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Abstract

Based on the household panel data over three waves in China, this paper investigates how inequality of opportunity within a region affects household risky asset investment. The empirical results show that inequality of opportunity raises both the probability and the share of household risky asset investment. Our key results are robust to a series of sensitivity checks. The heterogeneity analyses tell us that the higher income and more educated households seem to be affected more by inequality of opportunity within the county they reside. The paper also tests several possible channels behind the observed relationship, showing that the following channels help bring upon this effect: increasing material aspiration, changing risk preferences, and reducing education expenditures. Accordingly, creating more equal opportunities for people will generate larger policy effects than we normally expected.

Keywords: Income inequality; Inequality of opportunity; Risky asset investment; Stock market participation.

JEL Classification: G11, D31, D63, O53.

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1. Introduction

The determinants of household portfolio decisions have attracted much attention in economics and finance literature. In particular, previous studies have focused on micro-level factors that can affect household risky asset investment. These factors typically include demographic characteristics (age, gender, etc), resources available to the household (indicators for wealth and income), health status, financial literacy, and so on (Barber and Odean, 2001; Carroll, 2002; Rosen and Wu, 2004; Berkowitz and Qiu, 2006, van Rooij et al, 2011). Such variables are generally statistically significant and quantitatively important in regressions explaining portfolio decisions in different countries. These studies have important implications given the close link between stock market participation and financial development, and consequent economic growth as found in existing studies (Levine, 1997; Calvet et al., 2007).

However, studies on how regional characteristics can affect household portfolio decisions are still in its infancy. While several relevant studies have identified the effects of country-specific economic environments, including the presence, or lack thereof, of an economic crisis, on household portfolio choices (Chai et al., 2011; Christelis et al., 2013), little attention has been paid to regional factors within a country at a given time.

Our paper will utilize a panel dataset from China to examine the effect of within-region inequality, especially inequality of opportunity on household risky asset investment and then explore the channels behind these effects. The concept of inequality of opportunity is not new in economics literature. Arneson (1989) and Sen (1985) are among a number of influential authors who have argued that inequality of opportunity, rather than inequality of outcome (such as income) should be used as the appropriate criterion for assessing the fairness of a given allocation. In their opinions, inequality resulting from lack of individual effort may help purport a harder working society, while inequality caused by factors outside of individual control, such as poor family background, raises concern and are ethically unacceptable.

Roemer (1998) incorporates the concepts above into a model and divides the factors determining income into two categories: those people can control (called "efforts"), and those beyond people's control (called "circumstances"). Given this distinction, he defines “inequality of opportunity” essentially as the extent to which important outcomes—such as income—are determined by circumstances beyond people's control (Ferreira and Gignous, 2011). According to this definition, economists have developed a set of methods to empirically measure inequality of opportunity in different countries (Ferreira and Gignoux, 2011, Marrero and Rodriguez, 2012; Bourguignon et al., 2013; Ramos and Van de gaer, 2016).

Inequality of opportunity within a region may affect whether and how much a household invests in risky assets through several possible channels. First, higher inequality of opportunity may increase people’s material aspiration which may increase a household’s risky asset investment. Early studies have proposed the concept of material aspiration which depends on a person’s income or wealth as well as within-group inequality (Easterlin, 1974; Stutzer, 2004; Ball and Chernova, 2008). Second, inequality of opportunity may affect people’s risk preferences. If inequality is largely determined by factors beyond people’s control (i.e., higher inequality of opportunity), then people may choose to

take more risks and invest in risky assets. Third, large inequality of opportunity may reduce people's efforts and lower education expenditures. The reduced education investments may shift to the financial market. Mej á and St-Pierre (2008) build a theoretical model which suggests that a higher degree of inequality of opportunity is associated with a lower fraction of individuals investing in human capital. Our paper will utilize the panel dataset in China to test these channels.

We select China as our research setting for two reasons: first, while China's overall financial market has developed very rapidly in the past two decades, its variation across different regions remains quite large, as exemplified in the stock market. As Figure 1 shows, both the amount of money financed in the stock market and the total market value have sky-rocketed in China in the past two decades. Furthermore, unlike the institutional investment found more often in developed countries, a large proportion of participants in the Chinese stock market are individual investors (Wang and Tian, 2012). Meanwhile, stock market development remains uneven across different regions in China. According to the nationally representative dataset we use in this paper (China Family Panel Studies, CFPS), while the 2014 average stock market participation rate for urban China was 7%, the standard variation across all counties is almost 26%. Second, income inequality in China has risen sharply in the past two decades; the nation-wide Gini coefficient of per-capita annual income has increased from 0.37 in 1997 to 0.47 in 2014 (Song, 2017). This income inequality, and its consequences on the Chinese economy, has attracted substantial domestic attention (Meng et al., 2005; Benjamin et al., 2011; Song, 2013). The degree of inequality of opportunity in China has been found to be much higher than that in OECD countries and comparable to Latin America countries (Zhang and Eriksson, 2010; Song, 2017).

Figure 1 Inserted Here

In summary, we will employ the tracking survey (China Family Panel Studies, CFPS) in three waves (2010, 2012 and 2014) to investigate how inequality of opportunity within a region affects household risky asset investment. The empirical results show that inequality of opportunity increases both the probability and the share of household risky asset investment. Our key results are robust to a series of sensitivity checks. We also test and verify several mechanisms behind these results as mentioned above.

The paper proceeds as follows. Section 2 reviews the previous literature and specifies our contributions. Section 3 describes the dataset and introduces the measures for inequality of opportunity used in this paper. Baseline models and results are provided in Section 4. Section 5 provides a series of robustness checks to our main results, and Section 6 explores the main channels behind the empirical results. Section 7 concludes.

2. Literature review and our contributions

Many studies have explored various determinants of household portfolio decisions, both theoretically and empirically. A rich theoretical literature demonstrates how portfolio decisions depend on factors such as risk aversion and investment opportunities (Gollier, 2002). Theoretical studies suggest that

resources available to the household (e.g., wealth and income) have large impacts on portfolio choices because they can influence risk aversion and because of fixed costs to owning certain assets (Rosen and Wu, 2004; Cocco, 2005).

Empirical studies show that demographic characteristics (e.g., age, gender, and marital status) can partly explain portfolio behavior in different countries (Carroll, 2002; Campbell, 2006). Education has a large impact on portfolio choice. In general, households with more education are more likely to hold diversified portfolios, perhaps because they have better information about various investment opportunities (King and Leape, 1998). Rosen and Wu (2004) explore the role that health status plays in household portfolio decisions and find that health is a significant predictor of both the probability of owning different types of financial assets and the share of financial wealth held in each asset category. Households in poor health are less likely to hold risky financial assets, other things being the same.

Several recent studies investigated the determinants of stock market participation. Christelis et al. (2010) show that the propensity to invest in stocks is strongly associated with cognitive abilities, and van Rooij et al. (2011) find that financial literacy affects the investment in the stock market. Those with low literacy are much less likely to invest in stocks. Liang and Guo (2015) employ a national representative household finance survey data in China to demonstrate that social interaction positively affects household stock market participation, but internet access mitigates this influence. Conlin et al. (2015) discover that personal traits are significant predictors of stock market participation.

However, studies on how regional characteristics can affect household portfolio decisions are very scarce. Almost no existing studies have examined the effect of within-region inequality on portfolio choices. One relevant strand of literature is related to studying how within-region income inequality can affect household expenditures and savings. Jin et al. (2011) find that within-region income inequality measured by the provincial Gini coefficient has a positive effect on household savings and a negative effect on household consumption in urban China. Their explanation is the so-called status seeking hypothesis. That is, as income inequality rises, people may save more and invest more in education in order to strengthen their ability to seek high social status in the future. Increase in income inequality makes entering a high-status club more attractive because differences in resources between the high- and low-status groups widen (Corneo and Jeanne, 1999; Stutzer, 2004). In contrast, Sun and Wang (2013) adopt the measure of village-level income inequality to obtain the opposite results in rural China. They find that household savings are negatively correlated with the magnitude of income inequality of their home village.

Our paper makes at least three contributions to the existing literature. First, to the best of our knowledge, this paper is the first attempt to examine the effect of within-region inequality, especially inequality of opportunity, on household risky asset investment, compared to the numerous existing studies focusing on micro-level determinants of portfolio decisions. Second, we first explore the effects of inequality of opportunity on people's economic behavior at the micro level. The existing literature overwhelmingly measured the level of inequality of opportunity in different countries but rarely examined its economic consequences empirically. The exceptions to this are scarce; Marrero

and Rodriguez (2013), for example, investigate whether inequality of opportunity can affect economic growth. Their findings suggest that this component of inequality is negatively associated with economic growth in the United States between 1970 and 2000. Finally, our paper innovatively proposes and tests several possible channels behind the observed relationship, including increasing material aspiration, changing risk preferences, and reducing education expenditures.

3. Data and descriptive statistics

This section explains the data sources used in this paper and presents the summary statistics of key variables.

3.1 Data sources

This paper explores the relationship between inequality of opportunity and household risky asset investment using the household-level data from China Family Panel Studies (CFPS). The county-level variables come from the China City Statistical Yearbook and the China Statistical Yearbook for the Regional Economy. CFPS is a tracking survey conducted every two years by the Institute of Social Science Survey at Peking University. In order to keep track of China's economic development and social change, CFPS designs questionnaires on three different levels of aggregation: communities, households, and individuals.

CFPS investigates a national representative sample of households in 2010, for the first time, which represents 95% of the total population in 25 provinces.[2] The household sample contains 14,798 households in 635 villages/communities of 162 counties. CFPS conducts follow-up surveys in 2012 and 2014, which accounts for approximately 80% of the total sample in 2010. The household questionnaire asks a set of detailed questions about household investments in stocks and other risky assets as well as demographic variables. CFPS also contains information of each adult's parents, which allows us to construct the index for inequality of opportunity. We use the household as the unit of our analysis because financial decisions are usually made at the household-level in China; furthermore, it is hard to separate the investments of different household members. Specifically, we will use two measures for the risky asset investment: the total investment in risky asset (including stocks and funds) and the investment in stocks at the household level.

Moreover, we restrict our sample into the urban residents (who live in urban areas more than 6 months last year) because households in rural areas rarely invest in risky assets given the large urban-rural disparity.[3] The final sample used in our paper includes 4,005 tracked households for each of the three waves in 2010, 2012, and 2014.

3.2 Estimation procedure of inequality of opportunity

Inequality of opportunity is estimated as the between-type (ex-ante) inequality component following the parametric procedure of Ferreira and Gignoux (2011), Marrero and Rodriguez (2013), and Song

[2] The CFPS dataset does not cover Tibet, Qinghai, Xinjiang, Ningxia, Inner Mongolia, Hainan, Hongkong, Macao, and Taiwan.
[3] For example, the CFPS dataset in 2010 shows that only 0.7% of rural households hold risky assets.

(2017), which allows for the inclusion of a larger set of circumstances in the database. Specifically, following the convention of the literature, we divide the determinants of individual income (denoted by w) into two categories, including circumstances (denoted by C) and efforts (denoted by E). Since circumstances are economically exogenous by definition, and efforts may be influenced by circumstances, we can write the following equation.

$$w=f[C,E(C,v),u] \quad (1).$$

u and v represent other stochastic factors affecting income, such as fortuity (Lefranc et al., 2009). For the purpose of measuring inequality of opportunity—rather than of estimating any causal relationship between circumstances, efforts, and income—we can simply estimate a log-linearized version of the reduced form equation by OLS:

$$\ln w = C\varphi + \varepsilon \quad (2).$$

We follow three steps to construct the index for inequality of opportunity. First, we estimate equation (2) and obtain the predicted income denoted as $\hat{w}$. In the Mincer-type wage regressions, we follow the literature convention and include the following circumstances variables such as gender, hukou status at 3 years old, paternal and maternal education (Zhang and Eriksson, 2010; Marrero and Rodriguez, 2013; Song, 2017). Hukou means household registration system in China, which determines people's access to a variety of public services. People inherit at birth the hukou status from their parents, so the hukou status at 3 years old is generally beyond one's own control (Song, 2014).

Second, given that the Theil (0) index (mean log deviation) is additively decomposable, we calculate the Theil (0) index for the predicted income denoted by T($\hat{w}$) in order to estimate the extent to which the total income inequality can be attributed to inequality of opportunity (Shorrocks, 1984; Bourguignon et al., 2007; Ferreira and Gignoux, 2011). Third, we calculate the index for inequality of opportunity (denoted by IO) as the ratio of the Theil (0) index for predicted income to that for the actual income.

$$IO = \frac{\mathrm{T}(\hat{\mathrm{w}})}{\mathrm{T}(\mathrm{w})} \quad (3).$$

We will use the measure above, throughout the paper, to investigate the effect of inequality of opportunity on household risky asset investment decisions. We calculate this index for inequality of opportunity at the county level; this aggregation level is chosen because lower-level inequality may have larger effects on household behavior within a closely knit social comparison group (Sun and

Wang, 2013).[4] The use of county as the aggregation level in our study creates more variations than that of the country or state level, which has been used by others (Marrero and Rodriguez, 2013; Ferreira et al., 2014).

In addition, due to the data limitation, the regression equation cannot include all of the circumstance variables, which may make the measure for inequality of opportunity imprecise (Kanbur and Wagstaff, 2015). Ferreira and Gignoux (2011) have proved that this measure can safely be interpreted as lower bound estimates of overall inequality of opportunity. Since the focus of our paper is to investigate the effect of inequality of opportunity on household risky asset investments, we can avoid entering the discussion on the preciseness of this well-used measure as long as the measure is consistent for each county and in each wave of data. Our main purpose is to calculate a consistent measure for inequality of opportunity and then use the measure to study its effect on household risky asset investments. We thus include commonly-used circumstances variables in the literature, such as gender, hukou status at 3 years old, and each parents' education level (Zhang and Eriksson, 2010; Marrero and Rodriguez, 2013; Song, 2017).

We adopt two different measures for the risky asset investment, including the total investment in risky asset (stocks and funds) and the investment in stocks at the household level. Moreover, for each measure, we examine both the participation and the investment magnitude of each investment. We design two dummy variables, one for the stock market participation, and the other for whether to hold the risky assets; we also employ two ratios to measure the intensity, including the ratio of stocks to the total household financial asset, and the ratio of risky asset investment to the total household financial asset.

3.3 Summary statistics

Table 1 presents the summary statistics of the key variables used in this paper for all three waves. From this table, we can find that both of total income inequality (measured by the Theil (0) index) and inequality of opportunity reach a peak in 2012. The percentage of total income inequality that is attributed to inequality of opportunity increases from 22% in 2010 to 28% in 2012, and decreases slightly to 27% in 2014. Coincidentally, the shares of households investing in stocks as well as in risky assets also reach the peak in 2012. The participation rate in stocks in 2012 is 8%, and 11% of households hold some risky assets in the same year. In terms of the intensity, we focus on the data in 2010 and 2012 because the CFPS dataset does not ask the total amount of financial assets in 2014. As can be seen, the ratio of risky asset to the total financial asset (mostly deposits in a bank) is around 4%, and the ratio of stocks to the total financial asset remains at 3%.

In addition, we present summary statistics for several county-level variables, household-level control variables, and characteristics of the head of the household (called householder throughout the paper). We also include most of the variables in existing studies on the determinants of household portfolio decisions, such as measures for household income and wealth, measures for household members' health status and financial literacy, householder's education level and marital status, etc.

[4] To reduce the estimation bias, we drop counties with less than 50 observations.

Table 1 Inserted Here

4. Baseline models and results

We first estimate a Probit model to examine the effect of inequality on whether a household invests in risky assets. The baseline model is presented below, in which $\mathrm{Y_{ijt}}$ represents whether a household *i* invests in stocks or risky assets in county j in year t, $\mathrm{Oppoineq_{jt}}$ measures the inequality of opportunity in county j in year t, $\mathrm{X_{ijt}}$ controls for household-level variables as well as household head's characteristics, Prov is province dummies, and δ_t represents year dummies.

$$y^*_{ijt} = \beta_0 + \beta_1 Oppoineq_{jt} + \beta_2 X_{ijt} + \beta_3 Prov + \beta_4 \delta_t + \mu_{ijt}$$
$$\mathrm{Prob}(\mathrm{Y_{ijt}} = 1) = \mathrm{Prob}(y^*_{\mathrm{ijt}} > 0) = \Phi(\beta_0 + \beta_1 \mathrm{Oppoineq_{jt}} + \beta_2 \mathrm{X_{ijt}} + \beta_3 \mathrm{Prov} + \beta_4 \delta_t) \quad (4)$$

Table 2 first presents the effect of total income inequality within a county on household investment in risky assets. As it turns out, the effect remains significantly positive, even when we add many controls for the householder's characteristics. Marginal effects of the control variables are mostly consistent with our expectations: household income and education level of the householder are both positively correlated with participation rates in risky assets, while larger family size and those with elderly members are both negatively correlated with these participation rates. The only unpredicted result lies in the negative coefficients on financial literacy, which is measured by whether a household member holds an economics/finance-related undergraduate degree or higher.

Table 2 Inserted Here

Our major baseline results are shown in Table 3, where we add the measure for inequality of opportunity within a county into the regression. Although the coefficients on inequality of opportunity fall slightly after adding householder's control variables, they still remain significantly positive. Moreover, the results are similar regardless of whether we measure risky asset investment through stocks or through total risky assets.

Table 3 Inserted Here

We then adopt two intensity measures for risky asset investment: the ratio of stocks to the total household financial asset, and the ratio of risky asset investment to the total household financial asset. We estimate a Tobit model because the dependent variable is left-censured; the results are displayed in Table 4. Just as before, both the total income inequality and the inequality of opportunity are positively associated with household risky asset investment. The sample size shrinks by about one-third because the 2014 CFPS dataset lacks information on the ratio of risky assets as well as the ratio of stocks.

Table 4 Inserted Here

In order to obtain a better understanding of who are affected most by the inequality of opportunity in terms of the portfolio decisions, we perform several heterogeneity analyses by dividing the entire sample into different groups. We first divide the whole sample into three subgroups based on their household income, and Table 5 informs us that the main positive effect of inequality of opportunity comes from the middle and high income groups. That is, as the inequality of opportunity within a county becomes larger, middle and high income households would have more incentives and are more capable to invest in risky assets. Poor households are not affected significantly by higher inequality of opportunity. This is likely because their financial constraint, regardless of the status of others around them, rarely allows for investment in risky assets.

Table 5 Inserted Here

We then conduct a similar heterogeneity analysis as above by dividing the whole sample into three subgroups according to the householder's education level, and find that the main effect comes from better educated groups. The effect of inequality of opportunity is significantly positive only when the household head holds a high school degree or above, as shown in Table 6.

Table 6 Inserted Here

Our final heterogeneity analysis divides the whole sample into two subgroups based upon the householder's hukou status (urban and rural). Given the larger magnitudes of the coefficients, we find that households with urban hukou are affected more by inequality of opportunity.

Table 7 Inserted Here

In summary, the higher income, more educated households, and households with urban hukou seem to be affected more by inequality of opportunity within the county they live in. Higher inequality of opportunity in the comparison group may increase their incentives to invest more in risky assets such as stocks, when they are not financially constrained.

5. Robustness checks

To further support our results, we conduct several robustness checks. Our first check is related to using an alternative measure for inequality of opportunity. Remember that we calculate the Theil (0) index for the predicted income from circumstances variables denoted by $T(\hat{w})$ in equation (3) and then divide this number by the total income inequality to measure the extent of inequality of opportunity. Given that the total income inequality has already entered the regression, the two measures are correlated, which may result in estimation bias. As a robustness check, we measure the inequality of opportunity by the level value, that is, the numerator of our original measure, to avoid the problem above. Table 8 presents the results; inequality of opportunity still has significantly positive effects on risky asset investment.

Table 8 Inserted Here

Our second check is to explore the time-lag effect of inequality of opportunity on risky asset investment. Table 9 presents the effects of inequality of opportunity in year 2010 on whether the household invests in stocks or risky assets in 2012 and 2014, respectively. These regressions can both demonstrate the dynamic effect of inequality of opportunity on risky asset investment while also partly circumventing the endogeneity problem, given that the lagged measure for inequality of opportunity is much less likely to be correlated with unobserved county-level characteristics. Our key results remain consistent, although the magnitude of the dynamic effect shrinks a little from 2012 to 2014.

Table 9 Inserted Here

Third, we include the county fixed effect in our Tobit estimations to take into account the unobserved time-invariant county-level factors that can affect the household portfolio decisions. The results are displayed in Table 10. Although the magnitudes of the coefficients on inequality of opportunity decrease slightly compared to those in Table 4 where we don't control for the county dummies, the coefficients are still significantly positive.

Table 10 Inserted Here

Finally, we take into consideration the unobserved household-level factors and estimate a household random effect model given the relatively small variation of household risky asset investment across years. Table 11 informs us that our key results are robust to this modified specification.

Table 11 Inserted Here

In summary, all of the robustness checks support our main finding: inequality of opportunity has a significantly positive effect on household investment in risky financial assets.

6. **Tests of possible channels**

In this section, we test several possible channels behind our results. We first test whether inequality of opportunity affects risky asset investment through the increase in people's material aspiration. Earlier studies have proposed the concept of material aspiration which depends on a person's income or wealth as well as within-group inequality (Easterlin, 1974; Stutzer, 2004; Ball and Chernova, 2008). This logic is very similar to the status-seeking hypothesis in that people may wish to quickly obtain high social status through risky asset investment in a high-inequality environment (Jin et al., 2011). We follow the literature convention to measure one's material aspiration by comparing the household head's real economic status and self-reported economic status. Specifically, the material aspiration is equal to the real economic status minus the self-reported status. The former is categorized by 10 groups by per-capita household income (from lowest to highest), and the latter ranks from 1 to 5. We then standardize this difference from 1 to 10. The larger this difference is, the

more the household head values the material needs.

We run two regressions to test this mechanism. Results from our first regression, show in Table 12, showcase the positive effect of inequality of opportunity on material aspiration using the Ordered Probit Model with the household fixed effect. Our second regression shows that higher material aspiration indeed increases a household's participation in the risky asset investment, as displayed in Table 13.

Tables 12 and 13 Inserted Here

A second possible channel concerns changes in risk preference. The CFPS dataset in 2014 attempts to question people's risk preference by asking householders and his/her spouse of their attitudes toward taking risks when making household investments, with answers including no risk, low risk, modest risk, and high risk. Since the majority selects no risks and low risk, we define risk-loving as long as either the householder or his/her spouse chooses modest risk or high risk. Then we construct a dummy variable being equal to 1 if the household is risk loving and 0 otherwise.

Table 14 estimates the lagged effect of inequality of opportunity on risk preference using a Probit model. Whether we use the measure for inequality of opportunity in 2010 or 2012, the effects are still robust and significantly positive. To complete our analysis, we also regress the risky asset investment on the risk preference in 2014, and, as expected, the effect of risk preference is significantly positive. These results are shown in Table 15.

Tables 14 and 15 Inserted Here

The final channel we test is whether more risky asset investment crowds out household education expenditures. Mejía and St-Pierre (2008) build a theoretical model which suggests that a higher degree of inequality of opportunity is associated with lower investment in human capital. The reduced education investments may shift to the financial market. To test this hypothesis, we restrict our sample into the households with children below 16 years old, and then regress household education expenditures on inequality of opportunity. Table 16 verifies our hypothesis that the inequality of opportunity indeed reduces household education investment even when we control for household fixed effect. This finding also reveals a negative consequence of inequality of opportunity, which is noteworthy for policy purposes since household education investment is very important for both the family and the macro-economy as a whole.

Table 16 Inserted Here

In summary, at least three channels contribute to the observed relationship between the inequality of opportunity and household risky asset investment: increasing material aspiration, changing risk preferences, and reducing education expenditures.

7. Conclusions

Our paper investigates how inequality of opportunity within a region affects household risky asset investment and is one of the first attempts to look at the consequence of inequality of opportunity on household behavior. We employ the tracking survey (China Family Panel Studies) in three waves (2010, 2012 and 2014) to examine this relationship. The empirical results show that inequality of opportunity raises both the probability and intensity of household risky asset investment. Our key results are robust to a series of sensitivity checks. The heterogeneity analyses tell us that the higher income, more educated, and urban hukou holding households seem to be affected more by inequality of opportunity within the county they live in.

The paper also tests several possible channels behind the observed relationship, showing that the following channels help bring upon this effect: increasing material aspiration, changing risk preferences, and reducing education expenditures.

As is seen, the inequality of opportunity not only affect economic growth at the macro-level as several existing studies have proved, it also has much impact on household behavior. Accordingly, creating more equal opportunities for people will generate larger policy effects than we normally expected.

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Tables and Figures

Table 1 Summary Statistics (Obs.=4,005)

		2010		2012		2014	
Variables	Definition	Mean	Std.	Mean	Std.	Mean	Std.
	Key Variables						
Theil	Theil (0) Index	0.33	0.16	0.40	0.24	0.28	0.13
Oppo Ineq	Opportunity Inequality Index	0.22	0.13	0.28	0.15	0.27	0.14
Stock	Dummy Variable for Stock Investment (1=Yes)	0.07	0.26	0.08	0.27	0.07	0.26
Risky Asset	Dummy Variable for Risky Asset Investment (1=Yes)	0.10	0.30	0.11	0.32	0.09	0.29
Stock Ratio	Stock Value/Total Financial Asset	0.03	0.14	0.03	0.13	\	\
Risky Asset Ratio	Risky Asset Value/Total Financial Asset	0.04	0.16	0.04	0.16	\	\
Material Aspiration	Measures for Material Aspiration (ranked from 1-10)	5.76	2.79	5.71	2.83	5.04	2.93
Risk Preference	Dummy Variable for Risk-loving (1=Yes）	\	\	\	\	0.38	0.48
	County-level Variables						
Log GDP Per-capita	Log of GDP Per-capita	10.49	0.93	10.80	0.90	10.98	0.86
Log Area Per-capita	Log of Land Area Per-capita	0.37	1.20	0.37	1.21	0.39	1.23
Service Ratio	Value-added of the tertiary industry/GDP	0.42	0.13	0.40	0.14	0.43	0.14
Log Fiscal Exp. P.C.	Log of Fiscal Expenditure Per-capita	8.53	0.85	8.90	0.80	9.13	0.76
	Household Control Variables						
Familysize	Family Size	3.48	1.55	3.51	1.59	3.47	1.65
Child Ratio	Number of Children (0-16 years old)/Family Size	0.26	0.24	0.21	0.22	0.18	0.21
Elder Ratio	Number of the Old (60 years old and above)/Family Size	0.18	0.32	0.21	0.34	0.26	0.36
Log Income	Log of Household Income	10.17	1.02	10.16	1.41	10.41	1.24
House	Dummy Variable for Having a House (1=Yes)	0.86	0.35	0.85	0.36	0.86	0.35
Hospital	Dummy Variable for a Household Member in Hospital (1=Yes)	0.17	0.38	0.21	0.41	0.25	0.44
Financial Literacy	Dummy Variable for a Holding College degree in Finance	0.05	0.21	0.05	0.22	0.06	0.23
	Householder Control Variables						
Male	Dummy Variable for Gender (1=Male)	0.67	0.47	0.67	0.47	0.67	0.47
Han	Dummy Variable for Han Ethnicity (1=Yes)	0.96	0.20	0.96	0.20	0.96	0.20
Age	Age	50.68	12.90	52.67	12.9	54.67	12.9
Age Square	Age^2	2735.3	1358.7	2940.7	1409	3155.4	1460
Edu Years	Years of Education	8.00	4.66	7.82	4.75	7.82	4.75
Healthy	Dummy Variable for Health Status (1=healthy)	0.86	0.35	0.82	0.38	0.83	0.37
Spouse	Dummy Variable for Having a Spouse (1=Yes)	0.88	0.32	0.87	0.33	0.86	0.34
Party	Dummy Variable for Communist Party Member (1=Yes)	0.15	0.36	0.16	0.36	0.15	0.36
Urban Hukou	Dummy Variable for Urban Hukou Status (1=Yes)	0.55	0.50	0.58	0.49	0.59	0.49

Table 2 The Impacts of Inequality on Financial Investment (Probit Model)

	(1)	(2)	(3)	(4)
	Stock		Risky Asset	
Theil	0.044***	0.034***	0.052***	0.041***
	(0.010)	(0.009)	(0.013)	(0.011)
Log GDP Per-capita	0.020	0.035**	0.029*	0.050***
	(0.016)	(0.014)	(0.016)	(0.013)
Log Area Per-capita	-0.011	-0.008	0.007	0.010*
	(0.009)	(0.007)	(0.009)	(0.006)
Service Ratio	-0.018	0.002	0.044	0.066
	(0.071)	(0.062)	(0.077)	(0.063)
Log Fiscal Exp. P.C.	0.021	-0.001	0.032**	0.001
	(0.014)	(0.013)	(0.016)	(0.013)
Familysize	-0.016***	-0.005*	-0.022***	-0.007**
	(0.003)	(0.003)	(0.004)	(0.003)
Child Ratio	0.012	-0.009	0.028*	0.006
	(0.014)	(0.014)	(0.017)	(0.016)
Elder Ratio	-0.046***	-0.022	-0.058***	-0.021
	(0.011)	(0.015)	(0.013)	(0.017)
Male	0.056***	0.036***	0.068***	0.042***
	(0.005)	(0.004)	(0.007)	(0.006)
Log Income	0.019*	0.018**	0.026**	0.024**
	(0.011)	(0.009)	(0.013)	(0.011)
House	-0.005	-0.005	0.002	0.003
	(0.006)	(0.006)	(0.008)	(0.007)
Hospital	0.040***	0.011	0.064***	0.022*
	(0.012)	(0.011)	(0.015)	(0.013)
Financial Literacy		-0.022***		-0.030***
		(0.007)		(0.007)
Han		0.000		0.012
		(0.022)		(0.022)
Age		0.002		0.005*
		(0.003)		(0.003)
Age Square		-0.000		-0.000*
		(0.000)		(0.000)
Edu Years		0.009***		0.011***
		(0.001)		(0.001)
Healthy		0.002		0.006
		(0.008)		(0.009)
Spouse		0.016		0.017
		(0.013)		(0.014)
Party		0.016*		0.031***
		(0.008)		(0.011)
Urban Hukou		0.052***		0.070***
		(0.009)		(0.011)
Province Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes
Obs.	10,793	10,747	10,793	10,747

Note: The dependent variables are dummy variables for stock investment (column 1-2) and risky financial asset investment (column 3-4), respectively. "Theil" denotes the total income inequality in a county. “Service ratio” denotes value-added of the tertiary industry/GDP, and “Log Fiscal Exp. P.C.” means log of fiscal expenditure per-capita. The other variables are self-explanatory, and their definitions have been provided in Table 1. Cluster standard errors at county level are presented in parentheses, and *** p<0.01, ** p<0.05, * p<0.1.

Table 3 The Impacts of Inequality of Opportunity on Financial Investment (Probit Model)

	(1)	(2)	(3)	(4)
	Stock		Risky Asset	
Theil	0.074***	0.053***	0.096***	0.068***
	(0.016)	(0.013)	(0.019)	(0.015)
Oppo Ineq	0.091**	0.054*	0.132***	0.081**
	(0.037)	(0.029)	(0.042)	(0.032)
County-level Variables	Yes	Yes	Yes	Yes
Household Control Variables	Yes	Yes	Yes	Yes
Householder Control Variables		Yes		Yes
Province Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes
Obs.	10,793	10,747	10,793	10,747

Note: The model specification is similar to that in Table 2. "Theil" denotes the total income inequality in a county, and "Oppo Ineq" denotes inequality of opportunity in income within a county. Cluster standard errors at county level are presented in parentheses, and *** p<0.01, ** p<0.05, * p<0.1.

Table 4 Intensity Analysis by Using Ratios of Financial Investment as Dependent Variables (Tobit Model)

	(1)	(2)	(3)	(4)
	Ratio of Stock		Ratio of Risky Assets	
Theil	0.472***	0.326***	0.500***	0.356***
	(0.116)	(0.093)	(0.103)	(0.082)
Oppo Ineq	0.636**	0.333	0.815***	0.510***
	(0.267)	(0.213)	(0.220)	(0.167)
County-level Variables	Yes	Yes	Yes	Yes
Household Control Variables	Yes	Yes	Yes	Yes
Householder Control Variables		Yes		Yes
Province Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes
Obs.	7,369	7,336	7,420	7,386

Note: The model specification is similar to that in Table 2. Cluster standard errors at county level are presented in parentheses, and *** p<0.01, ** p<0.05, * p<0.1. Coefficients are reported in the table, and marginal effects are 0.034, 0.023, 0.049 and 0.035, respectively.

Table 5 Heterogeneity Analysis by Income (Probit Model)

	(1)	(2)	(3)	(4)	(5)	(6)
	Low-income		Middle-income		High-income	
	Stock	Risky Asset	Stock	Risky Asset	Stock	Risky Asset
Theil	0.026***	0.025**	0.090***	0.087***	0.030	0.080**
	(0.007)	(0.011)	(0.028)	(0.032)	(0.026)	(0.032)
Oppo Ineq	-0.005	-0.006	0.121**	0.133**	0.035	0.096*
	(0.018)	(0.023)	(0.061)	(0.068)	(0.052)	(0.055)
County-level Variables	Yes	Yes	Yes	Yes	Yes	Yes
Household Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Householder Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Province Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	3,083	3,083	3,072	3,104	3,738	3,835

Note: The model specification is similar to that in Table 2. Cluster standard errors at county level are presented in parentheses, and *** p<0.01, ** p<0.05, * p<0.1.

Table 6 Heterogeneity Analysis by Education Level (Probit Model)

	(1)	(2)	(3)	(4)	(5)	(6)
	Primary School and Below		Middle School		High School and Above	
	Stock	Risky Asset	Stock	Risky Asset	Stock	Risky Asset
Theil	-0.021	0.012	0.036**	0.044*	0.141***	0.154***
	(0.022)	(0.018)	(0.018)	(0.024)	(0.029)	(0.031)
Oppo Ineq	0.003	0.012	0.015	0.068	0.165***	0.155**
	(0.024)	(0.025)	(0.039)	(0.048)	(0.063)	(0.066)
County-level Variables	Yes	Yes	Yes	Yes	Yes	Yes
Household Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Householder Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Province Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	2,852	3,175	3,370	3,370	3,308	3,353

Note: The model specification is similar to that in Table 2. Cluster standard errors at county level are presented in parentheses, and *** p<0.01, ** p<0.05, * p<0.1.

Table 7 Heterogeneity Analysis by Household Head's Hukou Status (Probit Model)

	(1)	(2)	(3)	(4)
	Rural Hukou		Urban Hukou	
	Stock	Risky Asset	Stock	Risky Asset
Theil	0.028**	0.058***	0.080***	0.088***
	(0.013)	(0.015)	(0.019)	(0.021)
Oppo Ineq	0.042	0.065**	0.080*	0.106**
	(0.026)	(0.030)	(0.046)	(0.051)
County-level Variables	Yes	Yes	Yes	Yes
Household Control Variables	Yes	Yes	Yes	Yes
Householder Control Variables	Yes	Yes	Yes	Yes
Province Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes
Obs.	3,197	3,577	6,175	6,175

Note: The model specification is similar to that in Table 2. Cluster standard errors at county level are presented in parentheses, and *** p<0.01, ** p<0.05, * p<0.1.

Table 8 Sensitivity Analysis by Using Different Measure of Inequality of Opportunity (Probit Model)

	(1)	(2)	(3)	(4)
	Stock		Risky Asset	
Theil	0.048***	0.037***	0.057***	0.045***
	(0.011)	(0.009)	(0.013)	(0.010)
Oppo Ineq Level	0.349**	0.240**	0.517***	0.364***
	(0.137)	(0.121)	(0.151)	(0.122)
County-level Variables	Yes	Yes	Yes	Yes
Household Control Variables	Yes	Yes	Yes	Yes
Householder Control Variables		Yes		Yes
Province Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes
Obs.	10,793	10,747	10,793	10,747

Note: The model specification is similar to that in Table 2. Cluster standard errors at county level are presented in parentheses, and *** p<0.01, ** p<0.05, * p<0.1.

Table 9 Sensitivity Analysis by Exploring Time-Lag Effects (Probit Model)

	(1)	(2)	(3)	(4)
	Stock 2014	Stock 2012	Risky Asset 2014	Risky Asset 2012
Theil 2010	0.161***	0.188***	0.182***	0.206***
	(0.030)	(0.031)	(0.030)	(0.034)
Oppo Ineq 2010	0.219***	0.258***	0.236***	0.310***
	(0.049)	(0.052)	(0.048)	(0.054)
County-level Variables	Yes	Yes	Yes	Yes
Household Control Variables	Yes	Yes	Yes	Yes
Householder Control Variables	Yes	Yes	Yes	Yes
Province Dummy	Yes	Yes	Yes	Yes
Obs.	3,445	3,333	3,490	3,472

Note: The model specification is similar to that in Table 2. Cluster standard errors at county level are presented in parentheses, and *** p<0.01, ** p<0.05, * p<0.1.

Table 10 Sensitivity Analysis by Using Ratios of Financial Investment as Dependent Variables (Tobit Model + County Fixed Effect)

	(1)	(2)	(3)	(4)
	Ratio of Stock		Ratio of Risky Assets	
Theil	0.263***	0.228***	0.283***	0.250***
	(0.002)	(0.002)	(0.002)	(0.002)
Oppo Ineq	0.104***	0.095***	0.246***	0.252***
	(0.004)	(0.003)	(0.004)	(0.003)
County-level Variables	Yes	Yes	Yes	Yes
Household Control Variables	Yes	Yes	Yes	Yes
Householder Control Variables		Yes		Yes
County Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes
Obs.	7,369	7,336	7,420	7,386

Note: The model specification is similar to that in Table 2. Cluster standard errors at county level are presented in parentheses, and *** p<0.01, ** p<0.05, * p<0.1.

Table 11 Sensitivity Analysis by Using Ratios of Financial Investment as Dependent Variables (Panel Tobit Model + Household Random Effect)

	(1)	(2)	(3)	(4)
	Ratio of Stock		Ratio of Risky Assets	
Theil	0.487***	0.366***	0.496***	0.381***
	(0.087)	(0.085)	(0.078)	(0.076)
Oppo Ineq	0.648***	0.394**	0.778***	0.536***
	(0.154)	(0.156)	(0.136)	(0.136)
County-level Variables	Yes	Yes	Yes	Yes
Household Control Variables	Yes	Yes	Yes	Yes
Householder Control Variables		Yes		Yes
Year Dummy	Yes	Yes	Yes	Yes
Obs.	7,369	7,336	7,420	7,386
Num. of Households	3,971	3,957	3,980	3,966

Note: The model specification is similar to that in Table 2. *** p<0.01, ** p<0.05, * p<0.1.

Table 12 Mechanism by Increasing Material Aspiration (Ordered Probit Model)

	(1)	(2)	(3)
Theil	0.275***	0.293***	0.084
	(0.064)	(0.063)	(0.061)
Oppo Ineq	0.355***	0.147	0.234**
	(0.094)	(0.094)	(0.091)
County-level Variables	Yes	Yes	Yes
Household Control Variables		Yes	Yes
Householder Control Variables			Yes
Household Fixed Effect	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes
Obs.	11,176	11,174	12,001

Note: The dependent variables are standardized measures for Material Aspiration (ranked from 1-10). The larger it is, the more the household head values the material needs. Coefficients and Cluster standard errors at county level are presented in parentheses, and *** p<0.01, ** p<0.05, * p<0.1.

Table 13 The Impact of Material Aspiration on Risky Asset Investment (Probit Model)

	(1)	(2)	(3)	(4)
	Stock		Risky Asset	
Material Aspiration	0.003**	0.002	0.006***	0.003**
	(0.002)	(0.001)	(0.002)	(0.002)
County-level Variables	Yes	Yes	Yes	Yes
Household Control Variables	Yes	Yes	Yes	Yes
Householder Control Variables		Yes		Yes
Province Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes
Obs.	10,793	10,747	10,793	10,747

Note: The model specification is similar to that in Table 2. Standard errors are presented in parentheses, and *** p<0.01, ** p<0.05, * p<0.1.

Table 14 Mechanism by Increasing Risk Preference (Probit Model)

	(1)	(2)	(3)	(4)
	Risk 2014	Risk 2014	Risk 2014	Risk 2014
Theil 2012	0.063	0.057		
	(0.049)	(0.048)		
Oppo Ineq 2012	0.251***	0.222**		
	(0.094)	(0.094)		
Theil 2010			0.082	0.076
			(0.080)	(0.080)
Oppo Ineq 2010			0.310***	0.302***
			(0.108)	(0.108)
County-level Variables	Yes	Yes	Yes	Yes
Household Control Variables	Yes	Yes	Yes	Yes
Householder Control Variables		Yes		Yes
Province Dummy	Yes	Yes	Yes	Yes
Obs.	2,221	2,220	2,330	2,330

Note: The dependent variables are dummies for household risk-loving (1=Yes） The model specification is similar to that in Table 2. Cluster standard errors at county level are presented in parentheses, and *** p<0.01, ** p<0.05, * p<0.1.

Table 15 The Impact of Risk Preference on Risky Asset Investment (Probit model)

	(1)	(2)	(3)	(4)
	Stock 2014		Risky Asset 2014	
Risk Preference 2014	0.107***	0.101***	0.118***	0.108***
	(0.013)	(0.013)	(0.014)	(0.014)
County-level Variables	Yes	Yes	Yes	Yes
Household Control Variables	Yes	Yes	Yes	Yes
Householder Control Variables		Yes		Yes
Province Dummy	Yes	Yes	Yes	Yes
Obs.	2,143	2,136	2,174	2,167

Note: The model specification is similar to that in Table 2. Standard errors are presented in parentheses, and *** p<0.01, ** p<0.05, * p<0.1.

Table 16 Mechanism by Reducing Human Capital Investment

	(1)	(2)	(3)
Theil	-0.469	-0.483	-0.494
	(0.312)	(0.330)	(0.333)
Oppo Ineq	-1.392**	-1.453**	-1.430**
	(0.635)	(0.661)	(0.662)
County-level Variables	Yes	Yes	Yes
Household Control Variables		Yes	Yes
Householder Control Variables			Yes
Household Fixed Effect	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes
Obs.	6,585	6,061	6,054
R-Square	0.024	0.032	0.034
Num. of Household	2,952	2,902	2,901

Note: Cluster standard errors at county level are presented in parentheses, and *** p<0.01, ** p<0.05, * p<0.1.

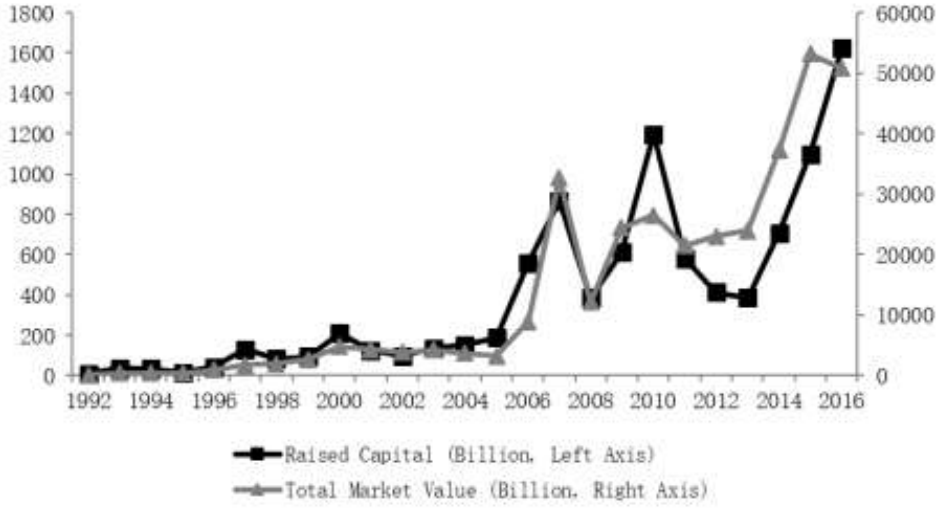

Figure 1 The History of China's Stock Market

Data Source: National Bureau of Statistics of China