The E ect of Education Policies on School Enrollment in China

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levels.[1] For example, tuition of a primary school student per year is at about 2.1-9.1% of per capita income in a household in rural areas in 2003.[2] Tuition of a junior high school student accounts for anywhere from 3.5 to 14.8% of per capita income in a household. As a result, even the central government regulates that all children should receive at least nine years of schooling and the enrollment rate for school-age children is at 99.11% in 2000, only 94.89% of graduates of primary schools enter junior high schools in 2000 in Mainland China (China Population Statistics Yearbook 2001). Inner and rural provinces have even lower enrollment rate, for example, Guizhou (78.72%). Additionally, junior high school dropout rate is 9.9% in 2000 in Mainland China (China Education Yearbook 2002).

Ensuring the a ordable education at the primary and junior-high school levels to all citizens is an important focus of the education policies in Mainland China. From 2001 to 2006, three reforms were implemented sequentially by the Ministry of Education of China as well as provincial governments aiming at reducing the education cost for poor and rural families. In 2001, the Ministry of Education regulated that the tuition of primary school students in rural areas can be no more than 160 RMB (about 23.5 U.S. dollars) per student per year and that of junior high school students in the rural areas was set to be 260 RMB (about 38.2 U.S. dollars). Also, schools are not allowed to charge extra cost other than the regulated tuition, which are allowed to oat by as much as 20% on the regulated levels. This policy (tuition control, hereafter) rst started in poor counties across the country and has been expanded to the whole nation by spring of 2005.

In 2003, Liaoning Province rst started to provide tuition waiver, free textbook and living expense subsidies to its poor students.[3]. By spring of 2006, this policy (two-waive-one-subsidy, hereafter) initiative has been expanded to all poor students in Mainland China. Finally in spring 2006, the Chinese central government provided tuition waiver for all primary and junior high school students in the rural areas of western provinces (tuition waive, hereafter). Two eastern provinces, Jiangsu and Liaoning, and two cities in central China had done so by themselves before September 1, 2006.

These reforms are important. Using the data from *China Population Statistics Yearbook 2002*, we estimated that about 216 million children in Mainland China in 2001 were potentially a ected by these policies, with a cost of 36.1 billion RMB (about 5.3 U.S. billion

[1] Mainland China's compulsory attendance law regulates all children are required to receive at least nine years of schooling. The school system generally splits between a six year elementary school (6 to 12 years old) and junior high school (13 to 15 years old).

[2] The numbers are tuition for the students in the rural areas divided by per capita income in a household by province. Data of tuition is the tuition level regulated by Ministry of Education. The tuition level can oat on two sides and then we use the maximum and minimum. Data of per capita income in a household is from China Health and Nutrition Survey.

[3] Government decides how many students will receive tuition waiver, free textbook and living expense subs2327(in)-347(a)2406(pro)28(vinin)-347land then tmnd prisdaoy in junior high schools.T4(oin)-347(a)240g(artin)-34deg(a7(

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dollars) in Western China in 2006 .[4] Yet the e ects of the three reforms are not clear. This study lls this gap by exploring the potential e ects of these policies on enrollment rates of school-aged children.[5]

of primary and junior high school age children are estimated by using the data from 2000 and 2004 waves while that of tuition waive by using the data from 2000 and 2006 waves.

Our estimates suggest that of the three sequential reforms, including tuition control, two-waive-one-subsidy and tuition waive, tuition control does not signi cantly change enrollment rates of school-aged children one way or another. On the other hand, the two-waive-one-subsidy has positive and statistically signi cant e ect on school enrollments of primary and junior high school age children. This e ect is especially large for school-aged girls. Finally, tuition waive only statistically signi cantly increases girls' enrollment rate.

Three supplementary analysis increase our con dence that the di erence-in-di erence method is valid. First, all e ects are insigni cant when we estimate the same models for senior high school age children. Second, we do pre-reform test by using the data from 1997 wave and 2000 wave and can't nd statistically signi cant e ects on school enrollment. Third, we use alternative speci cation and obtain similar results.

The remainder of this study is organized as follows. In section 2 we describe the data we use. In section 3 we show the empirical strategy, i.e. why di erence-in-di erence captures

Table 1 shows time line of the three reforms. We separate the sample period used in this research into two periods based on when a speci c tuition reform is implemented in a speci c CHNS county and when the three CHNS surveys are conducted in the county. Given that the rst reform, tuition control, does not start until 2001, no counties from the CHNS 2000 wave have experienced the reforms. Between CHNS 2000 panel, which nished on December of 2000 to the beginning of the 2004 panels (which approximately began on August 31, 2004), 29 counties or cities have implemented tuition control and another 10 regions have enacted two-waive-one-subsidy (see the upper panel of Table 1).[8] This variation in time of implementing two policies across regions enables us to estimate e ect of tuition control and two-waive-one-subsidy on school enrollment using data from 2000 and 2004 waves.

In the second period, an additional 21 and 40 counties or cities have implemented tuition control and two-waive-one-subsidy, respectively. So there are, for example, more than 10 counties in 2004 waves (which covers some period after September 1, 2004) experienced two-waive-one-subsidy? You need to include them in treatment as well. Why don't you just change the end of rst period to the end of 2004 wave. Or better yet, isolating the time span of wave 2004 so that we know how many counties become treatment within 2004 wave?

In other words, all 50 counties or cities where our observations are from have implemented tuition control and two-waive-one-subsidy before the beginning of the CHNS 2006 wave. In the mean time, tuition waive did not take place in any of the locations until the second period, when 24 locations enacted the reform.[9] The lower panel of table 1 indicates how many locations have simultaneously more than one reform. In the rst period, 7 CHNS locations have both tuition control and two-waive-one-subsidy policies. Tuition control is implemented with two-waive-one-subsidy or tuition waive in 12 and 3 locations in the second period, respectively. Furthermore, two-waive-one-subsidy and tuition waive are implemented simultaneously in 12 places in the same period, while another 6 locations experienced all three reforms.

Table 2 shows that there are 1150, 809 and 663 observed children from the CHNS 2000, 2004 and 2006 waves, respectively.[10] As for two-waive-one-subsidy, the numbers of observa-

[8] Two-waive-one-subsidy was implemented in Hubei in fall of 2004. Perhaps the parents would anticipate the coming two-waive-one-subsidy and change their children's school enrollment decision. In order to test this possibility, we assume two-waive-one-subsidy had been implemented in Hubei before September 1, 2004. But we nd this assumption will attenuate the treatment e ect of two-waive-one-subsidy substantially. Thus, even if there is an anticipation e ect of two-waive-one-subsidy, it must be ignorable.

[9] CHNS does not identify the exact counties or cities in the publicly available data. We compare the reported total area and population of the counties or cities in CHNS Community Data and the data of area and population from yearbooks in China, including China City Statistical Yearbook 2005, China County Statistical Yearbook 2007, China County Statistical Yearbook 2005, China County-Level Economy Yearbook 2005, China Statistical Yearbook for Regional Economy 2005, Guangxi Yearbook 2005, Heilongjiang Almanac 2003, and Jiangsu Almanac 2005, to identify the exact locations. Since we are not allowed to give out names of the exact counties or cities that are surveyed, they are not reported in this research. Furthermore, we cannot pin down whether particular reforms were enacted in 4 CHNS locations and then drop the observations from the four counties.

[10] The age structure had changed substantially from 2000 to 2006 in mainland China. The number of primary and junior high school age children decreases substantially during this period. Please refer to the 4th footnote.

tions in the control groups in 2000 and 2004 are 959 and 672, respectively, while those in the treatment groups 191 and 137. As for tuition waive, the numbers of observations in the control groups are almost the same as those in the treatment groups.

In table 3, we describe the summary statistics of variables in interests by year. [11] We see that the school enrollment rates of all children, especially girls and junior high school age children, increase substantially from 2000 to 2004 or 2006. But we should pay attention to the changes of several other key variables, the ratio of junior-high-school-age children in the population, age, gender, mother's nished education years, in the corresponding period. [12] Between 2000 and 2004, the proportion of junior high school age children decrease from 0.55 to 0.50 while between 2000 and 2006 from 0.55 to 0.38.

Children's average age in 2006 is 1.06 years younger than that in 2000. From 2000 to 2004 and 2006, there are about 0.46 and 0.8 year of increase in mother's nished years of education. Per capita income and the rate of household owning refrigerator also rise substantially from 2000 to 2004 or 2006. The above changes are expected to lead to an increase in school enrollment. There is a slight decrease in the proportion of the villages owning a primary school,[13] which may have a negative e ect on school enrollment of children.

3 Empirical Strategy

This study explore the e ects of tuition control, two-waive-one-subsidy, and tuition waive on school enrollment. These policy reforms regulate and waive tuition of primary and junior high school students. Table 4, 5 and 6 row 1 show the school enrollment rates of the primary and junior high school age children in the counties and cities implementing tuition control, two-waive-one-subsidy, and tuition waive before and after the reforms and their di erences. All di erences are positive and statistically signi cant. But these simple di erences don't prove that tuition control, two-waive-one-subsidy and tuition waive have positive causal e ects on school enrollment of primary and junior high school age children. The main concern is that there is a time trend in school enrollment of the counties and cities implementing the reforms. We can not distinguish the e ect of the reforms from the time trend e ect

di erent counties. Although the three reforms, except for tuition waive, usually start in the relative poor counties and cities, the reform decisions are not made by these counties and cities. Hence, the reforms and their timing variation are exogenous. Thus, in addition to the di erence of between school enrollment of children before the reforms and those afterwards, we can make the second di erence between the children living in the counties and cities implementing the reforms and those living in the counties and cities without implementing the reforms(i.e. di erence-in-di erence).

The three reforms overlapped in some counties and cities. Hence, we must disentangle the e ect of one reform from those of the other two reforms. Since tuition waive has not been implemented until 2006, tuition waive does not a ect school enrollment if we examine the e ects of the reforms during the period from 2000 to 2004. Thus, we can estimate the e ect of tuition control and two-waive-one-subsidy by using the data from 2000 wave and 2004 wave. The model is as followed:

$$\begin{aligned} school_{it} = {} & {}_0 + {}_1 tctrl_i + {}_2 twos_i + {}_3 year + {}_4 tctrl_i \quad year \\ & + {}_5 twos_i \quad year + {}_6 Z_{it} + v_{it} \end{aligned} \tag{3.1}$$

Our dependent variable is the dummy variable $school_{it}$ which equals to 1 if individual i is currently in school in year t and 0 otherwise. The dummy variables $tctrl_i$ and $twos_i$ represent tuition control and two-waive-one-subsidy respectively. The variable $tctrl_i$ equals to 1 if individual i lives in the counties or cities where tuition control had been implemented from 2000 to August 31, 2004 and 0 otherwise. The de nition of $twos_i$ is similar. The dummy variable *year* equals to 1 if the data is from 2004 wave and 0 otherwise. Control variable Z_{it} includes gender, mother's nished education years, whether the child belongs to junior-high-school-age, whether there is a primary school in their village, whether there is a junior high school in their village, and per capita income in their household, whether any household member owns a refrigerator. The dummy variable, *gender*, equals to 1 if the people is female and 0 otherwise. The variable, *mothers' edu, means mother's nished education years.* The variable, *junior-high-school-age child*, equals to 1 if the child's belongs to the intervals [12; 16) and 0 if [6; 12).[14] The variable, *primary school in a village*, is a dummy variable. It equals to 1 if there is a primary school in the village where the child lives and 0 otherwise. The de nition of the variable, *junior high school in their village*, is similar. The per capita income in a household is total income last year, is adjusted by every province's CPI and is measured in the price 2006. The dummy variable, *refrig*, equals to 1 if the household which a child lives in owns a refrigerator and 0 otherwise. It is use to be a proxy of the assets of the household. The variable, v_{it}, is an error term. The coe cients, $_4$ and $_5$, capture the school enrollment e ects of tuition control and two-waive-one-subsidy being implemented from 2000 to August 31, 2004 respectively.

[14] A part of children don't go to school until 7 years old. Thus, we regard the age interval [12; 16) as junior high school age.

As for tuition waive, we can estimate its effect by using the data from 2000 and 2006 waves or the data from 2004 and 2006 waves. Forty counties and cities have implemented two-waive-one-subsidy from 2004 to August 31, 2006. The correlated coefficient between year dummy and the interactive term of two-waive-one-subsidy and year is 0.8482 when using the data from 2004 and 2006. This may lead to a serious multicollinearity problem.[15] Since tuition control and two-waive-one-subsidy have been implemented in all counties and cities by August 2006, we can assume the two reforms have the same effect on school enrollment in each counties and cities. Hence, we can ignore the effects of tuition control and two-waive-one-subsidy when using the data from 2000 and 2006 waves estimate the effect of tuition waive. The model is as followed.

$$school_{it} = {}_0 + {}_1 twaiv_i + {}_2 year + {}_3 twaiv_i \quad year + {}_4 Z_{it} + u_{it} \qquad (3.2)$$

The dummy variable $twaiv_i$ equals to 1 if individual i lives in the counties or cities receiving tuition waive and 0 otherwise. The variable *year* equals to 1 if the data is from 2006 wave and 0 otherwise. The variable, u_{it}, is an error term. The coefficient ${}_3$ captures the school enrollment effects of tuition waive.

In this paper, firstly, we give out treatment effects of the three reforms when using unconditional difference-in-difference method; secondly, a set of covariates is introduced and then treatment effect of tuition control is obtained when using conditional difference-in-difference. The effect is statistically insignificant. Thirdly, we estimate treatment effects of two-waive-one-subsidy by using conditional difference-in-difference. Fourthly, we estimate model (3.2) and obtain school enrollment effect of tuition waive.

There are still two concerns on difference-in-difference methodology. One implied assumption of difference-in-difference method is that time trends in school enrollment rate of treatment groups are the same as those of control groups. Since school enrollment rates of treatment groups are often lower than those of control groups, their time trends in school enrollment rate may be different. Since the reforms, two-waive-one-subsidy and tuition waive, are implemented after 2000, they should have no effect on the school enrollment of primary and junior high school age children in treatment group from 1997 to 2000. Thus, we can test this assumption by using the data from 1997 wave and 2000 wave. If time trends in school enrollment rates of treatment groups are different from those of control groups, we should find statistically significant effects; otherwise, statistically insignificant effects. Another concern is that we may capture time varying effect from other factors rather than the three reforms. For example, China Western Development may has a positive effect on school enrollment of the children in western China after 2000. This program started in the end of 1999 and its leadership group was created by the State Council in January, 2000. It may raise income level of the people in western China. Thus, it is possible that China Western

[15] We use the data from 2004 and 2006 waves estimate the effect of tuition waive and find that there is a multicollinearity problem indeed according to vif.

Development improves school enrollment rate in western China. If so, it should a ect school enrollment decision of all children, including primary school age children, junior high school age children and senior high school age children. Since the reforms focus on primary and junior high school age children, they should have no school enrollment e ect on senior high school age children. Thus, using the observations of senior high school age children, we test whether the reforms lead to the e ects that we capture.

In addition, if we consider the e ects of the three reforms simultaneously, we can use equation (3.3).

$$\begin{aligned} school_{it} = {} & {}_0 + {}_1 tctrl04_i + {}_2 tctrl06_i + {}_3 twos04_i + {}_4 twos06_i + {}_5 twaiv_i \\ & + {}_6 year04 + {}_7 year06 + {}_8 tctrl04_i \quad year04 + {}_9 tctrl06_i \quad year06 \\ & + {}_{10} twos04_i \quad year04 + {}_{11} twos06_i \quad year06 + {}_{12} twaiv_i \quad year06 \\ & + {}_{13} Z_{it} + !_{it} \end{aligned} \tag{3.3}$$

The dummy variable $tctrl04_i$ equals to 1 if individual i lives in the counties or cities where tuition control had been implemented from 2000 to August 31, 2004 and 0 otherwise. The variable $tctrl06_i$ equals to 1 if individual i lives in the counties or cities where tuition control had been implemented from Sep. 1, 2004 to August 31, 2006 and 0 otherwise. The variable $twos04_i$ equals to 1 if individual i lives in the counties or cities where two-waive-one-subsidy had been implemented from 2000 to August 31, 2004 and 0 otherwise. The variable $twos06_i$ equals to 1 if individual i lives in the counties or cities where two-waive-one-subsidy had been implemented from Sep. 1, 2004 to August 31, 2006 and 0 otherwise. The variable $year04$ equals to 1 if the data is from 2004 wave, and 0 otherwise and $year06$ equals to 1 if the data is from 2006 wave, and 0 otherwise. The meaning of ${}_8$, ${}_{10}$ and ${}_{12}$ in equation (3.3) has the same meaning as that of ${}_4$, ${}_5$ and ${}_3$. The coe cients ${}_9$ and ${}_{11}$ are the school enrollment e ects of tuition control and two-waive-one-subsidy being implemented from September 1, 2004 to August 31, 2006 respectively. But the control groups are the counties or cities receiving tuition control and two-waive-one-subsidy from 2000 to August 31, 2004. That is to say, ${}_9$ and ${}_{11}$ are treatment e ect di erences between the reforms implementing in the rst period and those implementing in the second period during the second period rather than treatment e ects. If the long-run e ect of tuition control and two-waive-one-subsidy on school enrollment is di erent from their short-run e ect on that, ${}_9$ or ${}_{11}$ may be statistically signi cant di erent from zero.

4 Empirical results

4.1 Results when using unconditional di erence-in-di erence

Table 4 to 6 show the unconditional di erence in di erence results of the three reforms. Tuition control, two-waive-one-subsidy and tuition waive lead to 2.68, 6.85 and 1.75 percent

school age children. But the effect on girls compared to boys is statistically significant at the 5 percent level. In other words, most of the increase in school enrollment in column 1 is from girls. The sign of the covariates' coefficients are as expected. There is 1.8 percentage points drop in the school enrollment rate of all children per one-year increment of their age which is statistically significant at the 1 percent level. Junior high school age children are less likely to be currently in school than primary school age children. Mother's finished educational years has a statistically insignificant and positive effect on her children's school enrollment. The boys have a statistically significant 3 percentage point(at the 1 percent level) higher probability to enroll school than the girls. The schools in a village, especially junior high school, do increase the school enrollment rate of the children in the village. The children in rich households are more likely to be in school than those in poor households. But it is statistically insignificant different from zero. The models in columns 3 and 4 are the same as those in columns 1 and 2,except for replacing two-waive-one-subsidy with tuition waive. We can find tuition waive has just a statistically insignificant and positive effect on primary and junior high school age children in column 3. In column 4, girls benefit more from the reform tuition waive than the boys and the school enrollment effect on girls is statistically significant at the 10 percent level. This is to say, the school enrollment effect of tuition waive on primary and junior high school age girls is 4.81 percentage point higher than that on primary and junior high school age boys.

As mentioned above, the reform of two-waive-one-subsidy focuses on poor children while the reform of tuition waive on other children. It may be expected that the effect of two-waive-one-subsidy is larger than that of tuition waive. Since Chinese has a long traditional favorism on boys, it makes sense that both of the two reforms benefit girls more than boys.

4.3 Test the identification assumptions

Difference in difference method may capture other things rather than treatment effects. The possibilities include time trend difference between treatment groups and control groups, time varying effect from other factors.

First, we consider the possibility of time varying effect from other factors rather than the reforms. For example, China Western Development may improve school enrollment of all children in western China after 2000. Since two-waive-one-subsidy and tuition waive focus on primary and junior high school age children, they should have no school enrollment effect on senior high school age children. Thus, using the observations of senior high school age children, we test whether the reforms lead to the estimated effects in columns 1 and 3 of table 9. In the two columns, we can't find statistically significant effect of two-waive-one-subsidy or tuition waive on school enrollment of senior high school age children.[18] Hence, we may rule out the possibility of time varying effects from other factors rather than the reforms.

Second, if the time trends in school enrollment of treatment groups are different from those of control groups, we may capture the time trend differences between treatment groups

[18] We estimate the models without the triple interactive term and obtain similar results.

and control groups rather than the e ects of the reforms. In order to rule out the possibility of time trend di erence between treatment groups and control groups, we will do a pre-reform test by using the data from 1997 wave and 2000 wave. The reforms, two-waive-one-subsidy and tuition waive, should have no e ect on the school enrollment of primary and junior high school age children in treatment groups from 1997 to 2000. Columns 2 and 4 in table 9 show that there is no statistically signi cant e ect of two waive one subsidy and tuition waive on the school enrollment of children respectively.[19] Thus, it is impossible that there is a time trend di erence problem.

Last, llover e ect always receives much attention when considering program evaluation. Fortunately, the enrollments of primary school and junior high school are based on Hukou system. The reforms vary across counties and cities. It is hard for parents to transfer their children to the schools in other counties or cities. Furthermore, the quality of education in the urban areas is much better than that in the rural areas. Thus parents in the urban areas have no incentive to transfer their children to the schools in the rural areas. We admit that some parents do make a school transfer decision. But the parents are usually rich or powerful. Their primary and junior high school age children are almost currentlyal75t5Qram0fer 1(v)

while they actually across individuals. That is to say, if a part of children receive two-waive-one-subsidy or tuition waive in a county or city, all children will be assumed to receive two-waive-one-subsidy or tuition waive in the county or city. Obviously, this measurement error leads to bias toward zero.

Since two-waive-one-subsidy focuses on the poor children and tuition waive on other children, we estimate their treatment e ects using two subsamples. We separate the sample by four times of absolute poverty line. The observations whose per capita income in a household is lower than four times of absolute poverty line are used to estimate the e ect of two-waive-one-subsidy while those higher than four times of absolute poverty line are used to estimate that of tuition waive. We show the treatment e ects of two-waive-one-subsidy

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Table 1: The number of counties/cities with reforms in the two periods

Period	2000.12 -2004.8.31	2004.9.01 -2006.8.31	total
tuition control	29	21	50

Table 2: Number Nbleations(Nble)for2:h2:

Table 3: summary statistics

wave	2000	2004	2006
school	0.8965	0.9444	0.9412
	(0.3047)	(0.2293)	(0.2355)
primary school enrollment	.9480	1	.9565
	(.2223)	(0)	(.2042)
junior high school enrollment	.8542	.8892	.9152
	(.3523)	(.3143)	(.2785)
school enrollment of girls	.8771	.9383	.9452
	(.3286)	(.2410)	(.2282)
school enrollment of boys	.9130	.9505	.9377
	(.2820)	(.2172)	(.2421)
junior high school age children	0.5487	0.5019	0.3756
	(0.4978)	(0.5003)	(0.4846)
age	11.48	11.14	10.42
	(2.516)	(2.851)	(2.851)
gender	0.4600	0.5006	0.4676
	(0.4986)	(0.5003)	(0.4993)
mother's edu	6.3636	6.8272	7.1883
	(3.465)	(2.894)	(3.005)
primary school in a village	0.8330	0.7417	0.7315
	(0.3731)	(0.4380)	(0.4435)
junior high school in a village	0.2400	0.2979	0.3092
	(0.4273)	(0.4576)	(0.4625)
per capita income in a household	3.590	4.246	5.382
	(4.099)	(3.852)	(8.090)
refrig	0.2139	0.2596	0.3695
	(0.4102)	(0.4387)	(0.4830)
N	1150	809	663

Table 4: The school enrollment effect of tuition control

Period	2000	2004	Difference
tctrl	.8896	.9460	.0564***
	(.3136	(.2261)	(.0148)
No tctrl	.9111	.9407	.0297
	(.2851)	(.2366)	(.0210)
DiD			.0268
			(.0257)

Table 5: The school enrollment effect of two-waive-one-subsidy

Period	2000	2004	Difference
twos	.8586	.9635	.1049***
	(.3493)	(.1882)	(.0300)
No twos	.9041	.9405	.0364***
	(.2947)	(.2368)	(.0132)
DiD			.0685**
			(.0327)

Table 6: The school enrollment effect of tuition waive

Period	2000	2006	Difference
twaiv	.9025	.9552	.0527***
	(.2969)	(.2071)	(.0173)
No twaiv	.8917	.9268	.0351*
	(.3110)	(.2608)	(.0190)
DiD			.0175
			(.0257)

Table 7: Treatment effects of tuition control

variables	I	II
year04	.0194	.016
	(.0205)	(.0205)
tctrl	-.0262	-.0223
	(.0184)	(.019)
tctrl*year	.0285	.0214
	(.025)	(.0258)
twos		-.0285
		(.0284)
twos*year		.0495
		(.0332)
junior high school age	-.0188	-.0176
	(.0185)	(.0185)
age	-.0179	-.0178
	(.0046)	(.0046)
mother's edu	.0012	.0014
	(.0021)	(.0021)
gender	-.0241	-.0246
	(.0123)	(.0124)
primary school in a village	.027	.0273
	(.0158)	(.016)
junior high school in a village	.0267	.0268
	(.0133)	(.0134)
per capita income in a household	.0015	.0016
	(.0011)	(.0011)
refrig	.0539	.0528
	(.0125)	(.0127)
Const.	1.0871	1.0875
	(.0507)	(.051)
R^2	.0638	.0649
N	1959	1959

Table 8: Treatment e ects of two-waive-one-subsidy and tuition waive

variables	I	II	III	IV
year	.0296	.0297	.0139	.0137
	(.0131)	(.0131)	(.0186)	(.0186)
twos	-.0326	-.0325		
	(.0274)	(.0274)		
year*twos	.0547	.0071		
	(.032)	(.0426)		
year*twos*gender		.0765		
		(.0381)		
twaiv			.0152	.0152
			(.0178)	(.0178)
year*twaiv			.0139	-.0096
			(.0255)	(.0303)
year*twaiv*gender				.0481
				(.0279)
junior high school age	-.0171	-.0166	.0611	.0611
	(.0185)	(.0185)	(.0212)	(.0208)
age	-.0179	-.018		

Table 9: Tests of identi cation assumptions

variables	I	II	III	IV
year	.0522	-.0092	-.0006	-.0211
	(.0434)	(.0136)	(.0456)	(.0161)
twos/twaiv	-.0202	.0547	.0289	.0358
	(.0563)	(.0223)	(.0709)	(.0181)
year*twos/twaiv	-.0779	-.0204	.0316	-.0178
	(.1156)	(.0465)	(.2275)	(.0286)
year*gender*twos/twaiv	.0769	-.1176	.0848	.0202
	(.1478)	(.0796)	(.2545)	(.0314)
age	-.1406	-.0116	-.1378	-.0958
	(.0222)	(.0051)	(.027)	(.0128)
mother's edu	.0186	.0042	.0176	.0048
	(.005)	(.0017)	(.0053)	(.0017)
gender	.017	-.0273	.0305	-.0367
	(.0368)	(.0127)	(.0377)	(.0141)
junior high school age	-.0448		.0086	
	(.0198)		(.0166)	
primary school in a village	.0785	-.0066	.0662	.00005
	(.0419)	(.0166)	(.0449)	(.0142)
junior high school in a village	.0897	.0052	.0638	.0029
	(.0444)	(.0141)	(.0454)	(.0013)
per capita income in a household	.0021	.0037	-.0014	.0096
	(.005)	(.0013)	(.0047)	(.0043)
refrig	.2913	.0767	.2872	.069
	(.0461)	(.011)	(.048)	(.012)
Const.	2.501	1.028	2.4743	.8935
	(.3899)	(.0533)	(.4726)	(.024)
R^2	.1913	0.06	0.19	0.06
N	628	2025	578	2025

Table 10: Alternative specifications

variables	I
year04	.0305
	(.0131)
year06	.055
	(.0366)
twaiv	.0244
	(.0124)
twos04	-.0444
	(.0274)
year04*twos04	.0134
	(.0427)
year06*twos06	-.0502
	(.0396)
year04*twos04*gender	.0708
	(.0379)
year06*twos06*gender	.0094
	(.0291)
year06*twaiv	-.0193
	(.0276)
year06*twaiv*gender	.0423
	(.0324)
age	-.009
	(.004)
mother's edu	.0025
	(.0018)
gender	-.0269
	(.0127)
junior high school age	-.04
	(.0157)
primary school in a village	.0223
	(.0134)
junior high school in a village	.0157
	(.011)
per capita income in a household	.0007
	(.0006)
refrig	.0461
	(.0106)
Const.	.9803
	(.0435)
R^2	.051
N	2622

Table 11: Treatment e ects of two-waive-one-subsidy and tuition waive based on di erent groups

variables	I	II	III	IV
year	.0456	.0458	-.0356	-.0355
	(.0208)	(.0208)	(.0257)	(.0257)
twos	.0107	.0109		
	(.0341)	(.0341)		
year*twos	.0168	-.0809		
	(.0436)	(.0755)		
year*twos*gender		.1343		
		(.0717)		
twaiv			-.0398	-.0396
			(.0246)	(.0247)
year*twaiv			.1019	.0784
			(.0332)	(.0398)
year*twaiv*gender				.0489
				(.0302)
junior high school age	-.0210	-.0227	-.0560	-.0544
	(.0278)	(.0279)	(.0279)	(.0278)
age	-.0171	-.0169	-.0034	-.0037
	(.0070)	(.0070)	(.0075)	(.0074)
mother's edu	.0016	.0015	.0005	.0004
	(.0028)	(.0028)	(.0032)	(.0033)
gender	-.0371	-.0449	.0067	-.0033
	(.0190)	(.0196)	(.0177)	(.0216)
primary school in a village	.0219	.0212	-.0080	-.0078
	(.0269)	(.0268)	(.0203)	(.0203)
junior high school in a village	.0247	.0257	.0176	.0185
	(.0194)	(.0193)	(.0187)	(.0188)
per capita income in a household	.0163	.0166	.0004	.0004
	(.0114)	(.0114)	(.0007)	(.0007)
refrig	.0686	.0680	.0357	.0372
	(.0187)	(.0188)	(.0181)	(.0182)
Const.	1.0505	1.0522	.9825	.9901
	(.0833)	(.0833)	(.0770)	(.0770)
R^2	.0608	.0636	.0395	.0408
N	987	987	909	909

Table 12: summary statistics for tuition control

year	2000		2004	
twos	0	1	0	1
school enrollment	.9111	.8896	.9407	.9460
	(.2851)	(.3136)	(.2366)	(.2261)
school enrollment of girls	.8951	.8692	.9344	.9399
	(.3074)	(.3376)	(.2486)	(.2380)
school enrollment of boys	.9234	.9078	.9466	.9524
	(.2665)	(.2897)	(.2258)	(.2133)
junior high school age	.5472	.5494	.5059	.5000
	(.4984)	(.4979)	(.5010)	(.5005)
age	11.43	11.51	11.11	11.15
	(2.530)	(2.510)	(2.778)	(2.886)
gender	.4367	.4711	.4822	.5090
	(.4966)	(.4995)	(.5007)	(.5004)
mother's edu	5.813	6.626	6.891	6.798
	(3.561)	(3.389)	(2.857)	(2.913)
primary school	.7547	.8703	.5889	.8112
in a village	(.4308)	(.3361)	(.4930)	(.3917)
junior high school	.0997	.3068	.0791	.3975
in a village	(.3000)	(.4615)	(.2704)	(.4898)
per capita income	3.927	3.429	5.939	3.476
in a household	(2.890)	(4.556)	(4.656)	(3.140)
refrig	.2372	.2028	.3399	.2230
	(.4259)	(.4024)	(.4746)	(.4166)
num. of obs.	371	779	253	556

Table 13: summary statistics for two-waive-one-subsidy

year	2000		2004	
tctrl	0	1	0	1
school enrollment	0.9041	0.8586	.9405	.9635
	(.2947)	(.3493)	(.2368)	(.1882)
school enrollment of girls	.8830	.8495	.9279	.9767
	(.3218)	(.3595)	(.2591)	(.1516)
school enrollment of boys	.9216	.8673	.9518	.9412
	(.2690)	(.3409)	(.2144)	(.2376)
junior high school age	.5266	.6597	.5030	.4964
	(.4996)	(.4751)	(.5004)	(.5018)
age	11.37	12.06	11.12	11.23
	(2.540)	(2.309)	(2.865)	(2.787)
gender	.4546	.4869	.4747	.6277
	(.4982)	(.5011)	(.4997)	(.4852)
mother's edu	6.218	7.096	6.762	7.149
	(3.534)	(2.996)	(2.951)	(2.581)
primary school	.8154	.9215	.7128	.8832
in a village	(.3881)	(.2697)	(.4528)	(.3223)
junior high school	.2106	.3874	.2470	.5474
in a village	(.4080)	(.4884)	(.4316)	(.4996)
per capita income	3.616	3.458	4.402	3.483
in a household	(4.353)	(2.460)	(3.995)	(2.949)
refrig	.2294	.1361	.2723	.1971
	(.4207)	(.3438)	(.4455)	(.3993)
num. of obs.	959	191	672	137

Table 14: summary statistics for tuition waive

year	2000		2006	
twaiv	0	1	0	1
school enrollment	.8917	.9025	.9268	.9552
	(.3110)	(.2969)	(.2608)	(.2071)
school enrollment of girls	.8547	.9042	.9241	.9636
	(.3530)	(.2950)	(.2657)	(.1878)
school enrollment of boys	.9224	.9011	.9290	.9471
	(.2679)	(.2991)	(.2576)	(.2246)
junior high school age	.5400	.5595	.4116	.3403
	(.4988)	(.4969)	(.4929)	(.4745)
age	11.46	11.50	10.58	10.27
	(2.459)	(2.588)	(2.952)	(2.744)
gender	.4537	.4678	.4421	.4925
	(.4982)	(.4995)	(.4974)	(.5007)
mother's edu	6.490	6.207	7.519	6.864
	(3.343)	(3.607)	(2.736)	(3.219)
primary school	.8242	.8441	.7805	.6836
in a village	(.3810)	(.3632)	(.4145)	(.4658)
junior high school	.1695	.3275	.1189	.4955
in a village	(.3755)	(.4698)	(.3242)	(.5007)
per capita income	3.467	3.742	5.727	5.045
in a household	(4.863)	(2.879)	(10.17)	(5.311)
refrig	.2496	.1696	.4146	.3254
	(.4331)	(.3756)	(.4934)	(.4692)
num. of obs.	637	513	328	335