

# Equality of Educational Opportunity and Attitudes toward Income Inequality: Evidence from China\*

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## ABSTRACT

A substantial literature in comparative politics and political economy emphasizes the importance of income inequality in redistributive policies and regime transition. I argue that individual perceptions of equal opportunity affect the degree of resentment toward income inequality.

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Governments can influence perceptions of equal opportunity through the distribution of public goods and services, such as educational opportunity. Employing various empirical strategies, I systematically estimate both the subjective and objective effects of unequal educational opportunity on attitudes toward income inequality. The first set of evidence is based on two survey experiments conducted in China in 2009 and 2012, respectively; the second set on a 2004 China national survey using a quasi-regression discontinuity design as well as propensity score matching analysis. These complementary analyses offer consistent evidence that inequality of educational opportunity increases resentment toward income inequality.

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Redistribution is a contentious topic in many societies, and income inequality plays a major role in the study of redistributive politics and regime stability. Students of redistributive politics are primarily interested in how politicians use redistribution to prevent potential backlash from income inequality.<sup>1</sup> Most political debates focus largely on the redistribution of *outcomes* (income and wealth); however, policies could also shape the redistribution of *opportunities*, such as the targeted provision of public goods and services, which creates different prospects for individuals to enhance their economic well-being. How does inequality of opportunity affect attitudes toward income inequality? Surprisingly, existing research provides little empirical evidence to establish the causal link between inequality of opportunity and attitudes toward inequality.

The answer to this question enhances our understanding of variations in redistribution preferences and informs the current policy debate over forms of redistribution. Scholars have long been puzzled by the variation in preferences about redistribution, and a number of mechanisms have been proposed.<sup>2</sup> Proponents of one school of thought emphasize fairness and justice in income distribution, arguing that resentment of unequal outcomes (wealth) hinges on unequal inputs (personal characteristics and

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<sup>1</sup> Meltzer and Richard (1981), Boix (2003), Acemoglu and Robinson (2006), and Bueno de Mesquita *et al.* (2003).

<sup>2</sup> Alesina and Giuliano (2009) review the current literature, and identify seven main mechanisms: (1) preference from individual history; (2) culture difference; (3) indoctrination; (4) parental influence; (5) structure and organization of family; (6) perception of fairness; (7) desire to act in accordance with social value.

circumstances) that are beyond the control of individuals, such as inequality of opportunity. Their interest stems in part from the possibility that government policies may mitigate such circumstances. In fact, normative studies include extensive discussions of equal opportunity as a key principle of fairness and justice.<sup>3</sup> Empirical studies have focused largely on the origins, measurement, and economic consequences of equal opportunity.<sup>4</sup> Many countries have adopted equal opportunity policies as a remedy to social injustice in the past, and the World Bank has advocated equality of opportunity as a strategy for economic development.<sup>5</sup>

Despite vast interest in equal opportunity, it remains an empirical question whether individuals become more tolerant of income inequality in the presence of equal opportunity. Figure 1 provides suggestive cross-country evidence of a strong negative correlation between perception of equal opportunity and resentment toward income inequality.<sup>6</sup> Furthermore, Alesina and La Ferrara (2005) show that beliefs on the sources of economic success (effort vs. luck) — their proxy for equal opportunity — are highly correlated with demand for redistribution in the United States. Comparing mainland China and Hong Kong, Wu (2009) finds a positive correlation between the perception of fairness and the tolerance of income inequality.

The empirical evidence above, while enhancing our understanding of the role of equal opportunity, may be challenged on several grounds. First, the identification strategies in the analysis above are likely to identify a correlation but not causation. The independent variables used in existing studies are attitudinal measures (perceptions), which are likely endogenous because

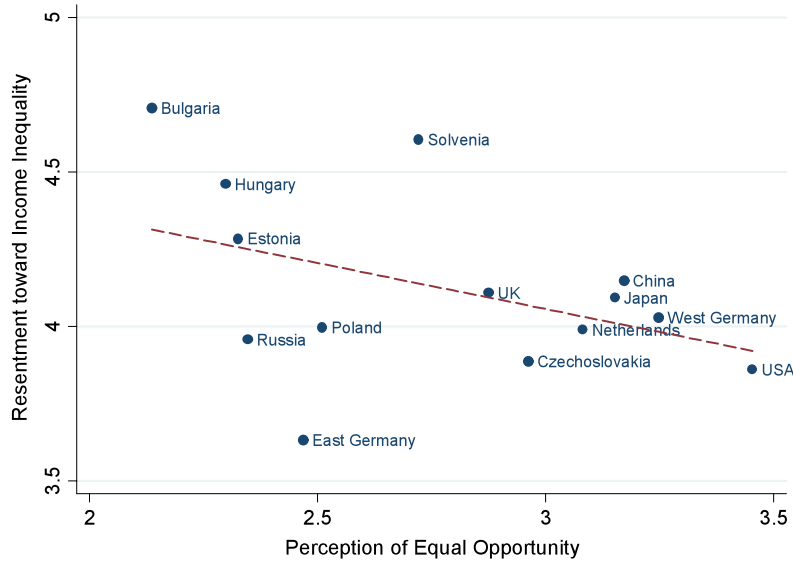
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<sup>3</sup> See Dworkin (1981a, 1981b); Arneson (1989); Cohen (1989); Roemer (2000).

<sup>4</sup> For example, some researchers have attempted to measure the degree of inequality of opportunity in a society (Breen and Johnson, 2005; Bourguignon *et al.*, 2007; Ferreira and Gignoux, 2011; Ferreira *et al.*, 2008), but others have analyzed the manner in which inequality of opportunity shapes income distribution in the society (Jencks, 1973; Roemer *et al.*, 2003; Lefranc *et al.*, 2008).

<sup>5</sup> World Bank (2006).

<sup>6</sup> The data for all the countries except China are from the 1991 International Social Justice Project (ISJP). The data on China are from a 2004 Chinese national survey, which is discussed in detail in the empirical section. These two different surveys use the same wording for both the dependent and independent variables, rendering comparability. The negative correlation remains robust when I estimate the effect of perceived equal opportunity on resentment toward income inequality for each country, controlling for personal characteristics such as age, gender, education, and household income. See Online Appendix Tables A1 and A2 for more details of the order probit analysis. These are the results based on 10 multiple-imputed datasets in order to avoid estimation bias resulting from missing data. See King *et al.* (2001), for more details of the imputation. I used Amelia II developed by Honaker and King (2010) for data imputation.



**Figure 1.** Partial correlation of perceived equal opportunity on resentment toward income inequality.

*Note:* The data is based on 10 multiple-imputed dataset of the 1991 International Social Justice Project (ISJP) and the 2004 Chinese national survey, and both surveys share the same wording for both questions on income inequality and equality of opportunity.

such attitudes could be driven by other factors, such as the structure of social mobility in a particular society. Second, the concept of opportunity could be multi-faceted, capturing different factors like education or employment, with the interpretation of “*opportunity*” differing across respondents. Unfortunately, the measure of equal opportunity in current studies, such as those by Alesina and La Ferrara (2005) and Wu (2009), does not distinguish among the manifold aspects of equal opportunity. Third, cross-country studies may suffer from comparability problems or persistent societal differences across countries that hinder causal inference. Finally, these studies do not directly consider the effects of objective equal opportunity resulting from a government’s policies.

To address these concerns, this paper focuses on one specific form of equal opportunity — educational opportunity — and estimates the effects of subjective and objective equal educational opportunity on attitudes toward inequality. To begin, I argue that the provision of a government’s public goods and services, particularly in education, may influence the distribution

of opportunities among citizens; this inequality of opportunity in turn shapes individuals' attitudes toward income inequality. I then test this claim using two survey experiments that I conducted in China in 2009 and 2012, which randomly primed perceptions of equal educational opportunity for different groups of respondents. The results of the survey experiments provide supporting evidence that the perception of unequal educational opportunity increases resentment toward income inequality. To corroborate this evidence, I use a quasi-regression discontinuity design to evaluate the effect of objective equal educational opportunity by exploring a policy shift in China — the dramatic expansion of the college admission quota since 1999. The results bolster the central claim that unequal opportunity increases resentment toward income inequality. The quasi-regression discontinuity results remain consistent following several robustness checks, such as falsification tests and matching analysis.

This paper contributes to existing research on redistribution preference and income inequality. Researchers have proposed a number of conditions under which the effects of income inequality matter for redistributive policies.<sup>7</sup> Several recent studies, however, cast doubt on the causal link between income inequality and redistribution/regime transition.<sup>8</sup> A number of researchers have shifted their attention to explain the variation in attitudes toward inequality in order to clarify this link.<sup>9</sup> This paper focuses on a different dimension, namely unequal inputs (educational opportunities) as a result of government policies, and suggests that the degree of equal opportunity helps explain the persistent variation in the beliefs of fairness of income distribution and preferences for redistributive policies across countries.<sup>10</sup> This paper furthermore helps suggest why citizens may favor the expansion of education in response to their concerns about income inequality in the United States (McCall and Kenworthy, 2009).

In addition, deeper study of equal opportunity can also shed light on the political consequences of government policies and rising income inequality

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<sup>7</sup> For example, existing research has identified the conditions such as electoral institution (e.g., Persson and Tabellini, 2003; Iversen and Soskice, 2006), social insurance function of redistribution (e.g., Moene and Wallerstein, 2001; Iversen and Soskice, 2001), social affinity and ethnic identities (e.g., Alesina *et al.*, 2001; Shayo, 2009), and the structure of income inequality (Lupu and Pontusson, 2011).

<sup>8</sup> See in particular Kaufman (2009), Ansell and Samuel (2010), and Haggard and Kaufman (2012).

<sup>9</sup> Graham and Sukhtankar (2004) and Cramer and Kaufman (2011).

<sup>10</sup> Piketty (1995), Alesina and Angeletos (2005), and Benabou and Tirole (2006).

in China, a topic that has attracted increasing attention in academic and policy circles.<sup>11</sup> With the exception of a few studies (Michelson, 2012; Lü, 2013), little empirical evidence exists to evaluate the effects of government policies on public opinion in China. This study investigates the effect of a government higher education policy — the dramatic expansion of the college admission quota since 1999 — on citizens’ attitudes toward inequality. It provides new insights on the way through which the Chinese government’s policies may mitigate citizens’ resentment toward rising income inequality.

## 1 The Argument

Inequality of opportunity is a multi-faceted phenomenon, stemming in part from persistent inequality in gender, ethnicity, birth location, and intergenerational transmission of family resources. I focus on educational opportunity in this paper because a key component of equal opportunity is that “every child has an equal chance to develop his or her traits for employment values” (Jencks and Tach, 2005). More importantly, the distribution of education resources by a government can shape individuals’ opportunity to enhance their economic well-being. Since 2006, the World Bank has tried to promote provision of public goods and services that would reduce inequality of opportunity (World Bank, 2006), and it has developed a Human Opportunity Index for a number of Latin American and Caribbean countries (Ferreira *et al.*, 2008).

For pure public goods that are non-excludable (e.g., national defense and infrastructure), government provision is equally accessible to all citizens by definition, but other types of public goods and services, such as education, are excludable to some extent and their provision can be unequal. How could distribution of public goods and services by a government generate unequal opportunity among individuals? The answer hinges on two disparities in distribution: disparity in spatial distribution across localities and disparity in inter-personal entitlement in a locality. First, if a government intensifies education provision in some localities but not in others, this spatial distribution leads to unequal opportunity across localities. Although in theory people could migrate to localities with better provision of public goods and services (Tiebout, 1956), the “vote-by-foot” mechanism could be undermined

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<sup>11</sup> See Yang (2006), Chung *et al.* (2006), Whyte (2010), and Wu (2009).

by migration costs and restrictions or by rules and regulations that favor existing local residents over migrants in the provision of public goods and services. As a result, spatial variations in education provision create unequal opportunity among citizens. Second, a government could establish entitlement rules for some types of public goods and services that have the properties of “club goods,” such as education and health services. The entitlement rule could be based on gender, ethnicity, or even family background. Consequently, individual-level differences in entitlement to public goods lead to inequality of opportunity among individuals within a locality. These two disparities then contribute to inter-personal income inequality.

Why, then, would unequal opportunity resulting from the unequal provision of public goods and services shape attitudes toward income inequality? Education provision by a government offers individuals only an opportunity for future economic gains instead of immediate welfare enhancement. One mechanism, often argued in the existing literature, works through the prospect of economic mobility. Receiving a good education is commonly considered an effective way to enhance one’s prospects for social mobility. Previous research has shown that the prospect of upward mobility reduces resentment toward inequality and demand for redistribution.<sup>12</sup>

I argue that an alternative mechanism lies in the perception of fairness and justice in income distribution. In essence, equal educational opportunity serves as a signaling mechanism that reduces noise when an individual draws inferences about others’ economic successes or failures. I contend that when education resources are distributed equally, an individual perceives a high degree of equal opportunity because equal access to education levels the playing field. As a result, this individual is more likely to attribute others’ economic success to factors such as talent and effort instead of luck and unworthy activities (e.g., corruption or criminal activities). Since people generally have no detailed information about the determinants of the economic successes or failures of others, a perception of equal opportunity is critical for developing a belief that people deserve what they receive and receive what they deserve. Some studies have already shown how individuals’ redistribution preferences are explained by this variation in beliefs about effort versus luck when it comes to others’ economic success.<sup>13</sup> Hence, whether

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<sup>12</sup> Piketty (1995), Ravallion and Lokshin (2000), Benabou and Ok (2001), Corneo and Gruner (2002), and Alesina and La Ferrara (2005).

<sup>13</sup> Alesina and Angeletos (2005), Alesina and La Ferrara (2005), and Benabou and Tirole (2006).

individuals receive direct benefits of the provision of public goods and services by the government is not the only issue that matters but also the perception of a level playing field for both winners and losers. Note that the existence of unequal opportunities could engender a negative view even when those in groups with disadvantageous opportunities achieve higher income. The reason is that people do not have full information on how individuals from disadvantaged groups obtain higher incomes. Some may attribute this individual's success to effort, but others may infer the success as a result of luck or unworthy activities, especially in societies where corruption and patronage are prevalent.

To this point I have argued that the perception of equal opportunity, particularly the educational opportunity shaped by government distribution of education resources, reduces resentment toward income inequality. The cross-country evidence presented in Figure 1 and the subsequent regression analysis in Online Appendix Tables A1 and A2, while useful and similar to other studies in terms of empirical strategy, is less satisfying when making a causal inference. The main concern is that some unobserved common factors may influence both the perception of equal opportunity and attitudes toward inequality, generating a spurious correlation. For example, the perception of equal opportunity is likely correlated with the opportunity an individual receives as well as his or her wealth and family background, which also strongly affect an individual's attitudes toward inequality. Furthermore, because the definition of equal opportunity is very general in the survey, it could invoke different dimensions of opportunity among different respondents.

To address these limitations, I employ two different empirical strategies and draw evidence from multiple sources. Empirical evidence from each of these strategies complements the other, and supports the main argument that perceiving equal educational opportunity reduces resentment toward income inequality.

## **2 Equal Opportunity and Income Inequality: Evidence from Survey Experiments**

China is a good testing ground for studying the relationship between unequal educational opportunity and attitudes toward income inequality. Not only do education resources vary significantly across localities, but they are also



closely tied to citizens' household registration status, which limits equal access to education resources through migration. Furthermore, inequality in educational opportunity is a salient issue in Chinese society. Press coverage of this topic has increased significantly since 2005. The total number of newspaper articles mentioning "equalizing educational opportunity" rose 224% from 2004 to 2005, and an additional 90% in 2006 and 20% in 2007.<sup>14</sup> Although the total number of articles fell in 2008 and 2009, the level of newspaper coverage in 2009 still showed a 270% increase over the 2004 level.

To invoke a consistent conception of educational opportunity across the respondents in the survey experiment, I focus on opportunity for college admission for several reasons. First, the opportunity to attend college is often considered as the most important path to upward mobility in Chinese society. Not only does a college degree generally yield a better return in the labor market, but it also relaxes the migration restriction for some college graduates resulting from the household registration system (*hukou*), especially for those with rural household registration status.

Second, in China the educational opportunities for college admission depend largely on the quality of local education resources.<sup>15</sup> The logic is the following. In most cases college admission in China is solely determined by students' scores on the national college entrance exam.<sup>16</sup> Although this college admission criterion appears to be fair and objective for all students across China, it implicitly favors students in areas with better educational resources (particularly better high schools) because students on average score higher on the standardized national college entrance exam in these localities. Thus, students in areas with better educational resources receive greater educational opportunities to college. To gauge the degree of local educational opportunity across localities, citizens often consider overall local college admission rates the yardstick because college admission rates are the most observable and objective outcomes for local education quality, as revealed in my field interviews. This observation is consistent with other researchers who have found a close relationship between the college admission rate and the quality of local schools in China, especially elite public

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<sup>14</sup> The news articles were counted by searching the *China Core Newspapers Full-text Database* (<http://china.eastview.com/kns50/Navigator.aspx?ID=CCND>).

<sup>15</sup> Yang (2003) and Lü (2011).

<sup>16</sup> The exceptions occur only for those applying to specialized arts and music colleges and student athletes.

schools.<sup>17</sup> In addition, some migrant workers in China are willing to pay a high premium to have their children educated in the cities instead of their rural hometowns precisely because urban schools offer better educational opportunities for their children (Chen and Liang, 2007).

Third, every university can have different quotas for accepting students from different provinces and provincial municipalities,<sup>18</sup> resulting in different admission score criteria. Hence, areas granted higher admission quotas have a higher percentage of students gaining college admission than other areas. In other words, the same individual could have very different opportunities for college admission by virtue of where he or she lives. Unequal educational opportunity among individuals is then shaped significantly by spatial disparity in education resources.

In the remainder of this section, I first describe a survey experiment that evaluates whether the belief in the existence of equal educational opportunity through college admission rate affects resentment toward income inequality. I then show in a second survey experiment that the indicator of educational opportunity in the first experiment, college admission rates, shifts respondents' beliefs about equal educational opportunity.

### 2.1 Experiment 1

The first survey experiment was carried out in China during the summer of 2009.<sup>19</sup> The survey contains a national sample of respondents drawn from a number of major cities, county-level cities, and rural areas across China, and consists of 3,266 observations.<sup>20</sup> The experimental design is as follows: I randomly assigned respondents to one of three groups in each survey location.<sup>21</sup> Each group received a survey question that primed the respondents about a certain degree of unequal educational opportunity in two hypothetical districts. I then elicited respondents' views on a constant level of income

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<sup>17</sup> Yuan (1999, 2005) and Liang, Lee *et al.* (2012).

<sup>18</sup> These provincial municipalities are Beijing, Shanghai, Tianjin, and Chongqing.

<sup>19</sup> Data cited are from the Horizon Consultancy Group. It was granted IRB approval from Yale University.

<sup>20</sup> The survey sites include seven major cities (Beijing, Shanghai, Guangzhou, Wuhan, Chengdu, Shenyang, and Xi'an), seven counties, and seven villages in the following provinces: Zhejiang, Fujian, Liaoning, Hebei, Hunan, Sichuan, and Shaanxi.

<sup>21</sup> Table A3 in the Online Appendix shows that respondents share similar characteristics in gender, age, education, and income across different treatment groups. The differences across groups are not statistically significant, indicating the group characteristics are balanced.

inequality in these two hypothetical districts with different college admission rates.<sup>22</sup> The English translation of the survey question is as follows:

*Suppose  $X$  percent of high school graduates can enter colleges in district A, and  $1-X$  percent of high school graduates can be admitted into colleges in district B. The average income of people in district A is twice as much as that of people in district B. Do you think the income difference in these two districts is much too large, somewhat too large, just fine, somewhat too small, or much too small?*

The experimental treatment randomly assigned across respondents is the district level college admission rate,  $X$  and  $1 - X$ , in two hypothetical districts. Three different values for  $X$  are 70, 50, and 30, which indicate degrees of unequal educational opportunity among individuals in these two hypothetical districts. In addition, I hold constant the level of income difference between these two districts in the question. By subjecting respondents to evaluate the same income difference, I elicit their attitudes toward inequality.

The first unequal educational opportunity treatment (Treatment 1) is that district A has a 70% college admission rate and district B has a 30% rate. Because income in district A is twice as much as that in district B, this is a case where the area with greater educational opportunity also has a higher income level. The second unequal educational opportunity treatment (Treatment 2) is that district A has a 30% college admission rate while district B has a 70% rate. Note that district B has a lower income level than district A, and the higher college admission rate in district B is intended to prime a “good” unequal educational opportunity that favors the poorer area. As discussed in the last section, “good” unequal educational opportunity may still invoke resentment toward inequality because respondents attribute the

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<sup>22</sup> An alternative design of the survey experiment question could emphasize individual-level differences in opportunity instead of unequal opportunities between two districts. However, pre-tests suggested that the framing of inter-personal differences in educational opportunity prompted respondents to have different assumptions about the efforts and abilities of the individuals in the question. I decided on the above framing in order to convey that the inequality of opportunity is exogenous to individuals’ abilities and efforts and beyond their control. Furthermore, interviews conducted after the pre-test also assured me that respondents consider the disparity in the college admission rate as exemplifying the unequal educational opportunities in two districts.

success to unworthy activities such as corruption and luck. In the equal educational opportunity treatment, both districts have 50% college admission rates (Treatment 3).

## 2.2 Experiment 1 — Results

Table 1 presents the results of the experiment. *Resentment toward Inequality 1* is a dichotomous variable, coded as 1 for responses of “much too large” and “somewhat too large” to the income difference and 0 otherwise. *Resentment toward Inequality 2* is an ordered response on a 5-point scale, where “much too large” is coded as 5, “somewhat too large” as 4, “just fine” as 3, “somewhat too small” as 2, and “much too small” as 1. Hence, a higher number indicates a more negative view of income inequality.

The results reveal several interesting findings. First, Chinese respondents generally dislike income inequality because nearly 70% of them consider the income difference to be either “much too large” or “somewhat too large.” This occurs in part because the framed level of income inequality in the survey question is very large (i.e., the average income of one district is twice as much as the other’s). Second, consistent with the theoretical conjecture, those respondents who received the equal opportunity treatment (i.e., the treatment in which  $X = 50\%$ ) were least likely of the three groups of respondents to have a negative view of income inequality: only 66% of the respondents in Group 3, which received the equal opportunity treatment, had a negative view of inequality, but 70% and 75% of the respondents in Treatment Groups 1 and 2, who received one of two unequal opportunity treatments respectively, had a negative view.

Third, respondents still have resentment toward income inequality when the unequal educational opportunity gives advantage to the poorer district over the richer district (Treatment 2). This is consistent with the conjecture that even “good” unequal opportunity engenders resentment toward inequality. Specifically in the Chinese context, respondents may consider the negative correlation between educational opportunity and income to the result of unworthy activities, such as corruption and family connections. More generally, Chinese culture places very high value upon education and people expect it to render social and economic rewards to those with high educational attainments, as observed by Kipnis (2011) and others. This meritocracy approach engenders resentment toward a negative relationship between education achievement and individual success.

**Table 1.** Unequal educational opportunity and attitudes toward inequality — survey experiment evidence.

Group treatment	Mean estimates by treatment category		
	Unequal edu. opportunity		Equal edu. opportunity
	(1) A: 70%–B: 30%	(2) A: 30%–B: 70%	(3) A: 50%–B: 50%
<i>Resentment toward Inequality 1</i>	0.704 (0.457)	0.755 (0.430)	0.660 (0.473)
<i>Resentment toward Inequality 2</i>	3.865 (0.881)	3.904 (0.863)	3.788 (0.816)
Observations	1055	1056	1078
Between group difference	Difference estimates		
	(1)–(2)	(2)–(3)	(1)–(3)
<i>Resentment toward Inequality 1</i>	–0.050 (0.019)	0.094 (0.020)	0.044 (0.020)
<i>Resentment toward Inequality 2</i>	–0.039 (0.038)	0.116 (0.036)	0.077 (0.037)

*Note:* The *t*-tests of the mean difference estimates are under the assumption of unequal variances between two samples. Standard deviations are reported in the parentheses in the first panel, and standard errors are reported in the parentheses in the second panel.

The second panel of Table 1 presents *t*-test results of the differences among the treatment groups. The mean difference of *Resentment toward Inequality 1* between unequal opportunity treatments and the equal opportunity treatment is 9 percentage points and 4 percentage points, respectively, and statistically significant at the 0.05 level. Similar results are also found when comparing the mean difference of *Resentment toward Inequality 2*. Hence, perceiving unequal educational opportunity increases resentment toward income inequality.<sup>23</sup>

I subject these results to various robustness checks. First, I use a nonparametric two-sample Wilcoxon test, which is based on the median instead of the mean, to evaluate the difference among treatment groups. The results

<sup>23</sup> Since the main theoretical argument concerns the difference between equal opportunities and unequal opportunities, the difference between two unequal opportunity treatments (Treatments 1 and 2) is beyond the scope of this paper.

suggest a pattern similar to the one emerging from the parametric tests. I also estimate an ordered probit model<sup>24</sup> by controlling for various personal characteristics.<sup>25</sup> The model estimation is specified as follows:

$$\begin{aligned} \text{Resentment toward Inequality } 2_i = & \beta_1 \text{Treatment } 1_i \\ & + \beta_2 \text{Treatment } 2_i + \delta Z_i + \mu_i \quad (1) \end{aligned}$$

The dependent variable is *Resentment toward Inequality 2*, a 5-point scale measure. *Treatment 1* is a dichotomous measure equal to 1 if the respondent received one unequal educational opportunity treatment (*A: 70%–B: 30%*), and 0 otherwise. *Treatment 2* is a dichotomous measure equal to 1 if the respondent received the other unequal educational opportunity treatment (*A: 30%–B: 70%*) and 0 otherwise. The omitted category is the equal educational opportunity treatment, and the coefficient estimates for *Treatment 1* and *Treatment 2* should be interpreted as the effect of being exposed to the unequal opportunity treatments compared to the equal opportunity treatment. The results, reported in Table 2, are consistent with the finding

**Table 2.** Regression analysis for survey experiment.

Dependent variable: resentment toward income inequality			
Independent variable	(1)	(2)	(3)
<i>Treatment 1 (A: 70%–B: 30%)</i>	0.110 (0.045)	0.115 (0.044)	0.113 (0.050)
<i>Treatment 2 (A: 30%–B: 70%)</i>	0.157 (0.055)	0.167 (0.055)	0.169 (0.059)
Demographic controls	No	Yes	Yes
Survey location fixed effects	No	No	Yes
Observations	3189	3163	3163

*Note:* These are ordered probit results. Clustered standard errors at the survey location are reported in the parentheses. Demographic controls include gender, age, education, and logged household income.

<sup>24</sup> I also use OLS and probit estimations, and the results are consistent with those reported in Table 2.

<sup>25</sup> I include characteristics such as gender, age, education, and logged household income.

above: respondents receiving the unequal educational opportunity treatment exhibit a greater resentment toward income inequality. The coefficient estimates for *Treatment 1* and *Treatment 2* are largely the same magnitude in models with different types of controls.

One could argue that the results above are largely due to a priming effect because attitudes toward income inequality and attitudes toward unequal educational opportunity are often correlated. In other words, the survey question invokes general inequity aversion attitudes instead of specific unequal opportunity perception as the treatment. Although this is a valid concern about the survey experiment design, the purpose of this paper is to identify through experimental data whether the perception of one type of inequality — unequal educational opportunity — could influence attitudes toward inequality, thus eliminating the notion that unobserved factors affect both beliefs of unequal opportunities and resentment toward inequality.

### 2.3 Experiment 2

A remaining concern is whether the difference in district college admission rates in the above experiment serves as a good proxy to manipulate respondents' belief about equal educational opportunity. To address this concern, I carried out a follow-up survey experiment in 2012 to evaluate whether the variation in college admission rates alters beliefs about equal educational opportunity in China.

In this second experiment, I closely followed the experimental protocol in the first experiment,<sup>26</sup> randomly assigning respondents into one of two groups in each survey location. Each group received a survey question that primed the respondents about different college admission rates in two hypothetical districts. I then elicited respondents' views on equal educational opportunity in these two hypothetical districts with different college admission rates. The English translation of the survey question is as follows:

*Education resources could affect the quality of local education. Suppose X percent of high school graduates can enter colleges in district A, and Y percent of high school graduates can be admitted into colleges in district B. Do you agree with the following*

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<sup>26</sup> Data cited are from the Horizon Consultancy Group. It was granted IRB approval from Texas A&M University.

*statement: The higher education opportunity is the same for individuals in district A and district B . . . Strongly Agree, Somewhat Agree, Somewhat Disagree, Strongly Disagree.*

In the first treatment group,  $X$  is 70% and  $Y$  is 30%, thus the respondents are primed by the unequal educational opportunity treatment. In the second treatment group,  $X$  is 32% and  $Y$  is 30%, thus the respondents are primed by the equal educational opportunity treatment.<sup>27</sup> In the analysis below, *Belief of Equal Edu. Opp. 1* is a dichotomous variable coded as 1 for responses of “strongly agree” and “somewhat agree” to the belief about equal college opportunity for these two hypothetical districts and 0 otherwise. *Belief of Equal Edu. Opp. 2* is an ordered response in a 4-point scale, where “strongly agree” is coded as 4, “somewhat agree” is coded as 3, “somewhat disagree” is coded as 2, “strongly disagree” is coded as 1. Hence, a higher number indicates a stronger belief about equal educational opportunity.

#### 2.4 Experiment 2 — Results

Table 3 shows supporting evidence that respondents receiving the treatment with unequal college admission rates have a lower perception of equality of college opportunity. Overall, 56.7% of the respondents who received the treatment with unequal college admission rate ( $X$  is 70% and  $Y$  is 30%) perceived equal educational opportunity, while 75.8% of the respondents who received the relatively equal college admission rate treatment ( $X$  is 32% and  $Y$  is 30%) held such a belief. The difference is 19.2 percentage points (standard error of 0.02) and it is statistically significant. Note that nearly half of the respondents who received the treatment with unequal college admission rate still have a belief of equal educational opportunity. Thus, the 70% versus 30% difference in college admission rate may only be a moderate level of unequal educational opportunity in the Chinese context. These results offer some explanation to the moderate marginal effect of the unequal educational opportunity treatment in the first experiment.

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<sup>27</sup> Unlike the first survey experiment, I did not have a third treatment group where  $X = 30%$  and  $Y = 70%$ . This treatment group is essentially the same as the first treatment group  $X = 70%$  and  $Y = 30%$  for the second survey experiment.



**Table 3.** Belief of equal educational opportunity — survey experiment evidence.

Group treatment	Mean estimates by treatment category		
	College admission rate treatment		
	(1) A: 70%–B: 30%	(2) A: 32%–B: 30%	(3) Mean difference estimates
<i>Belief of Equal Edu. Opp. 1</i>	0.567 (0.50)	0.758 (0.43)	–0.192 (0.02)
<i>Belief of Equal Edu. Opp. 2</i>	2.489 (0.75)	2.802 (0.62)	–0.314 (0.04)
Observations	759	744	1503

*Note:* The *t*-tests of the mean difference estimates are under the assumption of unequal variances between two samples. Standard deviations are reported in the parentheses in the first two columns, and standard errors are reported in the parentheses in the third column.

I then subject the experimental results to regression analysis by controlling for personal characteristics as well as local conditions. Table A4 in the Online Appendix shows that the estimates and standard errors of the treatment with unequal college admission rates are very stable across different model specifications regardless of the degree of control variables in the models. Hence, the second set of survey experiment offers supporting evidence that the variation in college admission rates induces Chinese respondents to have different beliefs about unequal educational opportunities.

Overall, this section provides consistent evidence that beliefs about unequal educational opportunity increase resentment toward income inequality, and this belief can be shifted by the variation in college admission rates in China. It is still an open question whether the effects identified in the survey experiment persist in the case of real policy change. The next section addresses these concerns by providing additional complementary evidence

on the effect of equal educational opportunity on attitudes toward income inequality.

### 3 Evaluating the Effects of Objective Equal Opportunity

A recent study points out that empirical findings in some survey experiments are often weakened once actual policy changes take place (Barabas and Jerit, 2010). In addition, perceptions of unequal opportunity are a *subjective* measure. We still do not know whether an *objective* change of equal opportunity affects attitudes toward income inequality. To assess the external validity of evidence from the survey experiment, this section evaluates the impact of a policy change affecting college admission opportunity on attitudes toward inequality. Specifically, I examine the dramatic expansion of the college admission quota across China since 1999. Using a quasi-regression discontinuity design to analyze the data from the 2004 Chinese national survey, I show that the cohort exposed to the college admission expansion treatment has a lower level of resentment toward income inequality than the earlier cohort not exposed to the treatment. I do not find this discontinuity in attitudes toward inequality in sets of cohorts where both were exposed, or neither was exposed; furthermore, the treatment effect is robust when I use matching analysis as an alternative identification strategy.

#### 3.1 *The College Admission Quota Expansion in China*

The policy of interest is a massive expansion of higher education admission quota that began in 1999, which substantially changed the landscape of college opportunity in China. The annual national college admission quota for all universities and colleges, set by the Ministry of Education, was one million in 1997 and 1.08 million in 1998. It swelled to 1.60 million in 1999 (an increase of 48% from 1998), and to 2.21 million in 2000 (an increase of 38% from 1999). The admission quota has increased steadily since then, stabilizing at between 6 and 7 million since 2009.

The expansion of the college admission quota offers a unique opportunity to evaluate the effect of objective equal educational opportunity on attitudes toward income inequality for two main reasons. First, the policy reduced the degree of unequal college opportunity in China to some extent, especially in the first few years of the expansion, largely because students from areas with fewer educational resources had a better chance of attending college as a

result.<sup>28</sup> Gou (2006) points out that the number of rural applicants grew at an annual rate of 15.36% between 1996 and 2005 and that the rate for urban applicants was 9.91% during the same period. In addition, the percentage of rural applicants admitted to colleges increased from 46.7% in 1989 to 53% in 2005 while the share of urban applicants admitted fell from 52.5% in 1989 to 47% in 2005. One could argue that such a considerable expansion of college admission quota depreciates the value of a college degree, hence undermining its return. Although this argument has some merit, the depreciation effect cannot yet be reflected in the data. The Chinese national survey was conducted in 2004, and only in 2003 did the first wave of college graduates benefiting from the quota expansion enter the labor market.

Second, the policy on college admission quota expansion is exogenous, allowing me to avoid biases from selection for treatment in the estimation. To start, the total national college admission quota was set by the Ministry of Education in China. The policy did not include preferential treatment for any groups of the population nor for local conditions or incentives from universities and colleges. In addition, the main driver for the expansion of higher education was the interest of the Chinese government in economic growth through enhancing labor quality and promoting domestic consumption at the time;<sup>29</sup> the intent of the policy was not explicitly to improve equal opportunity in order to prevent a popular backlash against income inequality.

### 3.2 Data and Identification Strategy

Ideally, one could use surveys conducted before and after the college admission quota expansion, and compare the difference in attitudes toward

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<sup>28</sup> Recently some studies have offered preliminary results indicating that the policy on college admission quota expansion, while providing more opportunities to students from rural areas and less well-off families, may offer more benefits to students from urban areas and more well-off families because these students tend to enter better universities or enroll in more popular majors (Ding, 2006; Liu, 2006; Liu *et al.*, 2009). However, it is still undeniable that the initial shock of college admission expansion has reduced unequal educational opportunity greatly for the first couple of cohorts that took the college entrance exam right after the 1999 expansion.

<sup>29</sup> The top policymakers in China at the time worried about lackluster economic growth shadowed by the last Asian financial crisis. Among several policies to promote domestic consumption and economic growth, the college admission quota is one of the policy instruments the central government used because it encouraged infrastructure spending and citizen consumption in education and related fields.

inequality; however, such survey data do not exist prior to 1999. Alternatively, I compare the difference in attitudes of two cohorts of respondents taking a 2004 Chinese national survey, in which one cohort could potentially benefit from the college admission quota expansion but the other cohort could not.

The identification strategy relies on the fact that these two cohorts, although similar in group characteristics, had significantly different personal experiences in terms of college admission opportunities. I contend that the belief of fewer higher education opportunities by the cohort who did not benefit from this expansion policy is the key mechanism by which the college admission quota expansion increases resentment toward inequality for this cohort. Specifically, I hypothesize that the negative sentiment toward income inequality is particularly strong for the cohort who just missed the expansion mainly because these respondents realized they could have significantly benefited from the college admission quota expansion if they had been a year or two younger. Essentially, the younger cohort, by luck of the draw, benefited from greater college opportunities through the higher admission quotas in 1999, but members of the older cohort did not benefit because of their age.

To evaluate the impact of the college admission quota expansion on attitudes toward inequality, I make use of a 2004 Chinese national survey, which contains 3,267 respondents and covers 59 county-level jurisdictions across 23 provinces. This is one of the few contemporary public opinion surveys that directly investigate Chinese citizens' public opinions on inequality using a representative national sample.<sup>30</sup> More importantly, this survey uses the spatial sampling technique and provides a more representative national sample than many other surveys in China.<sup>31</sup> Whyte (2010) offers an extensive discussion of the design and the main results of the 2004 Chinese national survey. The dependent variable measuring attitudes toward income inequality is as follows:

*What do you think about the differences in incomes of people in China? Are the differences much too large, somewhat too large, just fine, somewhat too small, or much too small?*

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<sup>30</sup> The survey was carried out by the Research Center for Contemporary China at Peking University, and the response rate was 75.21%. The principal investigator was Marty Whyte at Harvard University.

<sup>31</sup> Landry and Shen (2005) suggest that the GIS sampling technique helps to overcome the limitation of many previous national surveys in China, which often did not include internal migrants in the sample.

The responses to this question are coded in a 5-point scale, where “much too large” is coded as 5, “somewhat too large” as 4, “just fine” as 3, “somewhat too small” as 2, and “much too small” as 1. This wording is identical to that used in the International Social Justice Project (ISJP) survey data analyzed in Figure 1.<sup>32</sup>

I use a quasi-regression discontinuity design to evaluate the effect of the college admission quota expansion on the responses to the survey question above by different cohorts. I conceptualize the year of college admission quota expansion as a threshold that separates the cohorts who potentially benefited from this policy (the treatment group) from the cohorts who did not (the control group) in the 2004 Chinese national survey. Because Chinese students usually take the annual national college entrance exam around age 18, the members of cohorts whose age was 18 or below in 1999 were “treated” in the sense that their college admission opportunities were rendered more equal by the college admission quota expansion, regardless of their success or failure in gaining college admission. Cohort members aged 19 and above in 1999 served as the control group because they were not exposed to the admission quota expansion.

I analyze a subset of the respondents of the 2004 survey by focusing on individuals who were 17- to 20-year-olds in 1999.<sup>33</sup> Specifically, I consider the cohort of 17- to 18-year-olds in 1999 as the treatment group and the cohort of 19- to 20-year-olds in 1999 as the control group.<sup>34</sup> Generally speaking, one has no reason to suspect a substantial difference in personal characteristics in these two cohorts in the society.

This way of identifying the two cohorts, however, raises two concerns. First, does the expansion of college admission quota serve as a treatment for objective equal opportunity? If the policy benefits some groups of students, such as those from the wealthy families or urban areas, then it is not a treatment of equal opportunity for all. Although this concern is valid, the merit of regression discontinuity design is its focus on the cohorts whose college admission ages are concomitant with the first two years before or after the expansion. This timing aspect means that the survey respondents have not

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<sup>32</sup> Similar to the data used for Figure 1, I used Amelia II, a multiple-imputation technique to overcome the estimation bias resulting from missing data for the analysis below. All analyses below are based on 10 multiple-imputed datasets.

<sup>33</sup> In China, children usually go to school at age 6 or 7; thus, they take the college entrance exam when they are approximately 17 or 18.

<sup>34</sup> I also consider a different bandwidth of  $\pm 3$  year in the following analysis.

had a chance to adjust their behaviors in response to the expansion. Consider the case of Liang *et al.* (2012) who studied the profiles of college freshmen at Beijing University and Suzhou University between 1950 and 2003. Their data did not indicate a significant decrease in the share of enrolled students from rural areas, nor of students with lesser family background immediately after 1999.

The second concern is that members of two cohorts could differ in their attitudes for other reasons. At the time of the survey, the older cohort members are likely to be more educated, to have experienced job market competition, and to earn higher incomes. These factors could influence these slightly older respondents' views on inequality. However, Table A5 in the Online Appendix shows no statistical differences between these two cohorts in most group characteristics in the 2004 survey. The older cohort was not different from the younger one in educational attainment, income, employment status, or rural household registration status to any degree that could lead to a systematic difference in cohort members' views on income inequality. Thus, we are confident that the two cohorts are very similar in personal characteristics with the exception that one cohort was exposed to the treatment involving college admission expansion. In the robustness checks section, I use propensity score matching analysis as an alternative estimation strategy by balancing the group characteristics among these personal attributes, and it yields consistent results with those of the quasi-regression discontinuity design.

An important underlying assumption in my analysis is that respondents aged 19 or above in 1999 did not take or re-take the college entrance exam in 1999, and that respondents aged 18 or below in 1999 had not yet taken the exam. Granted, those who were 19 in 1999 could re-take the exam in 1999 or defer taking the exam in 1998 if they knew about the expansion of college admission quota, and individuals from rural areas could be slightly older when taking the exam. In addition, some students may be older than others when taking the exam. Theoretically, if such "crossover" occurs, it should weaken my results. That is, if students strategically chose to take the exam in 1999 instead of 1998, I should not have found any effect for the college admission expansion treatment. To empirically address these "crossover" concerns, I use "19-year-olds in 1999" as the alternative threshold in the analysis below and explore different bandwidths around that threshold.

### 3.3 Empirical Results

I first report the descriptive statistics of different cohorts in Table 4. *Resentment toward Inequality 1* is a dichotomous variable where any negative sentiment toward inequality is coded as 1, and 0 otherwise. *Resentment toward Inequality 2* is an ordered response in the 5-point scale, and a higher

**Table 4.** The effects of expansion of college admission in China in 1999.

	18-year-olds in 1999 as the Threshold		
	Treatment group	Control group	Between group mean difference
	17~18-years-old in 1999	19~20-years-old in 1999	
<i>Resentment toward Inequality 1</i>	0.764 (0.451)	0.894 (0.322)	-0.130 (0.053)
<i>Resentment toward Inequality 2</i>	4.079 (1.066)	4.324 (0.765)	-0.245 (0.126)
Observations	104	120	
	19-year-olds in 1999 as the Threshold		
	Treatment group	Control group	Between group mean difference
	18~19-years-old in 1999	20~21-years-old in 1999	
<i>Resentment toward Inequality 1</i>	0.806 (0.411)	0.910 (0.305)	-0.105 (0.047)
<i>Resentment toward Inequality 2</i>	4.121 (0.984)	4.401 (0.729)	-0.279 (0.113)
Observations	108	137	

*Note:* The results are based on 10 multiple-imputed datasets. The *t*-tests of the mean difference estimates are under the assumption of unequal variances between two samples. Standard deviations are reported in the parentheses in the first two columns, and standard errors are reported in the parentheses in the third column.

number suggests a more negative attitude toward inequality. The hypothesis is that the treatment group, the one exposed to the expansion of the college admission quota, is *less* likely to have a negative view of income inequality than the control group, which was not exposed to the expansion.

The first panel shows the results of a subset of the respondents who were between 17 and 20 years of age in 1999, using 18-year-olds in 1999 as the threshold to separate the treatment and control groups. As shown in the first panel, the result of *Resentment toward Inequality 1* shows that on average 76.4% of the respondents in the treatment group consider current inequality to be somewhat large or much too large, while 89.4% of those in the control group hold that view. The difference in mean responses is 13.0 percentage points lower and is statistically significant. The second panel shows the results of investigation of respondents who were between 18 and 21 years of age in 1999, using 19-year-olds in 1999 as the threshold to separate the treatment and control groups. Again, the results are consistent with those reported in the first panel. The difference between the treatment and control groups in mean responses is 10.5 percentage points lower and is statistically significant. One interpretation of this difference is that those who missed out on the expansion of the college admission quota perceived unequal college opportunity and therefore showed a strong negative sentiment toward income inequality. Thus, I find evidence that unequal educational opportunity increases resentment toward income inequality.

Next, I conduct several regression analyses to take personal characteristics into account. The model specification is as follows:

$$\begin{aligned} \text{Resentment toward Inequality } 2_i \\ = \beta_1 \text{College\_admission\_expn}_i + \lambda_1 Z_i + \mu_i \end{aligned} \quad (2)$$

*Resentment toward Inequality 2* is the 5-point scale variable measuring attitudes toward inequality, and *College\_admission\_expn<sub>i</sub>* is a dichotomous variable coded as 1 for the treatment group and 0 for the control group.  $Z_i$  is a vector of variables capturing personal characteristics of the respondents.  $\mu_i$  is the error term. Table 5 reports the ordered probit results. When using 18 years of age in 1999 as the threshold, the estimates of *College Admission Quota Expansion* are statistically significant, regardless of the degree of control variables (Columns 1 and 2). I then widen the bandwidth by considering three years below and above the 1999 threshold of 18 years of age and re-analyze the data. Columns 3 and 4 show that the coefficient



**Table 5.** Ordered probit analysis of college admission quota expansion in China.

Independent variable	Dependent variable: resentment toward income inequality													
	18-years-olds as Threshold						19-years-olds as Threshold							
	+/-2	(1)	(2)	(3)	(4)	(5)	Full Sample	(6)	(7)	(8)	(9)	(10)	(11)	Full Sample
<i>College Admission Quota Expansion Male</i>	-0.255 (0.154)	-0.295 (0.160)	-0.361 (0.126)	-0.369 (0.136)	-0.139 (0.067)	-0.165 (0.084)	-0.351 (0.150)	-0.407 (0.162)	-0.216 (0.127)	-0.211 (0.142)	-0.113 (0.064)	-0.131 (0.082)		
<i>Edu. Attainment</i>	0.049 (0.168)	0.052 (0.099)	0.099 (0.133)	0.099 (0.078)	0.012 (0.043)	0.049 (0.021)	0.159 (0.168)	0.103 (0.083)	0.138 (0.136)	0.103 (0.078)	0.048 (0.021)	0.012 (0.043)		
<i>Married</i>	0.111 (0.186)	0.111 (0.156)	0.053 (0.156)	0.053 (0.156)	-0.019 (0.063)	0.008 (0.187)	0.008 (0.154)	0.008 (0.154)	0.008 (0.154)	0.008 (0.154)	0.008 (0.154)	-0.010 (0.066)		
<i>Party Membership</i>	0.981 (0.615)	0.981 (0.615)	0.857 (0.465)	0.857 (0.465)	0.134 (0.084)	0.495 (0.659)	0.706 (0.466)	0.706 (0.466)	0.706 (0.466)	0.706 (0.466)	0.133 (0.084)	0.133 (0.084)		
<i>Logged Household Income</i>	-0.026 (0.101)	-0.026 (0.101)	-0.060 (0.076)	-0.060 (0.076)	-0.074 (0.025)	-0.074 (0.025)	-0.064 (0.093)	-0.064 (0.093)	-0.064 (0.093)	-0.064 (0.093)	-0.064 (0.093)	-0.074 (0.025)		
<i>Hukou Status (Rural=1)</i>	0.209 (0.218)	0.209 (0.218)	0.113 (0.176)	0.113 (0.176)	-0.213 (0.057)	0.399 (0.216)	0.112 (0.180)	0.112 (0.180)	0.112 (0.180)	0.112 (0.180)	0.112 (0.180)	-0.215 (0.057)		
<i>Have Job</i>	0.289 (0.211)	0.289 (0.211)	0.171 (0.162)	0.171 (0.162)	0.032 (0.050)	0.154 (0.211)	0.154 (0.211)	0.154 (0.211)	0.154 (0.211)	0.154 (0.211)	0.154 (0.211)	0.035 (0.050)		
Observations	224	224	342	342	3267	3267	245	245	348	348	3267	3267		

*Note:* These are ordered probit results. The analyses are based on 10 multiple-imputed datasets. Robust standard errors are reported in the parentheses. I omitted reporting the constant in this table.

estimates of *College Admission Quota Expansion* are similar in magnitude to Columns 1 and 2, and are statistically significant. In Columns 7 to 12, I re-analyze the data using 19 years of age in 1999 as the threshold, and the results are largely consistent with the analysis using age 18 as the threshold. Overall, the above analysis shows that a shift in government policy on college admission quotas in 1999 helped reduce resentment toward income inequality among respondents in the 2004 Chinese national survey.

The analysis may be challenged on the grounds that the numbers of observations is relatively small whether I use the bandwidth of  $+/-2$  years or the bandwidth of  $+/-3$  years. This is a limitation of the data. To address this concern, I expand the analysis to the entire sample, and find consistent evidence (Columns 5–6 and 11–12). Note that the magnitude of the estimate is small in the full sample analysis largely because the RD design identifies only a local average treatment effect (LATE). However, the standard errors are smaller in the full sample analysis because of the bigger sample size.

### 3.4 Robustness Checks

To evaluate the robustness of the quasi-RD results above, I conduct two sets of additional analysis. The main concern is that the difference we observe above is the result of cohort characteristics instead of the college admission quota expansion treatment. I address this concern through a falsification test and propensity score matching analysis.

First, I conduct a falsification test by considering thresholds of 16-, 17-, 20-, and 21-years-old in 1999. When using thresholds of 16 or 17, both cohorts are “treated” by the expansion of the college admission quota. When using thresholds of 20 or 21, both cohorts are not “treated” by the expansion of the college admission quota. I find that this between-cohort difference in attitudes toward inequality does not exist among other cohorts in the 2004 Chinese national survey. As shown in Table 6, the coefficient estimates for *College Admission Quota Expansion* are either statistically insignificant (Columns 1–12) or have the wrong signs<sup>35</sup> (Columns 9–16). Although the college admission quota continued to expand after 1999, we do not observe

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<sup>35</sup> The estimates are positive and statistically significant for the analysis of 21-year-olds (Columns 13–16). One potential interpretation of this result is that starting in 1994, the Chinese government changed the employment policy for college graduates who entered colleges in that year. Prior to the policy change, employment was guaranteed by the government, with universities matching students with different employers (mostly public employments and state-owned enterprises). Since 1998, the first cohort of college graduate who entered college had to find

a statistically significant effect on attitudes toward inequality in the cohort comparisons with age 16 in 1999 or age 17 in 1999 as the threshold, despite the right signs in the estimates in Table 6. This phenomenon is largely the result of individual expectation of a continued expansion of the college admission quota after 1999, and many people adjust their behaviors accordingly. Hence, the expansion of the college admission quota is no longer an exogenous treatment. In sum, these additional analyses offer evidence that the observed cohort difference in resentment toward income inequality reported in Table 4 is driven considerably by the expansion of the college admission quota.

Second, I further evaluate the potential estimation bias resulting from lack of balance in two observable characteristics (party membership and marital status) in respondents of the two cohorts presented in Table A5. I use radius propensity score matching, which selects only observations around the threshold with matching group characteristics in gender, educational attainment, marital status, party membership, household income, household registration status (*Hukou*), and employment status. The propensity matching only selects observations for control and treatment groups after achieving balance in these covariates of group characteristics, and I use radius matching to avoid bad matches where the closet neighbor is far away in the propensity score. This method helps eliminate bias caused by group characteristics. The matching analysis results, reported in Table 7, provide consistent evidence for the main results. The point estimates in the matching analysis in three out of four models are similar in magnitudes to the quasi-RD results reported in Table 5, and they are statistically significant. The estimate of the last model, while not statistically significant, still has the correct sign.

Finally, a concern remains that the quasi-RD result is driven by an alternative mechanism — educational attainment — because the younger cohort could have college degrees as a result of the college admission expansion. I argue that this concern does not invalidate the main results. First, as shown in Table A5 in the appendix, no statistically significant difference between the treatment and control groups exists in educational attainment. Second, I include educational attainment as a control variable in some of models

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employment by themselves in the labor market. The respondents in the treatment group for the 21-year-old cutoff point were actually in the job market and looking for jobs when the respondents in control group already had jobs. Thus, the treatment group had higher resentment toward inequality in part because of the challenges that they faced in the labor market.

**Table 6.** Robustness check (falsification test).

	Dependent variable: resentment toward income inequality															
	16-year-olds as Threshold		17-year-olds as Threshold		17-year-olds as Threshold		20-year-olds as Threshold		20-year-olds as Threshold		21-year-olds as Threshold		21-year-olds as Threshold		21-year-olds as Threshold	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
<i>College Admission</i>	-0.083	-0.055	-0.123	-0.104	-0.100	-0.142	-0.180	-0.149	0.054	0.060	0.011	0.038	0.335	0.360	0.204	0.262
<i>Quota Expansion</i>	(0.151)	(0.169)	(0.126)	(0.145)	(0.159)	(0.182)	(0.126)	(0.150)	(0.150)	(0.162)	(0.118)	(0.129)	(0.141)	(0.146)	(0.120)	(0.129)
Demographic	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Controls																
Observations	217	217	319	319	205	205	337	337	244	244	379	379	271	271	368	368

*Note:* These are ordered probit results. The analyses are based on 10 multiple-imputed datasets. Robust standard errors are reported in the parentheses.

**Table 7.** Matching analysis of college admission quota expansion in China.

Independent Variable	Dependent variable: resentment toward income inequality			
	18-year-olds as Threshold		19-year-olds as Threshold	
	+/- 2	+/- 3	+/- 2	+/- 3
	(1)	(2)	(3)	(4)
<i>College Admission</i>	-0.282	-0.335	-0.308	-0.153
<i>Quota Expansion</i>	(0.141)	(0.120)	(0.114)	(0.117)
Observations	212	336	228	345

*Note:* These are matching results using the Radius Matching method. The analyses are based on 10 multiple-imputed datasets. Bootstrap errors are reported in the parentheses.

reported in Table 5, and it does not affect estimates of *College Admission Expansion*. Third, the matching results above provide consistent evidence after balancing the educational attainment as one of the covariates in both the control and treatment groups. Finally, I re-analyze the data by restricting the observations to those who did not attend college to test whether educational attainment is the driving force behind the main results in Table 5. The estimates remain qualitatively consistent with the main results. Across all the models, the coefficient estimates have the expected sign, though two of them are no longer statistically significant due to smaller sample size around the threshold.

#### 4 Conclusion

When a government distributes public goods and services in an effort to promote equality, what are the consequences on attitudes toward inequality? This paper analyzes perceptions regarding equal educational opportunity, and estimates its effect on attitudes toward income inequality. In contemporary China, anger resulting from income inequality is a potential threat to regime stability. The Chinese government has engaged in revamping its efforts to reduce the tax burden of rural residents and has emphasized measures to create more equitable access to education and healthcare across the country since 2000. If these policies do indeed equalize opportunity among

citizens, they could be effective in mitigating a political backlash from rising income inequality.

Using two original survey experiments, I find systematic evidence that perceiving equal educational opportunity reduces resentment toward inequality. In addition, I explore the effect of a substantial expansion of the college admission quota launched in 1999, a policy that affects objective equal opportunity to attend college in Chinese society. Employing a quasi-regression discontinuity analysis of a 2004 Chinese national survey, I find that the members of the cohort that missed out on the expansion of the admission quota show greater resentment of income inequality than the cohort that was exposed to the expansion; however, the long-term political and economic impact of the college admission expansion policy remains an important area of research in the future.

The results here pertain to the larger debates of the form of redistribution and the relationship between redistributive policies and regime stability. They suggest that resentment toward inequality is not necessarily a result of the level of inequality but instead the source of inequality. Hence, the mixed evidence on the effects of income inequality could be understood through the lens of unequal opportunities. For example, perhaps the masses revolt not because of income inequality but because of unequal opportunity that leads to income inequality. Understanding the intended and unintended consequences of tactical redistribution on people's attitudes toward income inequality is therefore critical.

## References

- Acemoglu, D., S. Johnson, J. A. Robinson, and P. Yared. 2008. "Income and Democracy." *American Economic Review* 98(3): 808–842.
- Acemoglu, D. and J. A. Robinson. 2006. *Economic Origins of Dictatorship and Democracy*. Cambridge, New York: Cambridge University Press.
- Alesina, A. and G. M. Angeletos. 2005. "Fairness and Redistribution." *American Economic Review* 95(4): 960–980.
- Alesina, A., E. Glaeser, and B. Sacerdote. 2001. "Why Doesn't the United States have a European-Style Welfare State?" *Brookings Papers on Economic Activity* (2): 187–277.
- Alesina, A. and E. La Ferrara. 2005. "Preferences for Redistribution in the Land of Opportunities." *Journal of Public Economics* 89(5–6): 897–931.
- Alesina, A. F. and P. Giuliano. 2009. "Preferences for Redistribution." *National Bureau of Economic Research Working Paper Series* No. 14825.
- Ansell, B. and D. Samuels. 2010. "Inequality and Democratization: A Contractarian Approach." *Comparative Political Studies* 43(12): 1543–1574.
- Arneson, R. J. 1989. "Equality and Equal Opportunity for Welfare." *Philosophical Studies* 56(1): 77–93.

- Barabas, J. and J. Jerit. 2010. "Are Survey Experiments Externally Valid?" *American Political Science Review* 104(02): 226–242.
- Benabou, R. and E. A. Ok. 2001. "Social Mobility and the Demand for Redistribution: The Poup Hypothesis." *The Quarterly Journal of Economics* 116(2): 447–487.
- Bénabou, R. and J. Tirole. 2006. "Belief in a Just World and Redistributive Politics." *The Quarterly Journal of Economics* 121(2): 699–746.
- Boix, C. 2003. *Democracy and Redistribution, Cambridge Studies in Comparative Politics*. Cambridge, UK; New York: Cambridge University Press.
- Bourguignon, F., F. H. G. Ferreira, and M. Menezes. 2007. "Inequality of Opportunity in Brazil." *Review of Income and Wealth* 53(4): 585–618.
- Breen, R. and J. O. Jonsson. 2005. "Inequality of Opportunity in Comparative Perspective: Recent Research on Educational Attainment and Social Mobility." *Annual Review of Sociology* 31(1): 223–243.
- Bueno de Mesquita, B., A. Smith, R. M. Siverson, and J.D. Morrow. 2003. *The Logic of Political Survival*. Cambridge, MA.: MIT Press.
- Chen, Y. P. and Z. Liang. 2007. "Educational Attainment of Migrant Children: The Forgotten Story of China's Urbanization." In *Education and Reform in China*, E. Hannum and A. Park, (eds.), London and New York: Routledge.
- Chung, J. H., H. Lai, and M. Xia. 2006. "Mounting Challenges to Governance in China: Surveying Collective Protestors, Religious Sects, and Criminal Organizations." *The China Journal* 56: 1–31.
- Cohen, G. A. 1995. *Self-ownership, Freedom, and Equality*. New York: Cambridge University Press.
- Corneo, G. and H. P. Grüner. 2002. "Individual Preferences for Political Redistribution." *Journal of Public Economics* 83(1): 83–107.
- Cramer, B. D. and R. R. Kaufman. 2011. "Views of Economic Inequality in Latin America." *Comparative Political Studies* 44(9): 1206–1237.
- Ding, X. 2006. "Expansion and Equality in Chinese Higher Education." *Economics of Education Research (Beida)* 4(2).
- Dworkin, R. 1981a. "What is Equality? Part 1: Equality of Welfare." *Philosophy and Public Affairs* 10(3): 185–246.
- Dworkin, R. 1981b. "What is Equality? Part 2: Equality of Resources." *Philosophy and Public Affairs* 10(4): 283–345.
- Ferreira, F. H. G. and J. Gignoux. 2011. "The Measurement of Inequality of Opportunity: Theory and an Application to Latin America." *Review of Income and Wealth* 57(4): 622–657.
- Ferreira, F. H. G., M. Vega, J. R. De Barros, R. Paes and J. S. Chanduvi. 2008. *Measuring Inequality of Opportunities in Latin America and the Caribbean*. Washington, DC: The World Bank.
- Gou, R. 2006. "Cong Chengxiang Ruxue Jihui Kan Gaodeng Jiaoyu Gongping (Higher Education Equality in Urban and Rural Vision: A Perspective from Enrollment Opportunity)." *Jiaoyu Fangzhan Yanjiu (Research of Educational Development)* 5: 29–31.
- Graham, C. and S. Sukhtankar. 2004. "Does Economic Crisis Reduce Support for Markets and Democracy in Latin America? Some Evidence from Surveys of Public Opinion and Well-being." *Journal of Latin American Studies* 36(2): 349–377.
- Haggard, S. and R. R. Kaufman. 2012. "Inequality and Regime Change: Democratic Transitions and the Stability of Democratic Rule." *American Political Science Review* 106(3): 495–516.
- Honaker, J. and G. King. 2010. "What to Do about Missing Values in Time-Series Cross-Section Data." *American Journal of Political Science* 54(2): 561–581.
- Iverson, T. and D. Soskice. 2001. "An Asset Theory of Social Policy Preferences." *American Political Science Review* 95(04): 875–893.
- Iverson, T. and D. Soskice. 2006. "Electoral Institutions and the Politics of Coalitions: Why Some Democracies Redistribute More Than Others." *American Political Science Review* 100(02): 165–181.

- Jencks, C. 1973. *Inequality: A Reassessment of the Effect of Family and Schooling in America*. New York: Basic Books.
- Jencks, C. and L. Tach. 2005. "Would Equal Opportunity Mean More Mobility?" In *KSG Working Paper Series 05-037*. Harvard University.
- Kaufman, R. R. 2009. "The Political Effects of Inequality in Latin America: Some Inconvenient Facts." *Comparative Politics* 41(3): 359–379.
- King, G., J. Honaker, A. Joseph, and K. Scheve. 2001. "Analyzing Incomplete Political Science Data: An Alternative Algorithm for Multiple Imputation." *American Political Science Review* 95(1): 49–69.
- Kipnis, A. B. 2011. *Governing Educational Desire: Culture, Politics, and Schooling in China*. Chicago: University of Chicago Press.
- Landry, P. F. and M. Shen. 2005. "Reaching Migrants in Survey Research: The Use of the Global Positioning System to Reduce Coverage Bias in China." *Political Analysis* 13(1): 1–22.
- Lefranc, A., N. Pistolesi, and A. Trannoy. 2008. "Inequality of Opportunities vs. Inequality of Outcomes: Are Western Societies All Alike?" *Review of Income and Wealth* 54(4): 513–546.
- Liang, C., J. Lee, and *et al.* 2012. "Wusheng de Geming: Beijing Daxue yu Suzhou Daxue Xuesheng Shehui Laiyuan Yanjiu, 1952–2002 (Silent Revolution: The Sources of Students from Beijing University and Suzhou University: 1952–2002)." *Zhongguo Shehui Kexue (Chinese Social Sciences)* 1.
- Liu, J. 2006. "Gaodeng Jiaoyu Kuozhan yu Ruxue Jihui Chayi: 1978–2003 (Expansion of Higher Education in China and Inequality in Entrance Opportunities: 1978–2003)." *Shehui (Society)* 2006: 158–179.
- Liu, Y., Z. Wang, and X. Yang. 2009. "Jingying de Xuanba: Shengfeng, Diyu yu Zhiben de Shijiao — Kuaru Beijing Daxue de Nongjia Zidi (1978–2005) (Selection of Elites: Views from Social status, Geographical variation, and Capital Gaining — Case Study on Farmers' Children Who were Admitted into Peking University (1978–2005))." *Qinghua Daxue Jiaoyu Yanjiu (Tsinghua Journal of Education)* 30(5).
- Lü, X. 2011. "The Political Causes and Consequences of Inequality of Opportunity." Ph.D. Dissertation in Political Science, Yale University, New Haven, CT.
- Lü, X. 2013. "The Intended and Unintended Consequences of Social Policies in China: School Fee Exemption, Preference for Redistribution, and Regime Support." Texas A&M University.
- Lupu, N. and J. Pontusson. 2011. "The Structure of Inequality and the Politics of Redistribution." *American Political Science Review* 105(02): 316–336.
- McCall, L. and L. Kenworthy. 2009. "Americans' Social Policy Preferences in the Era of Rising Inequality." *Perspectives on Politics* 7(03): 459–484.
- Meltzer, A. H. and S. F. Richard. 1981. "A Rational Theory of the Size of Government." *Journal of Political Economy* 89(5): 914–927.
- Michelson, E. 2012. "Public Goods and State-Society Relations: An Impact Study of China's Rural Stimulus." In *The Global Recession and China's Political Economy*, D. L. Yang, (ed.), New York: Palgrave Macmillan.
- Moene, K. O. and M. Wallerstein. 2001. "Inequality, Social Insurance, and Redistribution." *The American Political Science Review* 95(4): 859–874.
- Persson, T. and G. E. Tabellini. 2003. *The Economic Effects of Constitutions, Munich Lectures in Economics*. Cambridge, MA: MIT Press.
- Piketty, T. 1995. "Social Mobility and Redistributive Politics." *The Quarterly Journal of Economics* 110(3): 551–584.
- Ravallion, M. and M. Lokshin. 2000. "Who Wants to Redistribute? — The Tunnel Effect in 1990s Russia." *Journal of Public Economics* 76(1): 87–104.
- Roemer, J. E. 2000. *Equality of Opportunity*. Cambridge: Harvard University Press.
- Roemer, J. E., R. Aaberge, U. Colombino, J. Fritzell, S. P. Jenkins, A. Lefranc, I. Marx, M. Page, E. Pommer, J. Ruiz-Castillo, M. J. San Segundo, T. Tranaes, A. Trannoy, G. G. Wagner, and I. Zubiri. 2003. "To What Extent do Fiscal Regimes Equalize



- Opportunities for Income Acquisition Among Citizens?" *Journal of Public Economics* 87(3–4): 539–565.
- Shayo, M. 2009. "A Model of Social Identity with an Application to Political Economy: Nation, Class, and Redistribution." *American Political Science Review* 103(02): 147–174.
- Tiebout, C. M. 1956. "A Pure Theory of Local Expenditures." *Journal of Political Economy* 64(5): 416–424.
- International Social Justice Project, 1991 and 1996. Inter-university Consortium for Political and Social Research (ICPSR) [distributor].
- Whyte, M. K. 2010. *Myth of the Social Volcano: Perceptions of Inequality and Distributive Injustice in Contemporary China*. Stanford, CA: Stanford University Press.
- World Bank. 2006. *World Development Report 2006: Equity and Development*. Washington DC: World Bank.
- Wu, X. 2009. "Income Inequality and Distributive Justice: A Comparative Analysis of Mainland China and Hong Kong." *The China Quarterly* 200: 1033–1052.
- Yang, D. 2003. *Jiannan de Richu (The Obstacles to Sunrise)*. Shanghai: Wenhui Chuban She (Wenhui Press).
- Yang, D. L. 2006. "Economic Transformation and Its Political Discontents in China: Authoritarianism, Unequal Growth, and the Dilemmas of Political Development." *Annual Review of Political Science* 9(1): 143–164.
- Yuan, Z. 1999. *Lun Zhongguo Jiaoyu Zhengzhe de Zhuanbian: Dui Woguo Zhongdian Zhongxue Pingdeng yu Xiaoyi de Ge'an Yanjiu (On Changes of Chinese Educational Policy — A Case Study on the Relationship between Equality and Benefit in Key Middle Schools)*. Guangzhou: Guangdong Jiaoyu Chuban She (Guangdong Education Press).
- Yuan, Z., ed. 2005. *Shuoxiao Chaju: Zhongguo Jiaoyu Zhengche de Zhongda Mingti (Narrowing the Gap: A Key Issue in China's Educational Policies)*. Beijing: Renmin Jiaoyu Chuban She (People's Education Press).