Dropout in Rural China’s Secondary Schools: A Mixed-Methods Analysis

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Abstract

Students in rural China are dropping out of secondary school at troubling rates. While there is considerable quantitative research on this issue, no systematic effort has been made to assess the deeper reasons behind student decision-making through a mixed-methods approach. This article seeks to explore the prevalence, correlates and potential reasons for rural dropout throughout the secondary education process. It brings together results from eight large-scale survey studies including 24,931 rural secondary students across four provinces as well as analysis of extensive interviews with 52 students from these same study sites. The results show that cumulative dropout across all windows of secondary education may be as high as 63%. Dropout is significantly correlated with low academic performance, high opportunity cost, low socioeconomic status and poor mental health. A model is developed to suggest that rural dropout is primarily driven by two mechanisms: rational cost-benefit analysis or impulsive, stress-induced decision-making.

Keywords: school dropout; China; junior high school; determinants; qualitative study; mixed methods analysis
Dropout in Rural China’s Secondary Schools: A Mixed-Methods Analysis

Education has long been recognized as one of the most important inputs to a nation’s economic development.¹ China’s history attests to the key role of education in fostering economic growth: high rates of primary and lower secondary enrollment before the 1979 economic reform have been credited as a vital contributor to China’s rapid economic development in the past three decades.² In the rest of East Asia, the countries that have shown the greatest economic growth in the second half of the twentieth century underscored that growth with high rates of secondary education enrollment.³

Unfortunately, research suggests that students from China’s poor, rural areas are currently receiving less secondary schooling than their urban peers. For example, well over 90 percent of students from large cities in China attend senior high school⁴, yet only half of all junior high graduates in poor, rural areas attend senior high school.⁵ The problem extends to every major window of the secondary schooling process: rural students are dropping out of junior high school, not matriculating into senior high school, dropping out of academic high school and dropping out of vocational high school all at high rates.⁶

Given that most children in China’s school system are from rural areas, the fact that they are not receiving secondary schooling at the same rate as their urban peers means that China’s

¹ Barro 1991.
² Heckman and Yi 2012.
⁴ Loyalka et al. 2014.
⁵ We use the term “senior high school” to refer to all upper secondary education programs including both academic and vocational high schools; Loyalka et al. 2013a; Liu et al. 2012.
⁶ We use the general term “dropout” to refer to both dropping out from school and non-matriculation into higher levels of school during the secondary schooling process; Mo et al. 2013; Yi et al. 2013a; Wang et al. 2011; Yao et al. 2013.
overall attainment in secondary education is seriously lagging and the nation is in danger of undermining its future development. Like other middle-income nations, China is increasingly shifting its emphasis from low-wage to higher-wage services and industries.\textsuperscript{7} As the economy shifts and as wages rise, individuals will need more schooling to hold the necessary skills and knowledge that these kinds of jobs require.\textsuperscript{8} In this new economy, young adults who have not finished secondary school will likely struggle to find gainful employment in the formal sector, and many will either be forced to work in the informal economy (in which returns are low and expectations of future income increases are negligible) or be left unemployed.\textsuperscript{9} Beyond the clear detrimental effects to undereducated youths and their families, if dropout rates continue as they are today increasing unemployment and widening inequalities could hinder economic growth and stability on a national scale.\textsuperscript{10}

Though studies have used quantitative methods to understand what kinds of students are dropping out, there has been no systematic effort to investigate rural China’s secondary school dropout problem through mixed-methods analysis.\textsuperscript{11} Mixed-methods studies complement the empirical rigor and generalizability of findings of quantitative research with the depth of interview-based case studies.\textsuperscript{12} It is only through standardized surveys administered to a large sample of students that researchers can accurately estimate the prevalence of dropout and its risk factors for a larger population. However, by its very nature, a multiple-choice survey cannot measure the complex series of value judgments and decisions that lead a student to a given educational choice. Carefully designed qualitative interviews therefore offer a unique

\textsuperscript{7} ILO 2010.
\textsuperscript{8} Heckman and Yi 2012.
\textsuperscript{9} Zhang et al. 2012.
\textsuperscript{10} World Bank 2005.
\textsuperscript{11} e.g. Yi et al. 2012; Mo et al. 2013.
\textsuperscript{12} Johnson and Onwuegbuzie 2004.
opportunity to understand individual students’ schooling decisions without boxing them into a finite list of choices that have been pre-selected by the researcher.

The purpose of our study is to better understand the dropout rate in secondary school in China and the reasons why students drop out. More specifically, we use a mixed-methods approach to explore the prevalence, correlates, and potential reasons for pervasive rural dropout at the secondary school level in China. We first summarize the rates of dropout at each level of the secondary education process (lower secondary school and upper secondary school) in rural China based on results from a series of quantitative studies conducted across four Chinese provinces over the past seven years. Second, we use survey data from a subset of those studies to identify the correlates of dropout in these schools. Finally, we use a new set of qualitative interviews to explore the reasons students give for deciding to drop out or to stay in the schooling system.

Quantitative Data and Results

Sampling Procedure and Data Collection

Quantitative survey data were collected during eight separate efforts. The research team (made up of researchers from the Chinese Academy of Sciences, Stanford University, Northwest University, and Shaanxi Normal University) collected data from 24,931 students in 262 rural junior high schools, 46 rural academic high schools, and 107 vocational high schools in four provinces—Shanxi, Shaanxi, Hebei and Zhejiang—between June 2007 and November 2013. Conducting the studies in four different provinces allows us to identify secondary school dropout prevalence and correlates across widespread regions of rural China in general and across poor
areas more specifically. Over 600 million people live in rural regions of China, accounting for around half of the population.\(^{13}\)

The data collection efforts of the eight studies are summarized in Table 1. While there were differences among the studies in the exact nature of sampling and data collection, all were survey-based and involved at least two rounds of investigation: a baseline survey at the beginning of the school year and an endline survey at the end of the school year. Students’ dropout status was verified in all studies using two steps. First, enumerators asked the homeroom teachers to identify dropouts. Second, the survey teams also verified the status of all students that were absent during the endline survey with their classmates. Matriculation status into senior high school was also verified using two steps: homeroom teachers were surveyed to identify the students that had matriculated and our enumerators visited each senior high school to personally verify that the students were in attendance.

Beyond information on dropouts, other data were collected during the baseline and endline surveys. In each study, enumerators collected data on students’ current schooling status as well as their demographic and socioeconomic characteristics. Students were given a 30-minute standardized math test using items from the Trends in International Mathematics and Science Study (TIMSS) so as to quantify their academic performance. In the study by Wang et al. (2014a), students were also given a 100 question Mental Health Test that has been shown in the literature to produce a reliable measure of general anxiety and has been widely used in China.\(^{14}\)

A number of studies also limited their sample to “poor students.” These students were identified in two steps. First, enumerators asked each homeroom teacher at the baseline survey to

\(^{13}\) CNBS 2012.

\(^{14}\) Deng et al. 2002.
provide a list of the poorest students in his or her class. Second, the baseline survey for the students included a number of questions about their family assets. A monetary value was attached to each asset to produce a single ranking of family asset value in each class. By matching these two pieces of information together, the studies were able to identify the four poorest students in each class.

**The Prevalence of Dropout**

All eight studies found high rates of dropout across the four major windows in secondary education (Table 2). Rates of dropout during junior high are high. 4.4% to 13.3% of students dropped out between the beginning of their first school year (seventh grade) and the beginning of their second school year (eighth grade). Among students who were present in the beginning of eighth grade, 9% dropped out before the beginning of ninth grade. Finally, 4.2% to 8.7% of students dropped out between the beginning of ninth grade and graduation. This suggests a cumulative average dropout rate across junior high ranging between 17.6% and 31%. These rates are 6 to 12 times higher than the government’s most recently reported (3-year cumulative) junior high dropout rate of 2.6%.

Including students who dropout during junior high school and students who finish junior high and then leave school, the largest drop in secondary education enrollment occurs prior to senior high school. Our studies show that more than half (between 51.2% and 53.5%) of poor rural students did not enroll in any kind of senior high school (academic or vocational). Thus, while over 90 percent of students in large cities in China attend senior high school, our studies

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16 MOE 2006.
confirm that less than half of students in rural China are continuing their education past the junior high school level.\textsuperscript{17}

Even if students enter senior high school, there is no guarantee that they will finish. Among the students that continued with their secondary education—either to academic high school or vocational high school—dropout remained high. Between 4.2\% and 7.4\% of students who enrolled in academic high school dropped out before graduating. The dropout rate from vocational high schools was even higher: between 29\% and 32\% of students enrolled in vocational high schools will drop out before completing their studies.

We then estimate a cumulative dropout rate throughout the secondary education process ranging from 59\% (most conservative) to 63\% (most liberal). Specifically, if 100 students begin junior high, we can calculate the proportion of students who complete each window of secondary schooling. If we take the most liberal statistics, we can estimate that after some dropout during junior high (roughly 31 kids—31\% dropout in junior high) a total of only 46 will enroll in senior high school (54\% do not matriculate—including prior dropouts). If 54\% of the remaining students go to academic high school and 46\% go to vocational schools, we can also calculate the number that drop out during senior high.\textsuperscript{18} Specifically, 25 students will attend academic high school but only 23 will graduate (dropout rate of 7\%), and 21 students will attend vocational high school but only 14 will graduate (dropout rate of 32\%). In total, only 37 out of 100 rural students who begin junior high school will graduate from secondary schooling (14 from vocational; 23 from academic high). By these numbers, assuming individuals will need a high

\begin{footnotesize}
\begin{enumerate}
\item \textsuperscript{17}Liu et al. 2012.
\item \textsuperscript{18}As of 2011, 54\% of high school attendees go to academic high school, and 46\% go onto vocational schools—CNBS 2014.
\end{enumerate}
\end{footnotesize}
school education to get a job in the formal sector in the coming decades, less than 40 percent of rural students are going to be prepared for China’s coming higher-wage economy.

**The Correlates of Dropout**

Of the eight studies included in our dataset, four of them also specifically investigated the correlates of dropout during different windows of the secondary education process. The objective of this work is to better understand the nature of dropouts and identify those subsets of students that are at risk of dropout. All four studies discovered remarkably consistent correlations (Table 3). Students who drop out tend to have four similar characteristics. Dropouts tend to have lower academic achievement, be boys, be older, and come from more disadvantaged family backgrounds (as revealed by their poverty status, number of siblings, parents’ education, parents’ migration status, etc.). These results are consistent with international findings.\(^{19}\)

Wang et al. (2014a), the only study to measure the correlation between dropout and mental health, also found that the student and family characteristics that correlate with dropout also correlate with mental health issues. Even after controlling for student and family characteristics, mental health issues remain correlated with dropout rates.

**Qualitative Findings and Mixed-Methods Analysis**

**Qualitative Data Collection**

As part of our effort to better understand why students are dropping out, we conducted interviews with a randomly selected subset of students from two of our studies cited above.\(^ {20}\) These interviews were conducted in two waves. All interviews took place in the fall of what would be the students’ first semester of senior high school. In each wave, we randomly selected

\(^{19}\) Clarke, Haney and Madaus 2000; Rumberger 1987.
\(^{20}\) Yi et al. 2013a; Li et al. 2014.
26 students from our sample schools in Shaanxi Province to interview for a total of 52 interviews. As Table 4 shows, we interviewed a total of 18 students that had already dropped out of school (dropouts), 11 students attending vocational high school (VHS), 20 students currently enrolled in academic high school (AHS) and 3 students repeating their final year of junior high school in order to retake the high school entrance exam (中考, zhongkao). All students were selected for participation in the study based on their being among the four poorest students in their class at the time of our initial survey in 2010. All interviews were conducted one-on-one, recorded, and transcribed. All 52 participants gave informed consent, and all personally identifiable information was removed from the transcripts. The interviews lasted from thirty to ninety minutes and were semi-structured: interviewers referenced a scripted interview protocol but also had the freedom to diverge from this protocol in order to investigate specific stories that emerged.

**A Simple Framework for Understanding the Dropout Decision**

Based on both our quantitative data (above) and the qualitative findings presented below, we propose the following framework for understanding the dropout decision. Students choose to drop out of the secondary education process according to two basic mechanisms. First, students may rationally consider the costs and benefits of staying in school and then conclude that they will likely be better off in the long run if they drop out.\(^\text{21}\) We will call this the *Rational Choice* mechanism. Alternatively, even if students have concluded that the long-term benefits of remaining in school outweigh the costs, they may face immediate psychological stressors that lead them to impulsively drop out of school in spite of their long-term prospects.\(^\text{22}\) We shall refer

\(^{21}\) Eckstein and Wolpin 1999.  
\(^{22}\) Gruber 2001.
to this as the *Impulsive Choice* mechanism. Both mechanisms are explained in more detail immediately below.

In the rest of the paper we examine both the Rational Choice factors that likely influence students’ decision-making and the Impulsive Choice short-run stressors that may impel students to make sudden rash decisions to drop out of secondary education.

*Rational Choice: Dropping Out Because the Costs Exceed the Benefits*

Our Rational Choice mechanism relies on a framework we derive from Liu et al. (2009) for explaining the rational decision of whether or not to participate in the secondary education system (in other words, whether or not to drop out). According to this framework, if rural students rationally consider the costs and benefits of staying in school, there are four general reasons why they would choose to drop out of the secondary education system.

First, it is possible that the *cost* of going to school (tuition + fees + opportunity cost), given the perceived benefit, is too high. Second, it is possible that students from poor families do perceive a high benefit to remaining in school, but they face a binding *liquidity constraint* as a result of high levels of school tuition. Third, it is possible that the *capabilities* of students themselves are so low that they would not be able to meet the admission requirements for their desired level of schooling (e.g., their high school entrance exam score would not be high enough for them to be admitted into academic high school) or would expect to derive very limited benefit from continued efforts to learn. Finally, it could be that the *quality* of school facilities, teachers and/or curriculum is so low that the students would have no incentive to attend; in other words, staying in school would not expect to add any human capital (and, thus, the expected benefit would be low).
Both our quantitative data (above) and qualitative interviews (immediately below) suggest that each of these factors is influencing student dropout to varying degrees during different windows of the secondary education process. In this section we seek to show that rural students are rationally choosing to drop out from junior high and academic high school primarily due to the interaction between the costs (including both the direct costs of school tuition and the opportunity costs represented by employment options outside of school) and their perceived capability (as measured by their academic performance). Vocational high school students, in turn, are likely dropping out based primarily on school quality concerns that may be undermining the perceived returns to their education.

Rational Choice in Junior High and Academic High School: Intertwining Cost and Capability Concerns

There is some evidence to suggest that rural students are dropping out due at least in part to perceived direct and indirect costs to remaining in school. Our correlates results, presented in Table 3, show that various metrics for “poverty” were significantly correlated with dropout in all reported studies. Studies conducted throughout the world and in China have long found that poverty correlates closely with low levels of educational attainment and high dropout rates.\(^\text{23}\) Poorer students are more likely to drop out likely in part because they are more profoundly affected by the costs of continuing their education. Indeed, the tuition and fees for academic high school in China, which are the highest in the world, are known to impose a significant burden on many rural families.\(^\text{24}\)

Whether seeking to attend academic or vocational school programs, students face an additional cost: high and increasing opportunity costs to attending any kind of secondary school.

\(^{23}\) Ensminger and Slusarcick 1992.
\(^{24}\) Liu et al. 2009.
According to Cai and Du (2011), the unskilled wage rate in China has been rising since the early 2000s. Huang et al. (2011) show that during the late 2000s virtually all young, able-bodied rural individuals were able to find a job off the farm in China’s coastal provinces. The same study also found that the monthly earnings of the typical unskilled worker (who had off-farm employment in both 2008 and 2009) were comparable to the annual per capita income in poor rural areas. Thus by forgoing secondary school to enter the labor market, young rural Chinese can expect to make significant wages in the short term. While the long-term returns to these low-skill jobs are likely to be low, the short-term economic incentives rural students face may encourage dropout.

We found that dropout was significantly correlated with both gender and age (Table 3—boys and older students are more likely to drop out), which we interpret as evidence of the importance of opportunity costs in influencing the dropout decision. As older children are more likely to find a job that has a higher rate of pay, age can be a critical factor in opportunity cost-induced dropout. Boys may also be able to more easily find higher wage employment in China, given persistent gender disparities in pay rates for rural-urban migrants. We therefore suggest that higher opportunity costs may contribute to the dropout decision.

A number of our in-the-field experiments conducted in rural China in the past few years have also demonstrated the importance of cost concerns in student dropout decision-making. Studies have found that offering students tuition subsidies for remaining in junior high or matriculating into high school significantly boost enrollment or lower dropout. For example, Mo et al. (2013) found that offering cash incentives for staying in school reduced dropout from

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25 Cai and Du 2011.
26 Huang et al. 2011.
28 Mo et al. 2013.
rural junior high schools by around 60% (from 13% to 5%).

Our interview results also support the finding that schooling costs are an important factor in shaping the dropout decision. A large portion of the students we interviewed pointed to the direct costs of attending school as an important influencing factor in their decision-making process.

“My parents had to work very hard to support my schooling. Since my grades were bad going to school was just a waste of money. I figured that if I left school and got a job, even if I wasn’t making much money at least I would be able to support myself.”
(dropout, 3328121)

“I didn’t want to stay in school because I thought my family might not be able to support me. My mom said that I should go to high school even if it ended up being a waste of time. Then at least I could be better off. I said, if I go to high school, will Dad be able to support me? Because there’s no subsidy and you have to buy your own textbooks. I said if I stay in school after one year all our family’s money will be used up. Then no one said anything else. And in the end I didn’t go to high school.”
(dropout, 3106346)

However, while the costs of schooling do play a crucial role in student decisions of whether to continue onto academic high school, our results suggest that costs alone cannot explain this decision. For example, while Mo et al. (2013) found that a scholarship agreement reduced dropout by 60 percent from 13% to 5%, 40% of the seventh graders receiving the scholarship in that program still ended up dropping out during their grade 7 year. Other programs offering similar financial incentives for staying in school have been shown to have minimal effects on reducing dropout or increasing matriculation to high school.\(^\text{29}\)

Our interviews also reflect this finding: while the direct and indirect costs of education play an important role in shaping students’ thinking towards dropout, many students suggested that costs were not the principal or deciding factor. This was first evident in a number of students’

\(^{29}\) Yi et al. 2013a; Li et al. 2014.
assertions that their parents were committed to paying for their schooling no matter the expense. Note that this suggests at least a share of students were not facing a binding liquidity constraint.

“My parents were always very determined. No matter what I said my mom would never agree to my dropping out. My dad also told me not to worry about the family. Just as long as I could get into high school, even if it meant more financial hardship my family would still support me in my studies and with my tuition.” (AHS, 3404621)

“If I didn’t get a scholarship—as long as I could get in—I still probably would have gone to high school. Because my mom told me ‘My child, just as long as you can get into college, it doesn’t matter what college. So long as you want to go, I will borrow money. I will borrow money for my whole life long and never recover if I can just help you get to college.’” (AHS, 1106546)

It is likely, then, that the perceptions of students of the high costs of school, though significant, were weighed heavily against the perceived benefit. The perceived benefit of staying in junior high or academic high school seemed to hinge primarily on students’ understanding of their academic capabilities. As Table 3 demonstrates, all of our studies found that dropout was significantly correlated with poor academic performance. The international education literature has long shown that poor academic performance is one of the strongest and most consistent predictors of dropout—especially in competitive educational systems like those in China.\(^{30}\)

A number of students also stated explicitly that grades were a more important influencing factor than schooling costs. Many of the students interviewed had been offered a scholarship (from the intervention provided by the research team in the Yi et al. (2013a) study) if they successfully matriculated into senior high school. However, students explained that the scholarship did not have a significant impact on their schooling choice simply because their grades were a far more critical factor. This is a particularly significant finding in light of the fact that all students interviewed in this study were among the poorest students in their counties;

though they presumably had the most to gain from a scholarship program, they still maintained that the scholarship’s usefulness hinged on their academic capabilities.

“When I got a scholarship it didn’t change anything. I thought, I’m still not going to be able to test into academic high school. No way. My grades were really bad. When my dad heard about the scholarship he said, ‘You still won’t be able to get in to academic high school.’” (dropout, 1314308)

“Even if I’d gotten a full scholarship I think the likelihood of my going to high school would still have been low. My grades were bad so going to high school would still have been a waste of money. It would still be better to go get a job and make some money instead.” (dropout, 3106346)

Indeed, students from many backgrounds suggested that grades might well be one of the most important factors in determining their classmates’ dropout decisions.

“That’s how people decide whether or not to stay in school. Those who can learn stay in school. Those that can’t learn drop out.” (dropout, 1314308)

“Some of my friends dropped out of school and some are still in high school. It was pretty much decided by their grades. If their grades were bad they left. Pretty much everyone who could test into academic high school ended up going.” (AHS, 1327232)

Moreover, nearly every dropout we spoke to emphasized that his or her grades were poor and cited that as a primary reason for dropping out. Some of these students dropped out before their grades became a true impediment to continuing on in school, while others were prevented outright from continuing onto academic high school because their score on the zhongkao was not high enough to be admitted.

Rational Choice in Vocational Schools: Pervasive School Quality Concerns

In the preceding section we saw that many students are dropping out of junior high and academic high schools due to the interaction between high costs and poor academic performance. By contrast, vocational high school is less costly and less competitive, with more generous
financial aid packages and minimal academic admission requirements. For students that are excluded from academic high school, then, vocational high school is an alternative path to continue their education. So why are the students that are dropping out from junior high and not going to academic high school not enrolling at higher rates in vocational high schools? And why is it that almost one-third of vocational high school students are choosing to drop out—many after less than one year?

There is reason to believe that low costs and minimal academic requirements notwithstanding, the quality of vocational programs is so low that students feel little incentive to enroll in or remain in vocational high schools. A number of recent studies have called into question the quality of vocational programs. In particular, Loyalka et al. (2013b) have shown that attending vocational high school actually leads to deteriorating academic skills and does not improve career-specific skills. Indeed, our interviews suggest that the low quality of vocational high schools is widely perceived by rural children and their families. A number of students we interviewed stated that they would not consider going to these schools because they perceived such poor quality.

“My grades in junior high were bad so I originally thought I might want to go to a vocational high school. But then my mom said there was no point in going to a vocational school. She’d heard from other people that it was useless so she didn’t let me go. Then the tuition is also expensive. So I didn’t go.” (dropout, 1325211)

“I thought I might go to the local vocational school but I don’t like that school. For lots of reasons. I think they would cheat me. Everyone says those schools are a scam. I wanted to go to academic high school, but my grades weren’t good enough. I wish I could go now.” (dropout, 1305146)

In addition to the common perception from outside the school system that vocational high schools are of poor quality, many current students of those schools gave examples of the

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31 Fo and Xing 2011; Yi et al. 2012.
32 Kuczera and Field 2012.
pervasive poor quality they encounter on a daily basis. This perceived poor school quality likely underlies the high rates of vocational high school dropout (from 29 to 32% across three years) reported in Table 2.

“I’m not happy at this school. Our teachers aren’t good, they’re worse than my junior high teachers. They don’t care. If you want to study that’s fine but if you don’t they won’t force you. And no one takes the academic classes seriously. The teachers don’t even take roll in those classes. I don’t even study for them. I only pay attention in my technical classes.” (VHS, 1322104)

“I really regret going to vocational school. It’s like they’re looking for ways to cheat us. And classes here are bad. The teacher’s up there talking but no one understands anything. We all just sit there. A lot of people sleep through class. And everyday about half of the kids don’t even come to class. Everyone regrets coming here.” (VHS, 1103420)

From both the quantitative and qualitative findings, we believe that it is clear that the Rational Choice mechanism plays a key role in determining students’ dropout decisions. In particular, the costs of schooling interact with students’ perceived academic capabilities to incentivize dropout from academic high school or prior to academic high school. At the same time, widespread school quality concerns are the primary factor motivating students’ non-matriculation and dropout from vocational high schools.

Impulsive Choice Dropout: Dropping Out Due to Short-term Stressors and Short-term Benefits

While the Rational Choice mechanism laid out above likely explains a large part of student decision making, it may be that rational, long-term cost-benefit analysis alone cannot explain high rates of dropout from rural secondary schools. The field of behavioral economics studies the ways that individuals of all ages sometimes make decisions that work against their true interests. Given mental development patterns in adolescence, secondary school-aged children may be even more likely to make impulsive decisions about such issues as dropping out
of school.\textsuperscript{33} Other studies of dropout at the secondary level outside of the field of economics have also concluded that student dropout cannot be fully explained by rational cost-benefit analysis.\textsuperscript{34}

Our findings suggest that rural students face short-term psychological stressors that may cause them to impulsively choose to drop out even when they know they will be better off in the long run if they choose to stay in school. Primed by these stressors, students may also be spurred on to dropping out by the promise or perception (whether true or not) of a freer or easier life outside of school. If students are not carefully mentored by adults (parents or teachers) who care about their educational prospects, it is possible that students may make rash decisions that they later come to regret.

The first evidence that students are making impulsive choices stems from their attitudes towards dropout after they have made that decision. If students were accurately weighing the costs and benefits of dropping out of secondary education, it is unlikely—barring major changes in the costs and benefits of schooling—that they would come to regret their decision soon after. However, the majority of dropped out students that we interviewed said that they regretted their choice or would make a different choice if they could go back in time.\textsuperscript{35} And, almost universally, the students stated that they would advise a current junior high school student to stay in school if at all possible.

“From the first day I left school I immediately regretted it. I knew I would regret from the beginning. But even if I would regret it I knew I had to leave, I had to get away from those girls.” (dropout, 1305335)

\textsuperscript{33} Gruber 2001.
\textsuperscript{34} Oreopoulos 2003.
\textsuperscript{35} While reentering the schooling system after dropping out for a period of time is allowed in the Chinese system, it is very uncommon. When asked about this possibility, interviewed students responded that they would not seriously consider going back to school as they thought they were “too old” or it was “too late” for them.
“I have a friend who’s still in junior high. He told me he was going to drop out and I asked him why. He said, ‘I want to go out on my own.’ I said, ‘What are you going to do?’ He said, ‘The same as you.’ So I told him to go back to school. He’s only seventeen. He should keep studying.” (dropout, 1302134)

Given that many students do not seem to be accurately weighing the costs and benefits of high school, what could be contributing to their rash decision-making? One obvious possibility is that students are simply poorly informed about the tradeoffs between staying in school and dropping out. Indeed, Loyalka et al. (2013a) found that students in poor, rural areas of China are misinformed about the returns of continuing on to senior high school. However, the same study also found that providing at-risk rural junior high students with information about the secondary education process and its returns had no measurable effect on junior high dropout rates.

Besides poor information, psychological stress in school may contribute to the short-run decision-making process of students. International research has shown that psychological factors, such as anxiety, depression, aggression and impulsiveness are strong determinants of poor educational performance and dropout.36 Wang et al. (2014a) found in a study in rural Shaanxi Province that 74% of surveyed seventh and eighth grade students were deemed clinically at risk for mental health issues, a rate 12 times higher than that found among urban students. This troubling statistic may be the result of more prevalent psychological stressors in the schooling and home environments of rural students. As shown in Table 3, the same study also found that poor mental health is significantly correlated with dropout. We explore a number of psychological stressors that came up in our qualitative interviews as possible contributing factors to rural students’ poor mental health and high dropout rates. We suggest that these psychological stressors may lead some students to start to disengage with school and consider dropping out.

36 Kokko et al. 2006.
Our interviews reveal that one major source of psychological stress in school stems from poor relationships between students and their teachers. Many students spoke of strained interactions with their teachers as causing them to dislike school or even to think about dropping out.

“In class the teacher would make you write English words up on the board and would hit whoever couldn’t do it. I would get hit too. So back then I didn’t want to study English… Back then whenever I got yelled at I just didn’t want to stay in school. When I was in class I just didn’t want to listen.” (dropout, 3106347)

“I left school halfway through the first year of junior high. I never liked school. I didn’t like my teachers. There was one who I really hated… She was too fierce. She would hit people. All the time. Whenever you made any kind of mistake… Yeah, I was scared of her. We were all scared of her.” (dropout, 1302134)

In addition to strained relationships with their teachers, a number of students also pointed to poor relationships with their classmates as a significant short-run factor that caused them to consider dropping out. Indeed, a recent study conducted in rural China found that fully 37% of junior high school students reported being frequently bullied by their classmates.37

“My relationships with my classmates were very bad. So that made me not like school. I can’t tell you what they did. But it was so awful I just had to leave.” (dropout, 1305335)

“There were a few kids with really bad grades who would bully other students on the street. They would make other kids buy things for them. And if you refused they would beat you up. And if you accidentally bumped into one of them then after class they would bring their friends and beat you up. I had three or four friends that were getting bullied. None of them dared to resist. If they resisted they would just get beaten up even worse. The teachers didn’t do anything to stop it.” (dropout, 3106347)

Primed to dislike school by the intertwining psychological stressors of poor grades and bad relationships with teachers and/or classmates, any kind of encouragement (or additional stress-filled event) to drop out of school may have magnified the effect. Scholars have pointed out that dropout is often the culmination of a gradual process of disengagement with school at

37 Wang et al. 2014a.
the end of which students are easily swayed by factors that can give them the final push or pull out of school.\textsuperscript{38} A number of students suggested that after considering it for a while, they finally decided to drop out only after hearing tales that life outside of school was better than life in school.

“I started to hate school. Then I heard from other people about my age who were already working. That was when I started to think about dropping out to go work. I thought that getting a job might be more relaxed than staying in school. I first felt like I hated school, then I saw that other people had left to get jobs. I saw that after they came home from leaving to get jobs they were all having fun and so happy. I started to think that maybe working would be less tiring than school. Working would be more free.” (dropout, 3328121)

“I wanted to go out and experience the real world… That’s what we would hear from other kids who had already dropped out. They said working was really great. When I told my mom she yelled at me… I just felt indifferent… At that time I was curious.” (dropout, 3305252)

Facing psychological stress in school and hearing about the freedom of life outside of school, a large proportion of rural students are also left with little positive guidance at home to help them determine the best course of action. In poor rural areas there are many single-parent families or children who are “left-behind” by parents who have migrated to far-away cities. Such children are often left to resolve the stressors of adolescence with little parental guidance.\textsuperscript{39} One study found that 18.1\% of junior high school students have had one or both of their parents migrate for work.\textsuperscript{40} Unfortunately, migrating parents are less able to care for or supervise their children’s education, which in turn may increase students’ chances of dropping out. In addition, migrating parents may serve as “role models,” attracting children to migrate themselves and perhaps increasing the probability of finding a job.\textsuperscript{41} Indeed, as presented in Table 3 above, both

\textsuperscript{38} Rumberger 1987.
\textsuperscript{39} Zhang 2006.
\textsuperscript{40} Du, Park, and Wang 2005.
\textsuperscript{41} Du, Park, and Wang 2005.
Yi et al. (2012) and Yao et al. (2013) found that rural students are at higher risk of dropping out when their parents have migrated. Even for students that do have parents at home, a large proportion of students in rural China board at school far from home and therefore have little interaction with their parents. Wang et al. (2014a) showed that dropout from junior high school is correlated with being a boarding student (Table 3).

Many interviewed students spoke of the limited guidance they received from distant parents.

“My dad really cares about my studies… My dad would always ask me about my situation at school, but I didn’t like to talk to them about it. I was always confused in class so if I told them that it would just make them sad. Before when I would go home my dad would always supervise me doing my homework. But then after he migrated to work far away I pretty much never did any homework. (dropout, 3510301)

“I never really talked with my dad very much. My mom would sometimes tell me that I should study hard. But I really didn’t interact with either of them very much. I would go home from school on Friday and then I’d have to go back to school by Sunday afternoon. Then sometimes when I was home everyone was busy so I would have to help them do chores. Or sometimes my parents weren’t home. So we really didn’t talk that much.” (dropout, 1325211)

Research in developed countries suggests the key role a mentor can play in averting dropout. Without their parents playing this role, many of these students were left to decide for themselves based on short-run considerations and imperfect information.

In this section we have brought together results from our quantitative and qualitative findings to show that while some students rationally considered the long-term costs and benefits of remaining in school and ended up deciding to drop out, many rural secondary students were also led to drop out by mechanisms they later came to regret. Under psychological pressure both

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43 Tyler and Lofstrom 2009.
44 Yi et al. (2012) also show that dropout is significantly correlated with poor parent health. Poor health may be another driver of emotional distance between parents and at-risk children.
in and out of school, these students came to believe that school was a painful place they wanted to leave however they could. Informed by others about the “freedom” of the wider world—and with little guidance from parents or teachers—many of them impulsively chose to drop out and try their luck.

Conclusions

In this paper we bring together, for the first time, results from eight survey studies conducted across rural China in the past seven years. We show that dropout rates are high across the secondary education process. Between 17.6% and 31% of rural students are not finishing junior high school. Including these early dropouts, less than half of rural students are matriculating into either academic or vocational high schools. Dropout from academic and vocational high school is also troublingly high. All told, our findings suggest that the cumulative dropout rate across all windows of secondary education may be as high as 63%. That is, if 100 students enter junior high, only 37 of them will graduate from either a vocational or academic high school.

Based on a rich set of interviews with students, we suggest that two different mechanisms are driving dropout in rural areas. First, some students appear to be making a rational choice to drop out based on (a) high costs, (b) high academic requirements, and (c) poor school quality. Second, even students who conclude that the long-term benefits of further schooling exceed the costs are dropping out. In this paper, we suggest that these students may be making an impulsive choice to drop out of school based on the psychological stressors they face in the classroom, the tales they hear from friends about the short-term benefits of leaving school, and limited parental and teacher guidance to encourage them to stay in school.
Three recommendations can be derived from these findings. Our results suggest that there are two major barriers to increasing enrollment into academic high school. First, high tuition rates for academic high school—especially in light of rising opportunity costs—create a backdrop against which dropout is a much more appealing option. This suggests that lower tuition rates (or more accessible financial aid) would greatly increase enrollment. Second, and perhaps even more significantly, the rigorous academic requirements for admission to academic high school (and the strict limits on enrollment) pose a serious barrier to academic high school matriculation in rural China today. We recommend that China follow most other developed nations in making education compulsory and free all the way through the end of senior high school.

Second, enrollment and completion in vocational high schools are unlikely to rise unless the quality of these schools can be improved. Furthermore, all students will likely require general academic skills (for example, in subjects such as math, reading, and science), if they wish to compete in higher-wage labor markets in China’s future economy. This suggests that Chinese education policymakers interested in continuing or expanding current vocational programs should place the highest priority on improving the quality of both vocational (technical) and academic (general) training in all schools.

Finally, our results suggest that even if the long-term benefits of remaining in school can truly be made to exceed the costs, dropout might still persist. We find that rural students face a range of psychological stressors that may spur them to drop out. International research has shown that many of the most successful interventions in preventing dropout from secondary education rely on increased mentoring and monitoring of at-risk students.\textsuperscript{45} Preliminary results

\textsuperscript{45} Tyler and Lofstrom 2009.
from a study conducted in rural China suggest that providing rural students with “life counselors” that teach a weekly class on handling mental health stress and make themselves available as mentors to their students significantly reduces dropout at the junior high level. More programs to provide poor rural students with this sort of mentoring are needed.

\[46\] Wang et al. 2014b.
References


Li, Hongbin, Pak Wai Liu, Ning Ma, and Junsen Zhang. 2006. Does Education Pay in Urban China?: Estimating Returns to Education Using Twins. School of Economics & Finance, University of Hong Kong.


### TABLE 1 Description of studies

<table>
<thead>
<tr>
<th>Sample provinces</th>
<th>School level surveyed</th>
<th>Sample characteristics</th>
<th>Number of sampled counties</th>
<th>Number of sampled schools</th>
<th>Number of sampled students</th>
<th>Survey date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mo et al. (2013)</td>
<td>Shaanxi</td>
<td>7th grade</td>
<td>All students</td>
<td>1</td>
<td>10</td>
<td>1507</td>
</tr>
<tr>
<td>Yi et al. (2012)</td>
<td>Shanxi and Shaanxi</td>
<td>7th and 8th grade</td>
<td>All students</td>
<td>4</td>
<td>46</td>
<td>7811</td>
</tr>
<tr>
<td>Wang et al. (2014a)</td>
<td>Shaanxi</td>
<td>7th and 8th grade</td>
<td>All students</td>
<td>8</td>
<td>38</td>
<td>4840</td>
</tr>
<tr>
<td>Yi et al. (2013a)</td>
<td>Shaanxi and Hebei</td>
<td>7th and 9th grade</td>
<td>Only four poorest students in each class</td>
<td>15</td>
<td>168</td>
<td>2424</td>
</tr>
<tr>
<td>Li et al. (2014)</td>
<td>Shaanxi and Hebei</td>
<td>9th grade</td>
<td>Only four poorest students in each class</td>
<td>15</td>
<td>132</td>
<td>1892</td>
</tr>
<tr>
<td>Wang et al. (2011)</td>
<td>Shaanxi</td>
<td>Academic high school</td>
<td>All students</td>
<td>8</td>
<td>10</td>
<td>1177</td>
</tr>
<tr>
<td>2013 Shaanxi High School Survey*</td>
<td>Shaanxi</td>
<td>Academic and vocational high school; 12th grade</td>
<td>Only four poorest students in each class</td>
<td>5</td>
<td>36</td>
<td>532</td>
</tr>
<tr>
<td>Yao et al. (2013)</td>
<td>Shaanxi and Zhejiang</td>
<td>Vocational high school</td>
<td>Only first-year computer majors</td>
<td>--</td>
<td>107</td>
<td>7172</td>
</tr>
</tbody>
</table>

*The “2013 Shaanxi High School Survey” is drawn from an as yet unpublished dataset. The data collection was a follow-up survey conducted three years after an initial survey described as in Yi et al. (2013a) with a subset of the same students (9th graders in the initial survey).
## TABLE 2 Dropout rates across windows of secondary school

<table>
<thead>
<tr>
<th>Definition of “dropout”</th>
<th>Sampled students</th>
<th>Dropout Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>During Junior High</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mo et al. (2013)</td>
<td>7&lt;sup&gt;th&lt;/sup&gt; grade</td>
<td>7.8</td>
</tr>
<tr>
<td>Left school and did not return during this school year</td>
<td>Poor 7&lt;sup&gt;th&lt;/sup&gt; graders</td>
<td>13.3</td>
</tr>
<tr>
<td>Yi et al. (2012)</td>
<td>7&lt;sup&gt;th&lt;/sup&gt; grade</td>
<td>5.7</td>
</tr>
<tr>
<td>Left school and did not return during this school year</td>
<td>8&lt;sup&gt;th&lt;/sup&gt; grade</td>
<td>9.0</td>
</tr>
<tr>
<td>Left school and did not return during this school year</td>
<td>Cumulative dropout across two years</td>
<td>7&lt;sup&gt;th&lt;/sup&gt;-8&lt;sup&gt;th&lt;/sup&gt; grade</td>
</tr>
<tr>
<td>Wang et al. (2014a)</td>
<td>7&lt;sup&gt;th&lt;/sup&gt; grade</td>
<td>4.4</td>
</tr>
<tr>
<td>Left school and did not return during this school year</td>
<td>8&lt;sup&gt;th&lt;/sup&gt; grade</td>
<td>9.0</td>
</tr>
<tr>
<td>Left school and did not return during this school year</td>
<td>Cumulative dropout across two years</td>
<td>7&lt;sup&gt;th&lt;/sup&gt;-8&lt;sup&gt;th&lt;/sup&gt; grade</td>
</tr>
<tr>
<td>Yi et al. (2013a)</td>
<td>Poor 7&lt;sup&gt;th&lt;/sup&gt; graders</td>
<td>9</td>
</tr>
<tr>
<td>Left school and did not return during this school year</td>
<td>Poor 9&lt;sup&gt;th&lt;/sup&gt; graders</td>
<td>4.2</td>
</tr>
<tr>
<td>Li et al. (2014)</td>
<td>Poor 9&lt;sup&gt;th&lt;/sup&gt; graders</td>
<td>8.7</td>
</tr>
<tr>
<td><strong>After Junior High / Before High School</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yi et al. (2013a)</td>
<td>Did not enroll in senior high school*</td>
<td>Poor students</td>
</tr>
<tr>
<td>Li et al. (2014)</td>
<td>Did not enroll in senior high school*</td>
<td>Poor students</td>
</tr>
<tr>
<td><strong>During Senior High School</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Academic High School</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wang et al. (2011)</td>
<td>Poor 12&lt;sup&gt;th&lt;/sup&gt; graders</td>
<td>3.7</td>
</tr>
<tr>
<td>Left school and did not return during this school year</td>
<td>Non-poor 12&lt;sup&gt;th&lt;/sup&gt; graders</td>
<td>2.1</td>
</tr>
<tr>
<td>Left school and did not return during this school year</td>
<td>Cumulative dropout across three years</td>
<td>Poor 10&lt;sup&gt;th&lt;/sup&gt;-12&lt;sup&gt;th&lt;/sup&gt; graders</td>
</tr>
<tr>
<td>Source</td>
<td>Event Description</td>
<td>Dropout Rate</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>------------------------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>2013 Shaanxi High School Survey</td>
<td>Cumulative dropout from fall of 10(^{th}) grade to fall of 12(^{th}) grade</td>
<td>Poor 10(^{th})-12(^{th}) graders</td>
</tr>
<tr>
<td><em>Vocational High School</em> Yao et al. (2013)</td>
<td>Left school and did not return during this school year</td>
<td>First year computer majors</td>
</tr>
<tr>
<td>2013 Shaanxi High School Survey</td>
<td>Cumulative dropout from fall of 10(^{th}) grade to fall of 12(^{th}) grade</td>
<td>Poor 10(^{th})-12(^{th}) graders</td>
</tr>
</tbody>
</table>

*Academic or vocational high school; students who dropped out during junior high school are also counted as not matriculating into senior high school.
<table>
<thead>
<tr>
<th>Study</th>
<th>School level surveyed</th>
<th>Number of observations</th>
<th>Correlates: who is more likely to drop out?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mo et al. (2013)</td>
<td>Junior high school</td>
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<td>Low academic performance, boys, older, &amp; poverty</td>
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<td>Yi et al. (2012)</td>
<td>Junior high school</td>
<td>7811</td>
<td>Low academic performance, older, poverty, has siblings, less educated father, poor parental health, &amp; migrated parent</td>
</tr>
<tr>
<td>Wang et al. (2014a)</td>
<td>Junior high school</td>
<td>4840</td>
<td>Low academic performance, boys, older, poverty, boarding status, has siblings, less educated father, &amp; poor mental health</td>
</tr>
<tr>
<td>Yao et al. (2013)</td>
<td>Vocational high school</td>
<td>7172</td>
<td>Low academic performance, less educated mother, &amp; migrated mother</td>
</tr>
<tr>
<td>TABLE 4 Interviewed students’ characteristics (52 students)</td>
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<tr>
<td>----------------------------------------------------------</td>
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<tr>
<td>Number of Students</td>
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<td><strong>Grade Level in 2010</strong></td>
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<tr>
<td>7th grade</td>
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<tr>
<td>9th grade</td>
<td>26</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
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<td>Male</td>
<td>26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
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<tr>
<td><strong>Schooling Choice</strong></td>
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<tr>
<td>Dropped out</td>
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<td>Repeating 9th grade</td>
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<tr>
<td>Attending vocational high school</td>
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<td>Attending academic high school</td>
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