Key-Point Schools and Entry into Tertiary Education in China

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Key-Point Schools and Entry into Tertiary Education in China

Hua Ye, Sun Yat-sen University, Guangzhou

Abstract: The tracking process at the secondary level has important consequences for students’ educational advancement. In China, a number of schools are designated as key-point schools with better teachers and facilities. After the unprecedented expansion of higher education since 1999, the spotlight of educational transition has shifted to some extent from College Entrance Exam, to gaining access to key-point senior high schools, because graduates from these schools are the most important sources of college recruitment. Employing data from a multi-stage national probability sample collected in 2008, this study shows that attending key-point senior high schools has a significantly positive effect on one’s likelihood of entry into tertiary education, even after taking account of the selection into these schools. Urban-rural divide is a barrier for students of rural hukou origin to attend senior high schools, and subsequently gaining entry into tertiary education. These findings have important implications for school reform policies in China.

Introduction

Education is the most important vehicle for upward mobility in modern societies (Blau and Duncan 1967). As countries industrialize, the demand for educated personnel has also increased (Featherman and Hauser 1978; Treiman 1970). Accordingly, the question of “who gets ahead” is increasingly translated into “who gets educated” (Blossfeld and Shavit 1993; Treiman and Yip 1989).
Previous research suggests that higher education is the most important channel through which children from rural China change their life chances (Wu and Treiman 2007). Nevertheless, the competition for enrollment in tertiary educational institutions was extremely fierce in China before 1999 (Levin and Xu 2005). The unprecedented expansion of higher education in China since 1999 has changed the scenario, and more opportunities for tertiary education have been offered to students graduating from senior high schools. Those who graduate from senior high schools after the expansion are much more likely to attend colleges than earlier cohorts. As a result, entry into a “good” senior high school becomes an important factor affecting one’s chance of getting into college, especially the chance of entering more selective colleges (Liang et al. 2012).

In China, a number of senior high schools are designated as key-point schools at different levels of jurisdiction. These schools are staffed with better teachers and equipped with better facilities. Graduates from these schools are the most important sources of college recruitment, especially for matriculation at the top universities in China. The existing literature suggests that socioeconomically advantaged parents secure some degree of advantage for their offspring to make a distinction between their children and those from lower social origins (Lucas 2001). The tracking process at the secondary level, which is a necessary step towards tertiary education, thus has important consequences for students’ educational advancement and later economic gains. In the era when higher education expands dramatically, the difference in labor market outcomes between those who can and those who cannot attend tertiary education is likely to become more significant (Hu and Hibel 2014; Ye 2012). In this context, I seek to examine first, whether attendance at a key-point senior high school increases one’s likelihood of entry into tertiary education, and second, who are more likely to attend key-point senior high schools.

In the following sections, I first discuss how the tracking system relates to educational stratification, and introduce China’s key-point senior high schools. Second, I introduce the data, variables, and methods used in the study. Third, empirical results are presented, focusing on the effect of key-point senior high schools on the transition to tertiary education and more generally, on tracking and educational stratification in China. Finally, the implications of the study are discussed.

### Tracking and Persisting Inequality in Educational Attainment

Education is the most important channel through which children from lower social origins obtain better occupations to achieve social mobility. It is also the means by which parents of higher social status transmit privileges to their offspring (Blau and Duncan 1967). As countries all over the world expand their education in the last century, it is expected that the relationship
between social origins and educational attainment will become weaker, because people from lower social origins obtain more education over time (Boudon 1974; Treiman and Yip 1989). However, empirical evidence proves otherwise, as the dependence of educational attainment on social origins persists over time (Shavit and Blossfeld 1993; Shavit, Yaish, and Bar-Haim 2007).

Scholars argue that unless expansion continues at the educational levels that people from higher social origins have already saturated, people from lower social backgrounds are not able to benefit from the expansion (Raftery and Hout 1993). Moreover, expansion at one level of education enlarges student enrollments, and subsequently increases the competition for transition to the next level. In this context, children from higher social origins are still better-equipped to grasp the opportunities (Alon 2009; Shavit, Yaish, and Bar-Haim 2007). Depending on the social context, dominant social classes maintain distinctions between their children and children from lower social origins in either level of education attained or quality of education obtained (Erikson and Goldthorpe 1985; Lucas 2001).

The above research findings redirect our attention to the mechanisms generating social class differences in educational attainment, or more specifically, the institutions that dominant social classes utilize to maintain educational inequality, such as the educational system (Turner 1960). Almost all educational systems in the world have some degree of tracking, especially in the distinction between academic and vocational tracks (Gamoran and Mare 1989). Tracking is considered as a system designed to reproduce inequality, because children from the working class are over-represented in the vocational track (Heyns 1974; Vanfossen, Jones, and Spade 1987). Types of schools also matter. The norms formed in certain types of schools are more concerned with academic improvements (Coleman 1988), or some schools may emphasize more on coursework and a core curriculum (Hoffer, Greeley, and Coleman 1985). Generally speaking, students may benefit from attending selective senior high schools because they are provided with an improved quality of instruction and richer resources, which facilitate the cultivation of academic skills. In addition, where the students are surrounded by highly able and motivated peers, they may enjoy more rapid improvement of learning.

China’s educational system has developed its own features since the second half of the twentieth century. In the face of resource scarcity, the government gives priority to the development of a smaller number of establishments, by virtue of certain institutional arrangements. Key-point schools in secondary education and selective universities in tertiary education exemplify such a development strategy and continue to act as powerful tracking systems diverting children from different social origins (Ye 2012). Although parents try to have their children go as far as they can in school,
families are different in their bottom-line expectations of children’s educational attainment (Mare and Chang 2006) and in the resources available to them for children’s academic development (Breen and Goldthorpe 1997). Such differences, coupled with the existence of a tracking system, contribute to educational inequality among various social groups.

There are two major explanations for the association between class origins and educational track positions. Given that tertiary education is neither free nor universal in most countries, the economic constraint thesis posits that families have to shoulder greater costs if their children pursue a higher track (Blossfeld and Shavit 1993). In the Chinese context, upper secondary education, which is beyond Nine-Year Compulsory Education, is tuition-charging, and it imposes considerable burdens on the lower social classes, especially on rural households. Once parents decide to have their children attend senior high school, they aim for tertiary education. Enrollment in tertiary education incurs opportunity costs, because it postpones children’s entry into the labor market, and their family has to shoulder the cost of forgone earnings. Moreover, such a choice is also more risky because graduates from senior high schools may not succeed in the College Entrance Exam leading to tertiary education, and then they run the risk of facing worse job prospects than graduates of vocational secondary education. All these considerations affect the choices of rural families, as they earn much less and are more sensitive to economic uncertainty than their urban counterparts.

Cultural capital theory, on the other hand, explains why children from higher social origins are more likely to succeed in a higher track. Children from families with a low level of parental education are less likely to internalize those habits normally transmitted by the family that is valued and rewarded by schools. For example, children’s exposure to reading and books, which affects their educational advancement, is found to be more prevalent in the upper classes (Evans et al. 2010; Wang, Davis, and Bian 2006). Accordingly, it is more difficult for rural children from families with less-educated parents to compete for educational advancement with their counterparts raised in a better cultural environment in urban China (Yuxiao Wu 2008).

In sum, the economic constraint thesis connects class-specific motivations with track positions, while the cultural capital theory focus more on the mechanisms that enable children from better socio-economic backgrounds to attain a higher track. Parents of different socio-economic statuses have different capacities to secure a class position for their offspring, and accordingly tracking is used as a way to maintain social inequality.

Studies of tracking focus mainly on the differential outcomes associated with the academic and the vocational tracks, and pay less attention to the effect of selective secondary schools on students’ educational outcomes. In this study I contribute to the literature of tracking by examining the effect of key-point senior high school on entry into tertiary education in China, and how social background is associated with attendance at key-point senior high
schools. This study also examines the perspectives of “Maximally Maintained Inequality” (Raftery and Hout 1993) and “Effectively Maintained Inequality” (Lucas 2001) through the effect of a concrete institutional arrangement of key-point schools on educational inequality in the Chinese context.

Key-Point Schools in China

The last decades have witnessed a dramatic expansion of education in China, especially of primary and lower secondary education (Treiman 2013). In 1986, the Law on Nine-Year Compulsory Education was passed. China sets a goal of universalizing primary and lower secondary education by the end of the twentieth century, which had largely been achieved by 1998 (Tsui 1997; Wu 2010). Partly due to the pressure of unemployment aggravated by the Asian Economic Crisis in 1997, the Chinese government decided to expand its tertiary education. The aim was to absorb more graduates from upper secondary education and promote consumption related to tertiary education (Bai 1998, 2006). This unprecedented expansion of higher education since 1999, however, has to some extent shifted the bottleneck of educational advancement from tertiary education to upper secondary education. Between 1999 and 2005, the progression rates from lower to upper secondary schools were even lower than those from upper secondary schools to tertiary education (see Figure 1 in Wu and Zhang 2010).

In China, a number of senior high schools are designed as key-point senior high schools. When People’s Republic of China was founded in 1949, it faced a very limited educational budget and scarce educational resources, coupled with a pressing need for qualified personnel. To produce maximum educational returns and meet the immediate demands, it prioritized resource allocation to existing establishments (Hannum 1999). Key-point schools were then chosen in each respective jurisdiction, based on their records of past educational accomplishment. They enjoyed favorable assignments of highly qualified teachers, and also received better equipment and much greater funding, as well as the enrollment of better-performing students. These schools served as teaching and learning models for ordinary schools (Xiaoxin Wu 2008). During the Cultural Revolution, however, the key-point school system was condemned for reproducing educational inequality, because children from the intelligentsia were overrepresented in these schools. The system was then abolished together with the College Entrance Exam. After the College Entrance Exam was restored and colleges reopened in late 1977, China still faced the problem of limited resources, and key-point schools were restored accordingly. At that time, 695 key-point schools around China were selected for preferential investments (China Education Yearbook Editorial Committee 1984). Given their limited budgets, local governments prioritized resource allocation to key-point schools
because it was a more efficient way to signify educational development. By the present time, students from key-point senior high schools constitute the most significant proportion of those matriculating at higher education, especially to the top universities in China (Liang et al. 2012).

The preferential allocation of resources by local governments is one of the reasons that key-point senior high schools outperform ordinary senior high schools in transition to tertiary education. Against this backdrop of resource allocation is the administrative structure of China’s government, as higher levels of jurisdiction command more resources and have greater discretion in terms of resource allocation (Bian 1994). This hierarchical structure results in variations in educational expenditure at different levels of jurisdiction, and it implies that schools at lower levels of jurisdiction enjoy fewer resources, which is consequential to students’ educational outcomes. For example, Wu (2010) shows that regional educational expenditure directly affects educational attainments of the residents.

To be sure, parents do not respond passively to the supply of student places in key-point schools. They try by all means to get their children into the preferred schools (Xiaoxin Wu 2008). If they fail to do so, they may send their children to after-school classes to help them better prepare for the College Entrance Exam (Xiaoxin Wu 2011). As in other countries, all these educational advancement options require substantial investments, and thus are difficult for students from the lower social classes to pursue (Buchmann, Condron, and Roscigno 2010).

Existing studies focus on educational inequality in rural areas and on lower levels of education in China (Hannum 2003, 2005). Urban areas are also important because schools of the upper secondary level are located primarily in urban areas, and access to them is an important channel through which one benefits from the expansion of higher education. China represents an appropriate and also interesting case where we can apply the perspectives of “Maximally Maintained Inequality” (Raftery and Hout 1993) and “Effectively Maintained Inequality” (Lucas 2001) to a concrete institutional arrangement of key-point schools to understand educational stratification. Specifically, I examine whether key-point senior high school as a form of tracking generates educational inequality among different social groups. This study, together with the findings from previous studies (Lai 2014; Liu et al. 2014; Wu 2010; Yeung 2013), seeks to depict a general picture of the dynamics of educational inequality in China.

**Data, Methods, and Measures**

**Data**

The data used in this study are from the 2008 Chinese General Social Survey (CGSS 2008), which follows a multi-stage stratified sampling strategy, and
covers both rural and urban China (see details in Bian and Li 2012). This sample of 6,000 individuals is a representative sample of Chinese adults living in all regions except Tibet. The CGSS 2008 survey collects extensive information on the respondent’s educational history and family background, which can be utilized to construct relevant variables. I restrict the sample to people who were twenty to sixty-nine years old at the time of survey, because those who were younger than twenty may not have finished upper secondary education, and thus have not been exposed to the transition risks involved with the College Entrance Exam. As education is correlated with longevity, I use the cut off age of sixty-nine to avoid selection on the dependent variable and differential mortality effects.

As people who take the vocational track of secondary education have little chance to enter higher education, I focus on the academic track only in this research. During the Cultural Revolution (1966–1976), admission to colleges were based on political criteria instead of academic skills (Deng and Treiman 1997), so I exclude those respondents who were at risk of transition to tertiary education before 1977. In order to examine both the transition from junior high school to senior high school and the transition from senior high school to tertiary education (explain later), I further restrict the sample to those who had graduated from junior high school. After these restrictions and excluding observations having missing values in any of the variables used in the analyses, the sample sizes are 3,290 for transition to senior high school and 1,051 for transition to tertiary education. In all the multivariate analyses follow, data are weighted to account for differential sampling probabilities, and robust standard errors adjusted for clustering in counties are presented.

**Methods**

To ascertain the causal effect of key-point senior high schools on entry into tertiary education, it is necessary to take into account the selection process for admission to key-point senior high schools. Therefore, I examine both the transition from lower to upper secondary education, and the transition from upper secondary education to tertiary education. Note that I focus on the academic track only, so students who graduate from junior high schools and then enter vocational training are treated as not having attended academic senior high schools.

Conventionally, the two educational transitions are estimated separately, or they are estimated together in a logistic regression framework with interactions between transitions and other explanatory variables. Employing the first approach, I model the respondent’s attendance at senior high school, given graduation from junior high school. I also differentiate the outcomes and use multinomial logit models to examine the determinants of admission to key-point or to ordinary senior high schools. I then use a dummy variable to indicate key-point senior high schools (versus ordinary senior high
schools), and examine its effect on entry into tertiary education, given graduation from senior high school.

The approach described above, however, may not be able to adequately control for the selection into key-point versus ordinary senior high schools, because we do not have any direct measures of the respondents’ academic abilities at the time of transition from junior to senior high school. In other words, students with better academic skills may be more likely both to enter key-point senior high schools and subsequently to enter colleges, thus inflating the net effect of key-point senior high schools on transition to tertiary education. To express this in a counterfactual language, even if key-point senior high schools had no treatment effect, students having better academic skills would still be more likely to enter colleges, but we would have credited key-point senior high schools as those students were more likely to attend these schools. Although previous research has found significant effects of key-point schools on educational transitions (Wu 2013), the results have to be interpreted with caution, as the conventional logit models may not have identified the casual effects of key-point schools. Indeed, Zhang (2014) utilizes school admission lotteries to examine the effect of key-point junior high schools on students’ academic performance in Middle School Graduation Exam (Zhongkao), and finds that three-year attendance at these schools does not improve students’ score in the exam, and that parents seem to choose schools based primarily on students’ average achievement level in a school rather than on the school’s academic “value-added” effect.

To address this problem, I employ a bivariate probit model to account for the common factors affecting both selection into key-point senior high schools and entry into tertiary education (Heckman 1978; Powers 1993). What is special in my current framework is that the two equations are recursive (Greene 2008: 823–826; Holm and Jæger 2011), meaning that the dependent variable of the selection equation, that is, attendance at key-point senior high school, is an independent variable of the outcome equation.

The model setup can be expressed as follows.

\[
\begin{align*}
Y_1^* &= \beta_1 X_1 + \epsilon_1 \\
Y_2^* &= \beta_2 X_2 + \beta_3 Y_1 + \epsilon_2
\end{align*}
\]

where \(Y_1^*\) refers to the latent probability of entering a key-point senior high school (given attendance at senior high school), \(Y_2^*\) is whether he/she actually attends a key-point senior high school or not (given attendance at senior high school), while \(Y_2^*\) refers to the latent probability of entry into tertiary education (given graduation from senior high school). The error terms follow a bivariate normal distribution, that is, \(E(\epsilon_1) = E(\epsilon_2) = 0, Var(\epsilon_1) = Var(\epsilon_2) = 1\), and \(Cov(\epsilon_1, \epsilon_2) = \rho\). The parameter \(\rho\) is a summary measure of the importance of selection on unobserved factors, for example, ability, noncognitive skills, or other unmeasured characteristics. The logic of the model is that if Student A is unlikely to attend a key-point senior high
school according to his/her characteristics measured by the \(X_1\) variables in the selection equation, but in fact does attend a key-point senior high school, there should be a positive residual associated with this student, which may capture his/her unmeasured ability or noncognitive skills. In the bivariate probit model, this residual enters the outcome equation predicting entry into tertiary education, such that the information about the possibly unmeasured characteristics is also taken into account.

By taking into account the correlation of errors, I control the unobserved characteristics of students that affect the dependent variables of two equations. Following Gamoran and Mare (1989), school-level characteristics of the junior high school a student attends, that is, whether that junior high school is a key-point school, the location of the junior high school, are used as the exclusion restrictions to identify the two-equation system. In other words, the characteristics of junior high schools are assumed to have indirect effects on one’s entry into tertiary education only through one’s attendance at key-point senior high school, but they have no direct effects on one’s entry into tertiary education. Although such an assumption cannot be verified empirically, Zhang (2014) shows that key-point junior high schools have little effect on students’ improvement of academic performance, and in the Chinese context junior high schools and senior high schools are often located in different districts (or counties), and we have no reason to expect that the effects of junior senior schools would be carried to senior high schools affecting entry into tertiary education.

**Measures**

The dependent variable is whether one attends tertiary education, given graduation from senior high school. Tertiary education includes both university (four years) and junior college (three years).

The independent variables include whether one attends a key-point senior high school or not, gender, hukou origin, parental educational attainment, father’s occupational status, and the timing of transition to tertiary education. A brief introduction to each of these variables follows.

**Key-Point Schools**

Attendance at a key-point senior high school is my key independent variable. Key-point senior high schools enjoy favorable allocation of funds, better facilities, and assignments of highly qualified teachers, which may have a positive effect on students’ improvement in academic skills. The survey collects information on the respondent’s educational history, and asks whether he or she has attended a key-point senior high school. For the transition from upper secondary to tertiary education, I construct a dummy variable that has a value of 1 for respondents who attend key-point senior high schools and 0 for those who attend ordinary senior high schools.
Gender

Previous research has shown that women in China are disadvantaged in educational attainment (Hannum 2005). Accordingly, gender difference in attendance at tertiary education is indicated by a dummy variable scoring 1 for women and 0 for men.

Hukou Origin

The Household Registration System, also known as the *Hukou* System, was implemented in 1955 by the Chinese government to control internal migration (Chan and Zhang 1999; Cheng and Selden 1994). Previous studies have shown that the rural-urban *hukou* distinction has an enormous impact on people’s educational attainment and later life chances in China (Treiman 2012; Xiaogang Wu 2011; Wu and Treiman 2004). The survey questionnaire asks whether the respondent has converted his or her rural *hukou* status to urban *hukou* status, and if so, when he or she converted. The respondent’s *hukou* origin is defined as his/her *hukou* status before he/she is at risk of educational transition. For example, if a respondent has obtained urban *hukou* status before the year he/she graduates from senior high school, he/she is defined as holding urban *hukou* while facing the risk of transition from senior high school to tertiary education. If a respondent has never obtained urban *hukou* status, or obtains it in the same year when or later than when he/she is at risk of transition, then he/she is defined as holding rural *hukou*.2

Parental Years of Schooling

As established in the stratification literature, parental schooling is an important predictor of a person’s educational attainment, and it also captures cultural capital available in a family (Blau and Duncan 1967; Ganzeboom and Treiman 1993; Shavit and Blossfeld 1993; Treiman and Yip 1989). Accordingly, years of schooling of the better-educated parent are included in the analyses.3

Father’s Occupation

In the CGSS 2008 data, the father’s occupation when the respondent is fourteen years old is coded according to International Standard Classification of Occupation 1988 (ISCO88) of the International Labor Office (ILO). Following the procedure described by Ganzeboom and Treiman (1996), I convert ISCO88 to the International Socio-Economic Index of Occupational Status (ISEI), which is a scale measuring occupational status, ranging in principle from 0 to 100. This ISEI reflects the economic circumstances of a family, and captures its ability to invest in children’s education and to shoulder the costs associated with alternative educational paths. The survey only asks the respondent’s
father’s occupation (when the respondent was fourteen years old) if he had a nonagricultural job. For fathers doing agricultural work at that time, as in the Chinese context they are most likely field crop or vegetable growers, I code their ISEI value as 23, which is the ISEI value for agricultural producers.

Yearly Trends for Transition to Tertiary Education

Yearly trends are also included in the model predicting entry into college to detect trends of college enrollment in different historical periods. I divide the years when respondents were at risk of transition to tertiary education into two linear segments with different slopes, connected by the beginning of dramatic expansion of higher education in 1999. It is expected that people would have more opportunity to attend tertiary education over time, and the increment of opportunity would be more evident after the expansion of higher education in 1999.

As mentioned above, in order to identify the two-equation bivariate probit model, I include whether the respondent has attended a key-point junior high school and the location of the junior high school as exclusion restrictions in the selection equation. This study focuses on the effect that students’ attendance at key-point senior high schools has on their entry into tertiary education. However, there are also key-point junior high schools. Some key-point schools at the lower secondary level are ancillary to the upper secondary level key-point schools. They were established later, and many of them were not formally recognized by the local government. Nevertheless, attendance at these schools is an important predictor for selection into key-point senior high schools. Therefore, I include in the selection equation predicting attendance at key-point senior high school a dummy variable that has a value of 1 for respondents who attend key-point junior high schools, and 0 otherwise.

The survey also collects information on the location of the school that each respondent attends. I classify the locations into four categories: (1) a village (the reference category), (2) a town or a county-level city, (3) a prefecture-level city, and (4) a provincial capital or a municipality. This set of dummies is included because it captures the level of financial investment in the school by the local government: the higher the level of the administrative unit where the school is located, the more the financial investment.

In the empirical section below, I will first present descriptive results, and then examine the transition from senior high school to tertiary education by logit and multinomial logit models. I then further examine the robustness of the results with bivariate probit model taking into account the possibly unobserved characteristics of students. Even if key-point senior high schools had a positive treatment effect on entry into college, it would not necessarily enlarge educational inequality if students of lower socio-economic backgrounds were more likely to enter key-point senior high schools. Therefore, I also examine the transition from lower secondary to upper secondary
education to provide a complete picture of the effect of key-point senior high schools on educational stratification in China.

**Empirical Results**

Descriptive statistics are shown in Table 1. As we can see, people who are able to graduate from senior high schools are more highly selected in terms of family background than those who graduate from junior high schools (Note that the former is a subsample of the latter). Senior high school graduates tend to have better-educated parents, their fathers have higher occupational status, and they are more likely to be of urban *hukou* origin. For the transition from junior to academic senior high school, we

<table>
<thead>
<tr>
<th>Table 1</th>
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<tbody>
<tr>
<td><strong>Descriptive Statistics</strong></td>
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<tr>
<td></td>
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<tr>
<td>From junior to senior high school</td>
</tr>
<tr>
<td>Female (%)</td>
</tr>
<tr>
<td>Rural <em>hukou</em> origin (%)</td>
</tr>
<tr>
<td>Parental years of schooling</td>
</tr>
<tr>
<td>Father’s occupational ISEI</td>
</tr>
<tr>
<td>Location of junior high school (%)</td>
</tr>
<tr>
<td>Village</td>
</tr>
<tr>
<td>Town/County</td>
</tr>
<tr>
<td>Prefecture</td>
</tr>
<tr>
<td>Provincial capital/Municipality</td>
</tr>
<tr>
<td>Unweighted N</td>
</tr>
<tr>
<td>From senior high school to tertiary education</td>
</tr>
<tr>
<td>Female (%)</td>
</tr>
<tr>
<td>Rural <em>hukou</em> origin (%)</td>
</tr>
<tr>
<td>Parental years of schooling</td>
</tr>
<tr>
<td>Father’s occupational ISEI</td>
</tr>
<tr>
<td>% attend key-point senior high school (among senior high school students)</td>
</tr>
<tr>
<td>1977–1998 (<em>n</em> = 725)</td>
</tr>
<tr>
<td>1999 and after (<em>n</em> = 326)</td>
</tr>
<tr>
<td>Unweighted N</td>
</tr>
</tbody>
</table>

*Notes:* Data are weighted; *n* denotes the number of students who attend senior high schools in each period.
also find a significant proportion of the students are from schools located in villages.

People have been more likely to attend key-point senior high schools over time: During the period from 1977 to 1998, 20.9 percent of students attended key-point senior high schools, and it increased to 40.1 percent in 1999 and after.

The existing literature suggests that parents of better socio-economic status try all means to secure an advantageous position for their children in the competition for more educational opportunities. As graduates from key-point senior high schools comprise a significant proportion of enrollment in China’s higher education, and especially elite universities, it is not surprising to find that students of higher social origins are more likely to attend key-point senior high schools. Table 2 presents relevant results. We can see that parents whose children attend key-point senior high schools have on average 9.5 years of schooling, compared to 8.6 years of those parents whose children attend ordinary senior high schools. Students attending key-point senior high schools also have fathers who have higher occupational status than those students who attend ordinary senior high schools. Moreover, students who attend key-point senior high schools are less likely to be of rural hukou origin than their counterparts in ordinary senior high schools, although this difference is only marginally significant ($p = 0.06$, one-tail test). These results suggest that we need to account for the differences in social backgrounds when examining the effect of key-point senior high school.

A sharp distinction can be found when we compare the rates of transition to tertiary education between students from key-point senior high schools and those from ordinary senior high schools. Graduates from key-point senior high schools have had much higher probability of attending tertiary education than those from ordinary senior high schools: Among students who graduated from ordinary senior high schools, 35.1 percent of them have entered tertiary education, while 68.5 percent of graduates from key-point senior high schools have received tertiary education.

<table>
<thead>
<tr>
<th>Table 2</th>
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<tbody>
<tr>
<td><strong>Comparison of Students’ Family Backgrounds by Selectivity of Senior High Schools</strong></td>
</tr>
<tr>
<td>Overall</td>
</tr>
<tr>
<td>Parental years of schooling</td>
</tr>
<tr>
<td>Father’s occupational ISEI</td>
</tr>
<tr>
<td>Rural hukou origin (%)</td>
</tr>
<tr>
<td>Unweighted N</td>
</tr>
<tr>
<td>Attend tertiary education (%)</td>
</tr>
</tbody>
</table>

Notes: Data are weighted. Numbers in parentheses are standard deviations. **$p < 0.01$. 
The results from the analysis of transition from senior high school to tertiary education are shown in Table 3. Students from key-point senior high school are more likely to attend tertiary education (Model 1) than those from ordinary senior high school. This effect remains significant after other variables are added to the model. In Model 2 I include gender, social background variables, and a dummy variable indicating students at risk of transition to tertiary education after the expansion of higher education in 1999. The odds of entering tertiary education for those who were at risk of transition after the expansion is 6.5 ($e^{1.876}$) times of the odds for those who were at risk of transition before the expansion. In Model 3 I try a different specification of periods by two linear segments of yearly trend. Students have been more likely to attend tertiary education over time, as indicated by the significant effects of two yearly trends. Moreover, the increment of opportunity in the period after the expansion in 1999 is more evident than in the period between 1977 and 1999, although the difference between the two slopes is only marginally significant ($p = 0.052$).

### Table 3

**Coefficients for Logit Models of Determinants of Tertiary Education Attendance, China, 2008 ($N = 1,051$)**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key-point senior high school</td>
<td>$1.492^{***}$ (0.176)</td>
<td>$1.340^{***}$ (0.205)</td>
<td>$1.252^{***}$ (0.203)</td>
</tr>
<tr>
<td>Female</td>
<td>$-0.370$ (0.212)</td>
<td>$-0.423$ (0.218)</td>
<td></td>
</tr>
<tr>
<td>After the expansion in 1999</td>
<td></td>
<td>$1.876^{***}$ (0.199)</td>
<td></td>
</tr>
<tr>
<td>Yearly trend</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slope in 1977–1999</td>
<td></td>
<td></td>
<td>$0.103^{***}$ (0.021)</td>
</tr>
<tr>
<td>Slope in 1999 and after</td>
<td></td>
<td>$0.247^{***}$ (0.062)</td>
<td></td>
</tr>
<tr>
<td>Parental years of schooling</td>
<td>$0.054^*$ (0.025)</td>
<td>$0.024$ (0.029)</td>
<td></td>
</tr>
<tr>
<td>Father’s occupational ISEI × 10</td>
<td>$0.001$ (0.050)</td>
<td>$0.031$ (0.055)</td>
<td></td>
</tr>
<tr>
<td>Rural hukou origin</td>
<td>$-0.342^*$ (0.174)</td>
<td>$-0.366^*$ (0.183)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>$-0.913^{***}$ (0.124)</td>
<td>$-1.636^{***}$ (0.312)</td>
<td>$-205.689^{***}$ (41.699)</td>
</tr>
<tr>
<td>Model $\chi^2$ (df)</td>
<td>71.67 (1)</td>
<td>188.1 (6)</td>
<td>173.3 (7)</td>
</tr>
<tr>
<td>Pseudo-$R^2$</td>
<td>0.077</td>
<td>0.218</td>
<td>0.252</td>
</tr>
</tbody>
</table>

**Notes:** Data are weighted. Numbers in parentheses are robust standard errors adjusted for clustering in counties. $^{***}p < 0.001$, $^{**}p < 0.01$, $^*p < 0.05$. 
Attendance at a key-point senior high school has a large and significant positive effect on entry into tertiary education: The odds of entering tertiary education for those who attend key-point senior high school is \(3.5 (= e^{1.252})\) times the odds of those who attend an ordinary senior high school, given that they graduate from senior high school, and net of other factors (Model 3). The effects of key-point senior high school on entry into tertiary education do not vary by period (results not shown here). Women who graduate from senior high school are significantly less likely than men to attend tertiary education \( (p = 0.053)\). Neither years of schooling of the better-educated parents nor father’s occupational ISEI has a significant effect on successful transition to tertiary education, probably due to differential attribution rates among different social groups along the educational ladder (Mare 1980; Treiman and Yamaguchi 1993). The odds of students of rural hukou origin attending tertiary education are only 69 percent \( (= e^{-0.366})\) of the odds of those who have an urban hukou origin, given they graduate from senior high schools.

In Table 4 I focus on the effect of key-point senior high school on attendance at four-year university \( (Benke)\) versus three-year junior college \( (Dazhuan)\). The dependent variable has three outcomes, that is, do not attend tertiary education, attend a junior college, and attend a university, and I use

<table>
<thead>
<tr>
<th>Variables</th>
<th>No tertiary education</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key-point senior high school</td>
<td>−1.035*** (0.229)</td>
<td>0.535* (0.225)</td>
</tr>
<tr>
<td>Female</td>
<td>0.421 (0.267)</td>
<td>0.004 (0.255)</td>
</tr>
<tr>
<td>Yearly trend</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slope in 1977–1999</td>
<td>−0.085*** (0.026)</td>
<td>0.051 (0.026)</td>
</tr>
<tr>
<td>Slope in 1999 and after</td>
<td>−0.248*** (0.067)</td>
<td>−0.012 (0.055)</td>
</tr>
<tr>
<td>Parental years of schooling</td>
<td>−0.019 (0.034)</td>
<td>0.017 (0.041)</td>
</tr>
<tr>
<td>Father’s occupational ISEI</td>
<td>0.002 (0.006)</td>
<td>0.012 (0.006)</td>
</tr>
<tr>
<td>Rural hukou origin</td>
<td>0.178 (0.207)</td>
<td>−0.519* (0.224)</td>
</tr>
<tr>
<td>Constant</td>
<td>171.608*** (51.137)</td>
<td>−102.398* (51.865)</td>
</tr>
<tr>
<td>Model ( \chi^2 ) (df)</td>
<td>225.4 (14)</td>
<td></td>
</tr>
<tr>
<td>Pseudo-( R^2 )</td>
<td>0.197</td>
<td></td>
</tr>
</tbody>
</table>

Notes: Data are weighted. Numbers in parentheses are robust standard errors adjusted for clustering in counties. ***\( p < 0.001\), **\( p < 0.01\), *\( p < 0.05\).
attendance at a junior college as the base outcome. As we can see from Table 4, students from key-point senior high schools are more likely to attend university than junior college than their counterparts from ordinary senior high schools, by a factor of 1.7 \( (e^{0.535}) \), and the difference is statistically significant \( (p < 0.05) \). Rural hukou origin has a significantly negative effect on attendance at a university than at a junior college: for students of rural hukou origin, their odds of attending university versus junior college are only 59\% \( (e^{-0.519}) \) the odds of their counterparts of urban hukou origin.

Table 4 also shows that women are no less likely than men to attend university versus junior college. Neither years of schooling of the better-educated parent or father’s occupational ISEI has a significant effect on attending university versus junior college. People are more likely to attend junior college over time versus not attending tertiary education. However, no trend is found for the transition to university versus junior college, probably because universities and junior colleges expand at a relatively similar pace or the sample size is not large enough to detect any difference.

From Tables 3 and 4 we find that key-point senior high school and hukou origin are two important factors affecting one’s chances of attendance at tertiary education. As mentioned before, to ascertain the causal effect of key-point senior high schools on entry into tertiary education, I need to take into account the process of selection into key-point senior high schools. I employ a bivariate probit model to deal with the correlation of errors between the selection equation of attendance at key-point senior high schools, and the outcome equation of entry into tertiary education. The results are shown in Table 5. It is clear that the coefficient estimates are similar between the probit model and the bivariate probit model. After controlling for the possibly unmeasured heterogeneous characteristics of students, key-point senior high schools still has a significantly positive effect on entry into tertiary education. The correlation of errors between the two equations \( (\rho) \) is not significantly different from zero, suggesting that it is also legitimate to use the probit model (Greene 2008: 825). In other words, the results shown in the tables above hold, and key-point senior high schools have a significant positive effect on entry into college.

To obtain an overall evaluation of key-point senior high schools on educational stratification in China, we need to consider who are more likely to enter these schools. If students of lower social origins are more likely to enter key-point senior high schools through hardworking, key-point senior high schools do not necessarily contribute to a larger gap in educational attainments among different social groups. Results from Table 6, however, do not support such an optimistic expectation. The first column of Table 6 presents results from a logit model predicting entry into senior high schools, while the two rightmost columns are results of a multinomial logit model differentiating between entry into key-point senior high schools and entry into ordinary senior high school.
From the results of the logit model, we find that the odds of attending senior high school for students studying at key-point junior high schools are 1.6 ($= e^{0.458}$) times of those who attend ordinary junior high school, net of other factors. Parental years of schooling have a significant positive effect on senior high school attendance: a one-year increase of parental years of schooling increase the odds of students attending senior high schools by about 8 percent ($= e^{0.074}$). Students who are of rural hukou origin are significantly less likely to attend senior high school: the odds of students with rural hukou attending senior high school are only 63 percent ($= e^{-0.460}$) of the odds of their urban counterparts. If a student attends a junior high school located at a higher level of the jurisdiction, he or she has significantly greater odds of attending senior high schools. As the school’s location is a proxy of the financial capacity of the local government to invest in education, taking together the negative coefficient of rural hukou origin, the result implies a barrier for students from rural areas to attend senior high schools. In contrast, women are no less likely than men to attend senior high school. Father’s occupational status (when the respondent was 14 years old) does not have a significant effect on attendance at senior high school, either. It seems that in lower level of transition, parental education matters more than their financial status as captured by father’s occupational status.

Table 5

<table>
<thead>
<tr>
<th>Variables</th>
<th>Probit</th>
<th>Bivariate probit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key-point senior high school</td>
<td>0.734*** (0.117)</td>
<td>0.620* (0.277)</td>
</tr>
<tr>
<td>Female</td>
<td>-0.269* (0.128)</td>
<td>-0.273* (0.126)</td>
</tr>
<tr>
<td>Yearly trend</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slope in 1977–1999</td>
<td>0.059*** (0.012)</td>
<td>0.059*** (0.012)</td>
</tr>
<tr>
<td>Slope in 1999 and after</td>
<td>0.152*** (0.035)</td>
<td>0.153*** (0.035)</td>
</tr>
<tr>
<td>Parental years of schooling</td>
<td>0.014 (0.017)</td>
<td>0.015 (0.017)</td>
</tr>
<tr>
<td>Father's occupational ISEI</td>
<td>0.002 (0.003)</td>
<td>0.002 (0.003)</td>
</tr>
<tr>
<td>Rural hukou origin</td>
<td>-0.217* (0.107)</td>
<td>-0.217* (0.108)</td>
</tr>
<tr>
<td>Constant</td>
<td>-118.410*** (23.814)</td>
<td>-117.480*** (23.567)</td>
</tr>
<tr>
<td>$\rho$</td>
<td>0.090 (0.194)</td>
<td></td>
</tr>
<tr>
<td>Model $\chi^2 (df)$</td>
<td>205.5 (7)</td>
<td>439.6 (15)</td>
</tr>
<tr>
<td>Pseudo-$R^2$</td>
<td>0.251</td>
<td></td>
</tr>
<tr>
<td>$N$</td>
<td>1,051</td>
<td>3,290</td>
</tr>
</tbody>
</table>

Notes: Data are weighted. Numbers in parentheses are robust standard errors adjusted for clustering in counties. ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$. 

From the results of the logit model, we find that the odds of attending senior high school for students studying at key-point junior high schools are 1.6 ($= e^{0.458}$) times of those who attend ordinary junior high school, net of other factors. Parental years of schooling have a significant positive effect on senior high school attendance: a one-year increase of parental years of schooling increase the odds of students attending senior high schools by about 8 percent ($= e^{0.074}$). Students who are of rural hukou origin are significantly less likely to attend senior high school: the odds of students with rural hukou attending senior high school are only 63 percent ($= e^{-0.460}$) of the odds of their urban counterparts. If a student attends a junior high school located at a higher level of the jurisdiction, he or she has significantly greater odds of attending senior high schools. As the school’s location is a proxy of the financial capacity of the local government to invest in education, taking together the negative coefficient of rural hukou origin, the result implies a barrier for students from rural areas to attend senior high schools. In contrast, women are no less likely than men to attend senior high school. Father’s occupational status (when the respondent was 14 years old) does not have a significant effect on attendance at senior high school, either. It seems that in lower level of transition, parental education matters more than their financial status as captured by father’s occupational status.
The two rightmost columns of Table 6 show the determinants of attendance at key-point or ordinary senior high schools, given graduation from junior high schools. The results share similar patterns to those obtained from the logit model, but some findings need to be highlighted here. Controlling for other factors, students who graduate from key-point junior high schools are more likely to attend key-point senior high schools, but are less likely to attend ordinary senior high schools. How can we understand these different patterns? Note that in the logit model on the left, the effect of key-point junior high schools is significantly positive in the transition to senior high school. For students who decide to attend senior high schools, the ultimate goal is tertiary education, because people with a diploma from academic senior high school without tertiary education do not fare well in the labor market compared to those who graduate from vocational secondary school (Broaded and Liu 1996). Given that key-point senior high schools provide the most important source of college recruitments, it is reasonable that students who cannot attend these schools may choose to not attend senior high schools at all, or to attend vocational secondary education instead.9 That is why we observe a significantly
negative effect of key-point junior high school attendance on attending
ordinary senior high school versus not attending senior high school at all.

After we examine the effects of rural *hukou* origin, the story becomes even
clearer. On the one hand, rural *hukou* origin has a significantly negative
effect on attendance at a senior high school (see the logit model). On
the other hand, the effect of rural *hukou* origin is only significantly negative
for attendance at ordinary senior high schools, and not significant for
attendance at key-point senior high schools (see the rightmost column of
the multinomial logit model). Furthermore, changing the base outcome
from not attending a senior high school to attending an ordinary senior high
school reveals that students of rural *hukou* origin are even more likely than
their urban counterparts to attend key-point senior high school versus
ordinary senior high school, although the difference is only marginally
significant ($p = 0.068$, results not shown here). These results suggest that
students of rural *hukou* origin are more concerned with whether they can
attend key-point senior high schools, and they avoid attending merely
ordinary senior high schools. In this sense, school selectivity in China has
a far-reaching implication for the choice of academic versus vocational
track, as whether one can attend a key-point senior high school may affect
his or her choice of taking the academic track. Previous studies suggest that
the pursuit of a higher track involves higher risks that families of lower
socio-economic status may be unable to shoulder. Consistent with this argu-
ment, rural *hukou* origin is again found to affect one’s educational mobility.

**Conclusion and Discussion**

Employing data from a multi-stage national probability sample in 2008, this
study shows that key-point senior high school has a significantly positive
effect on entry into tertiary education, and the significantly positive effect
is larger on attendance at university than at junior college. For students
of rural *hukou* origin, the urban-rural divide is a barrier to attending senior
high schools, and subsequently entering tertiary education. The results
reveal a difficult decision facing rural households on whether to support
their children to attend senior high schools. Although the payoff from
attending tertiary education is higher than that from vocational secondary
education, it is risky because the competition for entry into tertiary edu-
cation is fierce, and students with a rural *hukou* origin who graduate from
senior high schools are less likely to attain admission to tertiary education.

The results from logit and multinomial logit models may be subject to
omitted variable bias. The CGSS survey does not have any direct measure
of the respondents’ academic ability. Such ability is believed to affect both
attendance at key-point senior schools and transition to tertiary education,
but is absent from data collection in most, if not all, cross-sectional surveys
in China. We are not clear about what contributes to the differential
probabilities of gaining entry to college between graduates from key-point senior high schools and those from ordinary senior high schools. On the one hand, students in key-point senior high schools are more strictly selected in terms of academic performance. They must have high scores in the Entrance Exam for Senior High School to obtain a seat in a key-point senior high school. On the other hand, key-point senior high schools are believed to have better teachers and facilities, which help students improve their academic ability. To ascertain the effect of key-point senior high schools, I use a bivariate probit model to take into account the possible selectivity (Heckman 1978; Powers 1993). The results indicate that key-point senior high schools do have a significantly positive treatment effect on their students’ entry into tertiary education.

Comparative research has found that the relation between social origin and educational attainment persists over time (Shavit and Blossfeld 1993; Shavit, Yaish, and Bar-Haim 2007), and scholars provide descriptive accounts of such a phenomenon (Lucas 2001; Raftery and Hout 1993). Rational choice theory links between class positions and choices of educational transitions (Breen and Goldthorpe 1997), and has the potential to unify different theoretical generalizations of the persisting educational stratification, yet it states in abstract terms and largely ignores social contexts. This study contributes to the literature by examining the effects of a concrete institutional arrangement of key-point schools on educational inequality within a specific context of China. I identify key-point senior high schools as an important component of tracking in China’s educational system that reproduces educational inequality, because children of better-educated parents are more likely to attend key-point senior high school, and those who attend key-point senior high school are more likely to enter colleges. In other words, key-point senior high schools are utilized by parents of higher social status to ensure greater opportunities in higher education for their children. The thesis of “Effectively Maintained Inequality” argues that parents of better socio-economic status secure advantaged positions for their offspring in social status either by more schooling or better education (Lucas 2001). My study shows that the qualitative and the quantitative aspects of education are not distinct but are instead interrelated, because better upper secondary education in key-point senior high schools (i.e., a qualitative difference) leads to more education in tertiary education, and failure to attend key-point senior high school leads to no further education beyond the upper secondary level as in the case of children of rural hukou origin (i.e., a quantitative difference).

Research focusing on specific institutions can inform policy making. The public has recently raised concerns that students from disadvantageous social backgrounds, especially those from rural areas, have fewer opportunities to enter elite universities in China. If the promotion of equality in educational opportunities is the goal, we have to understand the fundamental mechanism of how the inequality is generated. If it is due primarily to the
treatment effect of key-point senior high schools, we should accordingly stress the need for more equal resource allocation to schools, so that different schools can offer comparable enhancements to students’ academic skills. What has been occurring in China, however, is quite the contrary. Resources have been even more concentrated in a small number of senior high schools, that is, super senior high schools (*Chaoji Zhongxue*), to promote academic excellence for a few students at the expense of more equal opportunities to other students. As a result, the impact of tracking at the upper secondary level is likely to persist for the foreseeable future.

In some Chinese cities, key-point schools now employ a randomized process to allocate some quotas to students who live in the same district where the schools are located. As a result, students who attend nearby key-point schools are less subject to selection in terms of their academic performance. They may be selected more in terms of their family background, because wealthier families can purchase apartments in the local school district to ensure a higher probability of enrollment into the key-point schools for their children (Xiaoxin Wu 2008). Given that the effect of key-point senior high schools on entry into higher education results largely from their treatment effect, my finding has important implications for school reform policies. The aforementioned arrangement may enlarge educational inequality based on social origins, as the allocation of some quotas through a randomized process is not likely to benefit students of lower socio-economic backgrounds. Instead, it might reduce the relative probability of students of lower social backgrounds to enter key-point senior high schools, as those with limited economic resources are less able to move into districts where key-point senior high schools are located. A more practical way to reduce educational inequality would be to allocate resources more equally among different schools, so that students in different schools can benefit from the improvement in the quality of education.

Due to the limitation of available data, I do not have any measure of respondent’s academic ability. The bivariate probit model I apply involves assumptions that cannot be empirically tested. Neither can it estimate the effect of academic ability on entry into tertiary education, which in itself is important to the evaluation of educational stratification in China. It is more difficult to measure academic ability than one may think. Ideally, we would like to know students’ academic abilities at the time they took the Entrance Exam for Senior High Schools. Measuring the respondent’s ability (such as using an IQ test) at the time of survey will not work, however, as the measured ability has been affected by education, so we run the risk of reversed causality when using it as a predictor of entry into a key-point senior high school. Panel surveys collecting data in earlier stages of child development would be of great help in verifying the effects of key-point senior high schools, and more generally, inequality in China’s educational system. I cannot identify the mechanisms of the positive effect of key-point
senior high schools on entry into tertiary education, either. Whether such a treatment effect results from favorable allocation of funds, better facilities, or assignments of better-qualified teachers, or all of them, requires further research. More data collection and empirical research are needed to understand school effects and inform policy choices in China.

Notes

1. The survey was jointly conducted by Department of Sociology, Renmin University of China, and Division of Social Science, Hong Kong University of Science and Technology. For more detailed information about the survey, please refer to: http://www.cssod.org/

2. An alternative classification is to define students as having urban hukou if they obtained that status in the same year they were at risk of transition from junior to senior high school. In such a case, only forty-three more respondents are classified as having urban hukou origin, and the results from multivariate analysis employing this alternative classification are consistent with the classification that I adopt. For the transition from academic senior high school to tertiary education, such an alternative specification has little effect, as even fewer cases need to be reclassified, and it is more likely that people were granted urban hukou because they were admitted to tertiary education (Wu and Treiman 2004).

3. I have also tried three alternative specifications: (1) both father’s years of schooling and mother’s years of schooling, (2) whether either parent has attended upper secondary education or above, and (3) the sum and difference between father’s and mother’s years of schooling. The last specification is useful for detecting which parent’s education is more influential, if the effect of the difference in father’s and mother’s years of schooling is significantly different from zero. However, I do not find such a statistically significant difference in the analysis. All these specifications yield consistent findings. As father’s and mother’s years of schooling are correlated to a considerable degree (about 0.62 in my analytic sample), I decide to use years of schooling of the better-educated parent to avoid a possible collinearity problem of including years of schooling of both parents.

4. In the unweighted analytic sample of 3,290 respondents, 287 of them reported that they attended a key-point junior high school.

5. Although there are large differences in educational opportunities across provinces, it is not appropriate to include province fixed effects in the models. Province in the data refers to a respondent’s residence at the time of survey instead of his/her origin province, and these two locations are more likely to be different for people who have been admitted to college. CGSS 2008 seems to collect information on respondent’s origin province, but the data have never been released.

6. Because years (without any transformation) are used to construct yearly trends, the constant term of the model does not have any meaningful interpretation, as it refers to one’s log-odds of entry into tertiary education given graduation from senior high school in year 0.

7. The correlations are 0.38 between parental years of schooling and father’s occupational ISEI, −0.30 between rural hukou origin and parental years of schooling, and −0.29 between and rural hukou origin and father’s occupational ISEI. They are not large enough to cause collinearity problem. Models excluding the variable of key-point senior high schools do not produce qualitatively different results for the family background variables, either.
8. Only the result from the outcome equation of the bivariate probit model is shown here to save space, and the result from the selection equation is available upon request.
9. Note that as I focus on the academic track, students who attend a vocational secondary education are treated as not attending (academic) senior high schools in my analysis.

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