

The Impact of Removing Selective Migration Restrictions on Education: Evidence from China*

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Abstract: An open question in migration research is how the removal of selective migration restrictions affects migrants' education decisions. I analyze this question in the Chinese context, in which the household registration system imposes selective rural-urban migration restrictions. The identification derives from a policy change that grants urban residency to a group of rural individuals based on their dates of birth. Using a regression discontinuity approach, I find that educational attainments for barely eligible rural residents decreased sharply after the reform. These effects are larger for males and for those able to permanently migrate to relatively rich areas.

Keywords: Migration; Education; Brain Drain; Regression Discontinuity; China

JEL Classification: J61; J24; O15; R23

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1. INTRODUCTION

This paper studies the impact of removing selective migration restrictions on education. Over the past decades, various countries have used controlled and selected migration policy (Docquier & Rapoport, 2012). One step further in the process of improving the allocative efficiency in the labor market is the free allocation of labor regardless of skill levels, such as the free movement of workers in the European Union and the relaxed internal migration barrier in China. However, if the selective migration scheme has induced stronger incentives to invest in education, policies that remove these migration restrictions may lead to lower levels of educational attainment. While extensive work has been conducted on the changes in skill compositions when a closed economy allows for selective emigration (as seen in the literature regarding debate over “brain drain” versus “brain gain”),¹ surprisingly there is little causal empirical evidence on the educational consequences of the shift from selected to free mobility. This paper aims to fill this gap with an analysis of the issue within the context of China. In particular, I investigate the impact of removing the selective internal rural-urban migration restrictions on the educational attainment of rural youth.

In China, rural-urban migrations are tightly restricted by the household registration system known as Hukou, a system that categorizes people as rural or urban at birth according to their parents’ status. While rural people are nowadays allowed to temporarily seek employment opportunities in urban areas, migrants without local urban Hukou have limited job choices which mainly involve low paid work in poor conditions. More strikingly, while subject to the same taxes as legal urban residents, rural migrants are not allowed urban benefits such as health care, unemployment insurance, housing subsidies and pensions (as is also the situation with illegal immigrants in other

¹See Docquier & Rapoport (2012) for a detailed review of studies on “brain drain” versus “brain gain”.

countries). To overcome the mobility restrictions, many rural youth strategically pursue post-compulsory education. Once enrolled in technical (vocational) high school or college, they are automatically granted urban Hukou. Such incentives to stay in school disappear after the removal of selective mobility restrictions.

In order to examine the impact of removing the rural-urban Hukou migration restriction on education, I analyze a change made to the Hukou inheritance law in September 1998. While under the previous system, Hukou status was inherited at birth from the mother, the new reform meant that this status could also be inherited at birth from the father. In addition to this, children under the age of 18 year were now allowed to transfer the Hukou status inherited from their mother to that held by their father. The reform thus differentially benefited individuals with a rural mother and an urban father and enabled them to obtain urban Hukou and its associated benefits without higher education. This is a non-trivial group given that one fifth of urban males marry rural females in China.² While the change to Hukou inheritance law eliminated these beneficiaries' incentive to pursue higher education for urban benefits, they no longer had to pay extra fees to enroll in urban schools once they obtain local urban Hukou. The direction of the net impact is theoretically uncertain and is left for empirical study.

I apply a regression discontinuity (RD) approach in this study to estimate the net impact of the Hukou reform on high school attendance. The age eligibility rule of this policy change, i.e. less than 18 years old by September 1998, implies a birth eligibility cut-off of September 1980. Thus, I compare the high school attendance between cohorts born before and after September 1980. Nonparametric estimation results show that the high school attendance rate drops by 8.8 percentage points for barely eligible cohorts compared with those barely ineligible. These results are mainly driven by a reduction in technical high school enrollment. In addition, the effects are larger for males and for

²Author's calculation based on the 2000 census data.

those able to obtain urban Hukou in relatively rich areas. All the findings above show that a removal of the selective mobility restrictions substantially lowers rural youth's educational attainment in China.

Note that the influence of the reform in determining the students' decision to attend high school is relative to whether the decision was made before or after the implementation of the new policy. Given the different school starting age across counties and the high likelihood of repeating/skipping a grade in China, there are substantial variations in the age at graduation from compulsory school and subsequent timing of the decision to attend high school within each birth cohort. As the 1998 Hukou reform was introduced rapidly, the change to the Hukou law was completely unexpected for most students. Therefore, the change to the law only had an impact upon students' decisions to attend high school or not among those who graduated from compulsory education in or after 1998. Those completing compulsory education earlier did not have the chance to respond to the implementation of the new policy. This means only a proportion (not all) of eligible individuals were able to adjust their high school attendance choices to the new policy. Hence, the results obtained above constitute a reduced form effect of eligibility for Hukou transfer. Unfortunately, the timing of the decision to attend high school is not reported in my data. This means I am unable to consistently estimate the local average treatment effect (LATE) of individuals' ability to adjust their high school decision to the new policy (an effect estimated via "fuzzy" RD design that uses eligibility as an instrument for ability). To get an idea of how large the LATE would be, I rescale the reduced form estimate with an approximated proportion of individuals making their high school decision after the reform. The reduction in high school attendance enlarges to 17 percentage points after rescaling.

In addition to education, evidence also indicates poorer labor market outcomes for beneficiaries of the reform. In particular, they are 6.7 percentage points less likely to be

working full-time and are 9.6 percentage points more likely to have unskilled blue-collar jobs compared with those barely ineligible. Note that these findings can only be viewed as suggestive evidence of the negative impact of the 1998 Hukou reform on labor market outcomes because a large proportion (29%) of the reform beneficiaries in the regression sample were still in school when being surveyed.

This research contributes to a main strand in the migration literature regarding changes in skill composition in the process of labor market integration. The relaxation of mobility restrictions generally consists of two phases: (1) the shift from a closed economy to restricted migration, which is often selected on the basis of skill levels; and (2) the shift from restricted migration to free migration. “Brain drain” supporters argue that selective migration of the first phase extracts talent from poor to rich countries (Bhagwati & Hamada, 1974). In contrast, some theoretical and empirical studies point out the possibility of “brain gain” since the future chance of emigrating to developed countries raises the expected returns to education.³ This paper adds new findings to the above “brain drain” versus “brain gain” literature by investigating educational investment changes during the shift from a selective migration scheme to a free migration scheme (which no longer selects migrants on the basis of education). This shift represents a contemporary migration pattern in both developing and developed regions, as seen in the relaxed internal migration restrictions in China and in the free movement of workers in the enlarged European Union. This paper is among the first to empirically analyze changes in education decisions during the second phase of labor market integration.

In addition to contributing to the “brain drain” vs “brain gain” literature, this paper also adds new findings to the literature on the educational consequences of reforms that

³See Mountford (1997), Stark, Helmenstein & Prskawetz (1997, 1998) and Vidal (1998) for theoretical arguments and Beine, Docquier & Rapoport (2001, 2008, 2010), Chand & Clemens (2008) and Batista, Lacuesta & Vicente (2012) for empirical evidence.

remove the “strategic” demand for education. Most of the work along these lines focuses on draft avoidance as an incentive to education (Angrist & Krueger, 1992; Card & Lemieux, 2001; Bauer et al., 2014). In many countries, government policy allows students to temporarily avoid compulsory military service by enrolling in higher education. As a consequence, such policy increases the demand for education among young men. Maurin & Xenogiani (2007) further show that the abolition of conscription in France resulted in a fall in men’s educational attainment and a decrease in their entry wages relative to women. Pietro (2013), in contrast, finds no overall effect of the dismissal of mandatory military services on schooling in Italy. Instead of draft avoidance, this paper focuses on the educational consequences of removing policies that induce strategic investment in education for mobility purposes. In particular, this study documents a decline in enrollment in post-compulsory education that takes place after selective migration restrictions have been removed.

Most importantly, my analysis provides policy implications for contemporary China. In order to mitigate the unbalanced development between rural and urban areas, a few provinces have used uniform Hukou identity since 2002 to replace the original rural/urban dichotomy. The elimination of rural/urban Hukou status erases part of the returns to education for the previous rural Hukou holders, which may in turn negatively affect their investment in education. Although the internal migration restrictions in China are unique and different from more common cross-border migration restrictions in other parts of the world, the policy implications of this study may also be relevant for areas outside of China. This study highlights the fact that higher education may serve as a means of escaping poverty if it increases the probability of obtaining legal residency in more developed areas. Any policy that removes or relaxes selective mobility restrictions needs to take this fact into account.

The rest of this paper is structured as follows: Section 2 provides the institutional back-

ground of the Hukou system, outlines the change to Hukou inheritance law in 1998 and discusses possible channels through which this change may have affected beneficiaries' education. Section 3 describes the main data source used in this study. The identification strategy and main estimation results are provided in Section 4. In Section 5, I test assumptions required for a valid RD design, check if my results are driven by the school enrollment cutoff dates and discuss other reforms in the same study period. Section 6 briefly discusses the labor market implications of the reform, and section 7 concludes.

2. THE HUKOU SYSTEM REFORM

2.1 Institutional Background

China's household registration system (the Hukou system) is one of the strictest population regulation mechanisms in the world.⁴ The two most important pieces of information in a Hukou record are the Hukou status (urban/rural) and the legal residence address. The legal status/authority conferred by these registration records was passed on from mother to child until the policy was reformed in 1998, at which point this status/authority could also be passed on from father to child. In either case, this information is registered at birth for every legal Chinese citizen, remains active during the entire lifetime of that person, and is extremely hard to change.

Until the 1980s, the Hukou system, combined with China's food rationing policy, effectively tied people to their registered place of residency. Rural people relied on their land to support themselves while the government provided health care services, unem-

⁴See Wu & Treiman (2004) and Chan (2009) for a detailed description of the Hukou system.

ployment insurance, housing subsidies and pensions (among other services) to urban residents. It was almost impossible to migrate without legally changed Hukou because of rigid food rationing and the absence of markets. As a result of such restrictions, the Hukou system has been criticized as a major cause of undersized Chinese cities (Fujita et al., 2004; Au & Henderson, 2006*a,b*), insufficient agglomeration in rural industries (Au & Henderson, 2006*b*), and rising rural-urban inequality (Yang, 1999; Wu & Treiman, 2004; Liu, 2005; Whalley & Zhang, 2007; Chan, 2009).

One of the few ways that Chinese have sought to elude the restrictions of rural Hukou has been through high education.⁵ After finishing 9 years of compulsory primary and middle school education, students then choose to either attend high school (which may be either regular or technical/vocational) or start work. Even though obtaining a regular high school degree does not guarantee an urban Hukou, it provides an opportunity for tertiary education. Newly admitted students to technical high school, junior college and above are automatically granted urban Hukou.^{6,7} For rural students, the returns to high school education include not only a higher future income, a frequent topic of study in the literature, but also potentially dramatic increase in welfare benefits.

Most previous studies on the relation between Hukou status and educational attainment have documented the importance of rural origin in determining lower levels of schooling (Wu, 2010; Wu & Treiman, 2004), and the importance of schooling itself, especially a

⁵Other ways of changing one's Hukou status from rural to urban have been mainly through a job assignment after military service or employment with the states. Both the Army and the government place significant emphasis on educational attainment.

⁶Admission to these schools are based on competitive exams, which are equally available to all Chinese citizens. However, rural children are less likely to attend these schools due to the inferior quality of compulsory education in rural areas.

⁷Even though the Hukou transfer is voluntary, most students accept urban Hukou given the enormous benefits associated with it. While rejection of urban Hukou is now rare, it was especially unusual in the last century when it played an even more significant role than it does today.

high school or college degree, in transferring Hukou from rural to urban areas (Wu & Treiman, 2004). The only study, however, to have treated education as a choice variable was made by Zhao (1997) who was the first to incorporate the schooling choice into the calculation of expected future income. She points out that the incentive for pursuing high school education is partly rooted in the chance of changing Hukou status. Her calculation shows that the rate of returns to high school education via promoting migration was 4.3% in 1985. Even though her calculation takes into account some non-wage benefits brought about by urban status, such as food ration coupons and subsidized housing, data limitations mean that this calculation does not include other benefits, such as health care, pensions and benefits that are transferable across different generations. In addition, her paper does not empirically analyze how the additional migration-related returns affect educational attainment. A series of reforms allow me to directly address this question.

In China, the relaxation of rural-urban mobility barriers has consisted of two main phases. In the first phase, the 1978 economic reform allowed rural people to temporarily migrate to urban areas. They could apply for a temporary resident permit, which granted them legal residency for a few months and was subject to renewal. However, the relaxed migration restriction only guaranteed controlled and limited mobility for rural labor. Temporary migrants were highly discriminated against, both inside and outside of the labor market, and they were normally obliged to take up work that was lowly paid in poor conditions. While subject to taxes, they were still denied access to urban social welfare benefits (Wang & Zuo, 1999).

The second phase of removing mobility restrictions in China has aimed at completely abandoning the rural-urban dichotomy and the discrimination associated with it. A first attempt at introducing this phase was the change in Hukou inheritance law studied in this paper. Whereas newborn children in China previous had to inherit their mother's

Hukou status (rural/urban), the reform of September 1998 meant that these children were also allowed to inherit their father's Hukou status. While this Hukou reform was initially proposed by the Ministry of Public Security on June 23, 1998 and it was approved by the State Council a month later on July 22, it was not put into practice until the beginning of September. In addition, children who were under the age of 18 in September 1998 and had inherited their mother's Hukou then had the chance to change their status according to their fathers' Hukou. The beneficiaries of this reform were therefore those born in or after September 1980 and who had a mother who held a rural Hukou and a father who held an urban Hukou. In this paper, I study the resulting impact of the 1998 Hukou reform on these beneficiaries' education decisions.

The study most related to my work is that of De Brauw & Giles (2008). They show that allowing temporary migration significantly reduces high school enrollment in rural China. There are several differences between their work and mine. Firstly, De Brauw & Giles (2008) only analyze the impact that a relaxation of the Hukou system has upon high school enrollment. This paper, in contrast, focuses on a complete removal of rural-urban Hukou restrictions. Secondly, the quasi-experimental empirical strategy adopted in this paper allows me to overcome the problem of endogenous policy change and clearly identify the reform's causal effect on educational attainment. Moreover, De Brauw & Giles (2008) base their findings on a reform implemented in 1980s and the returns to education and overall school enrollment may have changed since then with improved economic conditions. My paper uses a more recent reform to identify the effect of removing selective mobility restrictions on education. In addition, the results of De Brauw & Giles (2008) are based on a survey which covers a few provinces. Using a national representative dataset, I am able to estimate the average impact for all provinces as well as possible heterogeneities across regions.

2.2 The effect of the Hukou reform on education

The classic model of human capital accumulation, developed by Becker (1967), provides the conceptual basis for understanding how the change to Hukou inheritance law may have affected its beneficiaries' education. Within this framework, the optimal level of schooling is obtained by equating the marginal return with the marginal cost of education. The 1978 economic reform allowed individuals from rural areas to work in the urban labor market. Since then, the return to high school education for a typical rural child have included (1) a higher wage income in the labor market due to better skills and improved career options, and (2) a package of urban welfare benefits associated with Hukou status conversion from rural to urban. The cost of high school education includes direct costs, such as tuition and fees, and opportunity cost (foregone earnings during the period of study).

The change to Hukou inheritance law may change its beneficiaries' incentive to attend high school in several ways. First, with a direct grant of urban Hukou, a beneficiary may no longer need to pursue post-compulsory education in order to gain urban welfare benefits and, in such a case, the only return to high school education would be higher wages in the labor market. Second, after obtaining urban status, beneficiaries could potentially gain access to better job opportunities with higher wages, thus increasing the opportunity cost of high school. These costs would be further increased by the unemployment benefits offered as part of the urban welfare package. Third, direct school cost may decrease for beneficiaries of the reform. A majority (70%) of reform beneficiaries live in urban areas where parents of children without an urban Hukou have to pay additional fees to enroll them in local schools at compulsory level and regular high school. These extra fees are waived, however, once the child obtains local urban Hukou, and this would offset the negative impacts of the policy change on regular higher

school enrollment via the previously two channels as discussed above. The overall effect of urban Hukou on schooling would be the combination of these three channels. While these channels show that the policy change would lower beneficiaries' incentive to enroll in technical high school, the sign of its resulting net impact on regular high school enrollment is ambiguous and is left for further empirical study.

3. DATA

The data used in this paper come from the 0.095% sample of China's fifth wave population census conducted in 2000. The census collected individual level demographic information as of November 1, 2000, such as month of birth, gender, ethnic minority status, education level, employment status and occupation. Individuals also reported whether their Hukou status was rural or urban as well as in which province the Hukou was located.

To study the impact of obtaining urban status on high school enrollment decisions,⁸ I focus on the subsample consisting of individuals born between September 1971 and August 1986 with an urban father and a rural mother. I further restrict my sample to those with at least some middle school education and exclude those who had not made their high school decisions by the time of the census. In Table 1, summary statistics show that individuals within the sample have on average 1.13 siblings and that 63% are male. 43% of this group attended high school, of which one third attended technical high school and two thirds attended regular high school. While the census data do not contain information on whether a household resided in rural or urban areas by the time

⁸High school includes both technical and regular high schools. I focus on enrollment in high school instead of college because many individuals in my sample had not made college decisions by the time of the census.

of the Hukou reform, data from the China Health and Nutrition Survey (CHNS) show that a majority (70%) of the reform beneficiaries lived in urban cities or towns in 1997, one year before the policy change.

Compared with a typical rural child whose parents both hold a rural Hukou, individuals with an urban father and a rural mother are more likely to come from an advantaged background and are, on average, more likely to have better educated parents, defined as having at least middle school education. For children who have an urban father and a rural mother, my data show that 71% of them have an educated father and 34% have an educated mother. These proportions drop to 50% and 24% respectively for children with both parents holding rural Hukou. Children in the studied subsample also have 0.31 fewer siblings and are 23 percentage points more likely to enroll in high school, compared with children with a rural mother and a rural father.

4. EMPIRICAL ANALYSIS

In this section, I first outline the RD design and present the local linear regression results for the change in the high school attendance rate at the eligibility cutoff. Next, I show that individuals' ability to adjust their high school decision was influenced by whether the individual had sufficient time to respond to the 1998 Hukou reform. Using limited information from the data on the timing of the decision to enroll in high school, I then exploit the local average treatment effect. At the end of this section, I examine heterogeneous impact on subgroups.

4.1 High school attendance change at the eligibility birth cutoff

The Hukou reform meant that children born in or after September 1980 were able to change the Hukou status inherited from their mother to that held by their father. This differentially benefited individuals with a rural mother and an urban father. The main focus of this study is thus to examine whether post-compulsory schooling decisions are different between cohorts born before and after September 1980 for individuals within this group. A natural approach to estimating this is a regression discontinuity (RD) design.

In particular, I adopt a non-parametric approach with a triangular kernel suggested by Hahn, Todd & Van der Klaauw (2001) and Porter (2003) to estimate the relationship between an individual's eligibility for Hukou transfer and his/her high school attendance described in the following linear equation:

$$y_i = \alpha + x_i \times \beta + \epsilon_i$$
$$x_i = \begin{cases} 1 & \text{if } z_i \geq z_0 \\ 0 & \text{if } z_i < z_0, \end{cases}$$

where y_i is a binary variable taking the value of 1 if individual i attends high school and zero otherwise; z_i represents birth month of individual i with a cutoff value of $z_0 = \text{September } 1980$ and has been normalized to $z_0 = 0$ ⁹ and x_i is the Hukou transfer eligibility taking the value of 1 if individual i was born after the policy birth cutoff, and it is 0 otherwise. I focus on this intent-to-treat (ITT) effect because the data are not informative as to whether an individual utilizes this opportunity to transfer Hukou

⁹ z_i now is the difference between original z_i and z_0 , with a negative sign indicating “before”. For example, $z_i = 2$ for individuals born in November 1980 and $z_i = -3$ for individuals born in June 1980.

status or not.

I choose a bandwidth of 41 months for the main results based on the leave-one-out cross-validation procedure proposed by Ludwig & Miller (2007) and Imbens & Lemieux (2008) and show that the results are not sensitive to the choice of bandwidth. To support the local linear specification, I include dummies for each value of the birth month along with a piecewise linear control and test the joint significance of those dummies.¹⁰ If they are jointly significant, then the piecewise linear regression is misspecified. The test statistic fails to reject the first order polynomial specification with a p-value of 0.6675.¹¹

Before proceeding to formal analysis, I consider a sample of students who have a rural mother and an urban father and I plot the proportion of those who at some stage attended high school against the month of birth. I restrict the sample to individuals with at least some middle school education and exclude those still in middle school at the time of the census.¹² As shown in Figure 1, there is a clear decrease in the high school attendance rate at the cutoff value 0, which represents September 1980.

The local linear regression result presented in Table 2 Row 1 Column 1 is consistent with this visual evidence. Among those attended middle school, the high school attendance rate significantly decreases by 8.8 percentage points for cohorts born just after the threshold of September 1980 compared to those born just before.¹³ Given the base-

¹⁰See Lee & Lemieux (2010) for a detailed discussion of this test. Using dummies for bigger bins generates similar results.

¹¹Based on the Akaike Information Criterion (AIC), a first order polynomial also fits best compared to constant, quadratic, cubic and quartic specifications

¹²Most of the individuals who were still in middle school when the census was taken were born in 1984 or later. Including them will result in a low high school enrollment rate for later birth cohorts. Nonetheless, the estimated discontinuity at the cutoff of September 1980 is unchanged with these additional observations.

¹³I focus on the transition rate from middle school to high school because primary and middle school education is compulsory in China. Without restricting the sample to those with middle school education, the magnitude of the estimated reform effect on

line attendance rate of 43.7% in the control group, this effect is equivalent to a 20% decrease in the high school attendance rate.¹⁴ As the 1998 policy change took place after the annual middle school graduation and the high school entrance exam in June, students had no time to adjust the effort level in middle school. Therefore, this result can be viewed as a short-term effect. In the long term, the negative impact on high school enrollment might be even larger since individuals had the chance to adjust time and money spent on their middle school education. I check the sensitivity of the result to the choice of bandwidth by estimating the same regression using bandwidths ranging between 20 and 50 months. As shown in Table 3 Column 1 – 4, the estimate is robust to alternative bandwidths. I will further show other test results for the validity of the RD in Section 5.

The reduction in attendance may differ according to high school types. As discussed in Section 2.2, the reform may lower the regular high school fees of its beneficiaries, and this is expected to offset any possible negative impacts of the policy change on regular high school enrollment. In addition, even if technical high school graduates earn slightly more than regular high school graduates (Li, 2003; Xiu & Gunderson, 2013; Li, Liu & Zhang, 2012), the wage returns to regular high school may well be above that of technical high school when including the option value of college education.¹⁵ Nevertheless, more than one third of high school attendees still chose technical high school in the studied sample before the policy reform.¹⁶ The popularity of technical

high school enrollment rate is similar to the one reported in the main text. The point estimate is -0.085 with a standard error of 0.041.

¹⁴The control group consists of individuals born within 41 months before the eligibility cutoff of September 1980.

¹⁵For example, the wage premium of regular high school, technical high school and college degree holders, compared to primary school graduates, were 54%, 68% and 91% in the mid-1990s, respectively (Li, 2003). According to the China Education Yearbook, the transition rate from regular high school to college was 49.9% in 1995.

¹⁶Family backgrounds are similar between technical and regular high school attendants in general.

high school may be a result of the large associated urban benefits. Therefore, the Hukou reform would have a large negative effect on technical high school enrollment.

To investigate if the decrease in attendance rate is different between regular and technical high schools, I first plot the attendance rates of each type of high school separately in Figure 2. While the technical high school attendance rate drops sharply at the eligibility cutoff date of September 1980, the regular high school attendance rate is smooth over this cutoff. The muted effect of Hukou reform on the likelihood of enrolling in regular high school is consistent with the reduced school costs as discussed in Section 2.2. In addition to providing visual evidence, I estimate the same local linear regression for each school type separately. As shown in Table 4, the technical high school attendance rate decreases significantly by 8.8 percentage points for those eligible for the Hukou transfer. Even though the overall change in regular high school attendance is small and not significant, it does not necessarily mean that regular high school enrollment decisions are not affected when obtaining urban Hukou. The results in Table 4 represent the net effect of switching from technical high school to work, from regular high school to work and from technical to regular high school.

The sample in the high school attendance estimation includes those with at least some middle school education. The estimated drop in high school attendance rate can be divided into two parts: (1) a lowered middle school graduation rate for those who at some stage attended middle school, and (2) a decreased high school enrollment rate for middle school graduates. Since part of the returns to middle school education stems from the option value of attending high school, the reduced benefits associated with a high school degree is expected to weaken the incentive to graduate from middle school.

To test to what extent the change in middle school graduation rate can explain the decreased high school attendance, I run a local linear regression for the middle school graduation rate using the same sample. I use the same bandwidths of 41 months to be

consistent with previous analysis. According to the regression results shown in Table 5, the change in the middle school graduation rate at the eligibility cutoff of September 1980 is small and not statistically significant. The unchanged middle school graduation rate may result from the fact that primary and middle school in China is compulsory.

One concern regarding the estimation strategy is the potential bias resulting from the “crowding in” effect in high school admission. Since the incentive to pursue high school education weakens for the group consisting of individuals born in or after September 1980 with a rural mother and an urban father, high school enrollment for other groups may increase if admission requirements are less competitive. One of these groups includes individuals born before September 1980 with a rural mother and an urban father. In this case, the RD may overestimate the true impact of obtaining urban Hukou on education. However, the policy-affected group is relatively small, constituting only 4.9% of the population. As such, the “crowding in” effect is expected to be small and can be ignored.

To sum up, removing selective rural-urban migration restrictions via the change to Hukou inheritance law in 1998 discouraged rural youth from pursuing post-compulsory education in China. In particular, this reform led to a substantial reduction in technical high school enrollments among middle school graduates, and this in turn was responsible for the decline in overall high school attendance rate.

4.2 Timing of decision to enroll in high school and LATE

Note that the influence of the reform in determining the students’ decision to attend high school is relative to whether the decision was made before or after the implementation of the new policy. Each year, middle school graduates in China take the high school

entrance exam in June, receive their exam results by the end of July, and then decide whether or not to attend high school before the start of the school year in September. Because it was announced in July 1998, the Hukou policy reform only affected high school enrollment decisions of those individuals who had graduated from middle school and whose decision to enroll or not was made during or after 1998 (as illustrated in Figure 3). The variation in the timing of the decision to attend high school within each birth cohort is substantial in China. As shown in Figure 4, which is based on data from the CHNS, most of the cohort born between September 1980 and August 1981 made their decision to attend high school in 1996, 1997 or 1998 when they were between 15 to 17 years old.¹⁷ Hence only a proportion of eligible individuals were able to adjust their high school attendance choices according to the new policy (shown as the shaded area in Figure 4). Because the census data used for empirical analysis in this study did not report when the decision was made to attend high school, I am unable to estimate the LATE of individuals' ability to adjust their high school decision to the new policy (an effect calculated via "fuzzy RD" that uses eligibility as an instrument for ability). The timing of attendance decision relative to policy implementation is important to bare in mind when interpreting the findings from the main estimation strategy outlined in Section 4.1. In particular, the reported results constitute a *reduced form* effect: the effect of eligibility for Hukou transfer regardless of ability to adjust high school decisions.

I exploit the school status information reported in the 2000 census to get an idea of how large the LATE would be. In order to calculate the proportion of barely eligible individuals whose decision to attend high school was made after the reform, I first examine the Sept. 1980-Aug. 1981 cohort, a group equivalent to those decided whether to enroll in high school at an age of 17 or older (hereafter referred to as "late high

¹⁷Age here is defined as the age at one's last birthday. For example, the age of a child born on September 1, 1980 is 17 on any date between September 1, 1997 and August 31, 1998. His/her age reaches 18 on September 1, 1998.

school decider”). Each individual reported the school status of “in school”, “finished” or “dropout” in addition to highest education level attended. In my sample, 28.5% of individuals born between September 1983 and August 1984 were still in middle school when the census took place in November 2000, which indicates that they decided whether to enroll in high school during or after 2001 and were late high school deciders. Note that the proportion of late high school deciders differs by cohorts. Figure 5 plots this proportion across cohorts using data from the CHNS. This sample includes all individuals born between September 1980 and August 1984 regardless of their parents’ Hukou status. This proportion exhibits a downward trend. Assuming the time trend is the same for the CHNS sample and the census subsample used in this study, I obtain the estimated proportion of later high school deciders of 52.8%. This proportion can then be used as a rescaling factor for the “raw” discontinuity obtained in Section 4.1 to estimate the LATE of individuals’ ability to adjust their high school decisions to the new policy.¹⁸ After rescaling, the reduction in high school attendance rate enlarges from 8.8 to 16.7 percentage points.

Note that the estimated LATE via simple extrapolation may be biased if the time trend in the proportion of late high school decider differs between the CHNS and the census samples. As such, it only serves as a proxy of the local average treatment effect of the reform for individuals making their high school decisions at an age of 17 or older. We still thus focus on the reduced form results in the remaining analysis.

4.3 Heterogeneous effect on subgroups

The educational response to the Hukou policy change may differ by gender. Table 2 Column 2 and 3 reports the estimation results for male and female separately using a

¹⁸This rescaling method follows that of Hahn, Todd & Van der Klaauw (2001).

same bandwidth of 41 months. The estimated reduction in the high school attendance rate is 11.7 percentage point points for males, which is statistically significant and is bigger than the average effect. In contrast, the effect on females is relatively smaller and is no longer statistically significant. One possible explanation for the higher value that males place on urban status is that males are more likely to find a job in China and better utilize urban Hukou status. (Among those aged 25 and above, the employment rates for male and female are 91% and 77%, respectively.¹⁹) Another possible explanation of males' higher valuation of the urban Hukou stems from the advantage it gives them in the highly competitive marriage market. Wei & Zhang (2011) show households with a son increase their savings to improve their son's relative attractiveness for marriage. Urban status serves the same purpose. Urban Hukou holders have relatively stable income both during work age and after retirement. Compared to savings or income, Hukou status is easier to observe and serves as a sign of wealth in the dating stage. Thus, males with urban Hukou are more likely to succeed in the highly competitive marriage market.

Heterogeneous effects can also occur between the different urban Hukou locations. As the specific urban benefits depend on the budget of local government, the value of an urban Hukou in a big coastal city is different from that of an urban Hukou obtained in a small town in the relatively poorer western China. In order to test this hypothesis, I rank all provinces in China according to their urban per capita income in 1998 and categorize the top 50% as the rich region and the rest as the poor region. I then group individuals into these two regions according to the location of their father's urban Hukou. Table 2 Column 4 and 5 shows the different effects for the two groups. The likelihood of enrolling in high school significantly decreases by 12.6 percentage points for individuals eligible for urban Hukou in relatively rich areas. In contrast, obtaining an urban Hukou

¹⁹ Author's calculation according to "China 2000 Population Census Data Assembly", National Bureau of Statistics of China.

in relatively poor areas does not greatly affect an individual's decision to attend high school.

5. ROBUSTNESS AND VALIDITY

In this section, I first present test results for the underlying assumptions required for a valid RD design and check the robustness of my results to parametric specifications. I then show the main results are not driven by the August-September school enrollment cutoff. I also carry out a placebo test for a group that was not affected by the 1998 Hukou reform to show that the drop in high school attendance rate for the group with a rural mother and an urban father is not likely to be a result of other nationwide policy changes.

5.1 RD Validity

A valid RD design requires a smoothness in potential high school attendance outcomes around the birth month threshold of September 1980 without the intervention of the 1998 Hukou reform (Hahn, Todd & Van der Klaauw, 2001; Porter, 2003). I assess the validity of this assumption in two ways. First, I check for manipulation of the assignment variable (birth month) and possible sorting at the cutoff (Lee, 2008). Because the births of affected individuals occurred years prior to the policy change, the birth months of individuals around the cutoff can hardly be manipulated. Consistent with this argument, the density of birth months around the cutoff date displays no noticeable jump when I plot the number of observations of each birth month in Figure 7. The density smoothness test proposed by McCrary (2008) fails rejection at September 1980, providing additional support for continuous density of birth month.

Second, I check if covariates such as parents' education,²⁰ number of siblings and gender are smooth at the cutoff. Figure 8 graphically presents the mean value of each covariate in 6 month bins separately with a quadratic fit. The visual evidence shows no significant discontinuity before and after September 1980 for all of these variables. As suggested by Lee & Lemieux (2010), I test the joint significance of all the discontinuities at the threshold in a Seemingly Unrelated Regression (SUR), where each equation regresses one covariate on a threshold dummy, a constant and a fourth order polynomial of birth month. The coefficients of polynomials are allowed to be different on each side of the threshold and errors are allowed to be correlated across equations. I do not find evidence of discontinuity in these covariates. I also run the same local linear regression for each of these covariates and none has discontinuity at the eligibility cutoff.²¹ In addition, the main results are also robust to the inclusion of these additional controls as reported in Table 2.

As a further robustness check of the non-parametric results, I also provide results obtained from parametric regressions in Table 6 as suggested by Lee & Card (2008) for RD cases with discrete assignment variables. I estimate the impact of Hukou transfer eligibility on high school attendance with both quadratic and quartic specifications²² where the coefficient of the polynomials are allowed to differ on either side of the cutoff and the error terms are clustered at the birth month level. The estimated reductions in high school attendance are all similar in magnitude to those obtained from the local linear regressions.

²⁰Parents' education is measured by dummy variables for fathers and mothers holding middle school degrees and above, respectively

²¹The discontinuity estimate (s.e.) for father's education, mother's education, number of siblings and gender are -0.032 (0.038), 0.031 (0.041), -0.040 (0.084) and -0.035 (0.042) respectively.

²²Both second and fourth order polynomials pass the goodness-of-fit test proposed by Lee & Card (2008).

5.2 School enrollment cutoff

The official starting age for compulsory education in China is 6 or 7 years, depending on prevailing county policy. Those who do not reach this age before September 1 are obliged to wait another year to start school. Children who reach schooling age in September would therefore be older than their classmates while children who reach this age in August would be younger. This age difference due to the school enrollment cutoff may lead to a different performance in school. For example, Dobkin & Ferreira (2010) use U.S. data to find that students who are the youngest in their school cohort have a slightly higher level of educational attainment. However, this may be due to age-based mandatory school attendance laws in U.S.: children starting primary education at earlier ages have to stay enrolled longer before reaching the legal school leaving age of 16.

Unlike the U.S., China's laws regarding compulsory education are based on years of schooling and not on age. Europe shares these same features in mandatory school policy and as a consequence research results using European countries' data are more suitable than that from the U.S. to make inferences for China. Black, Devereux & Salvanes (2011) find no effect of school starting age on educational attainment in Norway and Fertig & Kluge (2005) observe similar results in Germany.

To further test if the main results of this study are driven by the August-September school enrollment cutoff rule, I run a local linear regression with the same bandwidth of 41 months that uses the same sample but has different cutoffs of September 1978 and September 1976, which are two and four years before the true cutoff. There is no significant change in the high school enrollment rate at either of these two thresholds.²³

²³The point estimate is 0.023 with a standard error of 0.041 for the threshold of September 1976 and is 0.026 with a standard error of 0.043 for the threshold of September 1978.

The probability jump of high school enrollment at September 1980 is therefore not likely to be caused by the school entry cutoff date.

5.3 Other simultaneous national reforms

Over the past two decades, China has witnessed extensive change in government policy and in its economic conditions. As such, it could be argued that other factors apart from the Hukou law reform may have led to the drop in high school enrollment. Such factors might include the reforms of the 1990s, which led to an increase in tuition and in the number of colleges, or the rising unemployment rate for college graduates of the 2000s. Since, on average, cohort born in August enrolls in school and enters the labor market a year earlier than one born in September, these two cohorts may face differences in tuition, school quality and funding, and immediate job market opportunities.

A placebo test for individuals with mother holding urban Hukou, however, suggests that the reduction in the high school enrollment rate is not caused by other nationwide changes. In theory, such individuals should not be affected by the 1998 Hukou reform since the ability to transfer the status of their Hukou from that of their mother to that of their father did not apply to them. I test for possible discontinuity in their high school attendance at the same threshold of September 1980. If there were other factors only affecting individuals born after September 1980, the high school attendance rate of this placebo group should decrease as well. Nonetheless, the change in the high school enrollment rate at September 1980 is small and not statistically significant for this placebo group.

Note that almost all individuals within the “urban-mother” placebo group also have an urban father²⁴ and they are generally from wealthier families than those individuals with

²⁴Chinese women rarely “marry down”. In my sample, 97% of urban females married

a rural mother and an urban father. If the “rural-urban” group is credit constrained and the decreased high school attendance rate is driven by increased tuition, the “urban-mother” group surely would respond less. To test if the reduced high school enrollment is a result of tuition reform, I use an alternative placebo group with both parents holding rural Hukou. Again, I find no significant changes in high school enrollment for this “rural-rural” group. Therefore, the reduction in high school attendance rate for the beneficiaries of the 1998 Hukou reform is not likely to have been caused by other nationwide reforms.

6. DISCUSSION

While the 1998 Hukou reform has led to lower high school enrollment rates, the lack of high school education studied in this paper may not reduce students’ chances in the labor market. It may be argued that, because of the incentives offered by the pre-reform Hukou system, students previously pursued a high school education only in order to obtain urban status and its associated benefits. The distortion caused by the previous policy might thus be seen as having led to an over-investment in education, meaning there was no actual increase in student learning (which would have led to higher wages).

However, several studies have argued that students are unable to make optimal schooling decisions that maximize their lifetime welfare in the absence of government interventions. There are a number of reasons that adolescents may underinvest in education: a high discount rate of future earnings (e.g. O’Donoghue & Rabin, 1999), culture or peer pressure (e.g. Akerlof & Kranton, 2002), misprediction of future returns, ignorance of non-pecuniary benefits (Oreopoulos, 2007) or credit constraints. Scholars have

urban males.

documented an increase in wages when students are forced to stay in school longer through changes in compulsory education laws (Meghir & Palme, 2005; Oreopoulos, 2006).

To investigate the impact of 1998 Hukou reform on its beneficiaries' labor market outcomes, I estimate the same local linear regression using the same regression sample, excluding those still in school at the time of the census. As shown in Table 7, while there is no significant change in the likelihood of having a job for those eligible for the Hukou transfer, conditional on being employed, the likelihood of full-time employment decreases significantly by 6.7 percentage points. In addition to employment status, I further examine the reform's impact on beneficiaries' occupations. I measure the skill requirement for each occupation according to the percentage of workers who attended high school. Based on this measure, I divide all jobs into three broad occupation categories: unskilled, middle-skilled and high-skilled. According to results reported in the last three columns of Table 7, reform beneficiaries are 9.6 percentage points more likely to have unskilled blue-collar jobs (Agriculture, Production and Transport Workers) and 8 percentage points less likely to work in middle-skilled white-collar jobs (Clerical and Service workers). Note that these findings need to be interpreted with caution, as a large proportion (29%) of the reform beneficiaries in the regression sample were still in school when the census was taken. Hence, results here can only be viewed as suggestive evidence of the negative impact of the 1998 Hukou reform on beneficiaries' labor market performance.

7. CONCLUSION

This paper provides evidence that removing selective mobility restrictions lowers migrants' educational attainment. Using data from China, I analyze the impact of a re-

removal of selective rural-urban migration restrictions on rural youths' post-compulsory education decisions. I find that directly granting urban residency decreases rural residents' high school attendance rate substantially by 8.8 percentage points.

In order to mitigate the unbalanced development between rural and urban areas in China, a few provinces have used a uniform identity since 2002 to replace the original rural/urban dichotomy. This new policy reform is analogous to the one examined in this paper, which impairs educational outcomes, but on a larger scale. Even though individuals with rural origin are able to enjoy urban benefits instantly, their potential for career development and long-term income may be restricted by limited education.

This paper also helps further understand the challenges faced by countries who have removed or relaxed mobility restrictions. Free migration has been fundamental to the European Union, which has undergone several enlargements since its inception in 1957 (the largest of these in 2004 which incorporated 10 new member countries). Free movement of workers was also introduced between India and Nepal in the 1950s. An integral role would also be played by the free movement of labor in the long-planned and hypothetical North American Union. If mobility restrictions used to be selective, open border policies may have unexpected impact on education.

Given data limitations, I cannot assess the long-term effects of removing migration selectivity. While migrants do receive legal residency and related benefits, their educational attainment is lowered. Are these schooling decisions myopic or optimal in their lives? Post-migration outcomes such as wage earnings, health status or marriage market performance are important aspects for future research.

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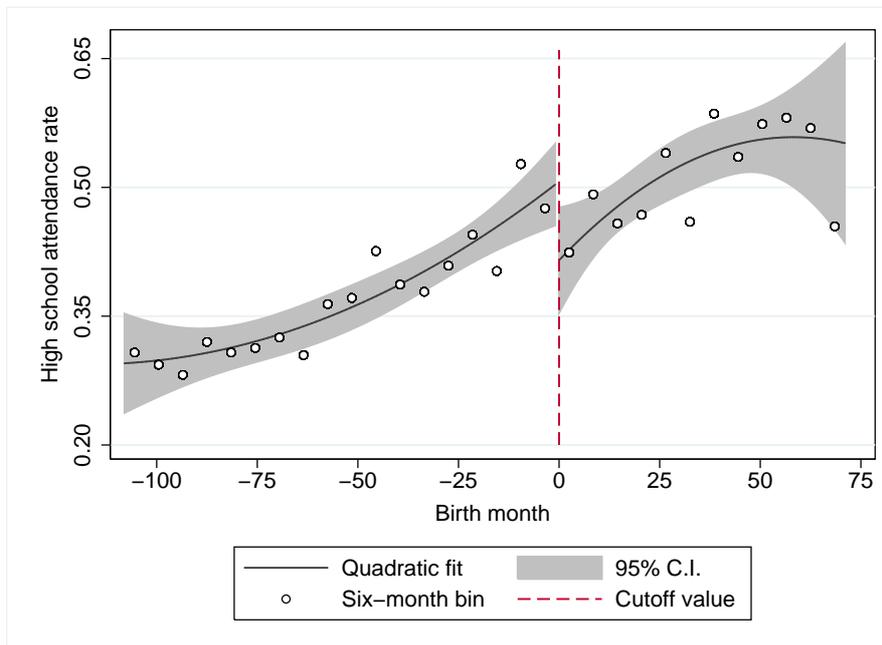
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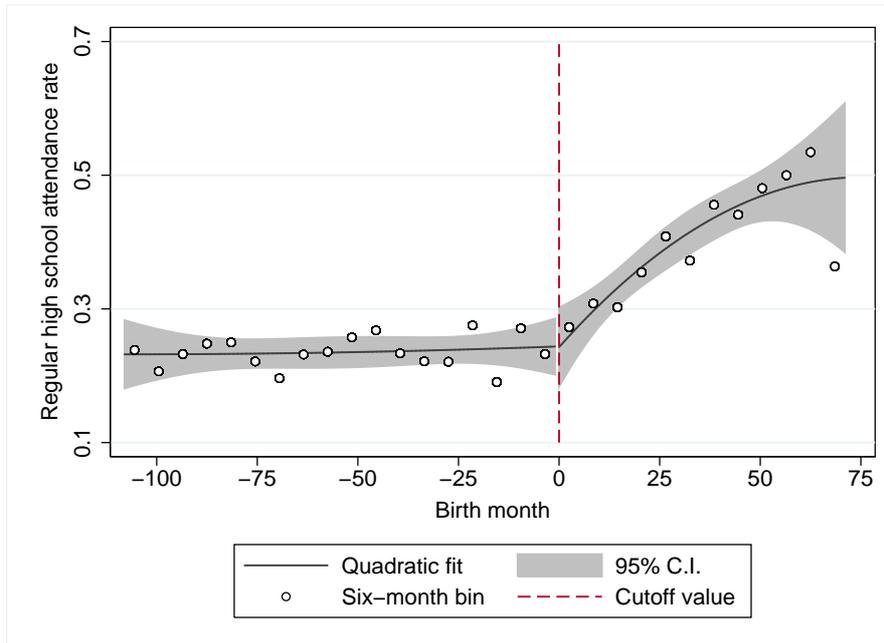
Figure 1: Discontinuity in High School Attendance Rate



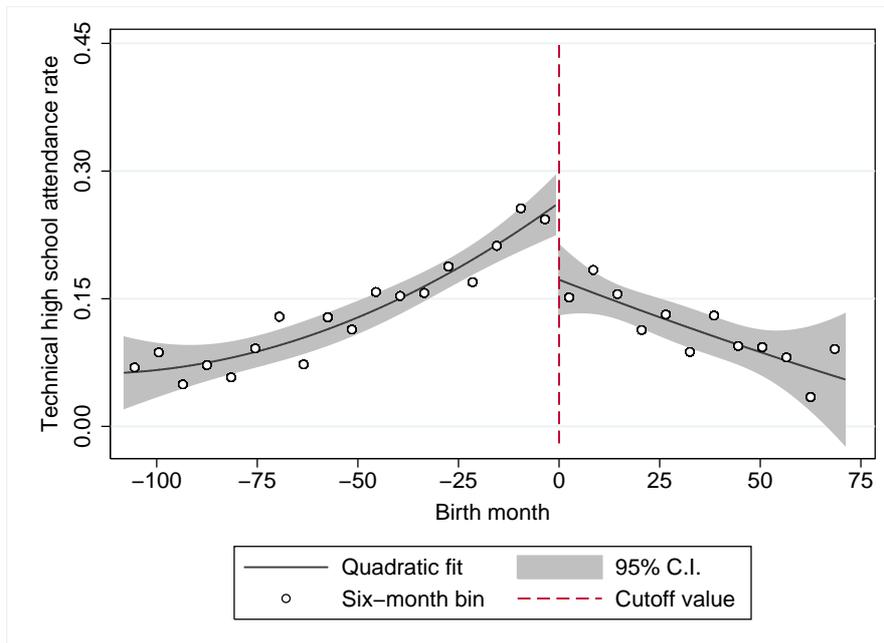
Notes: Figure shows the high school attendance rate for children with a father holding urban Hukou and a mother holding rural Hukou. The sample used here includes individuals born between September 1971 and August 1986 with at least some middle school education. Those still in middle school are excluded. Birth month is normalized with *Sept.*1980 = 0.

Figure 2: Discontinuity in High School Attendance Rate by School Type

(a) Regular High School

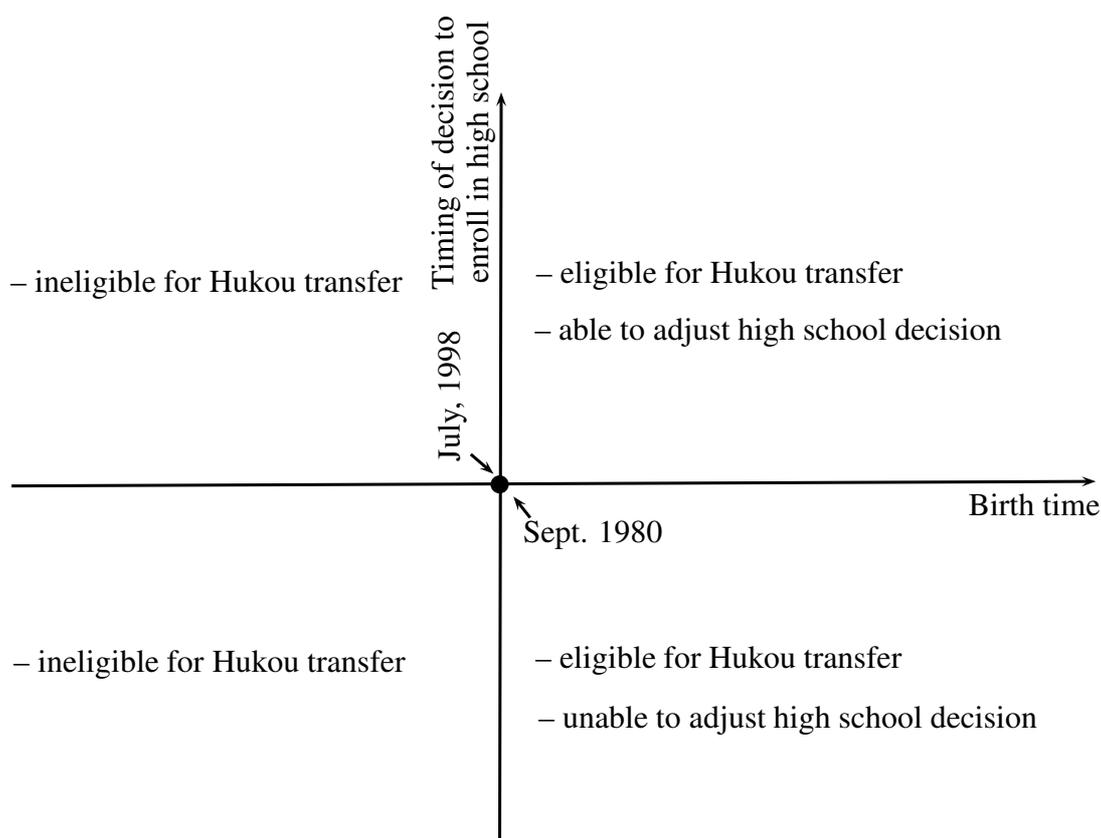


(b) Technical High School



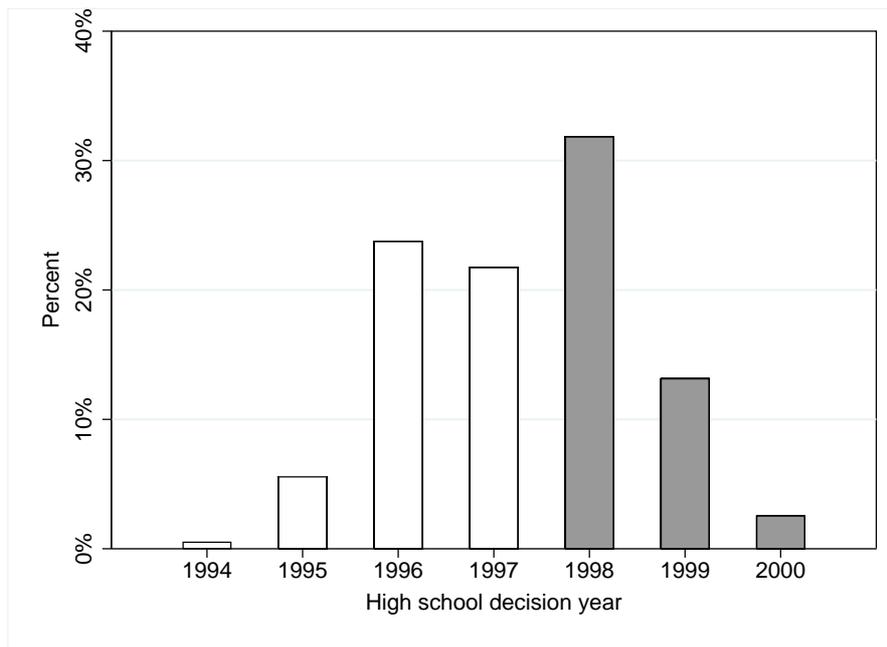
Notes: Figures show the regular and technical high school attendance rates for children with a father holding urban Hukou and a mother holding rural Hukou. The sample used here includes individuals born between September 1971 and August 1986 with at least some middle school education. Those still in middle school are excluded. Birth month is normalized with $Sept.1980 = 0$.

Figure 3: Ability to Adjust High School Decisions in Response to the Reform



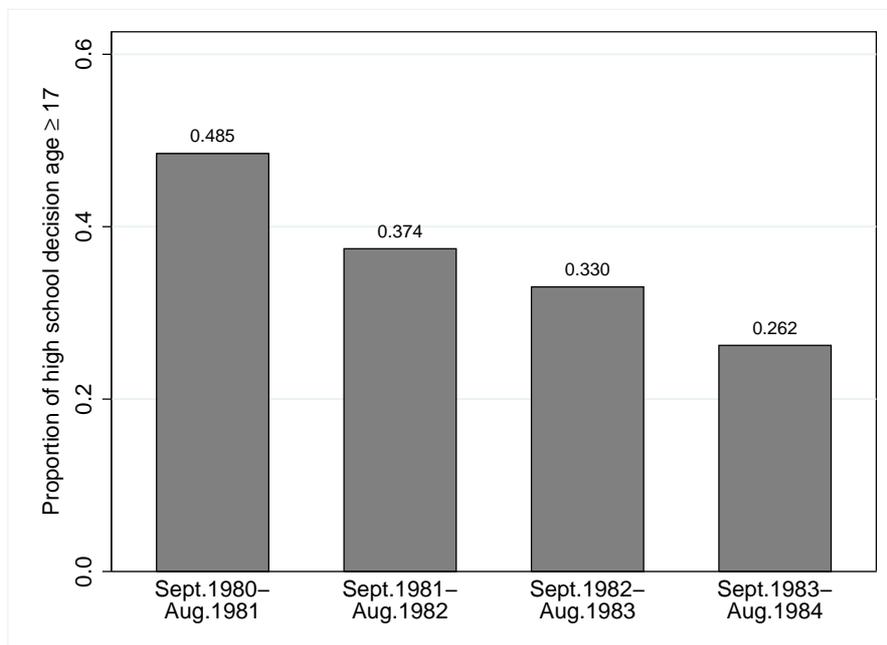
Notes: According to the 1998 Hukou reform, individuals born in or after September 1980 who inherited their mother’s Hukou would be eligible to adopt their father’s Hukou. Thus, children born in or after September 1980 with a mother holding rural Hukou and a father holding urban Hukou then had the chance to obtain urban status immediately. However, not all eligible individuals’ high school enrollment decisions were affected by this policy change. If the policy change was fully unexpected, only those who decided whether to enroll in high school after the reform had the chance to adjust their decisions according to the new policy.

Figure 4: Distribution of Timing of Decision to Enroll in High School



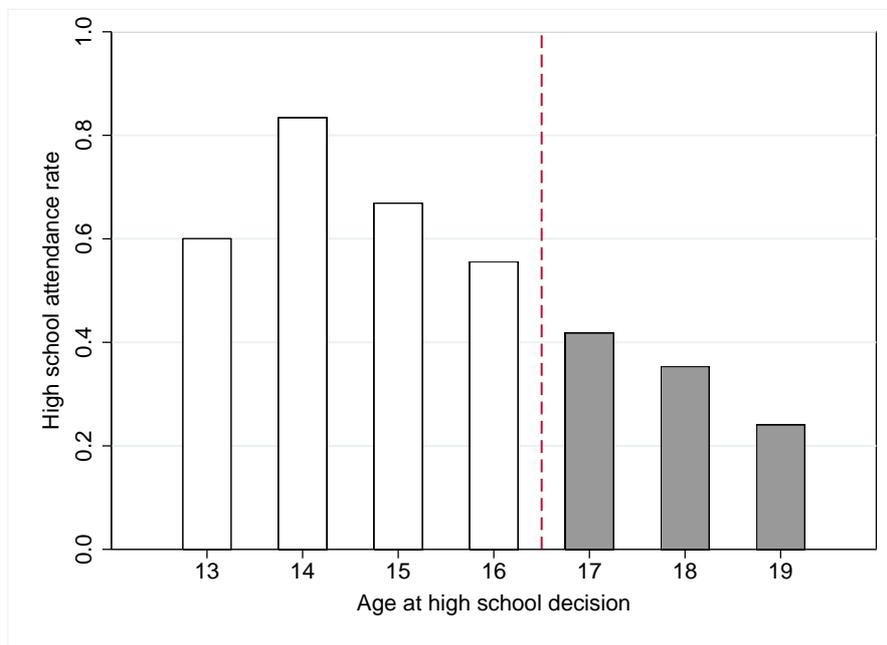
Notes: Figure shows in which year the decision was made to enroll in high school for the cohort born between September 1980 and August 1981. For the purpose of illustration, this distribution is drawn from the China Health and Nutrition Survey and may thus differ from the distribution for the 2000 census sample. Among all individuals eligible to inherit the urban Hukou status from their fathers, only those who decided whether to enroll in high school during or after 1998 had the chance to adjust their decisions according to the new policy as indicated in the shaded areas in this graph.

Figure 5: Proportion of High School Decision Age ≥ 17 across Cohorts



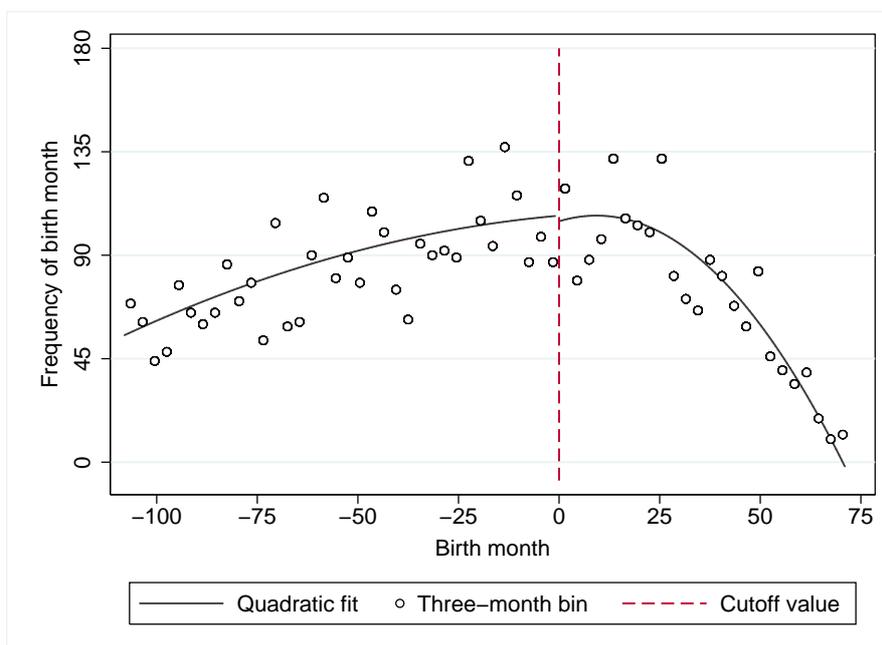
Notes: The figure is based on the China Health and Nutrition Survey. The sample includes all individuals born between September 1980 and August 1984 regardless of their parents' Hukou status.

Figure 6: High School Attendance rate by Age at High School Decision



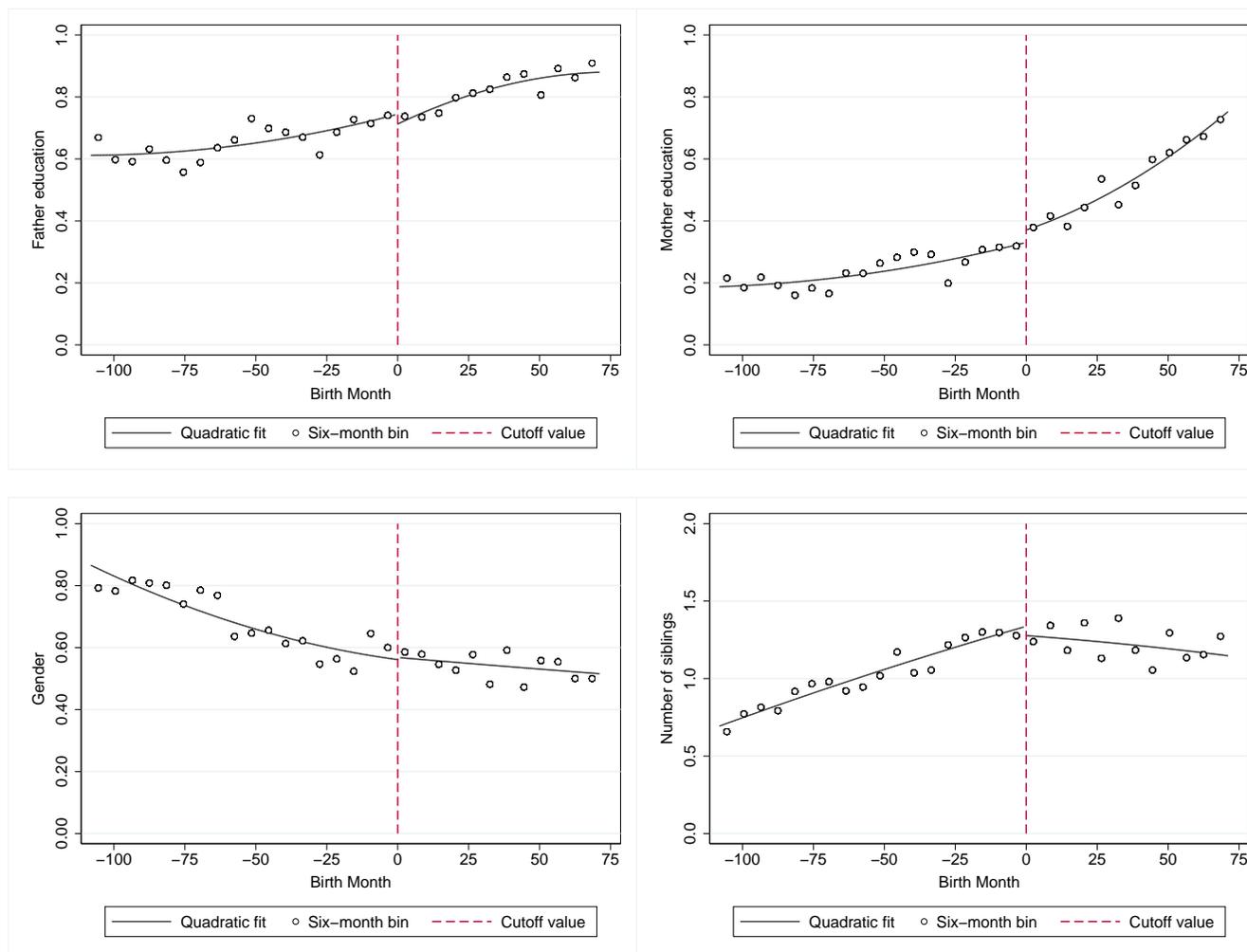
Notes: The figure is based on the China Health and Nutrition Survey. The sample includes all individuals born between September 1980 and August 1984 regardless of their parents' Hukou status.

Figure 7: Density Continuity for Birth Month



Notes: Figure shows the birth month density for children with a rural mother and an urban father. Birth month is normalized with *Sept.*1980 = 0. Sample includes individuals born between September 1971 and August 1986 with at least middle school education. Those still in middle school are excluded.

Figure 8: Covariates Continuity



Notes: Figure shows continuity in covariates for the high school attendance analysis for the group with a rural mother and an urban father. Sample used here includes individuals born between September 1971 and August 1986 with at least some middle school education. Those still in middle school are excluded. Birth month is normalized with *Sept.*1980 = 0.

Table 1: Summary Statistics

Variable	Sample Mean	Standard Dev.	N	Rural Mean	Diff.
<i>Educational Outcomes</i>					
High school attendance rate	0.43	(0.49)	4772	0.19	0.23***
Regular high school attendance rate	0.29	(0.45)	4772	0.15	0.14***
Technical high school attendance rate	0.14	(0.34)	4772	0.04	0.09***
<i>Personal Characteristics</i>					
Father education (\geq middle school)	0.71	(0.45)	4772	0.50	0.22***
Mother education (\geq middle school)	0.34	(0.47)	4772	0.24	0.09***
Gender (male=1)	0.63	(0.48)	4772	0.63	-0.01
Number of siblings	1.13	(0.99)	4606	1.44	-0.31***

Note: Data are drawn from the 0.095% sample of the 2000 census. Column 1-3 shows the summary statistics for the subsample used in this study, which consists of individuals born between September 1971 and August 1986 with a father holding urban Hukou and a mother holding rural Hukou. I exclude respondents with an education level lower than middle school and those still in middle school. Column 4 shows the mean characteristics for children whose parents both hold a rural Hukou. Column 5 shows the difference in mean characteristics between these two subsamples. Asterisks *, ** and *** denote significant levels of 10%, 5% and 1% respectively.

Table 2: Reform Impact on High School Attendance Rate

	By Gender			By Region	
	All	Male	Female	Rich	Poor
Without Controls	-0.088** (0.043)	-0.117** (0.055)	-0.054 (0.067)	-0.126** (0.059)	-0.049 (0.061)
<i>N</i>	2655	1510	1145	1366	1289
With Controls	-0.087** (0.041)	-0.104* (0.054)	-0.067 (0.063)	-0.137** (0.057)	-0.037 (0.059)
<i>N</i>	2639	1503	1136	1355	1284
Baseline Mean	0.437	0.455	0.423	0.486	0.383
Bandwidth (months)	41	41	41	41	41

Note: Table shows the estimated discontinuity in the high school attendance rate at the eligibility birth month threshold of September 1980. The sample is restricted to individuals with at least some middle school education, excluding those still in middle school. Controls included are gender, number of siblings and education level of parents. The father education and the mother education are measured as binary variables indicating middle school and above. Asterisks *, ** and *** denote significant levels of 10%, 5% and 1% respectively.

Table 3: Bandwidth Sensitivity of High School Attendance Rate

Sample	Without Controls				With Controls			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Bandwidth (months)	20	30	40	50	20	30	40	50
All	-0.114* (0.061)	-0.097** (0.049)	-0.089** (0.043)	-0.077** (0.038)	-0.114** (0.058)	-0.095** (0.048)	-0.087** (0.042)	-0.077** (0.037)
By Gender								
Male	-0.162** (0.079)	-0.140** (0.064)	-0.120** (0.056)	-0.092* (0.050)	-0.157** (0.074)	-0.125** (0.062)	-0.106** (0.054)	-0.084* (0.049)
Female	-0.052 (0.094)	-0.046 (0.077)	-0.053 (0.067)	-0.062 (0.060)	-0.085 (0.087)	-0.062 (0.072)	-0.066 (0.064)	-0.072 (0.057)
By Region								
Rich	-0.164* (0.085)	-0.144** (0.069)	-0.128** (0.060)	-0.112** (0.053)	-0.180** (0.080)	-0.157** (0.065)	-0.139** (0.057)	-0.119** (0.051)
Poor	-0.065 (0.086)	-0.049 (0.070)	-0.049 (0.061)	-0.040 (0.055)	-0.042 (0.080)	0.033 (0.067)	-0.036 (0.059)	-0.035 (0.053)

Note: The sample is restricted to those with at least some middle school education. Controls included are gender, number of siblings and education level of parents. The father education and the mother education are measured as binary variables indicating middle school and above. Asterisks *, ** and *** denote significant levels of 10%, 5% and 1% respectively.

Table 4: Reform Impact on High School Attendance Rate by School Type

	Regular High School		Technical High School	
Reform Impact	0.000 (0.038)	0.002 (0.038)	-0.088*** (0.034)	-0.088*** (0.034)
Controls	No	Yes	No	Yes
Baseline Mean	0.237	0.237	0.200	0.200
Bandwidth (months)	41	41	41	41
<i>N</i>	2655	2639	2655	2639

Note: Table shows the estimated discontinuity in regular and technical high school attendance rates at the eligibility birth month threshold of September 1980. The sample is restricted to individuals with at least some middle school education, excluding those still in middle school. Controls included are gender, number of siblings and education level of parents. The father education and the mother education are measured as binary variables indicating middle school and above. Asterisks *, ** and *** denote significant levels of 10%, 5% and 1% respectively.

Table 5: Reform Impact on Middle School Graduation Rate

	Middle School Graduation Rate	
Reform Impact	-0.008 (0.011)	-0.009 (0.011)
Controls	No	Yes
Baseline Mean	0.983	0.983
Bandwidth (months)	41	41
<i>N</i>	2655	2639

Note: Table shows the estimated discontinuity in the middle school graduation rate at the eligibility birth month threshold of September 1980. The sample is restricted to individuals with at least some middle school education, excluding those still in middle school. Controls included are gender, number of siblings and education level of parents. The father education and the mother education are measured as binary variables indicating middle school and above. Asterisks *, ** and *** denote significant levels of 10%, 5% and 1% respectively.

Table 6: High School Attendance Rate (Parametric Specifications)

Sample	Quadratic		Quartic	
	No Controls (1)	With Controls (2)	No Controls (3)	With Controls (4)
All	-0.092** (0.037)	-0.087** (0.035)	-0.127** (0.054)	-0.131*** (0.049)
By Gender				
Male	-0.116** (0.049)	-0.103** (0.047)	-0.163** (0.074)	-0.166** (0.071)
Female	-0.060 (0.066)	-0.067 (0.062)	-0.077 (0.101)	-0.090 (0.093)
By Region				
Rich	-0.115** (0.054)	-0.123** (0.053)	-0.129* (0.076)	-0.158** (0.069)
Poor	-0.061 (0.053)	-0.047 (0.053)	-0.127* (0.076)	-0.107 (0.078)

Note: Table shows the estimated discontinuity in the high school attendance rate at the eligibility birth month threshold of September 1980 using various of parametric specifications. Controls included are gender, number of siblings and education level of parents. The father education and the mother education are measured as binary variables indicating middle school and above. Standard errors are clustered at the birth month level. Asterisks *, ** and *** denote significant levels of 10%, 5% and 1% respectively.

Table 7: Labor Market Outcomes

	Employment		Occupation		
	Any	Full-time	Professionals, Technicians & Managers	Clerical & Service workers	Agriculture, Production & Transport Workers
Without controls	-0.028 (0.042)	-0.064* (0.036)	-0.016 (0.033)	-0.080* (0.045)	0.096* (0.050)
<i>N</i>	2216	1605	1657	1657	1657
With controls	-0.023 (0.042)	-0.067* (0.037)	-0.015 (0.032)	-0.096** (0.044)	0.111** (0.050)
<i>N</i>	2201	1590	1642	1642	1642
Baseline Mean	0.772	0.882	0.124	0.210	0.666
Bandwidth (months)	41	41	41	41	41
Skill requirement	—	—	0.919	0.610	0.219

Note: Table shows the estimated discontinuity in labor market outcomes at the eligibility birth month threshold of September 1980. The sample is restricted to individuals with at least some middle school education, excluding those still in school. Controls included are gender, number of siblings and education level of parents. The father education and the mother education are measured as binary variables indicating middle school and above. I measure the skill requirement for each occupation according to the percentage of workers who attended high school. Asterisks *, ** and *** denote significant levels of 10%, 5% and 1% respectively.