is a threshold wealth requirement, W, for joining the high-status club, where we assume W is exogenously given for simplicity.[9] Thus, H is a function of S, where $H(S) = 1$ if $S \geq W$; $H(S) = 0$ if $S < W$.

Formally, an individual select C_1, C_2 and S to maximize the following utility function,[10]

$$Max_{C_1,C_2,S} \quad U(C_1) + \beta[U(C_2) + B*H(S)]$$
$$s.t. \quad C_1 + S = Y_1$$
$$C_2 = S \tag{1}$$
$$H(S) = 1 \quad if \quad S \geq W; \quad H(S) = 0 \quad if \quad S < W,$$

where β is the discount factor. The utility function U is well behaved, i.e., increasing and concave. The model can be simplified to

$$Max_S \quad U(Y_1 - S) + \beta[U(S) + B*H(S \mid W)], \tag{2}$$

where the only choice variable is the savings S.

3.1 Optimal Solutions

We solve for optimal solution by graphical illustrations. Part (a) of Figure 1 illustrates how the lifetime utility would vary with savings given one's status: $V(S \mid H = 0)$ for a low-status individual and $V(S \mid H = 1)$ for a high-status individual, where $V(S \mid H = 1) = V(S \mid H = 0) + \beta B$. Both functions are maximized at S^*.

People may save more than S^* because they can derive utility from entering the high-status club with more savings, i.e., $V(S \mid H = 1) > V(S^* \mid H = 0)$ for S in the range of $(S^*, \bar{S})$, where $\bar{S}$ is the largest possible saving that satisfies the condition

---

[9] If there is a limit on the size of the high-status club, W is endogenously determined in the model. The main conclusions still hold in this case.

[10] For simplicity, we have assumed that families can keep the high-status even though they exhaust all the wealth accumulation in the second period. If instead, families need to save at least W to keep the high-status, the savings at the end of the second period will be affected by the status-seeking motive. The model can also be easily extended to a more general setup, such as there being more than two clubs, families having different social status in the first period, the benefit of the high-status being nonlinear, and there are more than two periods. The conclusions still hold.

$V(\bar{S} \mid H = 1) = V(S^* \mid H = 0)$. People have no incentives to save more than $\bar{S}$, because

they could be better off by saving only S^* even they are still in the low-status club.

Note that both S^* and $\bar{S}$ are increasing functions of Y, which follows from the

setup of the utility function. Thus, we could use S^* and $\bar{S}$ to define one's income

level. For the purpose of the following analysis, we have three income groups by

comparing S^* and $\bar{S}$ to W: one is rich if $S^* \geq W$, one is in the middle class if

$S^* < W \leq \bar{S}$, and one is poor if $\bar{S} < W$.

The actual lifetime utility function, described by the solid curves in Figure 1,

depends on the income group one belongs to. It is $V(S \mid H = 0)$ when the individual's

savings S is less than W, but switches to $V(S \mid H = 1)$ when S exceeds W. It highlights

a discontinuous increase of βB at $S = W$ due to the upgrade of the status. Based on one's

income level, there are three scenarios.

Case 1: Cheap Club Membership for the Rich

For the rich, or $S^* \geq W$, the membership requirement for the high-status club is

low, and they choose S^* and enter the high-status club, as shown in Figure 1(c). The

high-status club is "cheap" in the sense that a rich individual enters the club even if he

does not save for the purpose of joining the club, and he chooses the optimal

consumption and savings as if there were no membership benefits.

Case 2: Excessive Savings for the Middle Class

The middle class, or $S^* < W \leq \bar{S}$, save aggressively, as shown by Figure 1(d). In

this case, the wealth requirement of the high-status membership W is larger than S^*, or

the optimal savings when there were no status-seeking incentives, but acquiring the

high-status is better than staying in the low-status club. As a result, the optimal choice

is to save *W* and join the high-status club. In other words, people save excessively (more than the optimal savings S^* without status-savings incentives) for the purpose of entering the high-status club.

Case 3: The Poor Giving Up

The poor, or $\bar{S} < W$, give up status-seeking. As illustrated by Figure 1(e), now acquiring higher status by sacrificing consumption is no longer desirable or improving status becomes impossible at all. Thus, people give up seeking high-status and choose S^* as if there is no club membership.

3.2 Comparative Statics

Club Wealth Requirement *W*

Figure 2(a) summarizes how the optimal savings vary with *W*. For the rich, or $S^* \geq W$, increasing *W* does not affect his optimal choice of savings. For the middle class, or $S^* < W \leq \bar{S}$, savings increase with *W*. In other words, rising *W* stimulates more savings (exactly equals *W*) from the middle class. For the poor, or $\bar{S} < W$, they simply give up pursuing high-status so that they do not respond to increasing *W*. To summarize, when *W* increases, the savings for each individual either have no change or increase, except those who switch from "status seeking" to "giving up". As long as there are not many "switchers", the aggregate effect of *W* on savings will be positive.

Club Benefits *B*

An increase in the payoff of the high-status club induces a higher $\bar{S}$, which means people are willing to save more to attain the high-status. As a result, some people who were originally giving up start to save excessively now. These people are

represented by the segment between $\bar{S}^0$ and $\bar{S}^1$ in Figure 3(b), where $\bar{S}^0$ ($\bar{S}^1$) represents the $\bar{S}$ before (after) the change in *B*. People in other ranges do not change their savings. This suggests that rising club benefit increases savings on average, and all the increase comes from the enlargement of the status-seeking group.

Young versus Old

The effect of age can be examined by varying the discount factor β, where we assume that older people care less about the future and thus have a smaller β. Therefore, older people would have a weaker incentive for status-seeking, and thus smaller savings. Moreover, as β and *B* are complementary in the utility function, a lower β (for older people) means a lower marginal impact of the club benefit *B* on savings.

3.3 Empirical Hypotheses

In this section, we link income inequality to savings, which is the focus of empirical tests. An increase in inequality would mean two things: the increase of the club wealth-requirement *W* and an increase of the club benefit *B*. The comparative statics analyses suggest that on average, savings increase when *W* or/and *B* increases. However, the impact varies with *W* and age. Taking these together, we have the following three hypotheses:

> ***Hypothesis 1:** On average, rising income inequality has a positive (negative) impact on savings (consumption).[11]*

---

[11] The model can easily be extended to the case where there are many clubs. To the extreme, a family's status is just its rank in the wealth hierarchy, which is assumed in a typical model in the literature. The conclusion still holds. The main difference between our model and the literature is that income

Hypothesis 2: *The impact of inequality on savings is small for both the poor and rich, but is large for the middle class.*

Hypothesis 3: *The impact of inequality on savings (consumption) is stronger for younger people.*

4   Empirical Models

We test these hypotheses by estimating the following empirical model,

$$\ln(C) = \alpha + \beta * \ln(Y) + \gamma * Gini + \delta * X + \varepsilon \quad , \tag{1}$$

where C is household consumption, including all living expenditures except education expense, Y is the families' disposable income,[12] Gini is the Gini coefficient, and X is other covariates.

In equation (1), γ measures the impact of income inequality on consumption, which is expected to be negative, and β is the income elasticity of consumption.[13] The existence of the status-seeking motive means that even after we control for family income, inequality still affects household consumption. However, if the link between income inequality and consumption works only through consumers' heterogeneity in propensity to consume, then γ should be zero, particularly when we allow β to vary with income groups. Note that as long as $\beta < 1$, APC declines with income, which would be consistent with the literature about consumers' heterogeneity on saving

---

inequality increases the benefit of acquiring higher status (B), while B is fixed in a typical model. In addition, there is a discontinuous increase of the return of savings in our model. These explain why a typical model finds the increase in inequality in initial wealth reduce savings while our model indicates rising income inequality tends to stimulate savings.

[12] The disposable income includes wage, asset income, and transfers, excluding the social security contribution, income tax and accounting subsidy. Since the data quality of 'savings' is much worse than that of 'consumption', we focus on consumption in our empirical study and derive the responses of savings based on the results for consumption.

[13] The prediction based on Alesina and Perotti (1996) is that γ should be positive, which is on the opposite of the prediction based on the status-seeking story.

propensity.

For the measure of inequality, we focus on the Gini coefficient, using the income ratio of the richest 10% to poorest 10% as robust tests.[14] Besides, we use Gini coefficient among peers or the reference group, rather than inequality of the whole society because most of the competition for non-market goods comes from peers (Coleman, 1990; Li and Zhu, 2006). Reference groups are the social or professional groups to which families compare themselves.[15] The most relevant rank of social status for individual families is the rank among families living in the same region and of similar age. As a result, we use inequality within the reference province-age (plus and minus 5 years) group. For example, for families with a 31-year-old head, the reference group includes families with head aged 26-36 in the same province.[16] All inequality indexes are based on income per equivalent person taking into account family size or scale. The results presented below use the equivalence scale in which one of the adults in the household has weight 1, the other adults have weight 0.7 and children's weight is 0.5.[17]

Control variables are represented by X in equation (1), including the head's age, the family equivalent scale, the average income of the reference province-age group, provincial fixed effects, age-group fixed effects and year fixed effects. We define five age group dummies, which are respectively under 34, 35-44, 45-54, 55-64, and above

---

[14] The Gini coefficient reflects the average dispersion while the ratio 90/10 focuses on the difference on the tails.

[15] Bakshi and Chen (1996) introduce the reference group's average wealth in their 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 important to consider reference group when analyzing the effect of the status-seeking on behavior.

[16] 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 find very similar results when we apply fixed age groups for all families, for example for families with 30-years-old head and families with 39-years-old head, their reference groups are the same: families with head aged 30-39.

[17] The results are quite robust to different family equivalent scales (see Atkinson et al., 1995 for definitions of family scale).

65.[18] In addition, we control for the interactions between province and year dummies and those between age group dummies and year dummies to allow for the provincial and age-group effects to vary across years. Thus, the identification of our model relies on the difference in the nonlinear temporal changes in income inequality across age groups and provinces.

5 Data and Descriptive Statistics

The data come from the annual Urban Household Survey (UHS) conducted by the National Bureau of Statistics in China. The UHS covers all provinces in China, and uses a probabilistic sampling and stratified multistage method to select households. It is a rotating panel in which one third of the sample is replaced each year and the full sample is changed every three years. The sampled households are asked to keep detailed records of incomes and expenditures every day. It has demographic and income information for every member of the family. Unfortunately, it has no information on assets.

We have access of data for nine Chinese provinces from 1997 to 2006, including Beijing, Liaoning, Zhejiang, Anhui, Hubei, Guangdong, Sichuan, Shanxi and Gansu, which represent different regions and economic conditions. The mean values and the trends of the most important variables are quite comparable between our sample and the national sample. The statistics are available to interested readers on request.

Since there is no information on each member's expenditure, our analysis is based on consumption of the whole family. We drop families whose head is below age 25 or above age 75, because we cannot find enough families in these age groups to get reliable estimates of inequality measures. Finally, we exclude outliers with annual disposable income less than 100 RMB, ten families with highest income (annual

---

[18] Results are not sensitive to different ways of classify age groups.

disposable income more than 500,000 RMB), families whose living expenditure is 5 times larger than the income, or is 2 times larger than the income but larger than 200,000, and families whose family size is large than 10.[19] Our final sample includes 102,971 families in total.

The simple time-series trend in Figure 3 seems to suggest that consumption declined while inequality rose in our sample period. The average propensity to consume (APC) dropped sharply from 86.6% in 1997 to 81.5% in 2006, while the within reference group inequality rose dramatically from 0.23 to 0.29. The within province inequality has a similar trend to that of within reference group inequality. Figure 4 suggests that there are large variations of Gini coefficient across both provinces and age groups, which is good for estimations.

6   Estimation Results

This section reports regression results. All regressions are Ordinary Least Square estimations. We focus on the results using Gini coefficient as the measure for income inequality. The estimates based on Ratio 90/10 show quite similar robust results, and are not reported to save space.[20]

6.1   Status Seeking and Consumption

Table 1 reports the effect of income inequality on household consumption using Gini coefficient as our inequality measure. We control for family income, the head's age, the average income of the reference group, and province, year and age group fixed

---

[19] In 2002, the questionnaire was changed substantially. More detailed questions were included and the sample size was expanded from 21000 to 56000. These adjustments may cause the inconsistency of the caliber for the same variables between the data from 2002 to 2006 and that from 1997 to 2001. Accordingly, our estimation is based on the data from 1997 to 2006, and we use the data of 2002-2006 as a robust check, and the results are similar.

[20] Particularly, when Ratio 90/10 increases by 1, the average household consumption decreases by 1.6 percent and the average education investment increases by 7.4 percent. The difference across income groups and age groups are also similar to that based on the Gini coefficient.

effects in these regressions. We also allow for the linear time trend of the average consumption to differ across provinces and age groups.

Regression results show that given income, consumption declines with the Gini coefficient, which is consistent with Hypothesis 1. The first column shows that after controlling for disposable family income, the Gini coefficient has a significant negative effect on household consumption. When the Gini coefficient increases by 0.1, household consumption drops by 3.8%. As expected, income itself has a positive coefficient. The magnitude of 0.763 means that when income rises by one percent, consumption increases by 0.763 percent.

The impact of inequality on consumption still holds when we allow for different kinds of non-linear effects of income. We control for five income quintile groups, which are defined according to their income rank in the province-age group, in column 2, and both income group dummies and their interactions with log(income) in column 3 to allow different income groups to have different propensity to consume. The estimated coefficients on the Gini coefficient do not change much. In column 4, we control for the linear time trend for each province-age group and the result remains.[21] To summarize, we have found evidence supporting hypothesis 1, i.e. income inequality on average stimulates more status-seeking savings.

6.2   Heterogeneous Effects across Income Groups

In this part, we test Hypothesis 2, i.e., the impact of inequality on consumption varies with income. To do this, we define three income groups: *poor* for the bottom one third of the income distribution, *middle-class* for the middle one third, and *rich* for

---

[21] Besides the specifications reported in the table, we have tried many other specifications, such as controlling ten instead of five age categories, applying different age group categories (under 30, 30-40,40-50,50-60, and 60 above), controlling more family characteristics (including family scale, heads' education level and race), and the results are quite robust.

the top one third. We estimate the following model,

$$\ln(C) = \alpha + \beta * \ln(Y) + \gamma_1 Gini + \gamma_2 middle + \gamma_3 Gini * middle \\ + \gamma_4 rich + \gamma_5 Gini * rich + \delta * X + \varepsilon. \tag{2}$$

The variable "middle" is a dummy variable that equals 1 if the family belongs to the middle class, and "rich" is a dummy variable that equals 1 if the family is rich.

Results reported in Table 2 show that the impact of inequality on consumption decreases with income. The first column of Table 2 shows that the coefficient of the interaction between middle and Gini is significantly positive. For this group, the impact of inequality is -0.333, relative to -0.530 for the poor. The interaction term of rich*Gini is also positive and significantly different from zero, with an estimated coefficient of 0.269, suggesting that the impact of inequality for the rich is even smaller (-0.261). Regressions based on the three sub-samples (the poor, the middle, and the rich) show a similar pattern (column 2 to 4): the effect of inequality on the consumption for the rich is significant negative at 10% significance level, but it is much weaker than that for the middle and for the poor.

These results seem to show that the impact of inequality decreases with income (consistent with Hypothesis 2), and we do not find that the poor giving up (inconsistent with Hypothesis 2). One potential explanation is that our sample only includes urban households, and does not include poor households in China, most of whom live in the rural area. As a result, households in our sample are not poor enough to give up.

6.3 Young versus Old

We then test Hypothesis 3: income inequality has a larger impact on consumption for the young than the old, and results reported in Table 3 indeed confirm this. The first column shows that the interaction term young*Gini is negative and significant, suggesting that the negative effect of income inequality on consumption tends to be

16

stronger for the young (household head younger than 55) than for the old (55 or above). Regressions based on the two sub-samples (young versus old) show a similar pattern (column 2 and 3): for the young, income inequality has a significant negative effect on their consumption; while the effect is much weaker for the old. Finally, when we have five finer age groups (below 35, 35-45, 45-55, 55-65, and above 65), we find that for the oldest group (above 65), inequality has a significantly smaller effect on consumption compared to other groups. This provides stronger support that the old indeed has less status-seeking incentives than the young.

6.4   Education Investment

One specific way of improving status is investing in education. Education is not only considered as an indicator of social status itself, but also is correlated with higher income and wealth.[22] Thus, we hypothesize that rising income inequality may encourage households to increase education investment. Since there is generally very little education investment for adults, we only consider families with children under age 30.[23]

Results reported in Table 4 indeed show that rising income inequality has a positive impact on education investment. Column 1 shows that the Gini coefficient has a strong positive effect on household education expenditure. When the Gini goes up by 0.1, education expenditures increase by 50%. The positive effect of Gini coefficient on education expenditures remains when we control for the income group dummies and their interactions with Gini (column 2).

Unlike the results for consumption, the effect of income inequality on education

---

[22]   Because education expenditures are actually an investment instead of consumption, we have excluded them from consumption in our previous analysis.

[23]   We also try the specification that excludes families who have no kids under 25, and (or) whose kids are all under age 3, and (or) families who have kids at school but have no education expenditure. The results indicate stronger positive effect of income inequality on education expenditure.

expenditure does not decrease with family income (columns 3-6 of Table 4). Actually, the education investment of the rich may increase more than the poor as income inequality increases. This suggests that the rich may have stronger incentives than the poor in investing in children's education, probably because the human capital of the parents are more difficult to be passed to the next generation compared to wealth.

7   Robustness Tests

7.1   Counterfactual Tests

We argue that income inequality has a negative effect on household consumption because of the status-seeking motive of savings, but such motive should not affect the basic consumption for human needs. If we find a similar effect of income inequality on basic consumption, then our specification could be wrong. We use basic food consumption (cereal) to represent the subsistence expenditure in the robustness tests. As expected, the first column of Table 5 shows that income inequality has no effect on the subsistence consumption, or consumption of cereal. When we switch to non-basic food consumption as dependent variable, including cakes, fish, beverages and the expense at restaurants, we find status-seeking saving incentives again: inequality has a significant negative effect on non-basic food consumption (column 2 in Table 5).

7.2   Alternative Stories

Besides the social-status seeking story, there can be alternative stories to explain the negative effect of income inequality on consumption. One probable story is related to the housing market in China. Income inequality among the reference group can be positively correlated with provincial housing price. At the same time, rising housing price may reduce household consumption and stimulate savings for housing.

To test whether housing price has caused the correlation between inequality and

consumption, we augment model (1) by including a variable of housing price index. The third column of table 5 shows that after we control for provincial housing price index in the regression, the coefficient of Gini does not change much from those reported in Table 1. Housing price itself does not have a significant effect on consumption.

Another story is related to the imbalanced sex ratio in China. Wei and Zhang (2009) argue that the competition in the marriage market resulted from the rising sex ratio imbalance accounts for about half of the actual increase in the household savings rate during 1990-2007. If the sex ratio is correlated with our income inequality measures, our estimation of the effect of income inequality without controlling for the sex ratio is biased. In the fourth column in Table 5, we include the sex ratio variable used by Wei and Zhang (2009), which is the sex ratio for the age cohort 7-21. Controlling for the sex ratio does not change our main result. Sex ratio indeed has a negative coefficient, though not statistically significant in our sample.

The last alternative story is about the correlation between inequality and downward income risks. Generally, higher income risks result in more precautionary savings and less consumption. Therefore, rising inequality can have a negative impact on consumption due to the increase in income risks instead of the status-seeking motive.

To test this, we exploit the fact that the Urban Household Survey is a rotating panel and measure the *downward income risk* by calculating the proportion of families in a province-age group who experienced a decrease in income for families who are in the sample two yeas in a row.[24] We find that the correlation between income inequality and downward income risk is 0.33, but only 30% of the families experienced a

---

[24] The urban household survey does not have a consistent identifier for each family until 2002. Thus, this part focuses on the survey in 2002-2006. We construct a 2-year panel with 17000 families.

decrease in income, and less than 15% of the families had a decrease of more than 10%. Moreover, after we add the downward income risk variable in the baseline model (column 5 in Table 5), the negative effect of Gini is even larger, which indicates that the income risk is not the reason for the negative effect of income inequality on consumption.[25]

8 Conclusions

The rapid increase in income inequality in China and the substantial variation in inequality across regions and groups provide us a good opportunity to test the status-seeking hypothesis. Our simple theoretical model illustrates that households tend to save more when the income gap widens because of the status-saving incentives, but the impacts are different for different income levels: the rich save normally as achieving a high-status is easy, the middle-class save excessively in order to achieve a higher status, and the poor simply give up. The model also shows that the young saves more than the old.

Empirical results support these theoretical predictions. Using China Urban Household Survey data, we find that income has a negative impact on household consumption after we control for the income effect itself. The estimate indicates rising inequality can explain a large part of the declining consumption as a percentage of income between 1997 and 2006. In our sample, the urban Gini coefficient rose from 0.23 in 1997 to 0.29 in 2006 on average, which can explain 23% of the decline of urban household consumption during this period.

In addition, the negative effect of income inequality on consumption is stronger

---

[25] Without considering the income risk, the estimated coefficient of Gini in the baseline model is -0.42 using the sample of that period.

for poorer and younger people. We also find that the rising inequality has encouraged families to invest more in children's education, and the effect does not differ much between the rich and the poor. These results are robust to different inequality measures and different model specifications.[26] However, we do not find the poor in our sample giving up. The results are consistent with the story that people save to improve their social status, which is associated with both pecuniary and non-pecuniary rewards, and rising income inequality strengthens this motive.

---

[26] Other sensitivity tests we have tried include: deflating all the nominal variables using the provincial CPI, excluding families with heads under 30 and over 65, and excluding the samples of 1997-2001. Again, the results demonstrate the robustness of our estimations. Results are available from the authors.

Reference

Alesina A. and R. Perotti, 1996, Income distribution, political instability, and investment, European Economic Review, 40: 1203- 1228

Bakshi, G. S., and Zhiwu C. 1996, The Spirit of Capitalism and Stock-Market Prices, American Economic Review 86: 133 – 157.

Clark, A. and Oswald, A. 1996, Satisfaction and Comparison Income, Journal of Public Economics, 61:359-381.

Chamon M. and E. Prasad, 2008, Why are saving rates of urban households rising? NBER Working Paper 14546

Cole H., G. Mailath, A Postlewaite , 1992, Social Norms, Savings Behavior, and Growth, The Journal of Political Economy, 100:1092-1125

Coleman, J., 1990, Foundations of social theory, Harvard University Press, Cambridge, MA.

Corneo, G., and O., Jeanne, 1998, Social organization, status and savings behavior, Journal of Public Economics, 70: 37–51.

Corneo, G., and O., Jeanne, 1999, Social organization in an endogenous growth model, International economic review, 70: 37–51.

Corneo G. and O. Jeanne, 2001, Status, the Distribution of Wealth, and Growth, The Scandinavian Journal of Economics, 103: 283-293

Cowell, F.A. 1989, Sampling variance and decomposable inequality measures, Journal of Econometrics, 42: 27-41.

Dynan, K. E., J. Skinner, and S. P. Zeldes, 2004, Do the Rich Save More? Journal of Political Economy, 112: 397-444

Fershtman C., K. M. Murphy, and Y. Weiss Source, 1996, Social Status, Education, and Growth, The Journal of Political Economy, 104: 108-132

Futagamia K., and A. Shibatab, 1998, Keeping one step ahead of the Joneses: Status, the distribution of wealth, and long run growth, Journal of Economic Behavior & Organization, 36:109-126

Horioka , C. Y. and Wan , J . , 2006, The Determinants of Household Saving in China : A Dynamic Panel Analysis of Provincial Data ,NBER Working Papers 12723.

Kraay, A. ,2000, Household Saving in China, World Bank Economic Review, 14: 545—557

Gong, Liutang, and Heng-fu Zou, 2001. Money, Social Status, and Capital Accumulation in a Cash-in-Advance Model. Journal of Money Credit and Banking 33: 284-293.

Kuijs, Louis, 2006, How Will China's Saving-Investment Balance Evolve? World Bank Policy Research Working Paper #3958.

Li H. and Y. Zhu, 2006, Income, income inequality, and health: Evidence from China, Journal of Comparative Economics, 34: 668–693

Long, N., and K., Shimomura, 2004, Relative wealth, status-seeking, and catching-up, Journal of Economic Behavior & Organization, 53: 529–542

Menchik P. and M. David, 1983, Income Distribution, Lifetime Savings, and Bequests, The American Economic Review, 73: 672-690

Meng, Xin, 2003. "Unemployment, consumption smoothing, and precautionary saving in urban China," Journal of Comparative Economics, Elsevier, vol. 31(3), pages 465-485, September.

Modigliani F. and S. Cao, 2004, The Chinese Saving Puzzle and the Life-Cycle

Hypothesis, Journal of Economic Literature, 42: 145-170

Musgrove, P., 1980, Income Distribution and the Aggregate Consumption Function, The Journal of Political Economy, 88: 504-525

Neumark, D. and Postlewaite, A. 1998, Relative Income Concerns and the Rise in Married Women's Employment, Journal of Public Economics, 70: 157-183.

Pham, T., 2005, Economic growth and status-seeking through personal wealth, European Journal of Political Economy, 21: 407-427.

Schmidt-Hebbel K. and L. Serven, 2000, Does income inequality raise aggregate saving?, Journal of Development Economics, 61: 417–446

Smith D., 2001, International evidence on how income inequality and credit market imperfections affect private saving rates, Journal of Development Economics, 64: 103–127

Stoker , T., 1986, Simple Tests of Distributional Effects on Macroeconomic Equations, The Journal of Political Economy, 94: 763-795

Weber, M., 1922, Economy and Society. Translated and reprinted, University of California Press, Berkeley, 1978.

Wei S. and X. Zhang, 2009, The competitive saving motive, Evident from rising sex ratio and savings rate in China, NBER working paper.

Weiss, Y. and C. Fershtman, 1998, Social status and economic performance: A survey, European Economic Review, 42: 801-820

Wen, Yi, 2009. "Saving and growth under borrowing constraints explaining the "high saving rate" puzzle," Working Papers 2009-045, Federal Reserve Bank of St. Louis.

World Bank, 2005, World development report 2006: equity and development, Washington, DC: World Bank.

Lu Xueyi, 2002, The report on social strata in contemporary China, Social Sciences Academic Press, Beijing, China. (In Chinese)

Figure 1 Three Scenarios on the Status-seeking Savings

Lifetime Utility

$V(S|H=1)$

βB

$V(S|H=0)$

S*

S

(a)

Lifetime Utility

$V(S^*|H=0)$ $V(\bar{S}|H=1)$

$V(S|H=1)$

βB

$V(S|H=0)$

S* $\bar{S}$ S

(b)

Lifetime Utility

$V(S|H=1)$

βB

$V(S|H=0)$

W S* $\bar{S}$ S

(c) Cheap Club Membership

Lifetime Utility

$V(S|H=1)$

βB

$V(S|H=0)$

S* W $\bar{S}$ W

(d) Status Seeker

Lifetime Utility

βB $V(S|H=1)$

$V(S|H=0)$

S* $\bar{S}$ W S

(e) Giving up

24
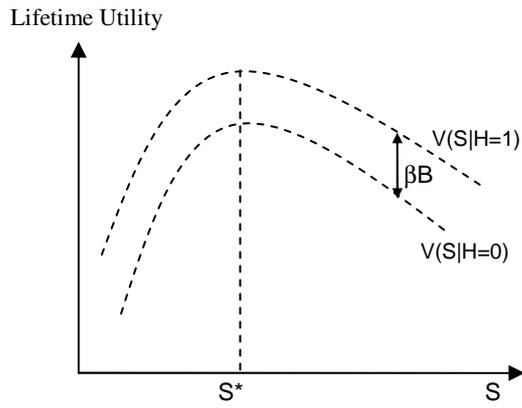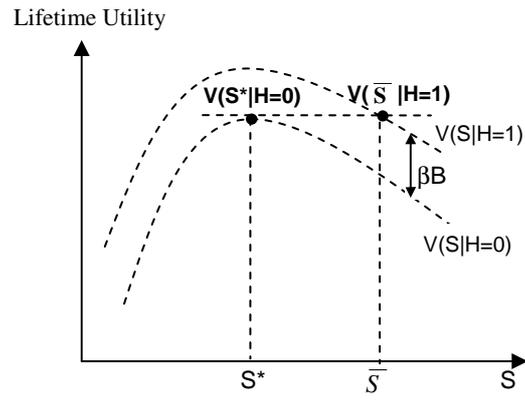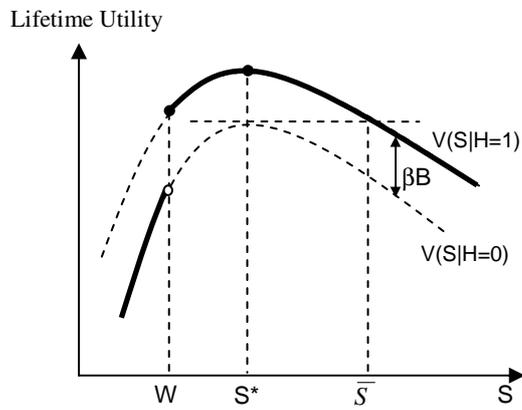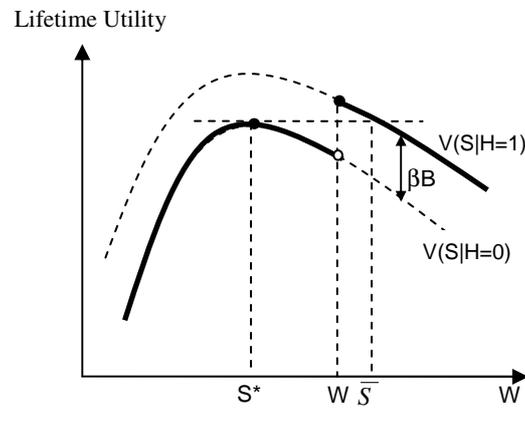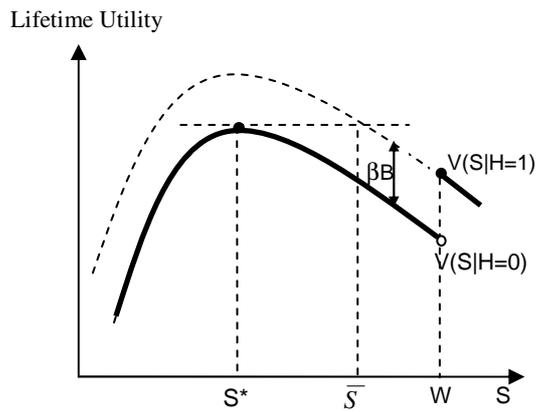
Figure 2 Optimal Savings and Comparative Statics

Optimal Savings
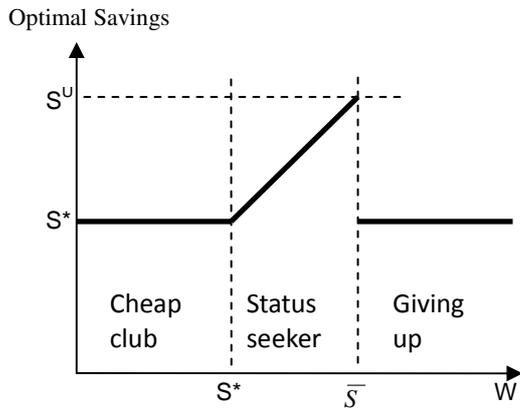
(a) Comparative Statics for W

Optimal Savings
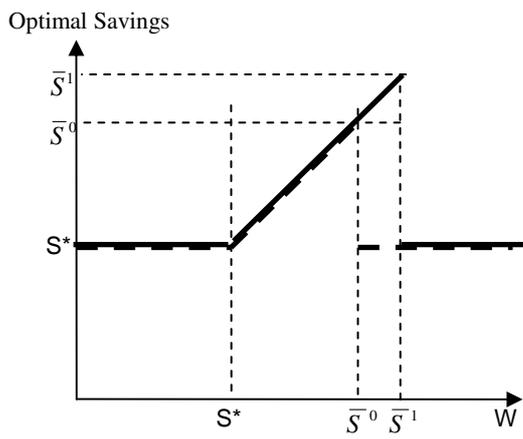
(b) Comparative Statics for B

Figure 3   The Trend of Average Propensity to Consume and Income Inequality
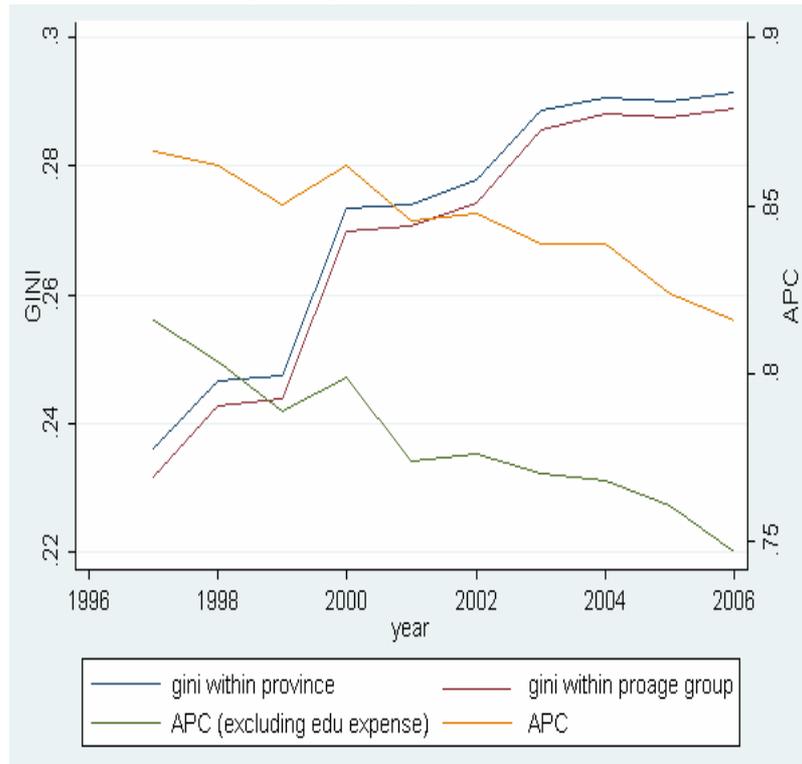
APC and Gini coefficient

Figure 4   The Variation of the Gini Coefficient across Provinces and Age Groups
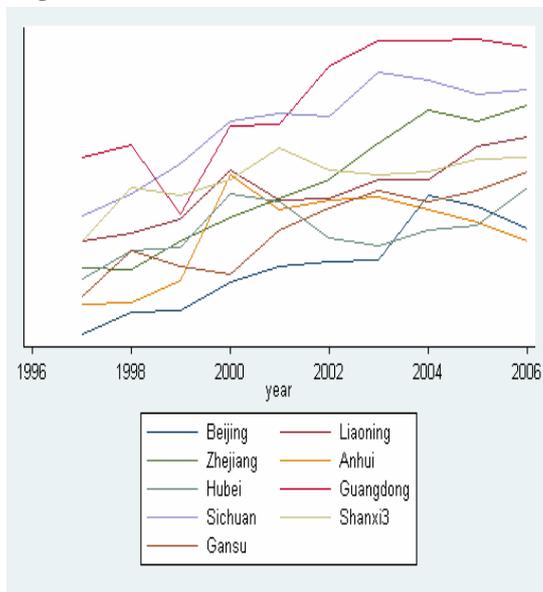
Gini across provinces   Gini across age groups
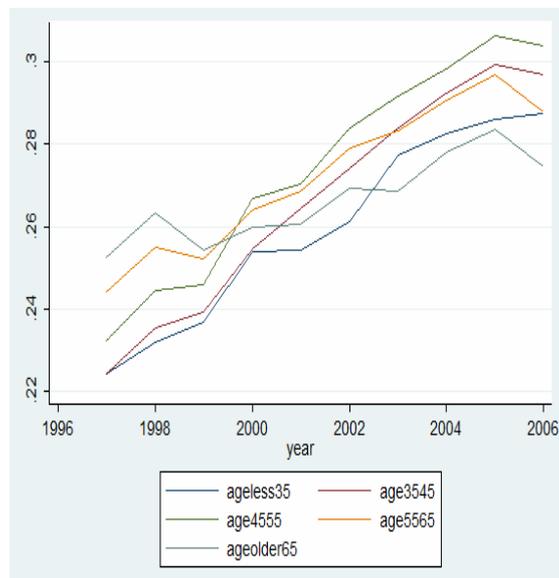
Table 1 The Effect of Income Inequality on Household Consumption

|	Dependent Variable: ln(Consumption)			
	(1)	(2)	(3)	(4)
Gini	-0.382***	-0.348***	-0.347***	-0.419***
	(0.088)	(0.088)	(0.089)	(0.109)
ln(Income)	0.763***	0.798***	0.772***	0.763***
	(0.003)	(0.007)	(0.010)	(0.003)
Five Income Quintile Group Dummies		Y	Y	
Five Income Quintile Dummies*ln(Income)			Y	
Reference Group's Specific Trend				Y
Obs.	102971	102971	102971	102971
Adjusted R^2	0.69	0.69	0.69	0.69

Note: Consumption has excluded education expenditure. The regressions are estimated by OLS. We control for the year, province and age group fixed effect and the average income of the reference group, and the age of the head in every regression. Robust standard errors are shown in parentheses. Three stars indicate statistical significance at the 1% confidence level; two stars at the 5% level, one star at the 10% level.

Table 2 The Effect of Inequality on Consumption for Different Income Groups

	Dependent Variable: ln(Consumption)			
	Whole Sample	The Poor	The Middle	The Rich
	(1)	(2)	(3)	(4)
Gini	-0.530***	-0.454***	-0.358**	-0.303*
	(0.101)	(0.140)	(0.146)	(0.169)
ln(Income)	0.776***	0.758***	0.800***	0.778***
	(0.006)	(0.009)	(0.016)	(0.010)
Middle	-0.057**			
	(0.025)			
Rich	-0.100***			
	(0.027)			
Middle*Gini	0.197**			
	(0.089)			
Rich*Gini	0.269***			
	(0.097)			
Obs.	102971	33599	34278	35094
Adjusted R^2	0.69	0.64	0.55	0.55

Note: Consumption has excluded education expenditure. The definition of the poor is the poorest 50% and the rich is the richest 50%. The regressions are estimated by OLS. We control for the year, province and age group fixed effect and the average income of the reference group, and the age of the head in every regression. Robust standard errors are shown in parentheses. Three stars indicate statistical significance at the 1% confidence level; two stars at the 5% level, one star at the 10% level.

Table 3 The Effect of Inequality on Household Consumption for Different Age Groups

	Dependent Variable: ln(Consumption)			
	Whole Sample	The Young (head age <55)	The Old (head age≥55)	Whole Sample
	(1)	(2)	(3)	(4)
Gini	-0.248**	-0.604***	-0.261	-0.601***
	(0.115)	(0.115)	(0.178)	(0.150)
ln(Income)	0.763***	0.770***	0.740***	0.763***
	(0.003)	(0.004)	(0.007)	(0.003)
Young Dummy	0.035			
	(0.031)			
Young *Gini	-0.185*			
	(0.104)			
(Age 35-45)* Gini				0.217
				(0.142)
(Age 45-55)* Gini				0.173
				(0.151)
(Age 55-65)* Gini				0.161
				(0.172)
Age over 65* Gini				0.553***
				(0.203)
Obs.	102971	78492	24479	102971
Adjusted R^2	0.69	0.70	0.66	0.69

Note: Consumption has excluded education expenditure. The definition of the young is that the head is younger than 55, while the old is that the head is older than 55. The regressions are estimated by OLS. We control for the year, province and age group fixed effect and the average income of the reference group, and the age of the head in every regression. Robust standard errors are shown in parentheses. Three stars indicate statistical significance at the 1% confidence level; two stars at the 5% level, one star at the 10% level.

Table 4　The Effect of Inequality on Households' Education Expenditure

	Dependent Variable: ln(Education Expenditure)				
	Whole Sample	Whole Sample	The Poor	The Middle	The Rich
	(1)	(2)	(3)	(4)	(5)
Gini	4.956***	3.800***	2.509	2.288	6.281***
	(0.507)	(1.158)	(1.784)	(1.663)	(1.696)
ln(Income)	0.968***	0.750***	0.815***	0.516***	0.787***
	(0.051)	(0.057)	(0.086)	(0.147)	(0.089)
Middle		-0.044			
		(0.268)			
Rich		0.485*			
		(0.264)			
Middle*Gini		0.565			
		(0.936)			
Rich*Gini		-0.899			
		(0.940)			
Young					
Young*Gini					
Obs.	75224	75224	25623	25249	24352
Adjusted R^2	0.21	0.21	0.17	0.20	0.22

Note: The regressions are estimated by OLS. We control for the year, province and age group fixed effect and the average income of the reference group, and the age of the head in every regression. Five Income quintile group dummies and their interaction with income are controlled in the first regression. The definition of the young is that the head is younger than 55, while the old is that the head is older than 55. Robust standard errors are shown in parentheses. Three stars indicate statistical significance at the 1% confidence level; two stars at the 5% level, one star at the 10% level.

Table 5 Robust Test--The Effect of Inequality on Food Consumption and Alternative Stories

Dependent Variable:	ln(Cereals Expenditure)	ln(Food Expenditure)	ln(Consumption)		
	(1)	(2)	(3)	(4)	（5）
Gini	-0.062	-0.148*	-0.392***	-0.384***	-0.413***
	(0.171)	(0.083)	(0.093)	(0.089)	(0.111)
ln(Income)	0.044***	0.499***	0.763***	0.763***	0.760***
	(0.005)	(0.003)	(0.003)	(0.003)	(0.004)
ln(Provincial Housing Price)			0.013		
			(0.038)		
Sex Ratio				-0.254	
				(0.362)	
Downward Income Risks					0.029
					(0.046)
Obs.	76413	103086	92284	102971	63372
Adjusted R^2	0.13	0.57	0.69	0.69	0.69

Note: Consumption has excluded education expenditure. In column (5) we use the samples of year 2003-2006. Using the samples of this period, the estimated coefficient of Gini is -0.42 in the baseline model without the measure of income risk. The regressions are estimated by OLS. We control for the year, province and age group fixed effect and the average income of the reference group, and the age of the head in every regression. Robust standard errors are shown in parentheses. Three stars indicate statistical significance at the 1% confidence level; two stars at the 5% level, one star at the 10% level.

Appendix A

Table A　Descriptive Statistics of the Regression Variables

	year	N	mean	sd
	1997	5392	0.232	0.033
	1998	5382	0.243	0.033
	1999	5378	0.244	0.027
	2000	5355	0.270	0.034
	2001	5378	0.271	0.031
Gini Coefficient	2002	12878	0.274	0.035
	2003	14379	0.286	0.041
	2004	15593	0.289	0.038
	2005	16677	0.288	0.037
	2006	16822	0.289	0.039
	Total	103234	0.277	0.041
Other Main Variables				
Disposable Income		104665	28178	21101
Consumption (excluding education expenditure)		104550	21858	17099
APC (excluding education expenditure)		104541	0.77	0.31
APC		104551	0.84	0.55
Education Expenditure		104665	1629	3094
Education (year)		104665	11.58	2.99
Family Equivalent Scale		104665	2.28	0.49
Family Size		104665	3.00	0.77
Age		104665	48.31	11.32