



Does financial aid help poor students succeed in college?



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ABSTRACT

The rapid expansion of enrollment capacity in China's colleges since the late 1990s has come at the price of high tuition hikes. China's government has put forth financial aid programs to enable poor students to access higher education. Although studies have shown that poor high school students are indeed able to attend college when their test scores are high enough (that is, few are unable to attend when they are qualified to attend), the literature has not explored whether poor students have sufficient amounts of aid to thrive in college.

Using findings from a randomized controlled trial, this study evaluates the impact of providing full scholarships to students from poor rural areas (henceforth treatment students) on student stress levels, self-esteem/self-efficacy, and participation in activities in four first-tier colleges. To do so, we compare outcomes of the treatment students with students who were not given full scholarships by the project (and were left to search for scholarships and other sources of financial aid from the university system itself—the control students). The project was run among the 200 poorest first-year students in four first-tier colleges in inland China. Somewhat surprisingly, we find that treatment students (those receiving full scholarships from the project) were only slightly more successful in obtaining financial aid than control students. This suggests that control students (those who did not receive full scholarships from the project) were still able to access comparable levels of financial aid. Most importantly, scholarship recipients were statistically identical in outcome to control students in terms of stress, self-esteem, and participation in college activities, suggesting that poor students (who are dependent on aid from the university system) currently are able to access sufficient levels of financial aid, are able to take advantage of the activities offered at college, and do not shoulder heavy financial or psychological costs.

We find, therefore, that efforts of the government to alleviate the financial burden of college on the poor have been relatively successful in first-tier colleges. Because of this, foundations and individuals may decide that if they want to improve human welfare, giving additional scholarships at high tier colleges may be having little effect.

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1. Introduction and Background

College opportunities in China have expanded rapidly in the past two decades. In the late 1990s China greatly increased its investment into colleges across the country (Brandenburg & Zhu, 2007). The investments triggered the expansion of the capacity of colleges to accept incoming students. From 1998 to 2005 the number of college students rose from 2.2 million to 8.5 million (Ministry of Education, 1999, 2006).

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Opportunities to attend college in China, however, have come at a price. Tuition skyrocketed as the government allowed institutions to collect more tuition, and colleges sought to fund at least part of their expansion by tuition hikes (Wang, 2009). Average college tuition almost tripled between 1997 and 2006, rising from 1620 yuan to 4500 yuan per student per year (Cui, 2007; Yu, 2008).¹ While affordable for the typical middle and upper class urban residents, four years of tuition can be more than 16 years of per capita income for rural families that are living at the poverty line (Liu et al., 2011; Zhang, 2007).

Aiming to address the problem of access, by the mid-2000s China's government put forward four financial aid initiatives: National Scholarships, State Grants, Work–Study Programs and Tuition Waivers (Wang, 2009). For example, in May 2002 China's Ministry of Education and Ministry of Finance jointly announced that they would be rolling out a 200 million yuan national scholarship program for poor college students, benefiting 45,000 students each year (Wang, 2002). In 2007, the amount of financial aid (including scholarship and need-based grants) announced by the State Council increased to approximately 3.7 billion US dollars (Ministry of Education, 2009). While partial programs were offered before this time, it was not until this new program that financial aid was supposed to be rolled out systematically across the country—especially to students in poor areas. At about the same time, the government created two educational loan programs: the General Commercial Student Loans Scheme and the Government Subsidized Student Loan (Guobanfa, 1999). The two loan programs were aimed at further expanding loan availability after the mid-2000s and were supplemented by the Student Resident Loan program in 2009 (Shen, 2008; Shen & Li, 2003). As they were categorized under financial aid for poor, rural students, these loans had low interest rates and favorable repayment schedules. Proponents hoped that such a broad base of financial support could allow tens of thousands poor rural students to afford their college dreams.

Despite the intentions of government officials, slow implementation of the programs meant that even in the mid- to late 2000s there still remained two concerns about poor, rural college aspirants. The first concern was that existing resources were limited, to such a degree that the families of poor rural students still could not be sure they could pay for higher education. Even after the announcement of the nation's financial aid programs, newspapers were still publishing stories of poor students who were still unable to go to college for lack of financial support (Chen, 2005; China Youth Daily, 2007; Qing, 2010). Academics, too, were unimpressed by the government's financial aid implementation (Zhao, 2002). A paper published in 2007 suggested that the programs were still not widely available to many students who needed them (Chen, 2007). The literature left the impression that there were remained large numbers of students that were testing into China's best universities but unable to attend because of financial reasons.

A more recent study arrives at a different conclusion (Liu et al., 2011). Based on a large survey of poor high school students in Shaanxi province, the study found that the problem of students who are eligible to enter tier one colleges has been largely solved. It is not clear why the study was at odds with much of the rest of the literature. Perhaps the Liu et al. (2011) study differed from previous work because it was examining the situation in more recent years (in 2008 and 2009 instead of earlier as was the focus of most of the rest of the literature). It may have been that the study was more rigorously designed. Whatever the reason, Liu et al. (2011) demonstrated that, in 2008 and 2009, the poorest grade 3 students in public high schools in the poorest counties of Shaanxi province who tested into top (or tier one) universities were always able to go. In other words, 100% of the high school students in their sample who scored high enough to enter tier one colleges were able to figure out a way to access sufficient financial resources to matriculate to college in the fall term after their senior year of high school. If this is true across the nation and for every year, one of the objectives of the nation's higher education financial aid program has been achieved.

The second concern was not whether existing financial resources were sufficient for students to matriculate (as shown above, they are), but whether the amount and nature of financial aid were such that poor students were able to thrive (or whether they floundered) once they entered college. Although poorer students have been shown to receive more aid than other students once in college (Loyalka, Song, & Wei, 2012; Yang, 2010), it is not certain whether such financial aid or support is sufficient (Shen, 2008; Yang, 2010). First, poor rural students without sufficient financial support experience substantial psychological stress associated with the guilt and anxiety of needing their families to sacrifice money and time for them (Kang & Chen, 2006; Ye, Qin, & Deng, 2005). At the extreme, media reports have gone so far as to document how the psychological burdens from the financial stresses on the families of college students have actually led to suicide (Hangzhou Net, 2006). Second, poor students without sufficient financial resources may experience low self-esteem (Cholewa & West-Olatunji, 2008; Fan & Gui, 1996; Kang & Chen, 2006). Self-esteem refers to students' sense of confidence, and self-efficacy refers to students' sense of personal competence (Schmitt & Allik, 2005). Sometimes this lack of self-esteem/self-efficacy arises as poor students are unable to afford nice clothes or accomplish tasks that their nonpoor classmates take for granted (Kang & Chen, 2006; Qu, Zhang, & Wang, 2007). Finally, poor students without sufficient aid may simply not have as much free time to participate in college activities as nonpoor students. They may need to (or feel guilty if they do not) work part-time in an effort to help minimize the family's financial burden or partially cover his/her college tuition and fees (Ford, Bosworth, & Wilson, 1995; Pang, 2003). They may be unable to participate in many campus activities and have fewer opportunities to generate social and future professional connections.

If this were happening in China, it would not be anything new. Internationally, there are many studies that demonstrate negative correlations between the financial demands of college and students' ability to thrive at college (Battistich, Solomon, Kim,

¹ 1 US dollar \approx 7 RMB in 2006.

Watson, & Schaps, 1995; Robotham & Julian, 2006; Singell, 2004). The results from international experiences indicate that when poor students reach college they often feel less self-esteem/self-efficacy and stress due to the financial burden borne by their parents and family (Bennett, 2003).

Surprisingly, to our best knowledge, there are no existing empirical studies that explore the validity of this second concern in China. As such, a fundamental question remains: Is the current amount of financial aid received sufficient? Are poor students who are currently receiving financial aid (under current financial aid policies) succeeding in college? More specifically, will receiving more financial aid reduce their stress levels; improve their self-esteem/self-efficacy; or increase their participation in college activities? On a policy level, the answers to these questions are crucial to evaluating whether college environments ensure an equality of opportunity among the poor and non-poor in terms of taking full advantage of the college experience.

To answer this core question, we pursue three objectives in this paper. Drawing on the results from a randomized controlled trial (RCT) evaluating the impact of giving four-year, full scholarships to 78 of the poorest college students at four colleges in China (and comparing them against a control group of 112 students in the same colleges who are left to pursue financial aid through the normal college-based and home-based channels), the first objective is to document the sources of financial aid that the poorest first-year students in these colleges are able to access. We do so by examining the amount of financial aid that control students are able to access (students that did not get funded as part of the treatment of the RCT and must seek aid within the current funding system). The second objective is to identify the correlates of those who receive aid and those who do not. This objective is pursued in part to ascertain whether the poorest of the poor (since all of the participants, both treatment and control students are poor) are able to access aid and to understand the characteristics of any particular group of students that are being left behind. Our third objective is to estimate the impact of providing full scholarships (that is, the impact of effectively mitigating any financial burdens on the student and family) on the stress levels, self-esteem/self-efficacy, and the degree of participation in college activities of poor students. As part of this objective, we also assess one of the potential mechanisms by which these outcomes are influenced: whether the scholarship decreased hours worked in a part-time job (arguably freeing time to pursue campus activities).

Although the paper is ambitious in its goals, there are limitations. First and foremost, we are examining four first-tier colleges in three inland Chinese provinces.² Our limited sample selection affects external validity. Our conclusions cannot represent all regions of China. More importantly, first-tier colleges almost certainly are better funded than second- and third-tier colleges. Therefore, if we find that tier one college students are well funded, this would not necessarily mean that students in lower-tiered colleges have access to similar resources. Most likely they do not. Hence, we cannot easily draw conclusions about lower-tiered colleges from our study. Second, we are only able to evaluate short-term impacts of the scholarship program. That is, outcomes like self-esteem/self-efficacy and stress levels may not be easily affected in the short term, and as such we may not be picking the true full impacts on these non-cognitive outcomes. Third, in this study we only measure the level of and changes in the levels of stress (and other outcomes) of poor students in our treatment group against the level of and changes in the level of stress of poor student in our control group. We cannot say anything about these outcomes relative to non-poor students. We cannot say that by giving poor students full scholarships they end up with stress levels that are equivalent to those suffered by nonpoor students. In this paper we can only compare changes in the levels of stress (more/less/no change) of treatment and control students. Fourth and finally, we do not have results on the academic performance of our participants because a survey instrument to measure academic performance among students who are pursuing completely different majors was too costly to produce and administer. As such, although academic performance is a key metric that suggests whether students are able to benefit from college, we cannot speak to this outcome.

Nevertheless, to our best knowledge this study is the first to assess the impact of financial aid (as opposed to just access to aid) in the context of a developing country. Moreover, this study contributes to a broader policy discussion about whether poor students are thriving in school after they matriculate. Indeed, if students in relatively prestigious colleges are all (more or less) getting financial aid, there are implications about how public and private funders of education might want to allocate funds (away from tier-one to lower-tier colleges and high school students). If it is found that tier-one colleges are not fully funded and poor rural students still face challenges in terms of financial aid, we almost certainly can assume that poor students in less prestigious colleges (which typically offer less financial aid) experience similar problems.

The rest of the paper is organized as follows. Section 2 presents the research design. Section 3 identifies the sources and quantifies the amount of financial aid that poor students currently access. Section 4 presents a determinant analysis of who is and who is not gaining access to financial aid. Section 5 estimates the impact of guaranteed financial aid on student stress levels, self-esteem/self-efficacy, and participation in college activities. Section 6 concludes with a discussion of this study's implications.

2. Research design

We conducted an RCT by providing a *full scholarship* to a randomly chosen subset of 78 students out of a total of 200 poorest students who were just entering their freshman year in one of four first-tier universities in Shaanxi, Sichuan, and Anhui Provinces. We selected the four colleges—Xi'an Jiaotong, Sichuan, Anhui, and Northwest University in Xi'an—based on their willingness to

² The higher education system in China includes first, second, and third tier colleges. Vocational colleges lie outside the tier system. The top 100 colleges (in large part ranked by the average college entrance exam scores of their freshman) in the country are classified as first tier colleges, widely regarded as having the highest quality of higher education. Third tier colleges are administered under either first tier or second tier colleges but have the authority to recruit undergraduates (with lower college entrance exam scores) independently.

participate. Indeed, as one of the main limitations of the study, practical concerns barred us from using random sampling to choose the four participating colleges (Wang et al., forthcoming). Nevertheless, even as the colleges are not statistically representative, in terms of enrollment, test scores of entering students, and curriculum they are qualitatively similar to other first-tier colleges in poor, inland parts of China (Li, 2009; MOE, 2009).

Before implementing the RCT, we conducted a census of all 20,059 first-year students in the four colleges, collecting information about their personal characteristics and family economic background. Students reported their gender, ethnicity, college entrance examination score, number of siblings, place of household registration (whether rural or urban), parental education, place of birth and place of high school attendance. Moreover, each student was also asked to fill out a checklist of the durable assets owned by her family, which we used to generate a metric of poverty level.³ To check the validity of this metric, we also called each student's high school homeroom teacher to ask if the student was, indeed, poor.⁴ Specifically, we asked the homeroom teacher about the nature of the student's meals and clothes and whether they were aware of any difficulty the family was having in paying tuition/fees during grade 12 (which in China are also quite high—Hannum & Adams, 2009). After collecting the asset data from the survey and assembling the information from the phone calls to the grade three teachers, we found that the asset checklist and homeroom teacher report were consistent in over 95% of the cases.

Based on the asset rankings, we selected the 50 poorest students with rural household registration (*nongcun hukou*) from each of the four colleges to participate in our randomized controlled trial. Of this group of 200 students (4 colleges \times 50 students per college), we randomly selected 20 students in each college to receive the full scholarships. This formed the treatment group (80 students). The remaining 30 students out of the 50 poorest formed the control group (120 students).⁵ Although the colleges and students knew who was in the treatment group (the full scholarship recipients), the colleges and students did not know (i.e., they were blind to) who was in the control group. That is, even though colleges and students knew who received scholarships, they did not know whom the scholarship recipients were being compared to and whether those students also received scholarships.

Importantly, because of the way we chose the treatment and control students, at the start of the study the two groups of students were statistically identical. Based on our 20,059 student college survey data, the treatment and control students can be seen to be statistically identical with regard to all observable characteristics (Table 1). We measured several basic characteristics, student stress levels, and self-esteem/self-efficacy (the instruments used to collect these data are described in our Data collection section). The average student in both groups had a college entrance exam score around 580, was just older than 19 years, came from a rural area, was Han Chinese, had one sibling, and had a family with around 5000 yuan of assets. In terms of stress levels and self-esteem/self-efficacy, there was no statistical difference between treatment and control groups.

In terms of attrition, there were two students that were part of the treatment group who dropped out of the program (leaving 78), and eight students among the control group also dropped out (leaving 112). Among the two who dropped from the treatment group, one dropped out of school and the other returned the scholarship. This student was a rare recipient of a merit scholarship with a greater award than the full scholarship we gave him. This merit scholarship required him to return our financial aid. Because the number of attriting students was so small, we can be assured that there are no significant differences in observable characteristic between the groups by observing the characteristics of those that we observed in our sample. Although one may imagine that receiving a scholarship increases the propensity of students to stay in school, most students do not drop out during freshman year unless there is an emergency.

2.1. The intervention: full-ride ZEE Scholarships to the treatment students

The treatment group received a no-strings attached, full scholarship (called a “ZEE Scholarship”) funded by the Cyrus Tang Foundation, an internationally based organization.^{6,7} Each student received 4000 yuan per year for all four years of college.⁸ In China's scholarship system this should be counted as a top-end scholarship in terms of both the size of the scholarship for a year

³ Based on the national Household Income and Expenditure Survey, which is organized and published by the China National Bureau of Statistics (CNBS, 2008), we quantified each asset in terms of its value. The sum of all assets was a single metric of the student's poverty level.

⁴ In most Chinese high schools students are grouped in classes of 50 with a homeroom teacher (*banzhuren*) who stays with the students all three years and acts both as a teacher and a counselor for personal and academic matters. As such, homeroom teachers are uniquely positioned to provide information on the socioeconomic status of their students.

⁵ The sample size was determined (before the intervention) using standard power calculation software. Based on past studies, we wanted to be able to detect a minimum detectable effect size of 0.25 (e.g. Greene, 2001). After controlling for covariates (and assuming an R-squared of .7), we calculated that we could achieve power equal to 0.8 at conventional significance levels ($\alpha = 0.05$) if we assigned 80 students to the scholarship intervention and 80 students as controls.

⁶ It is important to note that we have designed the ZEE scholarships to be the gold standard scholarships. That is, the ZEE scholarships are fully funded and fully guaranteed for four years. Our assumption is that if there is a financial aid instrument that can eliminate stress and allow a student to fully participate in college activities since he/she (or his/her family) does not need to worry about funding, then it is our ZEE scholarship. We do this in order to create a contrast with the current university scholarships. Current university scholarships are not fully guaranteed for four years. Funding levels are uncertain. Therefore, even if a student has a scholarship this year for a certain amount, there is almost never certainty about the following year. The assumption is that a poor student with such a fellowship, will have as little stress as possible (and have as much time as possible available to participate in university activities). Hence, we believe that we do have a valid, policy-relevant experiment. If we did find higher levels of stress and less participation in the activities of the university by those with the normal university fellowships compared to the ZEE scholarship winners, education policy makers could take steps to overcome these uncertainties.

⁷ We chose the name “ZEE” because it has no meaning or normative value associated with it.

⁸ Although a full review of the cost of higher education is beyond the scope of this paper, it is important to note that the level of tuition and formal fees in the four sample universities is about 3700 yuan per year (3700yuan/year = 300 yuan/month \times 9 months for formal fee + 1000 tuition fee). This means that the ZEE scholarship is enough to cover them.

Table 1

Baseline characteristics for treatment group, control group, and subsets of control group with and without financial aid in the second year of college.

Characteristics of samples	Treatment group	Control group	p-Value ^a	Control group subsets		
				With financial aid	Without financial aid	p-Value ^b
<i>Student characteristics</i>						
Gaokao Score	575.7 (67.8)	586.5 (52.0)	0.21	590.0 (52.5)	561.6 (48.8)	0.07*
Gender (1 = male, 0 = female)	0.7 (0.5)	0.6 (0.5)	0.62	0.6 (0.5)	0.7 (0.5)	0.71
Age (year)	19.1 (1.2)	19.1 (1.2)	0.99	19.1 (1.0)	19.1 (0.9)	0.93
Hukou (1 = rural, 0 = urban)	1.0 (0.1)	1.0 (0)	0.23	1.0 (0.1)	1.0 (0)	–
Han (1 = yes, 0 = otherwise)	0.9 (0.2)	0.9 (0.2)	0.98	0.9 (0.2)	0.9 (0.3)	0.71
Rosenberg SES I	22.0 (0.2)	21.5 (0.2)	0.12	21.4 (0.3)	21.8 (0.4)	0.28
SES II	22.5 (0.4)	21.8 (0.3)	0.17	21.9 (0.4)	21.7 (0.5)	0.74
GSE	25.4 (0.5)	25.3 (0.5)	0.85	25.3 (0.5)	25.4 (1.0)	0.88
UPI	12.3 (1.1)	13.3 (0.7)	0.41	14.8 (0.9)	10.8 (1.1)	0.01***
<i>Family characteristics</i>						
Asset (yuan)	4917.8 (6134.9)	5104.9 (9588.6)	0.88	4691.8 (10,226.14)	7202.9 (6718.4)	0.39
Family size (person)	4.1 (1.7)	4.5 (1.4)	0.06*	4.5 (1.5)	4.2 (1.4)	0.46
No. of sibling (person)	1.0 (0.8)	1.1 (0.8)	0.23	1.1 (0.8)	1.2 (0.9)	0.44
No. of observations	78	112		98	14	

Note: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

^a Test results of the equivalency of characteristics across treatment group and control group.^b Test results of the equivalency of characteristics for the students with and without financial aid in the control group.

and because of the fact that it is guaranteed for all four years (Ministry of Education, 2007). Importantly, in giving a no-strings attached scholarship, we are not limiting the student from receiving other financial aid.

The administration of the scholarship was as follows. In September of the first year of our study (at the beginning of the semester), the student affairs office at each school informed recipients that they received a “ZEE Scholarship” from an anonymous donor. Details of the exact number of students from each college in each group (treatment and control) can be found in Table 2. To transfer the funds to the student, the college first opened a bank account for each first-year scholarship recipient. In October (roughly a month after the autumn semester starts in China), the Cyrus Tang Foundation's financial accounting office wired scholarship funds to the financial department of each college. By the end of December (the end of the first semester of the first academic year), the financial department had wired the funds to the bank account of each ZEE scholarship recipient.

Fig. 1 is a flow chart summarizing the steps of the sampling and intervention.

2.2. Data collection

About seven months after the issuance of the scholarships, we conducted an evaluation survey of the 190 (78 + 112) treatment and control students to collect data on student access to financial aid, stress levels, self-esteem/self-efficacy, and

Table 2

Description of different treatments given to sample population and number of students involved.

Colleges in the study	Treatment group ^a	Control group ^b
Total	78	112
Xi'an Jiaotong	20	29
Sichuan U.	19	29
Northwest U.	20	26
Anhui U.	19	28

^a Treatment group: 4000 yuan/year 4-year scholarships with no strings attached.^b Control group: no intervention.

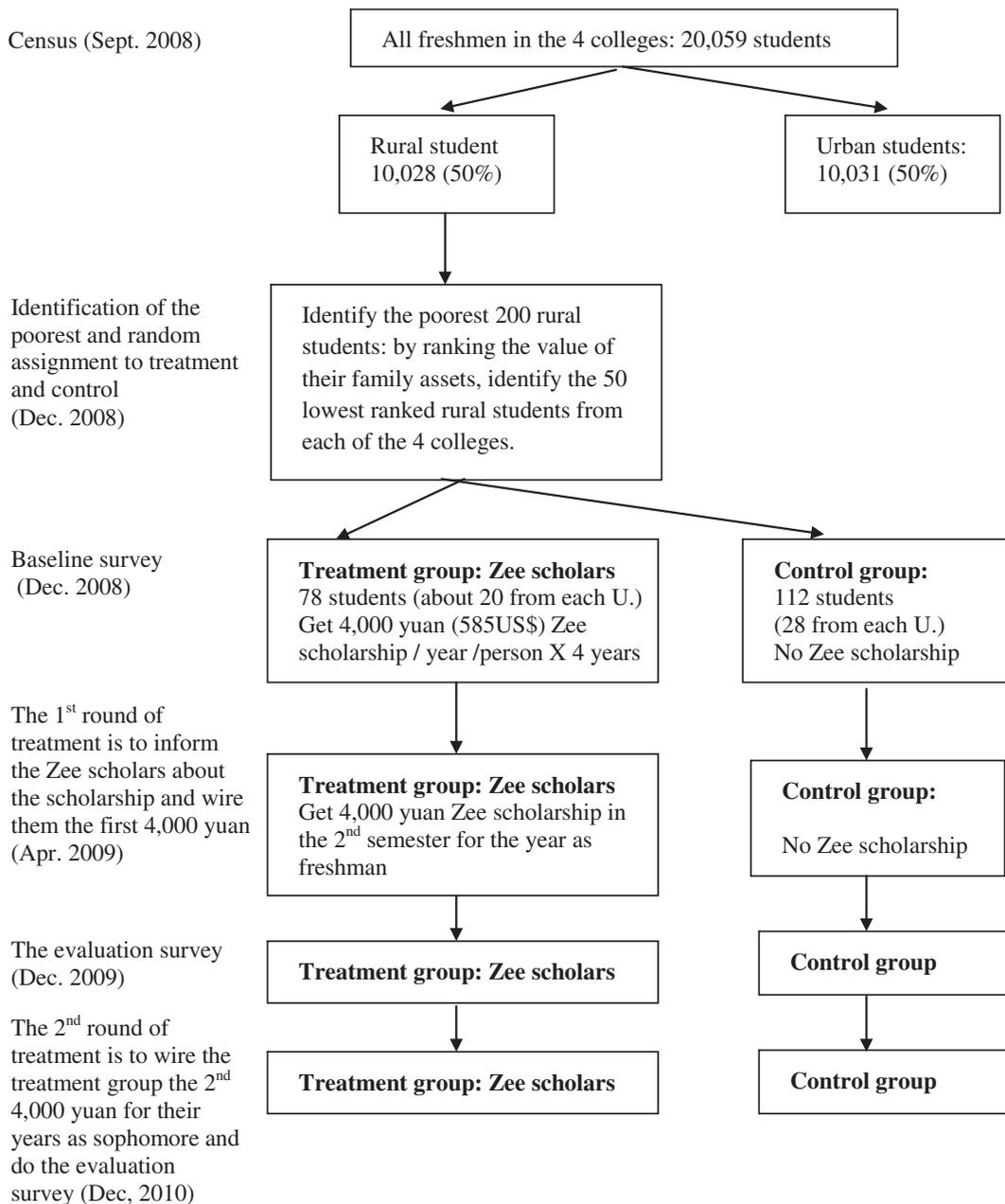


Fig. 1. Trial profile.

participation in campus activities. The survey was conducted by the coauthors in January 2010, when students were in the second year of college. In this survey the students were asked to provide detailed information on what kind of and how much financial support they had received, including scholarships and other financial aid and student loans. We also measured student participation in college activities, proxied by hours spent in activities on campus and hours participating in service activities. We collected data on number of hours worked in a part-time job to ascertain one of the possible mechanisms by which the scholarship might have affected the outcome variables.

Furthermore, survey teams also gave short scales to the students in both of treatment and control groups in order to measure the stress levels and self-esteem/self-efficacy. In determining which instruments to measure stress levels and self-esteem, we turned to the literature to seek tests frequently used in China (see citations in the paragraphs below). To measure self-esteem, we selected the Rosenberg Self-esteem Scales I & II (SES) and General Self-efficacy Scale (GSE). The Rosenberg SES (both I and II) includes 10 statements, each self-rated 1 to 4. While designed as a Guttman scale, the SES is commonly scored as a Likert scale.

The 10 statements are answered on a four-point scale ranging from Strongly Agree to Strongly Disagree. The General Self-efficacy Scale (GSE) was originally created by Schwartz and Jerusalem (1995) in the 1970s then updated more recently. The scale was created to assess a general sense of self-efficacy with the aim of predicting how individuals cope with daily hassles and adapt after experiencing stressful events.

The Rosenberg SES has been translated and used in China many times in the past (Cheng & Page, 1989; Farruggia, Chen, Greenberger, Dmitrieva, & Macek, 2004; Schmitt & Allik, 2005; Song, Cai, Brown, & Grimm, 2011). According to the authors of these studies, the internal reliability and factor structure of the test is psychometrically sound across many languages (including Mandarin). According to Scholz, Gutiérrez Doza, Sud, and Schwarzer (2002) and Wang, Hu, and Liu (2001), the GSE has a similar single-factor structure and similar psychometric properties for different populations in various nations (including those in Mandarin-speaking populations).

The University Personality Inventory (UPI) was used to measure stress levels. Designed by Japanese experts and psychiatrists from the Japanese Universities in 1966, the inventory was created as a psychological health survey for freshman students. The inventory is supposed to allow administrators to learn more about students' stress-related psychological problems and provide necessary assistance and treatment as early as possible. The test also is supposed to help students understand more about their psychological problems and encourage general awareness of the importance of psychological health. The UPI has received similar vetting from academics and has the added benefit of being fine-tuned for use on college students as research subjects (Zhang, Mu, & Zhu, 2004; Zhou & Li, 1993). Like the other scales, it has also been used extensively in China (Deng & Xuan, 2009; Guo, Du, & Yu, 2006; Li et al., 2008; Luo et al., 2011; Wu & Zhang, 2009). All psychometric scales used in this study are further explained in the appendix.

3. Access to financial aid for the poor in China's colleges

According to our data, most poor students in rural China have access to financial aid, and that aid primarily comes from grants and low-interest student loans (Table 3). In the treatment group, students received grants (of 4000 yuan) universally by design (column 1, row 1). Nonetheless, on average, each treatment student received 4400 yuan in financial aid grants (just more than the value of the ZEE scholarship—column 1, row 2). The fact that the average student received more than 4000 yuan in grants can be explained by the fact that a small subset of students received more than one grant. 35% of treatment students also received 5700 yuan (on average) of low-interest student loans (column 1, rows 3 and 4). In total, treatment students on average received around 6400 yuan in total financial aid (including both grants and loans) (column 1, rows 8 and 9). We include low-interest student loans as financial aid, because the terms of the loans (as discussed above) are generous and can be considered conciliatory (e.g., no repayment until one year after graduation, low-interest, etc.).

While there are differences between the control and treatment groups in terms of the nature of their financial aid packages, one of the most salient findings from our data is that control students received comparable financial aid. That is, the level of financial aid received by control students was not too far below that of the treatment group, despite the fact that each member of the treatment group received a gold-standard ZEE scholarship. 83% of control students received financial grants amounting to 2600 yuan (column 2, rows 1 and 2); 38% of them also received an average of 5400 yuan in student loans (column 2, rows 3 and 4).

Table 3

Number of students receiving scholarships/aid grants and educational loans for various treatment groups and control group in the second year of college study.

Characteristics of samples	Treatment group	Control group	p-Value ^a
<i>Scholarships + aid grants</i>			
Percentage (%)	100.0 (0.0)	83.0 (37.7)	0.00***
Average size (yuan/year) ^b	4371.2 (1418.8)	2639.4 (1659.2)	0.00***
<i>Educational loan</i>			
Percentage (%)	34.6 (47.9)	38.3 (48.9)	0.60
Average size (yuan/year) ^b	5703.7 (775.3)	5377.3 (1596.2)	0.33
Percentage with topline of 6000 yuan/year (%)	28.8 (45.5)	33.1 (47.2)	0.52
<i>Total</i>			
Percentage (%)	100.0 (0.0)	87.5 (33.2)	0.00***
Average size (yuan/year) ^b	6347.2 (2968.4)	4875.7 (3526.2)	0.00***

Note: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

^a Test results of the equivalency of funding for students across treatment group and control group.

^b This is calculated for the students who were in the group of obtaining scholarship or aid grants, or loan and part-time earning.

4). In total, 87.5% of control students received financial aid averaging almost 5000 yuan (or 4876 yuan) for the academic year (column 2, rows 8 and 9).

Hence, according to our data, we have an answer to our first research question: Is it true that most students in China's colleges (specifically first tier colleges) now have access to financial aid? In short, the answer is yes—mostly. Indeed, despite a 4000 yuan automatic (by design) financial aid grant advantage for the treatment group, the average treatment student only received 1400 yuan more in overall financial aid than the average control student (row 2).

The fact that the overall difference between the total funding of the two groups is less than 4000 yuan (row 9) means one of two things: either students are nearing a funding saturation point, and students who received the 4000 yuan scholarships, therefore, do not feel the need to seek out as much additional funding; or that the students who received the 4000 yuan scholarships were penalized from receiving other funding, thereby reducing their additional funding vis-à-vis the control group. Both of these potential reasons are consistent with the analysis of Kipnis and Li (2010) that availability of funding for education in China, while unequal between the rich and the poor, is not particularly low overall compared to other nations. This finding is mirrored by the work of Yang (2010) and Loyalka et al. (2012), who consistently show that poor students receive more aid than other students. This also suggests that additional scholarship programs, while potentially helpful, may be nearing a point of decreasing marginal returns at least at the midpoint of students' college experience (which was the period of time in which of our evaluation survey was conducted).

4. Determinants of receipt of financial aid

Even though it seems that all students, on average, have access to financial aid, a remaining concern applies to the control students. There were still 12% of control students that did not receive any financial aid. The question naturally rises (even though it only applies to a small share of students), why not?

The question is further significant because there may be a bias against the poorer students. That is, in our sample of the 200 poorest students in four universities, perhaps the poorest students (that is the poorest of the poor) and their families shoulder a heavier burden than their already-poor peers. Although averages matter, we are especially concerned whether there may be some obstacles against the poorest students in accessing any financial aid at all. In short, do the poorest students have a higher or lower probability of receiving aid, and do they get more or less aid?

Table 4

Determinants of receipt of financial aid by control students in the second year of college study.

Characteristics of samples	If students obtain financial aid or not (1 = yes, 0 = no)	The amount of financial aid Yuan
<i>Student characteristics</i>		
Age	−0.023 (0.192)	319.873 (359.150)
Gender	−0.447 (0.406)	−612.182 (740.076)
Han	0.663 (0.748)	−1152.761 (1530.899)
Gaokao Score	−0.002 (0.004)	0.018 (8.190)
<i>Family characteristics</i>		
Asset	−0.006* (0.003)	−11.178* (6.245)
Father's education	0.011 (0.050)	13.243 (92.257)
Mother's education	−0.085* (0.047)	−43.784 (89.048)
<i>College fixed effects</i>		
Xi'an Jiaotong	0.704 (0.678)	2099.958** (1052.713)
Sichuan U.	−0.229 (0.607)	−334.474 (1094.215)
Anhui U.	−1.249** (0.543)	−2584.767** (1044.497)
Constant	3.471 (4.573)	397.514 (8625.888)
Log likelihood	−32.357	
Pseudo R ²	0.185	
R ²		0.206
No. of obs.	108	108

Note: In this table financial aid refers to the sum of scholarships, loans and earnings from part-time job. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

To answer these questions, we conducted a regression analysis of the determinants of why some control students received financial grants and why others did not. Likewise, we conducted an empirical analysis of the determinants of total financial aid. To do this, we ran a simple Probit analysis as follows:

$$P_i = \beta_0 + \beta_1 X_i + u_i \quad (1)$$

where i is an index for the control student. P_i is a dummy variable equal to 1 if the student in the control group obtained some kind of financial grant/aid, 0 otherwise. The term X_i is a vector of covariates that are included to capture the pre-treatment characteristics of students, parents, and households. The vector X_i includes the age, gender and ethnicity of the student as well as the student's college entrance exam score, the level of his/her family assets, parents' education, the migration status of the student's parents and a set of dummy variables, one for each of the colleges. The symbol, u_i , is the error term in Eq. (1).

In the second regressions, we ran the same regressions using an Ordinary Least Squares (OLS) estimator with the amount of funding received by the control student as the dependent variable. Formally, the second regression can be written as:

$$Q_i = \theta_0 + \theta_1 X_i + \tau_i \quad (2)$$

where Q_i is the amount of financial aid obtained by students in control group. The other variables in Eq. (2) included in X_i are the same as those in Eq. (1). The symbol, τ_i , stands for the error terms in Eq. (2). In our estimation of Eq. (2) we also employed two strategies, one with college-level fixed effects and the other without.

We find that, controlling for college fixed effects (Table 4, columns 1 and 2), the coefficient on assets is negative and significant. In other words, our results show that within colleges, the poorest students (measured in terms of their assets) are getting aid (since the negative coefficients on the asset variable mean that those students from families with more assets have a lower probability of receiving financial aid and also receive less financial aid). The implication of this finding is that more of the control students that were relatively worse off in terms of poverty received more funding. Therefore, not only are poor students generally able to access funding (as discussed above—87% of the control students received aid), it is the poorest among the poor that are also most likely to receive the aid.

To further substantiate our finding, we interviewed the 12% of control students (13 in total) who did not receive aid. We found (in almost every case) that they did not receive financial grants because of poor college grades. Indeed, the students told us that they understood how to apply for financial and they were eligible for the need-based grants—had they ensured sufficient grades. They explained (again in almost every case) that they had not applied or had applied and been denied due to the fact that their college grades were low. In sum, financial aid is available to almost all of those who choose to avail themselves of the opportunities. However, this aid is not automatic and not totally based on needs. There appears to be a conditionality that students keep their grades up. Moreover, even though (according to policy) financial aid should not be based on college grades (Loyalka et al., 2012), this finding further suggests that the “need-based” aid in first-tier universities was actually not purely based on need.⁹

The regression results point to one potential gap in the financial aid program. Specifically, in both regressions in Table 4, the case of Anhui University might be cause for concern. According to the results (columns 1 and 2, row 10), Anhui University had the largest number of control students who received no scholarships or loans and the students had access to less financial aid. In fact, when looking closer at the data, we find that while only 25% of the control students attended Anhui University (by design—we chose equal numbers of students from the four sample universities), half of the students who received no funding attended Anhui University. In thinking about this results, it may also be important to note that students at Anhui University tended to be poorer (their families had fewer assets) and the school had comparably fewer funding opportunities, especially as compared to higher-ranked Xi'an Jiaotong University, whose students received, on average, 4700 yuan more than Anhui University students.

Why might this be the case? One potential reason for this phenomenon is that Anhui University is a comparably less prestigious and less selective institution (compared to the other three sample colleges). Anhui University is the lowest ranked among the four schools (though, it is still a first-tier college—Tibet' People Press, 2009). Moreover, it is located in one of the poorest locations (based on the income ranking of the county it resides within—CNBS, 2008). As we did not survey any second or third tier colleges, it might be conjectured that their conditions are somewhat more akin (and perhaps even more acute) than those at Anhui University. This would mean, of course, that the overall finding that the poorest of college students have the most access to financial aid is valid only for the better first-tier colleges.

⁹ There is really no contradiction between the findings in the interviews (cited in this paragraph) and the findings reported in Table 4. When we interviewed the students who had not received financial aid, they told us that financial aid depended on their in-major tests/grades. In the empirical results, however, we could not include a variable to measure this. This inability to create a variable based on in-major performance occurs because the students in both of treatment and control groups are in majors that span a number of different disciplines. However, it is possible to measure the performance of a student before they entered college. The independent variable used in Table 4 is “Gaokao Score”, which is the score on the college entrance exam. This test is taken by all students and is more or less a standardized measure of historical performance (Wang et al., 2011). According to our results, there is no correlation between the Gaokao Score and receipt of financial aid. Because these are two very different measures, there is no contradiction.

Table 5

Means of outcome variables for various treatment groups and control group in the second year of college study.

Outcome variables	Treatment group	Control group	p-Value ^a
Self-esteem scale (SES)			
Rosenberg SES I Scale	19.88 (3.06)	19.91 (3.23)	0.95
SES II Scale	23.00 (3.35)	22.13 (3.58)	0.10*
General Self-efficacy Scale (GSE)	25.78 (4.33)	25.91 (4.94)	0.85
University Personality Inventory (UPI)	12.37 (8.91)	11.44 (8.86)	0.48
Time allocation ^b			
Part-time job (h/semester)	22.23 (52.09)	10.83 (28.43)	0.06*
Activities on campus (h/semester)	3.66 (20.62)	2.06 (12.76)	0.51
Community service (h/semester)	1.78 (8.54)	0.67 (3.04)	0.21

Note: ^aThis column reports the test results of the equivalency of outcome variables across treatment and control group; ^bThese three outcome variables are used to assess the difference between treatment and control students in whether students have participated in each of the following activities. Standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

5. Consequences of financial aid

Even as we have established that most poor students indeed have access to financial aid, and the poorest students are more likely to receive financial aid, there remains that question of whether the level of the aid is sufficient and the nature of the aid (i.e., the way it is given) is appropriate. That is, even after the control students received an average of 4900 yuan of financial aid per year from different channels in China's education system, are poor students still experiencing higher stress and lower self-esteem? Do poor college students participate less frequently in college activities? To answer these questions, we compare the levels of stress, self-esteem/self-efficacy and level of participation of students in the control group with identical measures in the treatment group, those students that received our gold-standard scholarships. The logic behind this part of the analysis is that we believe that if a student is awarded a full, four-year, no-strings-attached scholarship, this goes about as far as any policy in China can go in mitigating parental financial burdens. If control students fare just as well as treatment students, we might conclude that existing financial aid is sufficient to mitigate financial burdens as effectively as if all students were guaranteed full scholarships.

To carry out our analysis, we initially do a direct comparison of means of key variables between the control and treatment. We find that treatment students who received full ZEE scholarships report having essentially identical levels of stress (when compared to the levels of stress of control students—Table 5, row 4). In fact, the average student in the treatment group had a slightly higher level of the UPI scale (12.37) than the average control student (11.44—the higher the score on the index, the more stressed a student feels). However, while treatment students seem to report having more stress, this difference is not statistically significant.¹⁰

In looking at the measures of self-esteem/self-efficacy, we find some indication that treatment students who received the full ZEE scholarship may have had somewhat higher levels of measured self-esteem, but overall these results are inconclusive. In the case of the Rosenberg SES I and GSE, the measures were not measurably different between those in the treatment and the control groups (Table 5, rows 1 and 3). This suggests that having access to full scholarships had no impact on students' self-esteem (when comparing the findings to the control group to who were accessing financial aid through China's college system). In the case of the Rosenberg SES II, the average treatment students had a slight tendency higher level of self-esteem (23.00) than the average control student (22.13—row 2). It should be noted, however, that the difference in the two means is only statistically significant at the 10% level (row 2, column 3). Because this measured difference is relatively small (in magnitude and only statistically significant at the 10% level), and because the result does not appear when using the other self-esteem scales, we exercise caution in interpreting this result. As such, we conclude that the treatment does not have an impact, or at most has only a small impact on self-esteem/self-efficacy. In other words, China's financial aid system (that the control students are subjected to and rely on for

¹⁰ When we look at an alternative outcome variable, the share of students that are suffering from moderate to heavy levels of stress (that is, those that diagnosed by UPI scores of higher than 20), we find similar results. The share of stressed students in the treatment group improves, falling from 25.6% during the baseline to 19.7% during the endline (a reduction of 6 percentage points). The share of stressed students in the control group, however, also improves slightly (falling from 17.9% during the baseline to 15.8% during the endline—a reduction of 2 percentage points). Hence, even though there was a small improvement in the level of stress in students after giving financial treatment in the treatment group, the same level of improvement was also experienced by those in the control group.

financial aid) is allowing students to maintain self-esteem/self-efficacy in college at least at the same levels as students who receive full, four-year awards.

We also find that receiving a full four-year scholarship has no measurable impact on one's participation in school activities. Treatment students report spending about as much time in on-campus activities and community service as students in the control group (Table 5, rows 6 and 7). Specifically, scholarship recipients spent an average of 3.66 h on campus activities per semester, compared to an average of 2.06 h spent by students who did not receive our four-year scholarship. This result is not statistically significant. Moreover, treatment students perform, on average, 1.78 h of community service per semester, as opposed to an average of 0.67 h by control students. Again, this result is not significant.

We also examine the number of hours spent working part-time during their second year of college study. This metric is of interest because if a student was working a lot outside of class (in order to help pay for tuition costs), it may be that such actions are affecting the nature of the college experience of the students. We know from interviews that working part-time often is a symptom that students need the additional earnings to support their studies. However, part-time work can detract from a student's ability to participate fully in college.

When we examine the propensity of students in the treatment and control groups to work outside of class, we find a significance difference, but, in an unexpected direction (Table 5, row 5). According to our data, treatment students report more hours worked in part-time jobs (22.23 h/semester) than control students (10.83 h/semester). This difference is significant at the 10% level. Hence, from these results it is safe to say that China's financial aid system (as measured by the control students) is not putting any measurable pressure on students to increase work outside of class and reduce the number of hours spent on extracurricular activities when compared to the treatment students.

5.1. Multivariate analysis

In order to increase the efficiency (precision) of the estimated treatment effects, we conducted a regression analysis to evaluate the impact of scholarships on the students. The higher efficiency is gained by conditioning our results on a set of

Table 6

Regression results of the impact of the intervention (full ZEE Scholarships) on self-esteem/self-efficacy and stress in the second year of college study.

	Rosenberg SES	SES II	GSE	UPI
<i>Treatment effect</i>				
Treatment	0.169 (0.535)	0.672 (0.597)	0.011 (0.831)	0.354 (1.541)
<i>Student characteristics</i>				
Age	-0.031 (0.248)	-0.291 (0.277)	0.055 (0.385)	-0.653 (0.718)
Gender	0.029 (0.581)	-0.288 (0.648)	0.502 (0.902)	-0.178 (1.681)
Han	-0.295 (1.017)	-0.002 (1.135)	-0.904 (1.580)	1.134 (2.944)
<i>Family characteristics</i>				
Asset	-0.001 (0.006)	0.003 (0.007)	-0.010 (0.009)	-0.033* (0.017)
Father's education	-0.098 (0.109)	0.003 (0.122)	0.029 (0.170)	0.629** (0.315)
Father's migration	-0.540 (0.675)	-0.379 (0.754)	-1.468 (1.049)	1.671 (1.954)
Mother's education	0.104 (0.088)	0.016 (0.098)	0.030 (0.137)	-0.646** (0.253)
Mother's migration	0.433 (0.743)	0.744 (0.830)	2.120* (1.154)	-1.107 (2.153)
<i>College fixed effects</i>				
Xi'an Jiaotong	1.326 (0.804)	-0.854 (0.898)	-1.375 (1.249)	1.163 (2.319)
Sichuan U.	2.338*** (0.830)	0.680 (0.926)	-0.149 (1.289)	-1.324 (2.402)
Anhui U.	0.558 (0.824)	-1.955** (0.919)	-2.547** (1.279)	-2.702 (2.383)
Constant	19.774*** (5.080)	27.941*** (5.671)	25.318*** (7.890)	23.663 (14.711)
Observations	134	134	134	135
R ²	0.119	0.101	0.091	0.096

Note: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table 7

Regression results of impact of treatment and scholarship on students' time allocation in the second year of college.

	Part-time job	Activities on campus	Community service
<i>Treatment effect</i>			
Treatment	9.933 (6.533)	2.257 (3.287)	0.704 (0.465)
<i>Student characteristics</i>			
Age	−0.769 (3.045)	−3.255** (1.532)	−0.140 (0.217)
Gender	−1.935 (7.124)	−0.738 (3.584)	0.411 (0.507)
Han	6.980 (12.479)	2.107 (6.279)	0.125 (0.889)
<i>Family characteristics</i>			
Asset	0.041 (0.072)	0.003 (0.036)	0.001 (0.005)
Father's education	−0.511 (1.337)	0.046 (0.673)	−0.085 (0.095)
Father's migration	1.954 (8.282)	−10.200** (4.167)	0.331 (0.590)
Mother's education	−0.306 (1.073)	−0.803 (0.540)	−0.099 (0.076)
Mother's migration	−1.287 (9.128)	8.573* (4.592)	−0.034 (0.650)
<i>College fixed effects</i>			
Xi'an Jiaotong	10.947 (9.828)	−11.454** (4.945)	−0.431 (0.700)
Sichuan U.	15.996 (10.183)	−11.384** (5.123)	0.391 (0.725)
Anhui U.	−3.622 (10.103)	−9.625* (5.083)	0.690 (0.719)
Constant	16.136 (62.360)	75.675** (31.374)	3.486 (4.440)
Observations	135	135	135
R ²	0.060	0.152	0.083

Note: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

predetermined individual characteristics (e.g., demographics, normalized high school entrance exam scores, and household characteristics). We also include college cluster effects in this model.

Formally, the model to be estimated is:

$$Y_i = \alpha_0 + \delta_i Z_i + \gamma_i X_i + \varepsilon_i \quad (3)$$

where i is an index for the student. Y_i can be any of the outcome variables, which include the scores of psychological examinations and student's time allocation. Z_i is the vector of treatment variables (which makes δ the vector of our parameters of interest), which includes a dummy variable for being in the treatment groups relative to the control group and/or the amount of scholarship. The term X_i is a vector of covariates that are included to capture the pre-treatment characteristics of students, parents and households. The vector X_i includes the age, gender, and ethnicity of the student as well as family assets, the parents' education and migration status, and dummy variables for each of the colleges. We run the regression analysis with robust standard errors to capture the possible presence of heterogeneous treatment effects.

Overall, the multivariate regression results in Tables 6 and 7 show no evidence of impacts of the scholarship on student stress levels, self-esteem/self-efficacy or participation in college activities. More specifically, scores on all four psychological tests for self-esteem/self-efficacy and stress—the Rosenberg SES I & II, GSE and UPI scales—are essentially identical across treatment and control students (Table 6). Although we found significant results in the section above (at the 10% level) when we compared treatment and control students in their scores on the Rosenberg SES II test for self-esteem, when accounting for these other control variables, this finding is no longer statistically significant. Furthermore, all of the other psychological tests yield no significant results. Although the effect of the treatment is positive for each psychological test, its magnitude is extremely small (under 1) and not significant. In short, according to this result, we can conclude that the scholarship had no measurable effect on students' stress levels, self-esteem, or self-efficacy.

Moreover, in terms of self-reported time spent on activities on campus and community service, treatment and control students report spending essentially the same number of hours on all activities. Although students receiving the scholarship do report spending, on average, 2.3 more hours on campus activities per semester compared to control students, this result is not significant, even at the 10% level. Moreover, they report spending only 0.7 more hours on community service compared to control students: this is also not significant. Again, although the results are positive, they are not statistically significant.

In short, it appears that after one year of the intervention, the scholarship treatment had no measurable impact on our outcome variables of interest. This finding implies that the given state of financial aid is sufficient for the first year of students' college life, such that students who did not receive our scholarship were able to find enough aid to relieve any financial burdens that might have led to negative consequences.

If we explore the plausible mechanism by which our scholarship should have improved outcomes controlling for other variables, we find that they, too, support our general finding that additional scholarships have no effect on student wellbeing. As mentioned, engaging in part-time work detracts from students' abilities to join campus activities. The scholarship would have reduced students' needs to work to gain additional income. Although we found in the descriptive results that treatment students tend to work more hours, this finding is not significant when we control for other variables (Table 6, column 1). While it is true that even after accounting for other variables treatment students still report doing 9.9 more hours of part time work per semester, this finding is no longer significant in our multivariate analysis. As such, we can conclude that the scholarship also did not affect students' propensity to engage in part-time work, which should have been one mechanism by which the scholarship would increase on-campus activities.

These results must, of course, be interpreted with caution. With an effective sample size of 190 students we cannot be completely positive that there is absolutely no effect. However, it needs to be emphasized that we can place conventional levels of confidence in the results since the statistical power of our randomized controlled trial is greater than 80%. In general, we believe it is fair to conclude that the magnitude of the effect, even assuming that it does exist, is not large. Indeed, for an intervention as extreme as providing full, four-year 4000 yuan per year to a student for four years (a total of 16,000 yuan), discovering no statistically significant differences across the treatment and control groups (who were accessing financial aid through the colleges' traditional channels) does point to an important result: poor, first-year college students in our sample colleges appear to have access to sufficient financial aid.

6. Conclusion

Reporting on the results of a randomized controlled trial in four first-tier colleges across inland China, this study has shown that providing full scholarships to poor first-year college students does not measurably improve student stress levels, self-esteem/self-efficacy, or participation in college. Furthermore, we have found that poor students who did not receive the scholarships (the control group) were able to access roughly equivalent amounts of financial aid, and the poorest college students receive more aid—even when they are compared with those who are already among the poor. Taken together, these results suggest that financial aid in first-tier colleges is currently sufficient and accessible for poor rural students, insofar as they do not experience any additional stress, reduced self-esteem/self-efficacy, or reduced college participation. In short: additional financial aid will not help poor students succeed in college because they are receiving enough financial aid to mitigate any negative effects from cost concerns already.

Of course, our findings do not address the potential funding issues encountered by students in second and third tier colleges, which are likely to be more challenging. Indeed, this fact was confirmed by the case of the lowest ranked college in the study, Anhui University: its poorest students had the most difficulty accessing financial aid among the four colleges. Given that financial aid is determined only when students enroll in college, it could very well be the case the poor students don't attend lower tier colleges because of financial constraints (Wei, Loyalka, & Song, 2012). When examining the Chinese higher education system at large (and not just first tier universities), Loyalka et al. (2012) also show that not all poor students receive aid.

Moreover, the educational inequalities that perpetuate the vast income inequities across China may not even be concentrated at the college level. Instead, we point to other studies that have indicated that they occur before that time, through the chasms that separate urban and rural Chinese in terms of neo-natal health, early childhood educational opportunity and quality (China Development Research Foundation, 2010; Wei et al., 2012); nutrition, health and facilities at the primary school level (Luo et al., 2009); and increasing opportunity costs to education at the junior high and high school levels that persuade so many to give up their futures (Liu et al., 2011).

As such, we conclude that scholarship funding at first tier colleges might be used more efficiently if it were provided for lower tier colleges, high school, and other pre-college pursuits. Put in terms of cost effectiveness: a single college scholarship of 4000 yuan—from which we have yet to find a significant impact—would be able to fund de-worming pills for 12,000 primary school children, reduce absenteeism by 25% (Miguel & Kremer, 2004), and dramatically increase their chances to continue in school onto college.

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Appendix A

To test the impact of the scholarship program on the psychological health and well-being of the college students, we administered the following psychological tests: Rosenberg Self-esteem Scale, Self-efficacy Tests, and University Personality Inventory. They are included here in full and with brief introductory explanations for reference and perusal.

Self-Esteem/Efficacy Tests

A. Self-Esteem Scales (SES)

A1. Rosenberg Self-esteem Scale (SES) has been used often in the psychology literature (Rosenberg, 1965). (http://bsos.umd.edu/socy/grad/socpsy_rosenberg.html)

1. General information for using the Rosenberg SES

To score the items, assign a value to each of the 10 items as follows:

- For questions 1, 2, 4, 6, 7: Strongly Agree = 3, Agree = 2, Disagree = 1, and Strongly Disagree = 0.
- For questions 3, 5, 8, 9, 10, which are reversed in valence: Strongly Agree = 0, Agree = 1, Disagree = 2, and Strongly Disagree = 3.

The scale ranges from 0 to 30, with 30 indicating the highest score and 0 the lowest score possible.

2. Statements in Rosenberg SES

	Statements	A ^a	B ^a	C ^a	D ^a
1.	I feel that I'm a person of worth, at least on an equal plane with others.	A	B	C	D
2.	I feel that I have a number of good qualities.	A	B	C	D
3.	All in all, I am inclined to feel that I am a failure.	A	B	C	D
4.	I am able to do things as well as most other people.	A	B	C	D
5.	I feel I do not have much to be proud of.	A	B	C	D
6.	I take a positive attitude toward myself.	A	B	C	D
7.	On the whole, I am satisfied with myself.	A	B	C	D
8.	I wish I could have more respect for myself.	A	B	C	D
9.	I certainly feel useless at times.	A	B	C	D
10.	At times I think I am no good at all.	A	B	C	D

Note: ^aHere, A = strongly agree, B = agree, C = disagree and D = strongly disagree.

A2. Self-esteem Scale II (SES II) was originally derived for Income Dynamics Study by Michigan State, USA

1. General information for using SES II

This SES II includes 8 statements and each self-rated 1 to 4. The statements are answered on a four point scale as *Never*, *Sometimes*, *Often*, or *Always*. To score the items, assign a value to each of the 8 items as follows: Never = 1, Sometimes = 2, Often = 3, and Always = 4. The scale ranges from 8 to 32, with 32 indicating the highest score and 8 the lowest score possible.

2. Statements in SES II

	Statements	A ^a	B ^a	C ^a	D ^a
1.	I do lots of important things.	A	B	C	D
2.	I like being the way I am.	A	B	C	D
3.	Overall, I have a lot to be proud of	A	B	C	D
4.	I can do things as well as most people.	A	B	C	D
5.	A lot of things about me are good.	A	B	C	D
6.	I'm as good as most other people.	A	B	C	D
7.	Other people think I am a good person.	A	B	C	D
8.	When I do something, I do it well.	A	B	C	D

Note: ^aHere, A = never, B = sometimes, C = often and D = always.

B. General Self-Efficacy Scale (GSE)

1. General information for using GSE <http://userpage.fu-berlin.de/~health/engscal.htm>

GSE includes 10 statements and each self-rated 1 to 4. The statements are answered on a four point scale as *Not at all true*, *Hardly true*, *Moderately true*, or *Exactly true*. To score the items, assign a value to each of the 8 items as follows: Not at all true = 1, Hardly true = 2, Moderately true = 3, and Exactly true = 4. The scale ranges from 10 to 40, with 40 indicating the highest score and 10 the lowest score possible.

2. Statements in GSE

Statements	A ^a	B ^a	C ^a	D ^a
1. I feel that I'm a person of worth, at least on an equal plane with others.	A	B	C	D
2. If someone opposes me, I can find the means and ways to get what I want.	A	B	C	D
3. It is easy for me to stick to my aims and accomplish my goals.	A	B	C	D
4. I am confident that I could deal efficiently with unexpected events.	A	B	C	D
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.	A	B	C	D
6. I can solve most problems if I invest the necessary effort.	A	B	C	D
7. I can remain calm when facing difficulties because I can rely on my coping abilities.	A	B	C	D
8. When I am confronted with a problem, I can usually find several solutions.	A	B	C	D
9. If I am in trouble, I can usually think of a solution.	A	B	C	D
10. I can usually handle whatever comes my way.	A	B	C	D

Note: ^aHere, A = Not at all true, B = Hardly true, C = Moderately true, and D = Exactly true.

C. University Personality Inventory (UPI)

1. General information for using UPI

UPI includes 56 statements that students answer with 'Yes' or 'No'. Yes awards 1 point while No awards 0 points. The results of the UPI is determined by the student's score, the highest being 56 points and the lowest 0.

2. Statements in UPI

No.	Statements		
1	Loss of appetite	Yes	No
2	Nausea, stomach discomfort, stomach ache	Yes	No
3	Easy to diarrhea or constipation	Yes	No
4	Concern about heart palpitations and pulse	Yes	No
5	Good health	Yes	No
6	Discontent with self	Yes	No
7	Pressured by parent's high expectations	Yes	No
8	Saddened by family's unfortunate past	Yes	No
9	Anxiety for future	Yes	No
10	I dislike meeting others	Yes	No
11	Feel like I am not myself	Yes	No
12	A lack of passion and enthusiasm	Yes	No
13	I am a pessimist	Yes	No
14	Unable to focus	Yes	No
15	Moody	Yes	No
16	Insomnia	Yes	No
17	Headache	Yes	No
18	Neck, and shoulder pain	Yes	No
19	Chest pain	Yes	No
20	Always energetic	Yes	No
21	Narrow-minded	Yes	No
22	Worrying about things easily	Yes	No
23	Restless	Yes	No
24	Easily irritated	Yes	No
25	Life is meaningless	Yes	No
26	Not interested in anything	Yes	No
27	Memory loss	Yes	No
28	A lack of endurance	Yes	No
29	Very little resolution	Yes	No
30	Too dependent on others	Yes	No
31	Get upset when embarrassed	Yes	No
32	Stuttering, voice tremble	Yes	No
33	My body is often too hot or too cold	Yes	No
34	Take note urination and sexual organs	Yes	No
35	Cheerful	Yes	No
36	Somehow disturbed	Yes	No
37	Feel uneasy when alone	Yes	No
38	Lack of confidence	Yes	No
39	Timid	Yes	No
40	Easily misunderstood	Yes	No
41	Easily alarmed	Yes	No
42	Physically tired	Yes	No

(continued on next page)

Statements in UPI (continued)

No.	Statements		
43	Chills when in a hurry	Yes	No
44	Dizzy when I stand up	Yes	No
45	Lose conscience	Yes	No
46	Popular with others	Yes	No
47	Too rigid as a person	Yes	No
48	Frustrated with indecision	Yes	No
49	Overly concerned with hygiene	Yes	No
50	Cannot stop obsessing with meaningless ideas	Yes	No
51	Feel like I have a strange smell	Yes	No
52	Self-deprecating when alone	Yes	No
53	Always take note of people around me	Yes	No
54	Caring a lot about other people's perception of me	Yes	No
55	Believe that others underestimate me.	Yes	No
56	Feel that I can be destroyed easily	Yes	No

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