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Abstract

The goal of this paper is describe and analyze the relationship between ability tracking and student social capital, in the context of poor students in developing countries. Drawing on the results from a longitudinal study among 1,436 poor students across 132 schools in rural China, we find a significant lack of interpersonal trust and confidence in public institutions among poor rural young adults. We also find that there is a strong correlation between ability tracking during junior high school and levels of social capital. The disparities might serve to further widen the gap between the relatively privileged students who are staying in school and the less privileged students who are dropping out of school. This result suggests that making high school accessible to more students would improve social capital in the general population.

Keywords: Ability Tracking, Social Capital, Interpersonal Trust, Confidence in Public Institutions, Rural Secondary Schooling

Ability Tracking and Social Capital in China's Rural Secondary School System

Ability tracking (also known as streaming or ability grouping) describes the practice under which students are sorted into different groups based on their prior academic achievement or socioeconomic class. Ability tracking is one of the most common practices in secondary schools in developing countries (Hanushek, 2006; Banerjee and Duflo, 2011; Glewwe et al., 2013; Arteaga and Glewwe, 2014). [1] The impact of ability tracking on student outcomes is contentious in the education literature. Supporters of ability tracking suggest that tracking improves academic performance for all students, because course curriculum and teacher efforts can be better targeted to the differing ability levels of students (e.g. Duflo et al., 2011; Booij et al., 2015). Critics of ability tracking argue that these systems have negative impacts on slow-tracked students by reducing positive peer effects, reducing student self-esteem, and inhibiting upward mobility for students of lower socioeconomic status (e.g. Hanushek, 2006).

Many studies have analyzed the impact of ability tracking on student academic performance, with mixed results (Kulik and Kulik, 1982; Slavin, 1990; Hoffer, 1992; Epple et al., 2002; Figlio and Page, 2002; West and Wößmann, 2006; Duflo et al., 2011). In a meta-analysis of 52 studies carried out in secondary schools in developed countries (primarily based on correlational studies), Kulik and Kulik (1982) conclude that the average effect of ability tracking on student test scores is rather small. In contrast, in a recent experimental study conducted in Kenya with 121 primary schools, Duflo et al., (2011) found that tracking students by their prior academic achievement raised scores of all students over 18 months, even those assigned to lower achieving tracks.

While the literature is unclear about the effect of tracking on academic achievement, there is evidence that ability tracking can have negative effects on important non-cognitive outcomes for slow-tracked students. For example, studies show that the most significant consequence of being placed in the slow track is an increased risk of dropping out of school (McPartland, 1993; Filmer, 2000; Brown and Park, 2002; Wang et al., 2015). Slow-tracked students have also been shown to have elevated levels of psychological stress, such as anxiety and depression (Kokko et al., 2006; Wang et al., 2015). Other work documents that student self-esteem and confidence are significantly correlated with their position in the tracking system (Oakes, 1985; Van Houtte et al., 2012). In response to some of these negative proximate outcomes, it has been shown that slow-tracked students in tracked systems often become more aggressive, more impulsive, and exhibit more antisocial behavior (Kokko and Pulkkinen, 2000; Kokko et al., 2006).

We hypothesize that the same mechanisms that drive these negative non-cognitive outcomes for slow-tracked students may also impact the *social capital* held by students in different tracks. Social capital is generally understood as a set of social norms that promote collective action (Coleman, 1988; Bourdieu and Wacquant, 1992; Putman, 1993). Social capital has been shown to be an important contributor to a country's development (Woolcock, 1998). At a micro level, social capital reduces transaction costs (La Porta et al., 1997; Zack and Knack, 2001), improves contract enforcement and facilitates credit for individual investors (Knack and Keefer, 1995). At a macro level, social capital fosters social cohesion—which may improve the efficiency of public administration (Putnam, 1993; Inglehart, 1999).

It has been established that there is a positive relationship between educational attainment and social capital. Education passes on social capital in the form of social rules, trust and norms (Leigh, 2006; Helliwell and Putnam, 2007; Cantoni and Yuchtman, 2013).

For example, in developed countries such as the United States, Britain, and Australia, education promotes greater civic participation, larger and more diverse social networks, as well as higher levels of social trust (Hall, 1999; Baum et al., 2000; Halpern, 2005; Li et al., 2005).

What has not been examined, to our knowledge, is whether student social capital might also be influenced by the differential treatment students receive in schools that use ability tracking. Theorists have been arguing since the 1970s that the day-to-day experiences of students in tracked education systems could promote very different social attitudes and expectations across groups (Bowles and Gintis, 1976; Oakes, 1982; Bernstein, 1997). Teachers in competitive education systems are more likely to direct positive attention toward better-performing students (Vickers, 1994; Fortin et al., 2006). By contrast, slow-tracked students are often assigned less effective or less motivated teachers (Talbert and Ennis, 1990), are more likely to be ignored by their teachers (Hallinan, 1996; Kerckhoff and Glennie, 1999), are reprimanded more often or more harshly than fast-tracked students (Shi et al., 2015), and sometimes even encouraged to drop out of school by their teachers (Bowditch, 1993). In cultures that place a high value on academic achievement, students who have been placed in the slow track may also receive less attention and less support at home from their parents or other caregivers (Hoover-Dempsey and Sandler, 1997; Kraft and Rogers, 2015).

Understanding social capital as the collection of norms that students hold (including interpersonal trust and confidence in public institutions), it would seem that ability tracked school systems might have a differential impact on the social capital of students in fast and slow tracks. For example, if a student is placed in the slow track and subsequently routinely ignored, punished or chastised by their teachers and parents, they may begin to have lower levels of trust in others and confidence in the institutions that they are attending. By contrast,

if a student is placed in the fast track and given more attention and treated preferentially by their teachers and parents, they may hold more favorable values towards school, their peers, and even social institutions around them. In spite of the logic behind this relationship, to our knowledge, no study has rigorously analyzed how ability tracking could affect the social capital of students—either fast-tracked or slow-tracked students.

It is important to note that there are other effects at work in schools that may also influence student social capital. In particular, there is evidence that social capital can vary by the type of student that is being examined, particularly on the basis of their socioeconomic status (Narayan, 1997; Grootaert, 2001). Specifically, the research shows that students of lower socioeconomic status tend to also have lower levels of social capital. Because our research goal is to isolate the impact of ability tracking on social capital, we seek to reduce this complexity by focusing on a single socioeconomic group. Consequently, in the rest of this paper, we have chosen to look at the poorest students within tracked schools, as they may be most vulnerable to the negative effects of being put in the slow track due to less parental support and lower parental educational background (Wilson, 1996; Grootaert, 2001; Tilak, 2001; Brown and Park, 2002; Tarabini, 2010). By limiting our sample to the poorest students, we can expect that differences in socioeconomic status across students will not bias our results.

The overall goal of this paper is to begin to fill in the gaps that exist in our understanding of the relationship between ability tracking and social capital among poor students in developing countries. To meet this goal, we have four specific objectives. First, we measure the levels of social capital among poor students who recently finished attending (or dropped out of) junior high school in a sample of tracked schools. Second, we compare the levels of social capital between students that have been on the fast track in junior high

school and those that have been on the slow track. Finally, we discuss the implications of having students go through a tracking system and the nature of the social capital that is produced (or not) by the system.

In this paper we seek to achieve our goals and objectives in the context of rural China. Studying the relationship between secondary schooling experience and social capital formation in rural China may provide a unique opportunity for several reasons. First, because 70 percent of school-aged children in China are growing up in rural areas, investigating the social capital of rural students is important if we are to understand the characteristics of China's future labor force (Khor et al., forthcoming). Second, ability tracking and high stakes matriculation exams have been prevalent in China's secondary education system for many years. The rigidity of China's fast-tracked educational system, as well as the high social value placed on academic achievement in Chinese culture, may be particularly likely to create different environments for fast-tracked and slow-tracked students (and the differences in the experiences that students in different tracks have might lead to different levels of social capital). Finally, in China's rural areas, there are still many poor families, which facilitates the selection of a cohort of students that are poor (which allows us to focus on the effect of fast-tracking on social capital without confounding the analysis with issues of differences in social capital by the differences in the socio-economic status of students).

The rest of paper is organized as follows. In the next section we describe the practice of ability tracking in China's junior high schools. In section 3 we explain the research design and data collection. In section 4 we explain the estimation strategy. In section 5 we present the results and in section 6 we conclude.

Ability Tracking in China's Rural Junior High Schools

Ability tracking has long been the norm in junior high schools in China (Cheung et al., 2003; Ding and Lehrer, 2007; Lai, 2007; Wang, 2008). However, in recent years, international opinion has turned against ability tracking for the youngest age groups (Fiedler et al., 2002). Similar sentiments also emerged in China. In 2006, to fight the perceived negative effects of tracking on younger children, China's central government explicitly prohibited junior high schools and primary schools from tracking students according to their ability (MOE, 2006). According to policy, formal tracking is only allowed at the level of high school or above.

In spite of the policy, the incentives faced by principals and teachers in junior high schools strongly encourage ability tracking. At the end of junior high, admission to high school is determined almost exclusively by student performance on a single high stakes test. The odds of success are low. In poor rural counties, less than half of junior high graduates are able to gain admission to high school (Mo et al., 2013; Shi et al., 2015; Li et al., 2015). Because of the importance of a high school (and college) education in Chinese society today, only students who are successful on this exam have any chance of charting a course towards greater opportunity and social status that a college education offers (Wang et al., 2013; Ye, 2013; Loyalka et al., 2014).

As a result of this institutional reality, the primary incentive for principals and teachers is to focus their energies disproportionately on the best students. Studies have shown that reputations and prospects for officials, principals and teachers in China are almost exclusively determined by their ability to cultivate high achieving students who are most likely to gain admission into prestigious high schools and universities (Tsang, 2000; Shi et

al., 2015). Studies have shown that teachers in Chinese schools spend more time with (Stevenson et al., 1994; Xue and Ding, 2009); provide more tutoring for (Lei, 2005; Dang and Rogers, 2008; Tsang et al., 2010; Zhang, 2013); give greater encouragement to (Lee et al., 2009; Wang et al., 2015) and generally provide a more supportive environment to (Tang, 1991; Shi et al., 2015) high achieving students relative to their peers.

Low-performing students, by contrast, receive less attention. These students are often taught by less experienced teachers (Wang et al., 2015) and are given almost no encouragement from teachers or school administrators (Yi, 2011; Wang et al., 2012). In rural schools where teaching styles are especially strict, qualitative research reveals that harsh physical punishment is commonplace for low-performing students (Shi et al., 2015). In the most extreme cases, slow-tracked students are actively encouraged to drop out of school by their teachers, so as to improve the school's or teacher's testing statistics (Liu, 2014; Xue, 2015). Low-achieving students drop out of school at high rates (Wang et al., 2015; Shi et al., 2015) and have lower self-confidence and self-esteem (Cheng, 1997; Wong and Watkins, 2001). Indeed, researchers have documented that this sort of "informal tracking" is pervasive in junior high schools across China (Yuen-Yee and Watkins, 1994; Yu and Suen, 2005; Liu and Wu, 2006; Dello-Lacovo, 2009).

Faced with this system, how do teachers decide which students deserve their time and effort? In other words, how do teachers decide student track placement in this informal tracking system? First, and most obviously, student track placement is determined by prior academic achievement (Oakes, 1985; Slavin, 1993; Betts and Shkolnik, 2000). In Chinese junior high schools, students are generally asked to take an exam (usually mathematics) at the beginning of school to determine their prior academic ability for the purpose of tracking placement (Xinhua, 2010). Student motivation also matters—students who are more

motivated to go to high school are more likely to get placed in the fast track (Yi et al., 2014). Students with higher socioeconomic status are also more likely to be fast-tracked, both due to the association between socioeconomic status and academic achievement, and due to the fact that social biases lead teachers and principals to expect students with wealthier and better educated parents to do better in the long run (Dang and Rogers, 2008; Tsang et al., 2010).

Due to this competitive environment, we believe that ability tracking may be important in producing variable levels of social capital (especially social trust) among poor students in different tracks in junior high schools in rural China. At the very age when students are beginning to discover their beliefs (as separate from their parents) and starting to understand society around them (Chen et al., 2005), fast-tracked education in China places students into two very different environments. Fast-tracked students are in an environment that is encouraging and that involves a lot of positive interaction with authority figures; slow-tracked students are in an environment that may be characterized by verbal abuse, physical violence, apathy, and negative and contentious relationships between adults and children.

Research Design

Sampling and Data Collection

To understand how student tracking affects the social capital of students, we gathered data from 132 rural, public junior high schools in 15 nationally designated poor counties in Shaanxi province and Hebei province. Shaanxi is located in northwest China and has a GDP per capita of 27,133 yuan (4000 USD), while Hebei is located in central China with a GDP per capita of 28,668 yuan (4320 USD; China Statistical Yearbook, 2011). We chose these two provinces because they differ in terms of location and geography, allowing us to increase the generalizability of our findings.

We used official records to create a sampling frame of all rural, public junior high schools in the 15 nationally designated poor counties in Shaanxi and Hebei provinces at the start of the program. A total of 150 rural junior high schools were identified. We then excluded 18 schools in Hebei because the administrative records reported that the number of seventh grade students in these schools was fewer than 50 (and the schools were likely to be merged with some other school in the near future). Our final sample therefore included a total of 473 sample classes in 132 schools (71 in Shaanxi and 61 in Hebei). This sample is roughly representative of rural, public junior high schools in nationally designated poor counties in provinces like Shaanxi and Hebei.

We also measured student's academic performance, and their individual and family characteristics. Specifically, we first conducted a 30-minute standardized math test for all students using items from the Trends in International Mathematics and Science Study (TIMSS).[2] Then, we administered a questionnaire to all students to understand student individual and family characteristics, such as their gender, age, and parent education and migration status. Previous studies have used similar variables to explain student-level differences in educational outcomes (Currie and Thomas, 2000; Behrman and Rosenzweig, 2002; Yi et al., 2012) and differences in social capital (Bowlby, 1988; Sampson and Laub, 1995; Hall, 1999). A description of all control variables used is provided in Appendix A.

As mentioned above, to control for the potential bias due to socioeconomic status effects on student social capital, we further restrict our sample to the poorest students. We adopted the following protocol to select the poorest students to form our analytical sample. We conducted the first round survey of all the seventh grade students and their homeroom teachers in our full sample at the beginning of the school year (in early October 2010). Students were asked to complete a checklist of major household assets. The homeroom

teacher of each class also filled out a questionnaire. One of the most important parts of the homeroom teacher's form was a list of the poorest five students in his or her class based on his or her understanding. Following the first round survey, we identified the four poorest students in each classroom in two steps. First, a monetary value was attached to each surveyed household asset to produce a single ranking of family asset value in each class. Second, we used the list of poorest students in each class collected from homeroom teachers at the baseline survey. By matching these two pieces of information together, we identified the four poorest students in each class. In total, we identified 1892 poor students.

Given that academic performance is highly correlated with socioeconomic status, we checked to make sure that the poor student sample had a wide distribution of prior academic achievement, and therefore that it was realistic to assume the poor students were sorted into different ability-group tracks. Because we administered the baseline math test to all students in each sample class (rather than just the four poorest students in each class), we can examine the distribution in scores for our sample of poor students relative to the full sample of poor and non-poor students to rule out this possibility. Figure 1 shows that while the poor students did perform at a lower level than the full sample of poor and non-poor students, *on average*, in fact, the distribution of poor student scores is normal and of a similar shape to that of the full sample of students. We therefore conclude that the distribution of scores among our poor sample is wide enough to allow for a meaningful consideration of the impact of student tracking on social capital among this more limited sample.

Follow-up Survey

The second round survey, just including the poor students sample, was conducted in October 2013, shortly after the students had graduated from junior high school and at a time immediately after the high school students had enrolled into high school. The survey was

conducted in two steps. First, we tracked each student's educational status. Specifically, we ascertained whether each student had: (a) enrolled into academic high school (henceforth "high school"); (b) left school before the end of junior high school, or (c) left the schooling system after graduating from junior high school.[3]

We visited all the students who had matriculated into high school in person to confirm their status and administer the survey; for the students who were no longer in school, we solicited the help of their previous teachers and classmates to track the students over the phone or by visiting them at their current place of residence. We followed a strict tracking protocol: in the first wave of this follow-up survey, we found 81 percent of sample students (1528 sample students); due to financial constraints, we then designated 25 percent of the remaining 19 percent of students as our "must-follow" group (62 sample students). We visited all of these "must-follow" students in person. The "must follow" group of students is correspondingly weighted in our analysis to account for the attrited students. Further, within all tracked students there are 9 percent of students (154 sample students) who has missing values in some of the outcome variables.[4] Thus, in total we have 1436 sample students to form the analytical sample.

As shown in Figure 2, at the time of the second round survey (three years after the first round survey), about 50 percent of students had enrolled in high school. Of the remaining students, 26 percent never graduated from junior high school and about 24 percent of students finished junior high but did not enroll in high school. In sum, half of the students (50 percent) did not continue their studies.[5]

In the second step we measured student social capital. The surveys were conducted in person, either through face-to-face interviews, or over the phone. A full description of our measures is in the subsection immediately below.

Measuring Social Capital

Studies argue that social capital manifests itself in individuals as a tight reciprocal relationship between levels of civic engagement, interpersonal trust, and other pro-social attitudes (Bourdieu and Wacquant, 1992; Putnam, 1993; Brehm and Rahn, 1997). In this study, we focus on two more narrowly defined attitudes that are important to broader social capital: interpersonal trust and confidence in public institutions. All outcome variables were based on questions taken directly from the General Social Survey (GSS) and World Value Survey (WVS). These measures have been implemented across more than 40 countries since the 1980s.

To measure student interpersonal trust, the question was: "*Generally speaking, would you say that most people can be trusted or that you cannot be too careful in dealing with other people?"* To measure confidence in public institutions, we asked students to answer the following question: "*I am going to name some institutions in this country. As far as the people running these institutions are concerned, would you say you have a great deal of confidence, only some confidence, or hardly any confidence at all in them?"* The question was asked four times for each of the following institutions: educational institutions, the media, banks and financial institutions, and the government. Detailed description of all the outcome variables can be found in Table 1, and the detailed distribution of the outcome variables can be found in Appendix A.

Estimation Strategy

Student Track Placement

To examine the relationship between ability tracking and student social capital, we must first identify student track placement. As we explained above, although ability tracking is pervasive in China's junior high schools, it is technically/legally prohibited. Because of this, it is impossible for researchers to systematically collect explicit information about student track placement from students or teachers directly. The words "fast track" and "slow track" are never used inside schools. As a consequence, school principals and teachers are often not willing to respond to questions about it—in either formal interviews or in written surveys. They will almost all admit, confidentially, that there is still fast tracking inside classes in their school, but they will not do so on-record.

Because of this, we need to use an indirect way to classify students as those placed on the fast track or the slow track. To identify whether students were fast-tracked or slow-tracked during junior high school, we adopt an approach in which we seek to mimic the way teachers would identify students (early in their junior high careers) and either put them on the fast or slow track. As mentioned above, international evidence (as well as studies in China) has shown that teachers in tracked schooling systems relegate students to either the fast or slow track based on a set of pre-existing criteria. These criteria include student test scores, but also often include a set of less tangible characteristics (such as student motivation and the educational and occupational backgrounds of their parents) that are associated with a high probability that the student will be able to do well enough academically to make it into high school. In our analysis, we attempt to mimic this process using student and parent characteristics (including scores made on a standardized math test) collected at the baseline survey in the first year of junior high school.

Statistically what we do is to take information from the baseline survey (when the students were in grade 7 in junior high school) and see which of those variables helps us predict who ultimately (three years later) will matriculate to high school (since we also collected this information about eventual student outcomes). To do so, we first use a *Probit* regression model to explain the observed relationship between baseline student characteristics and the educational outcome of students (i.e., did a student test into high school):

$$M_{ij} = \Phi(\alpha_0 + \alpha_1 S_{ij} + \alpha_2 P_{ij} + \alpha_3 H_{ij} + \theta_j + \varepsilon_{ij}) \quad (1)$$

where M_{ij} represents student i at school j's educational status after the end of junior high school (at the time of our second round survey). In our analysis, M_{ij} is equal to one if a student matriculated into high school, and M_{ij} is equal to zero if a student did not continue on in high school. In equation (1), S_{ij}, P_{ij} and H_{ij} are vectors of baseline student, parent and family background characteristics. The full list of control variables is presented in Appendix A. θ_j is school fixed effects and ε_i is the regression error term.

Once we have estimates of the relationship between educational performance (test scores) and characteristics of the students that the teachers observe, the next step is to predict which student (based on those characteristics) would be placed in the fast track and which student would be in the slow track. To take this next step, we proceed by using the coefficients from equation (1), α_0, α_1, α_2, α_3, and θ_j, to produce the predictions. We carry out this step by using the actual observed values for each student and creating a prediction (also for each student), or $\widehat{M}_{ij}$. The student-specific $\widehat{M}_{ij}$ is generated from the following formula:

$$\widehat{M}_{ij} = \Phi(\hat{\alpha}_0 + \hat{\alpha}_1 S_{ij} + \hat{\alpha}_2 P_{ij} + \hat{\alpha}_3 H_{ij} + \hat{\theta}_j) \quad (2)$$

$\widehat{M}_{ij}$is an estimated probability that the student is assigned to the fast track. It is important to note that in this formulation $\widehat{M}_{ij}$ ranges from zero to one.

This analysis has developed a reasonable prediction of ultimate schooling outcome for each student. However, the variable that has been generated is continuous. In order to proceed with the analysis, we need to choose a cutoff point (ρ) that will allow us to divide the students into one of two categories: those who are most likely to continue on to high school (fast track) and those who are least likely to continue on to high school (slow track). To do so, we use the conventional method proposed in Wooldridge (2010). Conceptually, in this method we maximize the percent correctly predicted. According to this approach, if $\widehat{M}_{ij}$ is larger than a set probability threshold, where we get the maximum percent correctly predicted, then the student is assigned to the fast track ($T_i = 1$). If not, then the student is assigned to the slow track ($T_i = 0$).

After choosing this approach, the next step is to count the false predictions where student is assigned to the fast (or slow) track but do not (or do) matriculate into high school over each probability threshold. Then we calculate the false-prediction rate (number of false-predicted students divided by all sample students) over each probability threshold, and plot out the decision curve. The cutoff (ρ) we will choose is the probability threshold where we get the lowest false-prediction rate (or the maximum percent correctly predicted).

We present the *Probit* regression results in Table 2. In running this regression, we find that at the probability value 0.55 (ρ=0.55) we get the lowest false-prediction rate (21 percent, Figure 3). This means that using our model predicted correctly 79 percent of the time from a student's baseline characteristics whether that student would be successful in matriculating to high school. Thus, in the end we determined that 788 students in our sample were fast-

tracked (Table 3, Row 1, Column 3) and 648 students were slow-tracked (Table 3, Row 2, Column 3).

Of course, because our rate of prediction was not perfect, we did find that among the 788 students that we predicted as fast-tracked students, 173 of them ultimately did not matriculate into high school. In the rest of the paper we call these the *underachievers*: they were fast-tracked during junior high school, but failed to live up to their potential by not gaining admission to high school. In addition, among the 648 slow-tracked students, there were 137 students who did end up matriculating into high school in spite of their less impressive baseline characteristics. In the rest of the paper, we call these the *overachievers*: they exceeded their baseline potential by gaining admission to high school against the odds. In the final section of the paper, we will look at these students in particular to see if their defiance of original expectations resulted in different levels of social capital from the students who fit more neatly into the categories they were placed in at the start of junior high school.

Tracking and Student Social Capital

Once we were able to assign each student to the fast- or slow-track, we then analyze how student tracking placement during junior high school is correlated with student social capital at the end of junior high school. To do so, we conduct OLS regression analysis to assess the correlation between a student's assigned track (fast- or slow-) and his/her social capital. The basic model that helps explain social capital is:

$$Y_{ij} = \alpha_0 + \alpha_1 T_{ij} + \alpha_2 X'_{ij} + \theta_j + \varepsilon_{ij} \quad (3)$$

In equation (3), Y_{ij} is the outcome variables that we are interested in. T_{ij} is the dummy treatment variable, which takes the value of one if student was from the predicted fast track ($\widehat{M}_{ij} \geq 0.55$), or zero if they were from the predicted slow-tracked ($\widehat{M}_{ij} < 0.55$). X_{ij}' is a vector of student, parent and family characteristics to form the controls, which is the same as in

equation (1). We also controlled school fixed effects (θ_j) and clustered standard errors at the school level.

Results

Social Capital among Rural Young Adults in China

We first describe the social capital of poor rural junior high school students in China—without separating students by fast- and slow-track. According to our analysis, we find that there is a significant lack of interpersonal trust among poor rural junior high school students in China. About half of the sample students reported that most people cannot be trusted (49 percent, Table 4, Row 1, Column 1).

Second, when we look at the confidence of students in public institutions, the results are even worse. In general over two thirds of students distrust public institutions (Table 4, Row 2 to 5, Column 1). Specifically, we find only 36 percent of students report that they are confident in educational institutions. More than 60 percent of our sample students distrust schools. Only 19 percent of students report that they trust the media (Table 4, Row 3, Column 1). The confidence of students in banks and financial institutions and in the government are, unsurprisingly, similarly low, respectively 40 percent and 38 percent for this sample of poor rural students (Table 4, Rows 4 to 5, Column 1).

Tracking and Social Capital

Descriptive analysis

Our data also show that ability tracking is highly correlated with social capital. Specifically, the descriptive results show that fast-tracked students have a significantly higher level of interpersonal trust than their slow-tracked peers. For example, the interpersonal trust of fast-track students is 17 percentage points higher than their slow-tracked peers (Table 4, Row 1, Column 4). About 59 percent of fast-tracked students believe that "most people can

be trusted", while only 42 percent of slow-tracked students believe the same (Table 4, Row 1, Columns 2 and 3).

The gap in confidence in public institutions is even wider. We find that only 20 percent of slow-tracked students trust educational institutions (Table 4, Row 2, Column 3). Fast-tracked students have almost three times (30 percentage points) higher probability than slow-tracked students of feeling confidence in educational institutions (Table 4, Row 2, Column 4).

Similar results can also be found for student confidence in other public institutions. For example, descriptive analysis show that fast-tracked students are 11 percentage points higher than slow-tracked students in their confidence in the media (Table 4, Row 3, Column 4), 17 percentage points higher than slow-tracked students in their confidence in banks and financial institutions (Table 4, Row 4, Column 4), and 22 percentage points higher in their confidence in the government (Table 4, Row 5, Column 4).

Multivariate Analysis

After we control for individual, parent and family characteristics, as well as school fixed effects, we find that the OLS regressions yield results that are consistent with our descriptive analysis. We find that fast-tracked students are still 15 percentage points higher than slow-tracked students in their interpersonal trust (Table 5, Row 1, Column 1). This result again provides evidence that ability tracking is positively associated with student social capital.

The OLS results for student confidence in public institutions are consistent and robust. As we can see from Table 5, fast-tracked students are 15 percentage points higher in confidence in the schooling system than slow-tracked students (Row 1, Column 2); 7 percentage points higher in confidence in the media (Row 1, Column 3); 13 percentage points

higher in confidence in banks and financial institutions (Row 1, Column 4); and 16 percentage points higher in confidence in the government (Row 1, Column 5). All of these results are significant at the 10 percent level or higher.

Disappointment, Overachievement and Social Capital

In the preceding section we examined the relationship between ability tracking placement (which was a decision that we are assuming is typically made early on in junior high school) and student social capital. However, there may be an additional effect to consider. In a competitive education system where schooling outcomes are primarily determined by a single high-stakes test, the impact of tracking may be tempered by unexpected results on that test. If a fast-tracked student fails to realize their goal of matriculating into high school, that might have a negative impact on their social capital. [6] Conversely, there is also a bright side to this potential effect. It is also possible for a slow-tracked student to unexpectedly make it into high school by doing well on the exam. If this is the case, this might have a positive impact on that social capital of student (which is measured after matriculating to high school).

Robustness Analysis

In this subsection we are going to examine the robustness of the results in two ways. First, instead of comparing human capital by ability tracking, we simply divide the observations into those that went to high school and those that did not. We do this because it is possible that social capital may be affected by the mere fact of being able to matriculate to high school or not. In addition, matriculation to high school is much more observable than participation in the fast or slow track prior to the time that students are able to matriculate to high school or not. Second, we will continue to look at the impact of ability tracking on social capital, but, in the spirit of robustness analysis, we recognize that expectations of being in the

track (which we are assuming has a formulate effect on social capital) may not be always realize. Specifically, given a student's participation in the fast (slow) track which is associate with the expectation of going to (not going to) high school, we will examine what happens to social capital when a student on the fast track does not get into high school as well as what happens to social capital when a student on the slow track does make it.

Going to High School or Not:

According to our results when we split the sample into those that went to high school and those that did not, the results, in fact, are similar to the results in the ability tracking analysis (see Appendix B for the results). For example, we find that student who matriculated into high schools are 22 percentage points higher than student who did not matriculate into high schools in interpersonal trust (Appendix B, Row 1, Column 1). We also find the same results hold over student confidence in public institutions. Student who matriculated into high school had 34 percentage points higher confidence in educational institutions relative to their peers who did not matriculate into high school (Appendix B, Row 1, Column 2). Their confidence in the media is 13 percentage points higher, confidence in banks and financial institutions is 21 percentage points higher, and confidence in the government is 24 percentage points higher (Appendix B, Row 3 to 5, Column 3). Consistent results observed with OLS regression after we controlled student individual, parents, family characteristics and school fixed effects (Appendix B, Row 1 to 5, Column 4).

Unrealized Expectations:

An issue that has received attention in other countries that have ability tracking systems punctuated from time-to-time (e.g., between lower and upper secondary school) with high-stakes exams is the effect of realized or unrealized student expectations (Clarke et al., 2000; Yu and Suen, 2005; Liu and Wu, 2006). If student tracking creates a certain amount of

positive (negative) social capital for high-performing (low-performing) students, what happens to that level of trust when a fast-tracked student fails to pass the high-stakes exam at the end of the program? What happens to the low levels of trust when a slower-tracked student somehow manages to pass the high-stakes exam against the odds? Is the trust (or lack of trust) that is fostered during a student's experience in the tracked school system reversed or maintained?

To examine this possibility, we examine the levels of social capital of two groups of students we introduced in the methodology section: the *underachievers* (fast tracked students who did not get in to high school) and the *overachievers* (slow tracked students who got into high school against the odds). In particular, we compare the levels of social capital of the disappointed students relative to their successful fast-tracked peers, and the overachievers relative to their slow-tracked peers who, as predicted, did not get in to high school.

According to the results of our analysis, we find a significant positive effect on social capital among the overachievers. Slow-tracked students who did manage to get into high school have 21percentage points higher social trust relative to slow-tracked students who did not get into high school (Table 6, Row 1, Column 3). The same relationship holds for confidence in public institutions. Overachieving slow-tracked students had 27 percentage points higher confidence in educational institutions relative to their other slow-tracked peers (Table 6, Row 2, Column 3). Their confidence in the media is 9 percentage points higher, confidence in banks and financial institutions is 24 percentage points higher, and confidence in the government is 28 percentage points higher (Table 6, Row 3 to 5, Column 3). In fact, we find that the "overachievement" effect on social capital is actually larger than the "tracking" effect on social capital for some outcomes (Table 4, Column 4 vs. Table 6, Column 3), such as interpersonal trust (21–17=4 percentage points), confidence in banks and financial

institutions (24-17=7 percentage points), and confidence in the government (28-22 = 6 percentage points).

Disappointed hopes appear to have a negative effect on social capital of a similar magnitude. Fast-tracked students who failed to matriculate into high school (underachievers) showed significantly lower levels of interpersonal trust relative to their fast-tracked peers who did get in to high school (20 percentage points, Table 6, Row 1, Column 6). This negative relationship holds for confidence in public institutions. Underachievers showed significantly lower levels of confidence in educational institutions (37 percentage points, Table 6, Row 2, Column 6), lower confidence in the media (13 percentage points, Table 6, Row 3, Column 6), lower confidence in banks and financial institutions (27 percentage points, Table 6, Row 4, Column 6), and lower confidence in the government (21 percentage points, Table 6, Row 5, Column 6). The magnitude of these negative effects are even higher than the positive effects observed for overachieving slow-tracked students.

We present the multivariate analysis in Appendix C. The adjusted model (with controls for individual, parents and family characteristics as well as school fixed effects) produces results of similar magnitudes that are statistically significant (Appendix C). All observed negative impacts for the underachievers are significant at the 1 percent level.

Conclusion and Discussion

Drawing on data from 1436 poor students in rural China, this study has investigated the current state of social capital among this group of youth in rural China and examined the relationship that exists between ability tracking and student social capital. In general (for all youth that we study), we find a significant lack of interpersonal trust among poor rural young adults. Confidence in public institutions is even lower among this population of students.

Such low levels of social capital among an important plurality of China's future labor force, accompanied with growing economic inequality, may pose a significant challenge to maintaining an engaged cohort of individuals that can play a positive role in building a modern, socially stable society.

So what is the mechanism of these low rates of social capital? While the results are admittedly only associations and not causal relationships, we do find that there is a strong correlation between student tracking during junior high school and social capital. Students who are fast-tracked while in school have significantly higher interpersonal trust and confidence in public institutions relative to students who are slow-tracked, even when student, parent and family characteristics are controlled for. This builds on existing research showing that ability tracking is closely associated with significant negative non-cognitive effects for slow-tracked students. These disparities might serve to further widen the gap between the relatively privileged students who are staying in school and the less privileged students who are dropping out of school.

Finally, we find that expectations matter. Students whose baseline characteristics make them more likely to gain admission to high school experience a reduction in social capital when they are unsuccessful in that effort. Students whose baseline characteristics make them less likely to gain admission to high school experience a positive gain in social capital when they are unexpectedly able to get in to high school. This may suggest that making high school accessible to more students would have an even greater impact on improving social capital in the general population.

Taking all of this evidence together, we argue that it is important to take social capital into account when estimating the returns of education and deciding on the optimal organization for education systems. This may be especially true in developing countries

where formal institutions are less well established. This result suggests that the classic trade-off between equity and efficiency in arguments about tracking may be missing a large portion of the equation. Even if tracking promotes higher test scores among the elite students, if it undermines social capital for low-performing students it may still have significant long-term costs for society as a whole. Taking into account both human capital and social capital returns from secondary education would yield a more comprehensive picture for investment decisions in developing countries.

Research Ethics Statement

My research protocol was reviewed and approved by the Stanford University Institutional Review Board (IRB). All human subjects gave their informed consent prior to their participation in the research, and adequate steps were taken to protect participants' confidentiality.

Notes:

1 In our study, we define ability tracking according to one (of several different) common practice in developing countries, as the sorting of students within the same school into different classes according to their ability, and teaching the students in each track at corresponding levels of curricular difficulty. There are also systems that track students into separate fast-track schools and slow-track schools. In our sample areas, this is less common.

2 We chose math test scores because they are one of the most common outcome variables used to proxy educational performance in the literature (Schultz, 2004; Rivkin et al., 2005; Glewwe and Kremer, 2006).

3 We focus on academic high school (rather than vocational high school) to reflect the higher social value ascribed to academic high school in Chinese society.

4 We used multiple imputation to deal with missing data and the results are consistent.

5 Reentering the schooling system after dropping out is possible in China, but very uncommon.

6 Failed to achieve their goal might due to various reasons. For example, student might not be able to pass the high-stakes exam as we have argued that this competitive exam system often frustrates students. Or students might due to financial reasons that could not matriculated into high schools since the cost of high schools in China is often prohibitive (Liu et al., 2009), and the opportunity cost are increasing fast (Yi et al., 2012).

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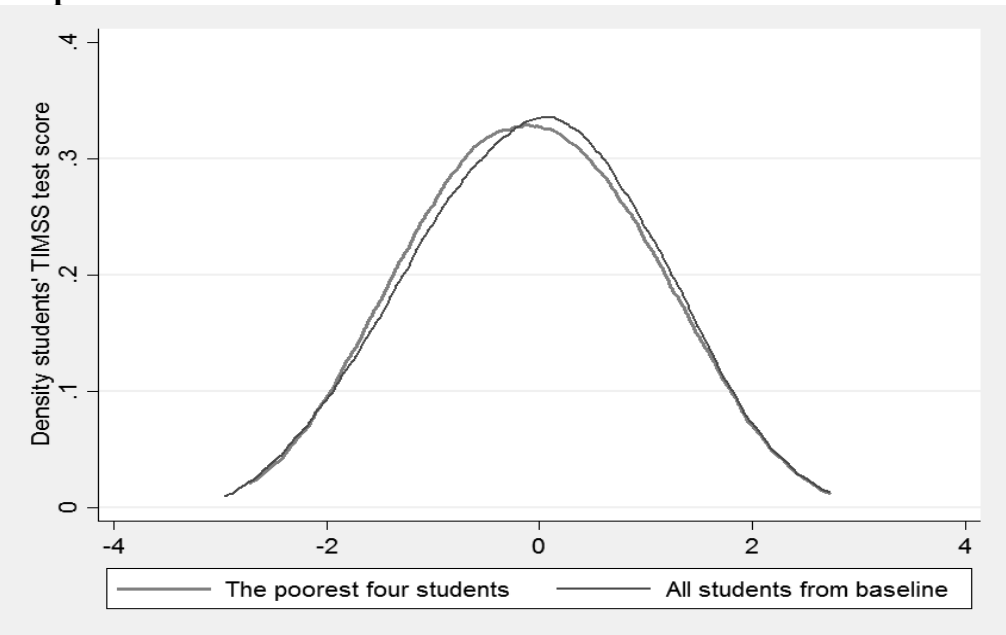
Figures:

Figure 1: Comparison of student TIMSS test score between poor sample students and full sample students



Data source: Authors' survey

Figure 2: The distribution of students after graduation

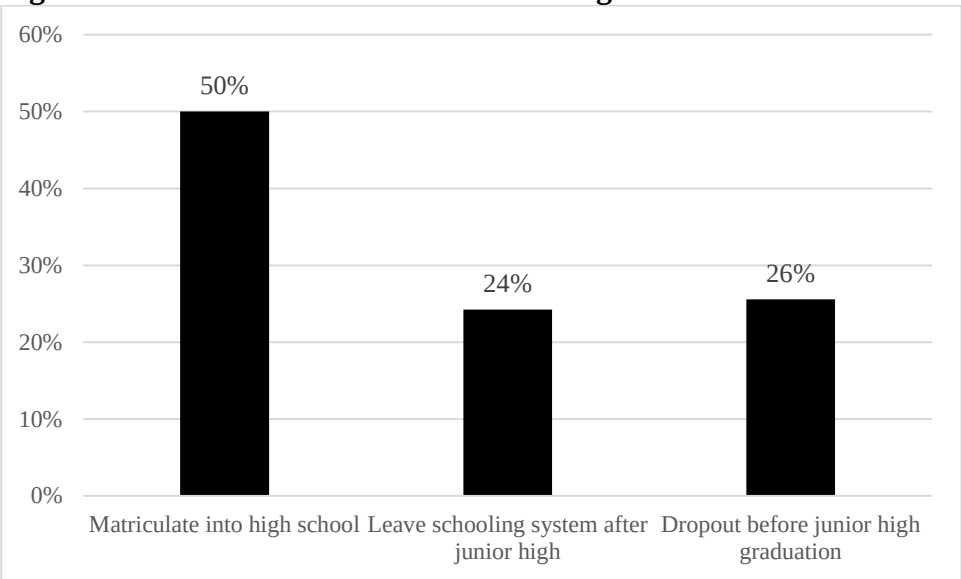
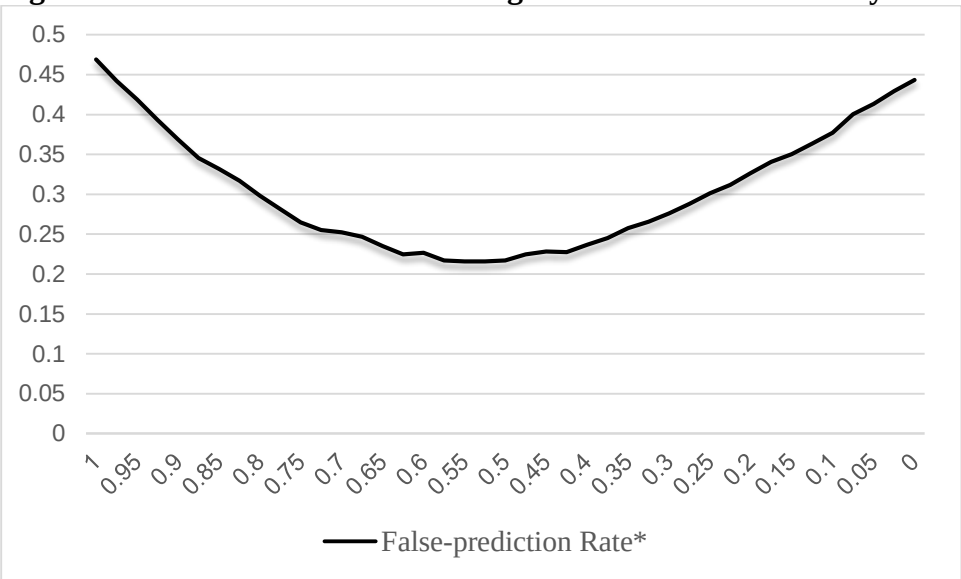


Figure 3: Decision Curve for Selecting the Threshold Probability



Data Source: *Authors' survey*

Tables

Table 1: Description of Social Capital Variables

Definitions	Descriptions	
Interpersonal trust *Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?*	Dummy equal to 1if respondent says, "most people can be trusted", and to 0 if he or she says, "you cannot be too careful".	
Confidence in public institutions *I am going to name some institutions in this country. As far as the people running these institutions are concerned, would you say you have a great deal of confidence, only some confidence, or hardly any confidence at all in them?*	Dummy equal to 1 if respondent says, "they have a great deal of confidence", and to 0 if he or she says, "only some confidence" or "hardly any confidence". [1]	Confidence in educational institutions Confidence in the media Confidence in banks and financial institutions Confidence in the government

[1] We categorized "only some confidence" and "hardly any confidence" together as zero because there might be upward bias due to the affirmative answers (Alesina and La Ferrara, 2000). A respondent may feel 'good' about himself if he/she answers affirmative answers, and this motivates us to categorize "only some confidence" as non-trusting. Same apply to confidence in the media, banks and financial institutions and government.

Table 2: The Determinants of Student Track Placement, probit regression

	Students enrolled into high school program, 1=yes (1)
Student individual characteristics	
1. Student age, in years	-0.41***
	(0.05)
2. Female student, 1=yes	0.28***
	(0.09)
3. Student plan to go to high school at the baseline survey, 1=yes	0.31***
	(0.09)
4. Student normalized baseline TIMSS test score at the baseline survey	0.39***
	(0.05)
Parent characteristics	
5. Mother's education, in years	0.01
	(0.01)
6. Father's education, in years	0.03
	(0.02)
7. Mother's health, 1=health	0.02
	(0.10)
8. Father's health, 1=health	0.10
	(0.11)
9. Mother has migrated before, 1=yes	-0.05
	(0.10)
10. Father has migrated before, 1=yes	0.03
	(0.11)
Family characteristics	
11. Number of siblings	0.08
	(0.06)
12. Family asset, in ten thousand yuan	0.03
	(0.03)
School Fixed Effects	Yes
Constant	5.49***
	(0.78)
Observations	1,436
McFadden's R2	0.26
Maximum Likelihood R2	0.33

*Note: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

Table 3: Predicted Student Track Placement

	Get into high school, T=1	Did not get into high school, T=0	Total
Estimated fast-tracked, Z=1	615	173	788
Estimated Slow-tracked, Z=0	137	511	648
Total	752	684	1436

Table 4: Differences in Social Capital Between Fast-tracked and Slow-tracked Students

Outcome variables	Overall Students	Fast-tracked students	Slow-tracked students	Difference between fast- and slow-tracked students
	(1)	(2)	(3)	(4) = (2) - (3)
1. Interpersonal trust, 1=most people can be trusted	0.51	0.59	0.42	0.17***
	(0.02)	(0.03)	(0.03)	(0.04)
2. Confidence in education institutions, 1=yes	0.36	0.50	0.20	0.30***
	(0.02)	(0.02)	(0.02)	(0.03)
3. Confidence in media, 1=yes	0.19	0.25	0.13	0.11***
	(0.01)	(0.02)	(0.02)	(0.03)
4. Confidence in banks and financial institutions, 1=yes	0.41	0.48	0.32	0.17***
	(0.02)	(0.03)	(0.02)	(0.04)
5. Confidence in government, 1=yes	0.38	0.49	0.27	0.22***
	(0.02)	(0.03)	(0.03)	(0.04)
No. of observations	1436	788	648	1436

*Note: Cluster-robust standard errors in the parentheses; ***p<0.01; **p<0.05; *p<0.1;*
Data source: Authors' survey.

Table 5: The Correlation Between Student Track and Social Capital, OLS results.

Outcome variables	***Student interpersonal trust and confidence in public institutions***				
	Interpersonal trust	*Confidence in education institutions*	*Confidence in the media*	*Confidence in banks and financial institutions*	*Confidence in the government*
	(1)	(2)	(3)	(4)	(5)
Treatment variable					
1. Student were fast-tracked, 1=yes	0.15**	0.15***	0.07*	0.13**	0.16***
	(0.07)	(0.06)	(0.05)	(0.06)	(0.06)
2. Student individual, parent and family characteristics	Yes	Yes	Yes	Yes	Yes
3. School fixed effects	Yes	Yes	Yes	Yes	Yes
Constant	0.92***	0.58**	0.20	0.12	0.81**
	(0.32)	(0.26)	(0.22)	(0.30)	(0.34)
Observations	1,436	1,436	1,436	1,436	1,436
R-squared	0.21	0.26	0.18	0.23	0.23

*Note: Cluster-robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1;*
Data source: Authors' survey.

Table 6: Overachievers and Underachievers: Comparison of Social Capital

Outcome variables	*Panel 1: Predicted slow-tracked students*			*Panel 2: Predicted fast-tracked students*		
	Predicted slow-tracked students matriculated into high school (Overachievers)[a]	Predicted slow-tracked students, who didn't matriculate into high school	Difference	Predicted fast-tracked students, who didn't matriculate into high school (Underachievers)[b]	Predicted fast-tracked students, who matriculated into high school	Difference
	(1)	(2)	(3) = (1) - (2)	(4)	(5)	(6) = (4) – (5)
1. Interpersonal trust, 1=most people can be trusted	0.61	0.39	0.21***	0.41	0.64	-0.20***
	(0.05)	(0.03)	(0.06)	(0.05)	(0.03)	(0.05)
2. Confidence in education institutions, 1=yes	0.45	0.17	0.27***	0.19	0.56	-0.37***
	(0.05)	(0.02)	(0.06)	(0.04)	(0.02)	(0.04)
3. Confidence in media, 1=yes	0.21	0.12	0.09*	0.15	0.27	-0.13***
	(0.04)	(0.02)	(0.05)	(0.03)	(0.03)	(0.04)
4. Confidence in banks and financial institutions, 1=yes	0.51	0.28	0.24***	0.26	0.53	-0.27***
	(0.06)	(0.02)	(0.06)	(0.04)	(0.03)	(0.05)
5. Confidence in government, 1=yes	0.50	0.23	0.28***	0.28	0.53	-0.21***
	(0.06)	(0.03)	(0.07)	(0.05)	(0.03)	(0.05)
No. of observations	137	511	648	173	615	788

Note:

a) Panel 1 we compare the overachievers with predicted slow-tracked students who unexpectedly matriculated into high schools.

b) Panel 2 we compare the underachievers with predicted fast-tracked students who unexpectedly did not matriculated into high schools.

*Cluster-robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1;*

Data source: Authors' survey.

APPENDICES

Appendix A: Description of all the variables.

	Obs.	Mean	Std. Dev.	Min	Max
Outcome Variables					
1. Interpersonal Trust, dummy variable, 1= yes	1436	0.51	0.50	0	1
2. Confidence in educational institutions, 1=yes	1436	0.36	0.48	0	1
3. Confidence in media, 1=yes	1436	0.19	0.39	0	1
4. Confidence in banks and financial institutions, 1=yes	1436	0.41	0.49	0	1
5. Confidence in government, 1=yes	1436	0.38	0.49	0	1
Treatment variables					
6. Students were fast-tracked, 1=yes	1436	0.55	0.50	0	1
Control Variables					
7. Student age, in years	1436	13.51	1.03	10.83	18.62
8. Student gender, 1=female	1436	0.51	0.50	0	1
9. Normalized TIMSS test score at the baseline	1436	-0.06	1.01	-2.72	2.72
10. Plan to go to high school after jr. school at the baseline survey, 1=yes	1436	0.48	0.50	0	1
11. Mother's education, in years	1436	5.33	3.46	0	20
12. Father's education, in years	1436	7.07	2.89	0	19
13. Mother's health, 1=not health	1436	0.37	0.47	0	1
14. Father's Health, 1= not health	1436	0.46	0.49	0	1
15. Mother had ever migrated, 1=yes	1436	0.48	0.49	0	1
16. Father had ever migrated, 1=yes	1436	0.80	0.40	0	1
17. Number of siblings	1436	1.02	0.82	0	5
18. Family assets at the baseline, in 10 thousand yuan	1436	3.72	2.62	0	17.36

Data source: author's survey.

Appendix B: Differences in Social Capital Between Student Who Matriculate into High School and Students Who do not

Outcome variables	Student who matriculated into high school	Student who did not matriculate into high school	Differences	Coefficient from OLS Regression
	(1)	(2)	(3) = (1) - (2)	(4)
1. Interpersonal trust, 1=most people can be trusted	0.61	0.39	0.22***	0.20***
	(0.02)	(0.02)	(0.03)	(0.03)
2. Confidence in education institutions, 1=yes	0.52	0.18	0.34***	0.26***
	(0.02)	(0.02)	(0.03)	(0.03)
3. Confidence in media, 1=yes	0.25	0.12	0.13***	0.10***
	(0.02)	(0.01)	(0.02)	(0.03)
4. Confidence in banks and financial institutions, 1=yes	0.50	0.29	0.21***	0.18***
	(0.03)	(0.02)	(0.03)	(0.03)
5. Confidence in government, 1=yes	0.50	0.26	0.24***	0.20***
	(0.02)	(0.02)	(0.03)	(0.03)
No. of observations	752	684	1,436	1,436

*Note: Cluster-robust standard errors in the parentheses; ***p<0.01; **p<0.05; *p<0.1;*
Data source: Authors' survey.

Appendix C: The Effect of Realized (or Unrealized) Expectations on Student Social Capital, OLS

Outcome variables	***Student interpersonal trust and their confidence in public institutions***				
	Interpersonal trust	*Confidence in education institutions*	*Confidence in the media*	*Confidence in banks and financial institutions*	*Confidence in the government*
	(1)	(2)	(3)	(4)	(5)
	Panel 1: Predicted slow-tracked students				
Treatment variable					
1. Slow-tracked student successfully got into high school (Overachievers)[a], 1=yes	0.18***	0.26***	0.10*	0.20**	0.30***
	(0.07)	(0.06)	(0.06)	(0.08)	(0.07)
2. Student individual, parent and family characteristics	Yes	Yes	Yes	Yes	Yes
3. School fixed effects	Yes	Yes	Yes	Yes	Yes
Constant	1.27**	0.45	-0.16	0.51	1.15*
	(0.59)	(0.44)	(0.35)	(0.51)	(0.59)
Observations	648	648	648	648	648
R-squared	0.33	0.32	0.27	0.30	0.32
	Panel 2: Predicted fast-tracked students				
Treatment variable					
4. Fast-tracked student failed to get into high school (Underachievers)[b], 1=yes	-0.20***	-0.32***	-0.12***	-0.29***	-0.18***
	(0.06)	(0.05)	(0.04)	(0.06)	(0.06)
5. Student individual, parent and family characteristics	Yes	Yes	Yes	Yes	Yes
6. School fixed effects	Yes	Yes	Yes	Yes	Yes
Constant	0.51	0.64	0.64	-0.41	0.97**
	(0.40)	(0.41)	(0.42)	(0.47)	(0.47)
Observations	788	788	788	788	788
R-squared	0.21	0.27	0.22	0.30	0.26

Note:

c) Panel 1 we compare the overachievers with predicted slow-tracked students who unexpectedly matriculated into high schools.

d) Panel 2 we compare the underachievers with predicted fast-tracked students who unexpectedly did not matriculated into high schools

*Cluster-robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1;*

Data source: Authors' survey.