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Inequality and Social Capital: How Inequality in China's Housing Assets Affects People's Trust

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ABSTRACT: This article examines how inequality in housing assets affects general trust in society. The economic stimulus package carried out in 2008 in China to tackle the global financial crisis increased housing prices and amplified inequality among residents with various initial housing assets. We apply a difference-in-differences strategy to compare cities with various initial levels of housing asset inequality. An increase in such inequality is found to be associated with a lower level of trust. It is also found that in the Chinese context, growing fiscal inequality is further deteriorating trust. These results are most likely driven by concerns regarding social and economic status.

KEY WORDS: China, housing prices, inequality, social capital, trust

JEL CLASSIFICATION: D31, Z13

Trust between people is an important form of social capital. Greater trust can lower the transaction costs of enforcing honest behavior in economic activities (Putnam 1993), facilitate governmental and organizational efficiency (Barney and Hansen 1994), support financial development, and thus spur economic growth (Zak and Knack 2001).

Trust is especially important for a developing country, where formal institutions are not readily available and people count on informal mechanisms to obtain important social services, such as loans and insurance (Tsai 2004). Trust is the lubricant that helps an economy run smoothly. In the context of China, economic and social reforms are still evolving and a potential conflict of interest is difficult to avoid. China needs to mobilize social capital in order to ensure the smooth implementation of its reform policies. Trust considerably reduces market frictions.

In this article, we consider whether the recent sharp increase in the inequality of housing assets has damaged social trust in China. If inequality does weaken trust, we ask which type of inequality has the most negative effects. Does inequality affect trust differently across various population groups? If so, what are the implications of these heterogeneities for understanding the impact of inequality on social trust?

This article is motivated by observations of a recent declining trend of social trust in China. The trust data are collected by China General Social Survey (CGSS), which gathers data from multiple levels of society, community, family, and individual levels and tries to capture the trend of social change. Since 2003, every year, CGSS survey up to 12,000 people that were randomly drawn from 100–125 districts and counties, 5 big cities, 300–500 streets and towns, 480–1000 neighborhood committees, and village committees. Based on CGSS data, in 2005, 22.78% of the population believed that most people in society were trustworthy, but this share dropped to 13.88% in 2010, 10.02% in 2011, and only 8.47% in 2012. Meanwhile, the share of people who believed that most people are completely untrustworthy increased

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from 8.21% in 2005 to 21.59% in 2012. The share of people who believed that the government is fully credible fell from 47.31% in 2006 to 38.23% in 2010, and dropped further to 19.03% in 2012. The degree of trust in the media also showed a downward trend: in 2006, 42.71% of the population believed that the information provided by the media was completely credible, while only 27.51% of the population held the same view in 2010, and this share dropped further to 13.59% in 2012. As the same time that levels of trust have declined, we observe that inequality gaps have widened. According to the National Bureau of Statistics of China, the Gini coefficient of income was 0.469 in 2014—higher than 0.4, the international warning line. Compared to income inequality, a more serious but often neglected inequality is property inequality, as measured by housing assets. The disparity of housing wealth among urban residents has been growing after the 1998 reform of the real estate market, and became more serious when a stimulus package was implemented in 2008.

Affected by the financial crisis 2007–2008, China experienced negative export growth, rising unemployment, corporate failures, and the real estate market downturn. In September, 2008, the real estate market appeared the most serious unsalable situation in last 3 years. The first case of default appeared in China. In order to stabilize housing prices and guard against the financial crisis and possible further economic crisis, the Chinese government introduced a series of plans to stimulate real estate market. These included: (1) in 2 months, lowering the 1-year benchmark lending rate of financial institutions by 0.27 percentage points three times and lowering the deposit rate by 2.04 percentage points in total; and, 1 month later, further lowering the benchmark lending and deposit rates by 1.08 percentage points, respectively; (2) lowering the minimum down payment ratio to 20%; (3) speeding up the construction of affordable housing projects; (4) abolishing credit limits on commercial banks; (5) exempting business tax when individuals purchase housing assets for more than 2 years (including 2 years); for the less than 2 years transfer, business tax levied on the transfer of income less the original purchase.

The stimulus package injected liquidity into the real estate market and then, housing prices rocketed 9.5% in the following year. Prices in metropolitan areas rose by as much as 70%. As a result, housing asset inequalities have been widened. With the surge in housing prices, property inequality has far surpassed income inequality and shows a more significant trend of deterioration (Sato, Sicular, and Yue 2011/2013/2015).

Figure 1 shows the percentiles of housing assets in 2005 and 2011 (deflated by the consumer price index) using CGSS data. Fearing a slowdown in economic growth following the 2008 global

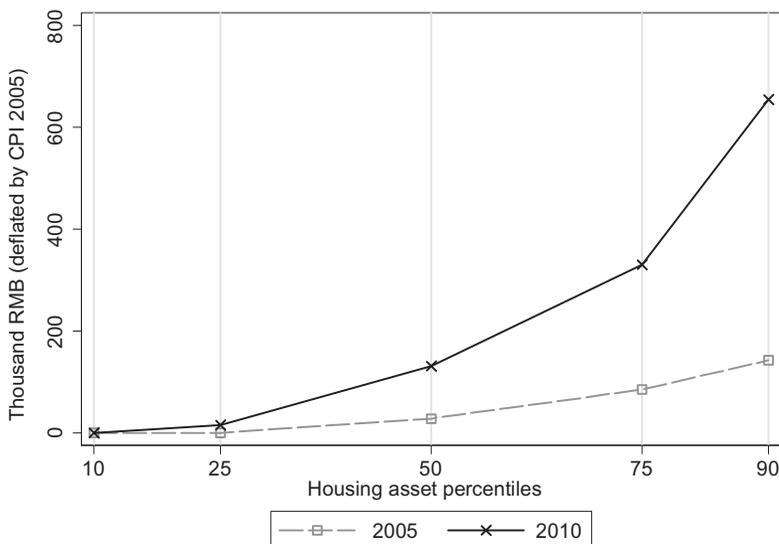


Figure 1. Distribution of housing assets. *Source:* China General Social Survey (CGSS) 2005 and 2011.

financial crisis, China launched a \$580 billion stimulus package. As a result of this, commercial banks started offering mortgage loans, private mortgage requirements were relaxed for home buyers, and rents were allowed to increase steadily to encourage people to purchase and own houses. The stimulus led to soaring housing prices (Li and Wu 2014). Those who had bought housing assets before 2008 benefited considerably from the stimulus, whereas those who had not were left worse off. The inequality in housing assets was amplified artificially by the stimulus plan. The slopes indicate the level of inequality: the steeper the curve, the higher the inequality. The comparison between 2011 and 2005 reveals a drastic rise in inequality after the 2008 stimulus package.

Although the stimulus plan was implemented nationwide, housing prices increased at different rates across cities, resulting in largely heterogenous housing inequality across the nation. After controlling for housing market characteristics and other macro-level variables, we observed that the degree of amplified inequality is mainly dependent on the initial distribution of housing wealth before the stimulus package. If the initial distribution of housing assets was equitable, rising property prices added value to individuals' housing assets but did not affect the inequality level overall; on the other hand, if the initial housing assets had been distributed unevenly, rising property prices further expanded this inequality. The 2008 stimulus package can be considered as an exogenous shock to the housing market, and provides us with many variations over time and across cities, which allow us to utilize the difference-in-differences (DIDs) approach to estimate how asset inequality affects trust.

We find that, after the stimulus package, trust decreases more in cities where inequality in the initial housing assets was more severe (measured by housing wealth Gini). This policy effect persists even after we control for city characteristics before and after the stimulus package, as well as trust in the government. As a sensitivity check, we divide cities into two groups by the growth rates in housing prices, that is, those above and those below the median growth rate. The results are still significant for each of the subgroups. The highly robust results indicate that the impact of the stimulus policy on trust can be attributed to increasing inequality in housing assets.

Furthermore, we calculate the ratio of the 90th percentile over the 50th percentile and the 50th percentile over the 10th percentile based on housing values to consider "the-rich-get-richer" and "the-poor-get-poorer" trends, respectively. Based on our estimation, after the stimulus package, trust declines much more because of "the-rich-get-richer" effect, while "the-poor-get-poorer" effect does not have a significant impact on trust.

Finally, we explore the possible mechanisms through which inequality influences trust. We find that inequality has a greater impact on individuals whose fathers are Communist Party members. Also, the trust of individuals who belong to a lower class is more sensitive to the stimulus package.

The rest of our article is organized as follows. Second section reviews the literature and summarizes our contribution. Third section describes the data set we used. Fourth section presents our empirical strategy. Fifth section explores the possible mechanisms through which inequality influences trust. Conclusion remarks are given in sixth section.

Literature and Contribution

As one of the most important forms of social capital, the meaning and role of trust has long been the focus of economists' research. Adam Smith (1759/1976) observed that different demands of people are critical to explain their behavior; he also pointed out that honesty and punctuality are very different across countries (Smith 1977/1766). There are two dimensions of trust, i.e., horizontal and vertical (Glaeser et al. 2000). The first refers to the general trust which measures the believe that other people can be trusted (Uslaner 2002). The second refers to the institutional trust which measures people's confidence in their government (Knack 2002). At the macro-level, the higher the degree of trust in a country, the better able it is to promote long-term social stability, to sustain economic growth, and even to improve economic efficiency (Cutter, Boruff, and Shirley 2003; Knack and Keefer 1997; Putnam 1993). La Porta et al. (1997) use cross-sectional data to show that trust is

particularly important for the performance of large organizations. Other studies, including Gambetta (1988), Coleman (1990) and Fukuyama (1995), argue that trust is crucial in determining the performance of a society's institutions. Zak and Knack (2001) studies the relationship between trust and growth, and show that investment increases with trust (also see, Algan and Cahuc 2010). The role of trust is particularly significant in an imperfect market, and in developing countries. At the enterprise level, the high level of trust among members inside organizations and between enterprises can improve their competitiveness and performance (Barney and Hansen 1994), while corporate dishonesty could have a significant short-term negative impact on their stock prices (Wang, Liu, and Zhao 2014). At the micro-level, trust can promote participation in the stock market and at the same time significantly reduce poverty.

A large number of researchers show that trust decreases with an increase in the heterogeneity of people, including their income and wealth inequality, as well as ethnic and cultural differences (Alesina and La Ferrara 2002; Uslaner 2002, 2003). Using cross-country data, Knack and Keefer (1997) and Knack and Zak (2003) show that trust increases with the degree of citizens' ethnically homogeneity. Also, Weingast (1997) argues that trustworthiness which provided by the enforcement of property rights is dependent on the degree of homogeneity of citizens' preferences. Similarly, Glaeser et al. (2000) show that trust decreases with races and nationalities, and people in high social positions are more likely to trust others. Fischer and Torgler (2006) observed that individuals who are at a disadvantage due to their relative income positions are more inclined to be insecure, believing that the social system is detrimental to their interests and that the rich can manipulate the system for their own profits.

Although the negative correlation between heterogeneity and trust is well documented in the literature, there are few works that identify the causal relationship behind it. We try to investigate such causality by looking at agents' heterogeneities. The technical difficulty of identifying causality, however, is that trust may impose a reverse impact on inequality, because a more trusting society may be more motivating or capable of reducing inequality (Alesina and La Ferrara 2002). One possible way of identifying the impact of inequality on trust is by finding an instrumental variable (IV) that can reflect inequality. Alesina and La Ferrara (2002) and Gustavsson and Jordahl (2008) offer examples of empirical studies utilizing IV tools. However, these studies are often questioned for the reasonability of their chosen IVs. On the one hand, it is difficult to find a variable that affects people's beliefs only by influencing inequality, making the exogenous requirement of the IV variable difficult to satisfy (Alesina and La Ferrara 2002). On the other hand, even if such a variable can be found, its correlation to inequality may be weak, resulting in an estimation bias.

One of the innovations in this article is the use of natural experiments to perform reduced form identification and avoid the problem of reverse causality. This article studies the question in the context of the rapid growth of housing inequality under the stimulus of real estate policies in China. Using the stimulus policy after the 2008 financial crisis as a natural experiment, we can solve the problem of reverse causality to some extent.

In China, the commercial real estate market was initiated in 2003–2004. The government began to implement the “land tender, auction and listing” system, and land transaction fees became the most important source of government revenue. Strong financial incentives became the internal driving force of housing prices (Cai, Henderson, and Zhang 2013). Also, much of the massive stimulus package launched in 2008 wound up flowing into the property market, and driving prices upward (Li and Wu 2014).

The steep rise in policy-driven housing prices and the widening housing inequality provide us with a natural experiment we can use to obtain more accurate estimates of how deepened inequality affects trust while avoiding the interference caused by reverse causality. Also, we study a period when there was a rapid rise in the disparity of China's housing assets. Although the real estate policy was enacted only for a couple of years, the huge inequality it generated wrought significant changes in historically accumulated social capital, thus increasing the identification power of our empirical model.

Our focus on a single country allows us to avoid the unobserved country-level factors introduced by cross-country analysis. And the use of individual-level data enables us to undertake various heterogeneity analyses and further explore the causes and channels of how inequality affects trust.

The research behind this article has practical significance. The marketization of the real estate sector enlarged the disparity in housing assets substantially. The Gini coefficient of housing property among urban residents reached 0.78 in 2009. Existing studies of housing prices mainly focus on the analysis of economic behaviors, including consumption and investment, or short-term effects on gross domestic product (GDP) growth. This article is the first to focus on how inequality in housing assets impacts general trust, and, in so doing, fills a significant blank in the literature.

Data

We use data on trust, housing assets, demographics, and social and economic status (SES) from the CGSS, a repeated cross-sectional data, as collected in 2005, 2010, and 2011. The survey asked respondents the following question about general trust, rated on a scale of 1–5 from low to high: “Generally speaking, would you say that most people can be trusted?” To construct a consistent sampling framework for the present study, the sample was confined to the 14 cities that were surveyed in all three waves. Summary statistics for city and household demographics are listed in [Table 1](#).¹

In our DID analysis, we estimate the impacts of inequality on general trust. We use the Gini coefficient in housing values to indicate the level of inequality. In order to avoid the bias in standard errors that may arise due to using the same data set, we calculate the Gini from a sizable independent data set from the National Bureau of Statistics. Specifically, we draw from a 25% sample of the

Table 1. Statistical descriptions for control variables.*

Variables	OBS	Mean	Standard deviation
City level			
Population (in 10 thousand)	4998	1135.3	535.83
GDP per capita (Chinese yuan)	4998	60,303	25,167
Employment percentage of service sector (%)	4998	55.983	13.393
GDP percentage of service sector (%)	4998	59.191	10.724
Individual level			
Household income**	4301	38,837	84,841
Household size	4998	2.778	1.228
Imputed rent (Chinese yuan)	3368	13,673	36,552
Property ownership (1 = yes, 0 = no)	4998	0.7687	0.4217
Sex (1 = male, 0 = female)	4998	0.4642	0.4988
Communist Party member (1 = yes, 0 = no)	4998	0.1579	0.3647
Age (17–97)	4998	47.72	16.22
Ethnic (1 = yes, 0 = no)	4998	0.03081	0.1728
Work (1 = yes, 0 = no)	4998	0.5124	0.4999
Occupation(1 = working in a SOE firm, 0 = not)	4998	0.3850	0.4866
Retirement (1 = yes, 0 = no)	4998	0.2946	0.4559
School (1 = yes, 0 = no)	4998	0.04022	0.1965
Marriage (1 = married, 0 = single)	4998	0.8647	0.342
Education years	4996	10.81	4.087
Class (1–5: 1 = highest, 5 = lowest)	4994	3.645	0.8715
Housing wealth Gini	4998	0.588	0.065
Living adequacy Gini	4998	0.331	0.049

Notes: *Data source: China General Social Survey.

** Households' incomes are deflated to 2005 yuan by the consumer price index.

national 1% sample population surveyed in 2005, which has detailed information on housing assets, infrastructure, building materials, and associated costs. Housing assets are also deflated to the 2005 yuan by the consumer price index. The Gini coefficient we calculated from NBS is a city level index, based on the household dispersion within a city.

Besides the housing wealth Gini, following McKenzie (2005), we also use the principal components analysis to obtain another measure of inequality in living standards, namely, the living adequacy Gini.² The surge in housing prices will directly affect living standards, especially adequate housing. Compared with the housing wealth Gini, inequality is reflected more in the living standards Gini. In particular, this index captures the living standards of tenants whose housing wealth equals zero, whereas the housing wealth Gini is unable to capture associated changes in tenants' quality of life. To keep our results comparable with the literature that precedes us, we focus on the housing wealth Gini, but use the living standards Gini for a sensitivity check.

Finally, the Gini we constructed represents the inequality of a city as a whole. The Gini gets larger because of an increase in inequality contributed by both sides of the housing wealth distribution. Nevertheless, different sources of inequality may have different impacts on trust. Therefore, we further investigate whether the-rich-get-richer or the-poor-get-poorer phenomenon contributes more to the changes in trust. Following Gustavsson and Jordahl (2008), we calculate the ratio of the 90th percentile over the 50th percentile to reflect the degree of disparity in housing wealth between the rich and the median population group. As the ratio becomes larger, the-rich-get-richer effect is more severe. Similarly, we use the ratio of the 50th percentile over the 10th percentile to reflect the degree of disparity of housing wealth between the median group and the poor, namely, the-poor-get-poorer effect.

Empirical Estimation

In this section, we present our empirical strategy. We utilize a natural experiment to accomplish our goal. As mentioned in previous sections, in order to combat the 2008 global financial crisis, the Chinese government spontaneously carried out a stimulus package. The timing of the stimulus was therefore arguably exogenous to China's housing market. The drastic increase in housing prices amplified the inequality in the initial housing assets in all cities. However, all else being equal, and in particular, controlling for the level of housing price increase, the cities with higher initial inequality experienced a more severe exacerbation in inequality.

To investigate the impact of inequality on general trust, we apply a DID strategy, exploiting different levels of inequality across various cities. Since the work by Ashenfelter and Card (1985), the DID methods have been widely applied to various empirical studies. A basic setup would be one where outcomes are observed for two groups for two time periods. Both treatment and control groups are not exposed to the treatment in the first period, and only the treatment group is treated in the second period. By subtracting the average gain in the control group from the average gain in the treatment group, we remove biases from permanent differences between the two groups and the possible similar trend in both groups over time. The remaining difference would be the impact of the exogenous treatment for the treatment group.

Our identification strategy suggests the following model:

$$\text{Trust}_{ict} = \alpha + \text{Ineq}_{c05} \times \text{post}_t \cdot \beta + X_{ict} \cdot \gamma_1 + Z_{ct} \cdot \gamma_2 + \delta_c + \delta_t + \varepsilon_{ict} \quad (1)$$

where Trust_{ict} represents the level of trust held by individual i , in city c , in year t ; Ineq_{c05} represents the initial inequality of housing assets in city c in 2005; and post_t is a dummy indicator that equals 1 if year t is after the implementation of the stimulus package and 0 otherwise.

The interaction term $\text{Ineq}_{c05} \times \text{post}_t$ captures the variations in inequality from two sources—the initial unequal allocation of housing assets and the uneven growth in housing prices caused by the stimulus package. The initial unequal distribution in housing assets was present before the stimulus

package was implemented and was therefore not affected by the policy. The uneven growth in prices, meanwhile, is driven by for-profit capital searching for a safe and profitable investment, even as the real estate market boomed rapidly after the stimulus package. The surging housing prices are considered to be the direct consequence of the policy. Therefore, we do not include the housing price variable in the regression due to the problem of potential endogeneity. As seen in the regression, the lack of this variable reduces the accuracy of the measurement of rising inequality, so we consider the coefficient β the lower bound of the effect that inequality could work on general trust. In the robustness analysis, we divide the city samples into two groups by the growth rate of average citywide housing prices (that is, cities above or below the median growth rate) and run regression (1) separately.

Following Gustavsson and Jordahl (2008), we control for individual characteristics in X_{ict} , which includes annual household income, imputed rent, family size, housing ownership (rented or owned), employment status, occupation (working in a SOE firm or not), political identity (membership in the Communist Party), self-reported social class (1–5: 1 = highest, 5 = lowest), and basic demographics: sex, age, ethnic (1 is for Minority and 0 is for Han Chinese), marriage, school (1 is for attending school and 0 is not) and education years. The imputed rent is the real rental that is deflated to 2005 Yuan by the consumer price index. Z_{ct} denotes time-varying city characteristics, including population, GDP per capita, and local industry structure, reflected by the share of the service sector in GDP and the share of employment in the service sector. δ_c and δ_t are city and survey year fixed effects, respectively, and ε_{ict} is an idiosyncratic error term, which is clustered at the city-year level.

Coefficient β is the average effect of city-level inequality on general trust among residents who experienced rising inequality in housing assets. Controlling for the degree of housing price increase, cities with more unequally distributed housing assets had even greater inequality following the 2008 stimulus package. A finding that $\beta < 0$ suggests that the stimulus plan was associated with relatively decreased trust among individuals in the more unequal cities.

In Table 2, columns (1)–(3), we construct the 2005 housing wealth Gini to measure inequality. Column (1) shows that if the initial Gini increases by 1% before the stimulus package, general trust after the policy shock would be lower by 0.017 (trust is measured by a variable with numerical value of 1–, 1 being the lowest level). The results are significant at the 1% level.

To interpret β as the effect of larger asset inequality, three main assumptions should be satisfied. First, cities with different inequalities in 2005 are assumed to have a similar trend in general trust. One concern is that the relation between trust and inequality could be nonlinear. For instance, if in 2005 people in certain cities held a low level of trust, then the impact of the stimulus would be bounded. However, in this case, the effect of exacerbated inequality would be underestimated.

Second, initial inequality should not capture other time-varying, city-level characteristics that relate to trust. In addition to city-level covariates, we include interactions of $post_t$ and city-level economic variables in 2005, that is, GDP per capita, service sector share in GDP, and employment share in the service sector. This allows for time-varying effects of observables to be different across cities. As shown in Table 2, column (2), the main estimates remain similar.

Third, the stimulus plan should not affect general trust through channels other than the expansion of inequality. There may be some concern that public policies could directly affect people's quality of life and social status through improving their income or expanding job opportunities, and thus affect trust in the government. To control these factors, we include demographic and social economic variables (X_{ict}). Furthermore, people might have a preference for a particular public policy, for example, the housing market policy. The direct response toward the policy itself might alter their trust in the government, thus affecting the general trust toward other people. In column (3), the results show that our findings are robust after controlling for trust in the government.

In Table 2, we use the living adequacy Gini for a sensitivity check. Following McKenzie (2005), we use the principal components analysis to obtain a measure of inequality in living standards which is calculated from the 25% sample of the national 1% sample population surveyed in 2005. Results

Table 2. Effect of the housing market stimulus on general trust (DID estimates).

	(1)	(2)	(3)	(4)	(5)	(6)
Mean of housing wealth Gini		0.588				
Mean of living adequacy Gini					0.331	
Ineq_wealth _{c05} × post _t	-1.651*** (0.504)	-1.680*** (0.608)	-1.289** (0.474)			
Ineq_adequacy _{c05} × post _t				-2.557*** (0.922)	-2.519** (1.041)	-2.162** (0.947)
Population	0.165 (0.126)	0.153 (0.126)	0.167 (0.135)	0.190 (0.119)	0.204** (0.121)	0.188 (0.129)
GDP per capita	-0.107*** (0.034)	-0.084** (0.031)	-0.112*** (0.036)	-0.197*** (0.059)	0.177*** (0.050)	-0.187*** (0.059)
Share of employment in service sector	0.016 (0.009)	0.013 (0.010)	0.012 (0.010)	0.004 (0.008)	0.006 (0.010)	0.002 (0.009)
Share of service sector in GDP	0.008 (0.010)	0.004 (0.009)	0.006 (0.012)	0.015 (0.014)	0.014 (0.012)	0.013 (0.015)
City-level covar05 × post _t		×			×	
Trust in government			×			×
Observations	4291	4291	4281	4291	4291	4281
R-squared	0.054	0.054	0.083	0.054	0.054	0.083

Note: *** and ** denote significance at the 1% and 5% level, respectively.

are shown in columns (4)–(6). The coefficients of interest are significant at the 5% level, with greater magnitudes compared with the results using the housing wealth Gini, possibly because the measure of the living adequacy Gini is, in general, smaller than that of the housing wealth Gini.

In regression (1), we exclude the housing price variable in the regression due to the potential endogeneity problem. However, the housing price is closely related to the social capital, which might affect trust in the government, thus affecting the general trust.³ The exclusion of the housing price variable might cause the omitted variable bias. As an important sensitivity check, we divide our sample into two groups by the growth rate of urban housing prices, namely, those above and below the median level. Within each group, the growth rate of housing prices is considered to be less volatile. We run separate regressions for these two groups. If the regression results of each group are similar to those in Table 2, we could claim that the omitted variable problem does not cause serious bias in our empirical study.

Table 3 presents the regression results for the two separate groups. As seen, the results are largely similar to Table 2. Within each subgroup, we observe that general trust drops more in those cities with larger initial housing wealth Gini or living adequacy Gini. This proves that the results in Table 2 are not driven by the omitted variable bias.

In Table 4, we intend to find out the source of inequality that causes the most damage to the general trust. Instead of using the housing wealth Gini or living adequacy Gini, we use the ratio of the housing wealth percentile over the median level to measure the initial degree of inequality across different wealth groups. We use the ratio of the housing wealth of the 90th percentile over that of the median group to capture the gap in housing wealth between them. If the ratio increases, it means the rich get richer. On the other hand, we use the ratio of the housing wealth of the median group over that of the 10th percentile to capture the disparity in housing wealth between the two groups. The larger the ratio, the poorer the poor become. We call these the-rich-get-richer and the-poor-get-poorer effects, respectively. We run separate regressions to see if these two different sources of inequality contribute equally to the change in general trust.

The columns (1)–(3) show the results for the-rich-get-richer effect. Those who own more housing stock initially benefit a lot more from the surging housing prices. Column (1) shows that for cities with a greater initial unbalanced distribution in housing wealth, the general trust would deteriorate to

Table 3. Effect of the housing market stimulus on general trust (DID estimates) dividing the sample into two groups by the median housing price growth rate.

	Cities with a housing price growth rate higher than the median city	Cities with a housing price growth rate lower than the median city
	(1)	(2)
$\text{Ineq_wealth}_{c05} \times \text{post}_t$	-5.614*** (0.718)	-2.701*** (0.762)
Population	0.792*** (0.120)	0.854*** (0.144)
GDP per capita	-0.010 (0.051)	-0.549 (0.907)
Share of employment in service sector	-0.025*** (0.012)	0.044 (0.027)
Share of service sector in GDP	0.099*** (0.013)	-0.007 (0.040)
City-level covar05 \times post _t	\times	\times
Trust in government	\times	\times
Observations	2819	1462
R-squared	0.083	0.136

Note: Standard errors are clustered at the year and province level.

*** denotes significance at the 1% level.

Regressions also include a constant term, calendar year fixed effects, city fixed effects, the interaction of housing price increase and year dummy indicators, and individual SES.

a greater extent after the stimulus package. Specifically, if the gap between the housing wealth of the top 10% group and the median group in 2005 doubles, then the trust level after the stimulus package would decrease by 0.091, given that the trust level is measured from 1–5, with 1 being the lowest level. And columns (2) and (3) show the robustness of the results after we control for the city's initial characteristics and trust toward the government. The estimates are largely similar.

Columns (4)–(6) show the results for the-poor-get-poorer effect. Column (4) shows that if the initial gap between the median wealth group and the lower 10% group enlarges, the general trust does not exhibit a significant reduction. Similarly, columns (5) and (6) show the robustness of the results after controlling for the city's initial characteristics and trust in the government. This proves that the-poor-get-poorer effect does not cause much deterioration in the general trust.

The results shown in Table 4 are different from the findings in Gustavsson and Jordahl (2008), who observe that the-poor-get-poorer effect is more harmful on the general trust. They explain that a deterioration in conditions of the poor draws more attention and public concern regarding inequality, and therefore affects the general trust. However, in the institutional context of China, housing assets were initially allocated by the state. A particular subsegment of the population, mainly state employees, were provided heavily subsidized homes. Later on, as the housing market became increasingly privatized, the government created a separate housing market for the state employees, which allowed them exclusive access to housing at prices below market value (Wang 2011). When the housing market boomed, this group obtained incredible wealth. This phenomenon triggered extensive concerns regarding equality and might seriously harm general trust across the nation.

Table 4. Effect of the housing market stimulus on overall trust (DID estimates) using the ratio of housing wealth percentile over the median to measure initial inequality.

	(1)	(2)	(3)	(4)	(5)	(6)
	Using the ratio of the housing wealth of the 90th percentile over that of the median group to describe the rich-get-richer effect			Using the ratio of the housing wealth of the median group over that of the 10th percentile to describe the poor-get-poorer effect		
post _t pc90/pc50×	-0.075*** (0.024)	-0.076** (0.032)	-0.056** (0.023)			
pc50/pc10 × post _t				-0.0001 (0.0001)	-0.00006 (0.0001)	-0.00009 (0.0001)
Population	0.143 (0.126)	0.156 (0.135)	0.177 (0.134)	0.130 (0.122)	0.162 (0.140)	0.162 (0.131)
GDP per capita	-0.130*** (0.040)	-0.109*** (0.033)	-0.122*** (0.038)	-0.130*** (0.040)	-0.119*** (0.037)	-0.123*** (0.038)
Share of employment in service sector	0.016 (0.009)	0.018* (0.009)	0.011 (0.010)	0.006 (0.008)	0.010 (0.011)	0.003 (0.008)
Share of service sector in GDP	-0.002 (0.009)	-0.003 (0.008)	-0.004 (0.010)	-0.004 (0.011)	-0.006 (0.009)	-0.004 (0.011)
post _t City-level covar05×		×	×		×	×
Trust in government			×			×
Observations	4291	4291	4281	4291	4291	4281
R-squared	0.054	0.054	0.085	0.053	0.053	0.085

Note: Standard errors are clustered at the year and province level.

***, **, * denote significance at the 1%, 5%, and 10% level, respectively.

Regressions also include a constant term, calendar year fixed effects, the interaction of housing price increase and year dummy indicators, and individual SES.

Mechanisms

To explore the possible mechanisms through which inequality influences trust, we examine the heterogeneity of the effect of inequality across groups. First, social ties make people be more willing to trust those who are similar to themselves in terms of income and wealth. Second, people's perspective on economic inequality may influence their trust toward others. For instance, those who are influenced by Karl Max may see inequality as evidence of exploitation, thus choose to lower their trust when inequality increases. Third, inequality creates conflicts over resources including public goods. Lastly, holding the wage mean constant, increases in wage inequality lead to changes in the opportunity cost of time, therefore affecting the net benefit of working and trusting.

Empirically, using US data for the period 1974–1994, Alesina and La Ferrara (2002) show that being economically unsuccessful in terms of income and education level and living in a community with a high degree of income disparity are among the strongest factors reducing trust. Using cross-country data, Leigh (2006a) finds that both inequality and ethnic heterogeneities are negatively correlated with trust. Leigh (2006b) summarizes the factors that affect trust, including individual characteristics such as income and education. Using Australia data, he does not find significant correlation between inequality and trust across neighborhoods.

Motivated by prior studies, we try to explain the mechanism in the Chinese context, with a focus on two characteristics. First, inequality may influence trust through individual preferences. The more an individual dislikes inequality, the less trust he or she will have in society. China is a country led by a Communist Party, which was inspired by the Communism theory developed by Karl Marx and

Friedrich Engels. As the founders of Communism, they believe that inequality between the poor and the rich arises from capitalism. Thus, a deepening of inequality has more of an impact on trust among followers of communism or socialism than it does on other belief followers. The second characteristic is SES. The lower the social class of an individual (or the lower income earned), the more that individual's trust declines alongside inequality. In particular, the poor may especially abominate the rich-get-richer phenomenon. While interpreting this attitude, Fischer and Torgler (2006) show that trust does rise as relative income increases. Therefore, the disadvantaged tend to show a low level of trust in others.

In our empirical analysis, we use the triple difference (Difference-in-Difference-in-Differences) specification as follows:

$$\begin{aligned} Trust_{ict} = & \alpha + H_i \times Ineq_{c05} \times post_t \cdot \beta_1 + Ineq_{c05} \times post_t \cdot \beta_2 + H_i \times Ineq_{c05} \cdot \beta_3 + H_i \\ & \times post_t \cdot \beta_4 + X_{ict} \cdot \gamma_1 + Z_{ct} \cdot \gamma_2 + \delta_c + \delta_t + \varepsilon_{ict} \end{aligned} \quad (2)$$

To proxy for individuals' preferences regarding inequality, we consider whether their fathers were Communist Party members when they were 14 years old. Compared with non-party counterparts, if these individuals consider inequality as the result of exploitation, they are more inequality-averse. To proxy for individuals' SES, we use their fathers' SES when the individuals were 14 years old. All other controls are the same as in Equation (1). The coefficient captures the difference in the magnitude of the impact across different subgroups.

Equation (2) includes interaction terms for H_i , $Ineq_{c05}$, and $post_t$. Similar to the previous regression, $Ineq_{c05}$ is the initial inequality of housing assets and $post_t$ is a dummy indicator for post-stimulus. The new variable H_i either represents a dummy variable for whether an individual's father is a party member, or describes the SES of individuals' fathers when they were 14 years old. In the former case, the estimated coefficient β_1 indicates how individuals with heterogeneous preferences on inequality are affected differently by increasingly uneven income dispersion. In the latter case, β_1 indicates the different influences of inequality on trust across different social classes.

In Table 5, columns (1)–(3) report heterogeneity when inequality is measured using the housing wealth Gini. Columns (4)–(6) replicate the estimation using the living adequacy Gini and yield similar results.

Column (1) shows that general trust is undermined most among individuals whose fathers were party members. This is consistent with the hypothesis that members of the Communist Party are influenced by Karl Marx and may regard inequality as a signal of exploitation, which is an untrustworthy behavior. In the face of rising inequality, such a belief will reduce their trust more than that of non-party members.

Columns (2) and (3) reveal that if an individual's father was educated or had a professional occupation when the individual was 14 years old, her/his general trust will be less affected by deterioration in inequality. These findings are consistent with the explanation in Fischer and Torgler (2006) that envy and positional concerns have a negative effect on perceptions of others' fairness. People who feel disadvantaged distrust "the Joneses" and eventually extend this distrust to the entire community and, possibly, society. This is also consistent with our finding that the general trust levels decrease significantly alongside an increase in the ratio of housing wealth at the 90th over the 50th percentile. Rich people getting richer is more harmful in undermining social trust than poor people getting poorer.

Conclusion

Rapid appreciation of housing assets is not unique in China. Since housing assets generally amount to a lion's share of an individual's assets, inequality in housing assets can seriously affect attitudes. We

Table 5. Heterogeneity in the effect of inequality on trust: Triple difference estimation.

	(1)	(2)	(3)	(4)	(5)	(6)
Heterogeneity (H_i)	Father is a party member	Father's schooling years	Father is in a professional occupation	Father is a party member	Father's schooling years	Father is in a professional occupation
$H \times \text{Ineq.Housing Wealth}_{\text{cos}} \times \text{post}_t$	-2.056*** (0.515)	0.126* (0.0719)	0.611 (0.537)	-1.496* (0.778)	0.132 (0.0995)	1.146* (0.629)
$H \times \text{Ineq.living adequacy}_{\text{cos}} \times \text{post}_t$						
Population	0.184 (0.130)	0.215* (0.126)	0.183 (1.235)	0.200 (0.121)	0.244** (0.117)	0.200 (0.128)
GDP per capita	-0.108*** (0.034)	-0.108*** (0.034)	-0.127*** (0.034)	-0.193*** (0.059)	-0.205*** (0.059)	-0.207*** (0.058)
Share of employment in service sector	0.015 (0.010)	0.015 (0.010)	0.013 (0.010)	0.004 (0.008)	0.005 (0.008)	-0.002 (0.009)
Share of service sector in GDP	0.009 (0.011)	0.013 (0.011)	0.008 (0.011)	0.015 (0.014)	0.021 (0.014)	0.017 (0.015)
Observations	4291	4037	4291	4291	4037	4037
R-squared	0.058	0.056	0.134	0.056	0.056	0.135

Note: Standard errors are clustered at the year and provincial level.

***, **, * denote significance at the 1%, 5%, and 10% level, respectively.

Regressions also include a constant term, calendar year fixed effects, city fixed effects, the interaction of housing price increase and year dummy indicators, and individual SES.

provide empirical evidence of a significant reduction in trust when inequality in housing assets is seen to increase.

We further show that the mechanism through which inequality influences trust could be complex and multidimensional. The-rich-get-richer and the-poor-get-poorer phenomena have different effects on the general trust. Contrary to Gustavsson and Jordahl (2008), we show that the-rich-get-richer effect deteriorates general trust much more than the-poor-get-poorer effect. Which type of inequality is more harmful depends on the specific circumstance, which should not be taken for granted.

Since the-rich-get-richer effect is strong, the Chinese government should be more careful in using stimulus policies. Levying a property tax could be an effective way to reduce inequality in housing assets and help restore general trust in the society.

Finally, explanations involving SES are in line with the empirical findings. The trust of agents whose fathers are party members or who are from a relatively low social class decreases more in response to an increase in housing asset inequality. We hope that our empirical evidence of the complex formation of trust could shed light on studies of social capital.

Supplemental Material

Supplemental data can be accessed [here](#).

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Notes

1. These 14 cities includes Beijing, Tianjin, Taiyuan, Shenyang, Shanghai, Ningbo, Jinan, Guangzhou, Guilin, Nanning, Chongqing, Chengdu, Kunming, and Yinchuan.

2. The 2005 Population Survey asks about the building structure, the floors of the building, the number of rooms, and the square meters of the dwelling; whether the accommodation is shared; whether it has tap water, a kitchen, a toilet, and a shower; and the type of stove present (electronic, gas, wood, coal, etc.)

3. As a separate regression, we control housing price changes. The results are largely similar to what we have in Table 2.

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