SUPPLY-SIDE RESPONSES TO TARGETED VOUCHERS*

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Abstract

We examine (private and public) schools' responses to a targeted voucher program in Chile. We study responses on both the extensive (i.e., entry/exit) and the intensive (i.e., pricing, educational inputs) margins. The reform triggers a response on the extensive margin on the part of private-voucher schools, which enter and exit the market more often than in the absence of the reform. Public schools' responses, on the other hand, are more tenuous in this respect. On the intensive margin, private-voucher schools decrease their monthly top-up fees by about US$4.6–8.9, which represents around half the monthly fee level previous to the reform. In addition, both public and private-voucher schools respond to the reform by investing in more and better educational inputs; however, private-voucher schools are more responsive than public schools. Our results represent one of the few pieces of evidence on the supply side responses to vouchers.

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1 Introduction

The traditional approach to evaluating the impact of vouchers on education markets is to study the consequences of these vouchers on student performance markers. The current literature is ample on the effects that vouchers have on students, using variables that range from standardized tests results to changes in years of schooling (Epple et al. (2017)). However, the evidence is scarce when trying to explain the success—or failure—of these programs (Sánchez (2018a); Correa et al. (2014)). The current lack of evidence in this regard lays bare the black-box nature of these traditional approaches, this is in part because the existing literature has neglected the study of the suppliers of such education, the schools.[1]

In this paper, we address this issue by explicitly studying the effects that vouchers have on schools' decisions. Specifically, we study the 2008 Chilean education reform, which gave economically disadvantaged students an additional education subsidy in the form of a voucher.[2] Students were provided with vouchers that they could use in the educational institution of their choice. Schools were given the option to opt-in to the program, and participating schools were able to cash in the vouchers.

Schools respond with an increase in market entry and exit. Municipalities see an increase of 0.37 new schools entering the market each year. Taking into account the eight years that we study post reform, and the 365 distinct municipalities, this is the equivalent to 1,080 additional schools entering the education market, or 15% of the 7,500 schools that comprise the Chilean market. On the other hand, schools exiting the market increases by 0.40 schools per year, per municipality. When added up across all eight years and all municipalities, this translates to 1,160 additional exits. Tuition fees charged to non-beneficiaries of the program decreases in private-voucher schools by 30–50% of the mean tuition that these schools charge one year before the reform, $4.6 to 8.9 US dollars.[3]

[1] There are other mechanisms that have been studied and that can partially explain the effects of reforms on the students, e.g., sorting and cream skimming of the students (Epple and Romano (2008); Altonji et al. (2015)).

[2] On top of the subsidy that the whole student population already had access to in the form of a universal voucher.

[3] Private-voucher schools are the private schools that accept governmental vouchers as payment for the tuition fee. In 2007, private-voucher schools' mean tuition fee was of $13.7 USD.

In addition to higher entry and exit, and a decrease in tuition fees, schools also change the usage of various input variables. Schools increase their weekly teaching hours per student by 2 hours, and decrease their weekly hours per teacher by the same amount.[4] This comes paired with a decrease in the share of specialized teachers of 3% and a decrease in the share of teachers with an indefinite contract of 8%.[5] Finally, schools also decrease their share of multigrade classes by 22%. In addition to these effects, private-voucher schools also react by decreasing their mean class size by 5 students and by decreasing their pupil-teacher ratio by 1.6 students per teacher.

To identify the previously mentioned effects, we use a fuzzy difference-in-differences type strategy (Duflo (2001); Abadie (2005)). In which each of the 365 Chilean municipalities constitutes a differentiated education market (Gallego and Hernando (2009); Chumacero et al. (2011)), and where the treatment is a continuous variable—therefore an "intensity of treatment"—constructed using the share of disadvantaged students in the municipality. Given the intensity of treatment, we calculate the effect that a full treatment would have on our variables of interest. We report our findings on four distinct school groupings: public schools, private-voucher schools, purely private schools and the whole of the schools simultaneously.[6] Although we report our findings portraying purely private schools, we do not study them in depth as they are not directly affected by the voucher program.

Previously published articles explore similar topics, offering insights into our findings. Although Neilson's work (2013) focuses primarily on students, he also establishes an empirical model that explains how the introduction of targeted vouchers increases competition among schools and, subsequently, improvements in students' outcomes. His approach has some limitations primarily its assumption that school quality is "not observable by the econometrician" and that this quality can be measured indirectly using mean test scores. We propose a more direct way of measuring the quality of the schools by measuring the quality and quantity of the education inputs.

[4] A teaching hour is comprised of a 45 minute block.

[5] Specialized teachers are teachers that have a degree in education. An indefinite contract is a rigid labor contract celebrated between a teacher and a school, which does not require periodical revision and renewal.

[6] A school is considered private-voucher if it accepts vouchers as part of the tuition, while a purely private school doesn't accept any type of voucher.

Very few studies analyze schools affected by vouchers directly. One of the few is Sánchez (2018a), in which he argues why we should study schools' responses. He finds that schools engage in "undesirable" strategies when trying to better their mean tests' scores.[7] This paper expands on this idea by reporting on some of the "desirable" strategies that schools follow to better their mean scores. In another vein, Sánchez (2018b) creates an empirical model representing supply and demand and responses to different vouchers designs. In this work, he builds counterfactual scenarios around the different designs but limits the study of schools to entries and pricing. This paper expands on this work by reporting on the actual responses and by expanding beyond pricing and entries.

2 Targeted voucher program

The voucher-based education system started in Chile in 1980 with the introduction of the universal voucher, a subsidy that became available to every student. Participation in this program was mandatory for public schools and optional for private schools. This reform effectively separated private schools into private voucher-accepting schools and purely private schools.[8] In 2008, after almost 30 years of this universal voucher regime, the targeted voucher program was introduced. This new program was put into place through the enactment of the *Ley de Subvención Escolar Preferencial*, or SEP law, and included an additional education subsidy for economically disadvantaged students on top of the universal voucher.[9] The objective was to correct certain shortcomings of the original program, in particular the disparity in the education quality accessible to students (Weinstein et al. (2010)).

Participation in the new program was voluntary, and once enacted, it attracted a large number

[7]He finds that schools engage in something akin to "stochastic cheating", in which schools bolster their mean test scores by discouraging underperforming students from taking the tests.

[8]By the year 2005, 55% of schools were public schools, 40% were private-voucher, and 5% were purely private.

[9]For a student to be considered disadvantaged, they must belong to the poorest 33% of the population or participate in the social welfare program *Chile Solidario*. When both groups are taken into account, beneficiaries represent (roughly) the poorest 40% of the population.

of schools.[10] In that same year, 75% of the 7,391 schools that could participate in the program did so; almost all of the 4,133 public schools participated as did 50% of the 3,258 private-voucher schools. Since then, participation has gotten consistently higher, with upwards of 75% of private-voucher schools participating by 2015, as can be seen in Table 1 and graphically in Figure 1.

The SEP law subsidy is made up of two components, the main one being the targeted voucher—representing roughly 60% of the universal voucher's value—and a secondary concentration subsidy. The secondary subsidy is called the *Subvención por Concentración*, or SC, a small additional per-student subsidy given to schools where more than 15% of students are beneficiaries of the targeted voucher program, and that marginally scales up in magnitude with higher concentrations. The subsidy amount derived from the SC is almost negligible and represents about 1% of the universal voucher's value. Both of these subsidies, alongside the universal voucher subsidy, are adjusted yearly to account for inflation and occasionally as a result of increases in the education budget. By 2010 the universal voucher was slightly above $60 USD per month and the targeted voucher, above $30 USD. A more detailed description of the evolution of voucher values can be seen in Table 2 and in Figure 2.

Participants of the program must comply with certain conditions. Schools could no longer charge tuition fees to beneficiaries of the targeted program on top of the amount that they already received through vouchers, and were no longer able to discriminate on applicants according to their historical or current academic performance. This, according to the law's designers, would enhance schooling options for disadvantaged students (Weinstein et al. (2010)). At the same time, schools also had to establish and follow a plan that would ensure their compliance with a nationwide performance minimum, as measured by the mean test scores, and with school-specific milestones. Schools that underperformed could be removed from the program and would no longer be able to collect the targeted voucher subsidy. Taken together, these requirements—according to the law's designers—would pressure schools to enhance quality.

[10]Participation in the program is optional, but only public and private-voucher schools are able to participate.

3 Data

We combine various administrative data sets covering the universe of Chilean schools, students and teachers for the years 2004-2015. The data sets were obtained from the Ministry of Education and the *Agencia de Calidad de la Educación*, the government's agency in charge of conducting all national standardized examinations in the primary and secondary levels. The data sets include the censuses of students and schools, the census of teachers, the registry of students that are eligible to receive the targeted voucher, the registry of schools that participate in the targeted-voucher program, and the tuition fees that private-voucher and purely private schools charge. See Appendix A.1 for a more detailed description of each of the data sets we use.

With these combined data sets we were able to measure the effects of the reform on various school related variables. Table 3 shows the mean values and the standard deviations on the studied variables for the years 2006 and 2010, two years before and two years after the reform.

4 Empirical Analysis

4.1 Identification Strategy

To identify the effects that the introduction of vouchers had on our variables of interest, we use a conventional difference-in-differences and an event study, both with localized education markets and a continuous intensity of treatment variable. To define the local markets, we take advantage of the work made by Gallego and Hernando (2009) and Chumacero et al. (2011), which finds that the primary variable that parents consider when choosing schools is school distance, with the average elementary school student traveling less than 2.1 km (1.3 mi). Furthermore, 90% of elementary grade students attend a school that is located in their municipality of residence, suggesting that not only does the Chilean elementary education market arranges itself in local markets, but that municipalities' political boundaries also serve as market boundaries.[11] This

[11] See Topel (1986) and Card (1992), for more on the use of political and administrative boundaries to define local markets.

leaves us with 365 differentiated markets.[12]

To build the intensity of treatment, we exploit the targeted nature of the SEP reform. This, in addition to the local nature of education markets, lets us build an intensity of treatment variable that is calculated as the share of disadvantaged students in the municipality. The intensity of treatment, as would be expected, is highly correlated with the probability that a school would join the targeted voucher program, with the probability of joining going from 40% in the municipalities with the least treatment to almost a 100% in the municipalities with full treatment, Figure 3 shows this relationship. The intensity of treatment distribution has (almost) full support in the [0, 1] interval, with the majority of municipalities in the 10%–50% interval and very few in the extremes, both when weighted by population and when unweighted, which is shown in Figure 4. The approach is similar to the one found in Card (1992), Neumark and Wascher (1992) and Duflo (2001), and for Chile's specific case Hsieh and Urquiola (2006), Correa et al. (2014) and Sánchez (2018a) use similar strategies with municipalities as delimitation for local education markets. Finally, to avoid any endogeneity issues (i.e., endogenous migration) when calculating the share intensities of treatment, we use the students' municipality of residence one year before the enactment of the 2008 SEP Reform (Rosenzweig and Wolpin (1988)). The municipality of residence in 2007 is highly correlated with the municipality of residence for the studied period as 88.4% of 1st–4th graders in 2008-2011 live in the same municipality than they did in 2007.

4.2 Empirical Strategy

We estimate the following equations:

$$y_{ist} = \gamma_s + \lambda_t + \delta(post_t \times intensity_s) + \epsilon_{ist} \tag{1}$$

$$y_{ist} = \gamma_s + \lambda_t + \sum_{\tau=m}^{n} \delta_\tau(D_t^\tau \times intensity_s) + \epsilon_{ist} \tag{2}$$

[12]This number may vary slightly across time, as Chile has had some rare instances where it redrew a few municipalities boarders.

In both equations, y_{ist} is the outcome of interest for school i on time t which belongs to the municipality s one year before the reform (2007), γ_s is a fixed effect for municipality of residence, λ_t is a year fixed effect, $intensity_s$ is the intensity of treatment (i.e., share of disadvantaged students in the municipality of residence one year before the reform), and ϵ_{ist} is an error term. In equation (1), $post_t := 1\{t \geq 2008\}$ is a post-reform indicator, the coefficient of interest is δ, as it captures the effect of the targeted voucher reform. In equation (2) m and n are the first and last year of the analysis (these may vary depending on data availability and scope of the description), $D_t^\tau := 1\{t = \tau\}$ which means that each year's effect is being calculated independent of the other years. The coefficients of interest are the δ_τ, which capture the year effects of the targeted voucher reform for post-reform periods (2008 and up), and indicate trends in the pre-reform periods (De Chaisemartin and D'Haultfoeuille (2018)).

The key identification assumption on both of these strategies is the *parallel trends assumption*. This assumption requires that in the absence of treatment, the trends that the agents have portraying the variables of interest remain parallel. This assumption is not testable, as a counterfactual scenario would be necessary. Although, we are able to check if before the treatment the schools had parallel trends. Our results using equation (2) show that in the majority of variables the schools have parallel pre-trends when compared using their intensity of treatment. Information on which variables show parallel pre-trends can be seen in Table 4.

4.3 Results

In the implementation of the empirical strategy we cluster the standard errors at the municipality of residence before the reform level (Bertrand et al. (2004); Colin Cameron and Miller (2015)). It is also important to note that the extensive margin variables (i.e., entry and exit), might be affecting the intensive margin variables (i.e., tuition, class size, pupil-teacher ratio and share of specialized teachers, to name a few). This is because the entry and exit changes the existing pool of schools.

4.3.1 Entry and Exit

To calculate effects on entries and exits, we use a variation of equation (1) and (2) instead. This is because we calculate the effect of the reform at the level of the municipality s, instead of at the level of the school i, the resulting equations are:

$$y_{st} = \gamma_s + \lambda_t + \delta(post_t \times intensity_s) + \epsilon_{st}$$
$$y_{st} = \gamma_s + \lambda_t + \sum_{\tau=m}^{n} \delta_\tau (D_t^\tau \times intensity_s) + \epsilon_{st}$$

with y_{st} being the entries and exits into the market s. All other descriptors are the same as in equation (1) and (2) respectively.

To identify exits and entries into the market, we calculated first the effects on schools as a whole and then we distinguished between the different type of schools. Tables 5 and 6 show the results for the difference in differences exercise, while Figures 5–8 (and Tables 7 and 8) do so for the event study one. Tables 5 and 6 show the results for both total number of entries/exits and entries/exits as share of the already existing schools of the same type on that municipality for the previous year.[13] The estimates show a response on the part of private institutions when measuring total entries and exits. The per municipality full treatment effect is (around) 0.4 per year on both entries and exits, with a statistical significance at the 1%. There appears to be no measurable effect when considering entries and exits as a share of the already existing schools of the same type. The event study portion of this exercise shows that the purely private schools react the year of enactment and that private-voucher schools take three years to do so.

In conclusion, our findings on entry and exit show that there is a net positive effect of the treatment on both the number of entries and exits, at least in the private portion of the market (private-voucher and purely private schools). Suggesting that private entities are more sensitive towards this type of reforms.[14]

[13] This is, we take the entries/exits of a given year and divide them by the amount of schools of the same group one year before.

[14] There exists literature that might explain this result. In his book, Pritchett (2009) makes the argument that public education systems are top-down bureaucracies that are–by design–slower in their decision making than private agents.

4.3.2 Tuition

Table 9 and Figure 9, show the effects that the SEP Reform had on the monthly tuition that private-voucher schools charge students' family.

Table 9 shows, using the difference-in-differences equation (1), that the treatment lowers the tuition fees for non beneficiaries that attend private-voucher schools. These findings hold true on both the non-weighted, with a decrease of $4.6 USD, and the weighted specifications, with a decrease of $8.9 USD.[15] The figure that shows our results using the event study equation (2), Figure 9, further supports these findings and shows that tuition lowering is put into action the same year of the enactment of the program, and that the effect only increases in magnitude over time.[16]

4.3.3 Educational Inputs

Tables 11 to 28 and Figures 10 to 27 show our findings on school input variables. First we observe Tables 11–16 (and Figures 10–15), which show weekly teaching hours per student, class size and pupil-teacher ratio. The 2008 SEP reform led private-voucher schools to increase the usage of educational inputs: when using the difference-in-differences equation (1) there's an increase of 1.25 weekly teaching hours per student, a decrease of 5 students per class and a decrease of 1.6 students per teacher. The event study portion of the analysis shows that most of the responses start one year after the enactment of the reform and increase in magnitude over time.

On the public side of the market, there's an increase of 1.6 in weekly teaching hours per student, but statistical zeroes on the rest. The event study side of the analysis shows that the teaching hours per student started increasing the year of enactment and as in the private-voucher case, the magnitude also increases over time. Despite not finding any effect on the difference-in-differences portion, there is a permanent increase of (around) 3 students per teacher after 4 years

[15]The weighted specification takes into account the amount of students in the school and gives a corresponding weight.

[16]Holla and Kremer (2011) find that school fees are a major deterrent to education access, but Lucas and Mbiti (2012) find that a sudden increase in access can strain school systems short term as per child resources might be reduced.

of education reform.

Tables 17–24 (and Figures 16–23), include: share of specialized teachers, share of female teachers, teachers' mean experience and share of multigrade classes.[17] For private-voucher schools and public schools, the difference-in-differences regression suggests that the share of specialized teachers declined by (roughly) 5%, the share of female teachers increased by (roughly) 5%, teachers' experience increased by 1.6 years for private-voucher schools and by 3 years for public schools, and that the share of multigrade classes decreased by 28% for private voucher schools and by 17% for public ones.

The event study portion of the analysis shows us that private-voucher and public schools started increasing their share of female teachers one year after the reform, and started decreasing their share of multigrade classes 3 years after the reform. The event study figures also show that private-voucher and public schools responded at different times on the other two variables, the decrease on the share of specialized teachers started 1 year after the enactment for private-voucher schools and 3 years after for public ones. While teachers' experiences started to increase the same year of enactment for public schools, private-voucher schools started seeing a rise in experience only after 7 years of enactment.

Finally, variables portraying weekly teaching hours per teacher and the share of teachers with an indefinite contract are shown in Tables 25 to 28, and in Figures 24–27. In the difference-in-differences tables, both private-voucher and public schools did not change their share of teachers with an indefinite contract, and only private-voucher schools decreased their weekly teaching hours per teacher, and they did so by 3.2. The event study figures show that teaching hours per teacher started declining in public schools two years into the reform with increasing magnitudes over time, and that weekly teaching hours per teacher also start decreasing for public schools 6 years after enactment.

[17] A teacher is considered specialized if they hold a degree in education, and a class is considered multigrade if more than one grade is being imparted on the same classroom at the same time.

5 Conclusions

This paper contributes to the education literature by providing one of the few pieces of evidence on how schools react when confronted with targeted vouchers. To do so we measure the changes in competition decisions (entry, exit and tuition) and in the quality of the education they provide (through various input variables) using a difference-in-differences and an event study strategy. Allowing us to report on both the effects and their behaviour across time.

On entry and exit, schools react by increasing yearly entries and exits within three years of the reform. On pricing, we found that the tuition fees that private-voucher schools charge to non-beneficiaries of the program is reduced by $4.6–8.9 USD, (around) half the value of private-voucher schools' mean tuition one year before the reform, and that the effect starts increases in magnitude over time, settling around the -$12 USD mark five years after the reform. Suggesting that the sudden influx of government funding allowed these schools to also compete on prices in order to attract non-beneficiaries.[18]

On the input variables, there are some variables in which private-voucher and public schools reacted in a similar way, but there is also evidence that private-voucher and public schools favored some strategies over others. We'll start on the former. There is evidence that schools in general made an effort to better their education quality: an increase in teaching hours per student and a decrease in teaching hours per teacher, paired with the decrease in the share of teachers with and indefinite contract suggests that schools increase their teacher faculty with more flexible labor contracts. Furthermore, the decrease in the share of specialized teachers suggests that schools go outside the established teachers' market in order to satisfy their demand.[19] Schools also reduce their share of multigrade classes, giving students a more specialized study environment.

In addition, private-voucher schools also react by reducing their mean class size by 5 students and by decreasing their pupil-teacher ratio by 1.5 students per teacher. Furthermore, the event

[18]Participating schools where obligated to not charge any type of fees to the beneficiaries of the program. On the other hand, no constraints where put on how much–if anything at all–should be charged to the rest of the students.

[19]The event study shows—at least in the 8 years post reform that we study—that the variable portraying the share of specialized teachers behaves as if it had a one-time negative impact that lasted 4–5 years, the time that it would take a teacher to specialize.

study shows that the effect on public schools' class size oscillates around the zero mark and that their pupil-teacher ratio increases over time, indicating an opposite trend to that of the private-voucher schools. Finally, public schools' decisions results in them increasing their teachers' mean experience faster and in higher magnitudes.[20]

In closing, the introduction of vouchers changes schools' decisions on entry and exit, tuition fees and the usage of input variables. And, although schools in general react by increasing their education quality, private-voucher schools put into place additional strategies in order to do so.

[20]The change in teachers' mean experience could be explained in several ways, one one hand it might be that public schools favor experience and actively hire based on that or that younger teachers leave. Lower teacher turnover could also be the case.

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A

A.1 Data

We combine various administrative data sets for Chilean students and schools for the years 2004-2015. Specifically, we use:

- Registry of students, 2004-2015.

  These data provide information on students' gender, date of birth, age, municipality of residence, type and level of education, grade, class, grade repetition status, special education status, and various characteristics of the school of attendance, such as municipality, type of administration (public, private-voucher, purely private), single/double shift schedule, and urban status.

- Registry of schools, 2004-2015.

  These data provide information on schools' municipality, type of management, urban status, address, and type and level of education offered.

- Registry of schools' summary of enrollment, 2004-2015.

  These data provide information on schools' municipality, type of management, urban status, male enrollment by education type and level, female enrollment by education type and level, total enrollment by education type and level, total enrollment, number of single-grade classes by education type and level, total number of single-grade classes, number of multigrade classes by education type and level, and total number of multigrade classes.

- Registry of teachers, 2004-2015.

  These data provide information on teachers' gender, date of birth, education degree, subject specialization, institution attended, graduation year, and duration of the degree studied.

They also provide information on the characteristics of all schools in which each teacher is hired (municipality, type of management, rural status), and on the teachers' primary and secondary roles (e.g. teacher, principal, supervisor), type of contract, hours contracted, teaching hours, experience, tenure, and teaching subject and level of education.

- Registry of schools that participate in the targeted voucher program, 2008-2015.

  These data provide information on the characteristics of schools that participate in the targeted voucher program. Information on schools' municipality, type of management, urban status, targeted voucher classification, number of disadvantaged students that are eligible for the targeted voucher subsidy, and number of targeted voucher beneficiary students is also available.

- Registry of students that are eligible to participate in the targeted voucher program, 2008-2015.

  These data provide information on the characteristics of disadvantaged students that are eligible to participate in the targeted voucher program. They provide information on students' gender, date of birth, targeted voucher participation status, level of education, grade, single/double shift schedule, and on the type of management, urban status, and targeted voucher category of the school attended by the student.

- Databases on Private Tuition, 2005-2011.

  These databases list all of the private schools that charge a strictly positive tuition and indicate the amount of such tuition. They also provide secondary information on all of the listed schools, like municipality and total tuition-based income.

A.2 Tables

Table 1: Schools by type and participation in SEP law

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
A. All	7,904	7,868	7,839	7,833	7,852	7,827	7,738	7,725	7,638	7,561	7,500
public	4,378	4,265	4,193	4,133	4,093	4,028	3,924	3,878	3,807	3,732	3,690
private-voucher	3,067	3,158	3,201	3,258	3,328	3,364	3,387	3,424	3,412	3,407	3,384
purely private	459	445	445	442	431	435	427	423	419	422	426
B. Participating	–	–	–	5,544	5,921	5,979	6,093	6,227	6,205	6,190	6,207
public	–	–	–	3,999	4,027	3,965	3,865	3,836	3,737	3,697	3,664
private-voucher	–	–	–	1,545	1,894	2,014	2,228	2,391	2,468	2,493	2,543

Notes: Panel A shows the total number of schools that offer basic education. Panel B shows the number of basic schools that participated in the program.

Table 2: Monthly Voucher Subsidy Decomposition for Students in 1st-4th Grades

	subsidy (US$)										
category	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
universal voucher	43.78	47.83	49.25	49.58	56.74	60.47	61.78	62.54	66.76	69.06	69.08
targeted voucher	–	–	–	28.84	28.84	30.75	31.41	31.79	39.23	40.55	40.56
concentration subsidy:											
15–30%	–	–	–	2.02	2.02	2.15	2.20	2.23	2.75	2.84	2.84
30–45%	–	–	–	3.46	3.46	3.69	3.77	3.82	4.71	4.87	4.87
45–60%	–	–	–	4.61	4.61	4.92	5.03	5.09	6.28	6.49	6.49
more than 60%	–	–	–	5.19	5.19	5.54	5.65	5.72	7.06	7.30	7.30

Notes: The universal voucher refers to the education subsidy program that started in 1980 and that is available to every Chilean student. The targeted voucher refers to the education subsidy program that started with the enactment of the 2008 *Ley de Subvención Escolar Preferencial*, or SEP, and that is available only to the economically disadvantaged students. The concentration subsidy, which also started with the enactment of the SEP law, is a per-student subsidy given to schools that depends on the percentage of their students that are beneficiaries of the targeted voucher program, starting at 15% and increasing in magnitude at the 30, 45, and 60% mark. All values are real using 2011 as base year, and converted to USD using May 16 2016's exchange rate of $686.52 CLP per USD. The universal voucher's values correspond to those used for students at schools with full school shifts.

Table 3: Mean and standard deviation of studied variables.

	Year:	
	2006	2010
Variable:		
Entry	0.432	0.233
	(0.936)	(0.618)
Exit	0.567	0.356
	(1.081)	(0.845)
Tuition	14.57	15.34
	(22.94)	(22.22)
Weighted tuition	17.66	18.91
	(23.85)	(22.78)
Teaching hours per student	2.57	3.15
	(3.04)	(4.89)
Class size	23.08	21.89
	(11.45)	(11.69)
Pupil-teacher ratio	16.94	15.54
	(9.73)	(11.51)
Share of specialized teachers	0.103	0.126
	(0.167)	(0.181)
Share of female teachers	0.650	0.668
	(0.300)	(0.283)
Teachers' experience	19.22	17.98
	(8.44)	(8.50)
Share of multigrade classes	0.348	0.305
	(0.452)	(0.430)
Teaching hours per teacher	30.71	30.75
	(7.56)	(7.80)
Share of indefinite contracts	0.791	0.724
	(0.247)	(0.261)

Notes: This table shows the municipality level mean values for entry and exit, and school level mean values for the rest of the variables. Standard deviations are in parenthesis. The years shown are 2006 and 2010, two years before and two years after the reform.

Table 4: Variables with parallel pre-trends.

	Grouping:		
	all	private-voucher	public
Variable:			
Entry	✓	✓	✓
Exit	✓	✓	✓
Tuition	n.a.	-	n.a.
Weighted tuition	n.a.	✓	n.a.
Teaching hours per student	-	✓	-
Class size	-	✓	✓
Pupil-teacher ratio	-	✓	✓
Share of specialized teachers	✓	✓	✓
Share of female teachers	-	✓	✓
Teachers' experience	-	-	✓
Share of multigrade classes	✓	✓	✓
Teaching hours per teacher	✓	✓	-
Share of indefinite contracts	✓	-	✓

Notes: The check-mark symbol indicates that the variable-grouping pair shows parallel pre-trends. A variable under a particular grouping is considered to show parallel pre-trends if all of the pre-reform effects of the intensity of treatment on the variable are statistical zeros when using a 95% confidence interval.

Table 5: Entry - Difference in Differences.

	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)
A. Total number of entries				
post × intensity	0.372***	-0.049	0.288***	0.133***
	(0.099)	(0.045)	(0.085)	(0.025)
observations	3,916	3,916	3,916	3,916
R^2	0.425	0.158	0.395	0.269
B. Entries as a share				
post × intensity	0.008	0.002	0.000	0.034
	(0.008)	(0.006)	(0.022)	(0.068)
observations	3,850	3,795	2,956	894
R^2	0.237	0.11	0.161	0.118

Notes: A school enters the market in year t if it didn't exist in year $t-1$. Column (1), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of diff-in-diff regressions that use schools' data from the three years before the reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007, one year before the introduction of targeted vouchers. We report the estimated coefficient on the interaction between the dummy for the periods after the introduction of the program and the intensity of treatment variable. Panel A shows our results when measuring entries as total number of entries, while Panel B measures entries as a share of the already existing schools of the same type in the same municipality one year before. Clustered standard errors are in parentheses. *** denotes statistical significance at the 1%, ** denotes statistical significance at the 5%, and * denotes statistical significance at the 10% level.

Table 6: Exit - Difference in Differences.

	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)
A. Total number of exits				
post × intensity	0.403***	0.077	0.157**	0.170***
	(0.128)	(0.105)	(0.067)	(0.026)
observations	3,916	3,916	3,916	3,916
R^2	0.347	0.231	0.371	0.353
B. Exits as a share				
post × intensity	0.009	0.012*	0.000	0.124*
	(0.006)	(0.007)	(0.013)	(0.072)
observations	3,850	3,795	2,956	894
R^2	0.25	0.143	0.233	0.257

Notes: A school exits the market in year t if it existed in year $t-1$, but not in t. Column (1), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of diff-in-diff regressions that use schools' data from three years before the reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007, one year before the introduction of targeted vouchers. We report the estimated coefficient on the interaction between the dummy for the periods after the introduction of the program and the intensity of treatment variable. Panel A shows our results when measuring exits as total number of exits, while Panel B measures exits as a share of the already existing schools of the same type in the same municipality one year before. Clustered standard errors are in parentheses. *** denotes statistical significance at the 1%, ** denotes statistical significance at the 5%, and * denotes statistical significance at the 10% level.

Table 7: Entry - Event Study.

	Total number of entries				*Entries as a share*			
	all	public	private-voucher	purely private	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A. Pre-reform								
year × intensity								
2005	0.077	-0.081	0.021	0.138***	0.014	-0.010	0.019	0.165
	(0.206)	(0.093)	(0.176)	(0.052)	(0.017)	(0.012)	(0.046)	(0.139)
2006	0.036	0.031	-0.082	0.087*	0.018	0.001	0.001	0.062
	(0.206)	(0.093)	(0.176)	(0.052)	(0.017)	(0.012)	(0.046)	(0.139)
B. Post-reform								
year × intensity								
2008	0.045	0.017	-0.088	0.115**	0.007	0.002	0.011	0.059
	(0.206)	(0.093)	(0.176)	(0.052)	(0.017)	(0.012)	(0.046)	(0.140)
2009	-0.005	-0.088	-0.118	0.201***	0.000	-0.009	-0.008	0.085
	(0.206)	(0.093)	(0.176)	(0.052)	(0.017)	(0.012)	(0.046)	(0.141)
2010	0.561***	-0.010	0.317*	0.254***	0.016	0.002	-0.001	0.035
	(0.206)	(0.093)	(0.176)	(0.052)	(0.017)	(0.012)	(0.046)	(0.141)
2011	0.500**	-0.223**	0.450*	0.273***	0.028	-0.012	0.030	0.121
	(0.206)	(0.093)	(0.176)	(0.052)	(0.017)	(0.012)	(0.046)	(0.141)
2012	0.151	-0.048	-0.025	0.224***	0.036**	0.028**	-0.019	0.103
	(0.206)	(0.093)	(0.176)	(0.052)	(0.017)	(0.012)	(0.046)	(0.141)
2013	0.542***	-0.009	0.328*	0.222***	0.013	-0.014	0.008	0.065
	(0.206)	(0.093)	(0.176)	(0.052)	(0.017)	(0.012)	(0.046)	(0.141)
2014	0.649***	-0.174*	0.663***	0.160***	0.023	-0.014	0.014	0.074
	(0.206)	(0.093)	(0.176)	(0.052)	(0.017)	(0.012)	(0.046)	(0.141)
2015	0.838***	0.010	0.613***	0.215***	0.028	0.004	0.017	0.333**
	(0.206)	(0.093)	(0.176)	(0.052)	(0.017)	(0.012)	(0.046)	(0.141)
observations	3,916	3,916	3,916	3,916	3,850	3,795	2,956	894
R^2	0.43	0.161	0.403	0.273	0.239	0.115	0.161	0.127

Notes: A school enters the market in year t if it didn't exist in year $t-1$. Columns (1) and (5), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of event study regressions that use schools' data from three years before the enactment of the 2008 SEP reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007. We report the estimated coefficients on the interaction between the dummy for the year and the intensity of treatment variable. Columns (1) to (4) show our results when measuring entries as total number of entries, while columns (5) to (8) measures entries as a share of the already existing schools of the same type in the same municipality one year before. Panel A shows the pre-reform period, and Panel B does so for the post-reform period. Clustered standard errors are in parentheses. *** denotes statistical significance at 1%, ** denotes statistical significance at 5%, and * denotes statistical significance at 10%.

Table 8: Exit - Event Study.

	Total number of exits				*Exits as a share*			
	all	public	private-voucher	purely private	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A. Pre-reform								
year × intensity								
2005	-0.370	-0.208	0.099	-0.262***	-0.008	-0.023	0.030	-0.205
	(0.268)	(0.220)	(0.139)	(0.054)	(0.013)	(0.014)	(0.027)	(0.147)
2006	0.084	-0.071	0.175	-0.020	0.021	0.001	0.032	0.168
	(0.268)	(0.220)	(0.139)	(0.054)	(0.013)	(0.014)	(0.027)	(0.147)
B. Post-reform								
year × intensity								
2008	0.048	-0.158	0.199	0.008	-0.001	-0.009	0.018	0.096
	(0.268)	(0.220)	(0.139)	(0.054)	(0.013)	(0.014)	(0.027)	(0.148)
2009	0.352	-0.029	0.303**	0.077	0.002	0.000	0.019	0.113
	(0.268)	(0.220)	(0.139)	(0.054)	(0.013)	(0.014)	(0.027)	(0.149)
2010	0.613**	0.111	0.355**	0.147***	0.015	0.001	0.016	0.133
	(0.268)	(0.220)	(0.139)	(0.054)	(0.013)	(0.014)	(0.027)	(0.149)
2011	0.477*	0.108	0.338**	0.030	0.062***	0.051***	0.020	0.062
	(0.268)	(0.220)	(0.139)	(0.054)	(0.013)	(0.014)	(0.027)	(0.149)
2012	0.202	-0.132	0.209	0.125**	0.010	-0.004	0.043	0.106
	(0.268)	(0.220)	(0.139)	(0.054)	(0.013)	(0.014)	(0.027)	(0.149)
2013	-0.113	-0.359	0.204	0.042	-0.002	-0.017	0.024	0.073
	(0.268)	(0.220)	(0.139)	(0.054)	(0.013)	(0.014)	(0.027)	(0.149)
2014	0.664**	0.302	0.275**	0.088	0.016	0.016	0.029	0.092
	(0.268)	(0.220)	(0.139)	(0.054)	(0.013)	(0.014)	(0.027)	(0.149)
2015	0.219	0.025	0.103	0.091*	0.005	0.005	-0.009	0.218
	(0.268)	(0.220)	(0.139)	(0.054)	(0.013)	(0.014)	(0.027)	(0.149)
observations	3,916	3,916	3,916	3,916	3,850	3,795	2,956	894
R^2	0.35	0.234	0.373	0.36	0.258	0.152	0.234	0.265

Notes: A school exits the market in year t if it existed in year $t-1$, but not in t. Columns (1) and (5), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of event study regressions that use schools' data from three years before the enactment of the 2008 SEP reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007. We report the estimated coefficients on the interaction between the dummy for the year and the intensity of treatment variable. Columns (1) to (4) show our results when measuring entries as total number of entries, while columns (5) to (8) measures entries as a share of the already existing schools of the same type in the same municipality one year before. Panel A shows the pre-reform period, and Panel B does so for the post-reform period. Clustered standard errors are in parentheses. *** denotes statistical significance at 1%, ** denotes statistical significance at 5%, and * denotes statistical significance at 10%.

Table 9: Tuition - Difference in Differences.

	tuition	weighted tuition
	(1)	(2)
post × intensity	-4.591***	-8.869***
	(1.19)	(2.463)
observations	30,016	1,320,134
R^2	0.243	0.237

Notes: Tuition refers to the monthly payment that private-voucher schools charge non-beneficiaries of the targeted voucher program on top of the universal voucher. Tuitions are valued at 2015 Chilean pesos and converted to US dollars using May 16 2016's exchange rate of $686.52 CLP per USD. All results come from the estimation of diff-in-diff regressions that use private-voucher schools' data from four years before the reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007, one year before the introduction of targeted vouchers. We report the estimated coefficient on the interaction between the dummy for the periods after the introduction of the program and the intensity of treatment variable. Column (1) shows the change in tuition without any type of weighting, and Column (2) weights by the number of students in each school. Clustered standard errors are in parentheses. *** denotes statistical significance at the 1%, ** denotes statistical significance at the 5%, and * denotes statistical significance at the 10% level.

Table 10: Tuition - Event Study.

	tuition	weighted tuition
	(1)	(2)
A. Pre-reform		
year × intensity		
2005	-0.831	-1.79
	(1.446)	(2.473)
2006	-4.59**	-8.176*
	(1.938)	(4.635)
B. Post-reform		
year × intensity		
2008	-2.184*	-3.901
	(1.319)	(2.737)
2009	-6.263***	-8.84***
	(1.675)	(2.893)
2010	-6.043***	-11.305***
	(1.587)	(3.081)
2011	-4.844***	-10.151***
	(1.549)	(3.015)
2012	-7.925***	-14.249***
	(1.591)	(3.277)
2013	-9.469***	-17.477***
	(1.988)	(3.726)
2014	-6.861***	-15.351***
	(2.106)	(3.916)
2015	-7.925***	-16.488***
	(2.072)	(4.12)
observations	30,016	1,320,134
R^2	0.243	0.238

Notes: Tuition refers to the monthly payment that private-voucher schools charge non-beneficiaries of the targeted voucher program on top of the universal voucher. Tuitions are valued at 2015 Chilean pesos and converted to US dollars using May 16 2016's exchange rate of $686.52 CLP per USD. Columns (1) and (5), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of event study regressions that use schools' data from three years before the enactment of the 2008 SEP reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007. We report the estimated coefficients on the interaction between the dummy for the year and the intensity of treatment variable. Column (1) shows the change in tuition without any type of weighting, and column (2) weights by the number of students in each school. Panel A shows the pre-reform period, and Panel B does so for the post-reform period. Clustered standard errors are in parentheses. *** denotes statistical significance at 1%, ** denotes statistical significance at 5%, and * denotes statistical significance at 10%.

Table 11: Teaching Hours per Student - Difference in Differences.

	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)
post × intensity	1.955***	1.664***	1.258***	0.051
	(0.177)	(0.241)	(0.193)	(0.953)
observations	103,618	59,890	38,574	5,154
R^2	0.147	0.164	0.115	0.074

Notes: Teaching hours per student adds the weekly class hours and divides them by the amount of students. Column (1), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of diff-in-diff regressions that use schools' data from four years before the reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007, one year before the introduction of targeted vouchers. We report the estimated coefficient on the interaction between the dummy for the periods after the introduction of the program and the intensity of treatment variable. Clustered standard errors are in parentheses. *** denotes statistical significance at the 1%, ** denotes statistical significance at the 5%, and * denotes statistical significance at the 10% level.

Table 12: Class Size - Difference in Differences.

	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)
post × intensity	-3.814***	-0.901**	-5.386***	3.889*
	(0.298)	(0.439)	(0.601)	(2.117)
observations	103,607	59,887	38,567	5,153
R^2	0.385	0.457	0.363	0.175

Notes: Class size refers to the average number of students per class. Column (1), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of diff-in-diff regressions that use schools' data from four years before the reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007, one year before the introduction of targeted vouchers. We report the estimated coefficient on the interaction between the dummy for the periods after the introduction of the program and the intensity of treatment variable. Clustered standard errors are in parentheses. *** denotes statistical significance at the 1%, ** denotes statistical significance at the 5%, and * denotes statistical significance at the 10% level.

Table 13: Pupil-Teacher Ratio - Difference in Differences.

	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)
post × intensity	-1.595***	0.936	-1.603***	1.141
	(0.437)	(0.593)	(0.542)	(2.809)
observations	103,534	59,842	38,552	5,140
R^2	0.162	0.202	0.191	0.054

Notes: The pupil-teacher ratio is obtain by dividing the count of students with the count of teachers. Column (1), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of diff-in-diff regressions that use schools' data from four years before the reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007, one year before the introduction of targeted vouchers. We report the estimated coefficient on the interaction between the dummy for the periods after the introduction of the program and the intensity of treatment variable. Clustered standard errors are in parentheses. *** denotes statistical significance at the 1%, ** denotes statistical significance at the 5%, and * denotes statistical significance at the 10% level.

Table 14: Teaching Hours per Student - Event Study.

	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)
A. Pre-reform				
year × intensity				
2004	-0.879***	-0.744***	-0.297	-3.416
	(0.165)	(0.181)	(0.204)	(2.652)
2005	-0.463***	-0.503***	-0.114	0.524
	(0.121)	(0.176)	(0.172)	(0.922)
2006	-0.394***	-0.350***	-0.293	-0.697
	(0.106)	(0.130)	(0.200)	(0.520)
B. Post-reform				
year × intensity				
2008	0.301***	0.311**	0.182	-0.043
	(0.101)	(0.140)	(0.113)	(0.652)
2009	0.886***	0.735**	0.857***	-1.184*
	(0.173)	(0.315)	(0.305)	(0.630)
2010	1.208***	0.947**	0.732***	-1.095**
	(0.226)	(0.425)	(0.248)	(0.523)
2011	1.215***	1.149***	0.740***	-0.296
	(0.226)	(0.315)	(0.279)	(0.675)
2012	1.897***	1.537***	1.584***	-0.442
	(0.216)	(0.309)	(0.280)	(0.685)
2013	2.013***	1.875***	1.135***	-1.757**
	(0.255)	(0.346)	(0.230)	(0.883)
2014	2.312***	1.883***	1.576***	-1.268*
	(0.262)	(0.345)	(0.306)	(0.710)
2015	2.478***	1.806***	1.937***	-1.179
	(0.262)	(0.338)	(0.323)	(0.995)
observations	103,618	59,890	38,574	5,154
R^2	0.148	0.165	0.116	0.076

Notes: Teaching hours per student adds the weekly class hours and divides them by the amount of students. Column (1), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of event study regressions that use schools' data from three years before the enactment of the 2008 SEP reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007. We report the estimated coefficients on the interaction between the dummy for the year and the intensity of treatment variable. Panel A shows the pre-reform period, and Panel B does so for the post-reform period. Clustered standard errors are in parentheses. *** denotes statistical significance at 1%, ** denotes statistical significance at 5%, and * denotes statistical significance at 10%.

Table 15: Class Size - Event Study.

	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)
A. Pre-reform				
year × intensity				
2004	1.792***	0.877	0.754	0.418
	(0.416)	(0.592)	(0.661)	(2.209)
2005	0.996***	0.445	0.587	-2.018
	(0.371)	(0.552)	(0.574)	(2.390)
2006	0.740***	0.437	0.419	0.328
	(0.264)	(0.343)	(0.380)	(2.153)
B. Post-reform				
year × intensity				
2008	-0.271	0.211	-0.475	2.403
	(0.169)	(0.247)	(0.396)	(1.560)
2009	-1.259***	0.005	-1.419**	8.070**
	(0.280)	(0.387)	(0.581)	(3.805)
2010	-1.246***	0.334	-1.872***	2.134
	(0.323)	(0.454)	(0.695)	(2.046)
2011	-3.266***	-0.668	-4.522***	1.814
	(0.407)	(0.512)	(0.786)	(2.467)
2012	-2.559***	0.327	-5.395***	1.218
	(0.395)	(0.527)	(0.709)	(2.531)
2013	-5.597***	-1.894***	-9.353***	3.515
	(0.445)	(0.598)	(0.821)	(2.386)
2014	-5.056***	-1.342**	-8.908***	4.173*
	(0.448)	(0.609)	(0.852)	(2.496)
2015	-4.604***	-0.802	-8.188***	5.081*
	(0.456)	(0.646)	(0.841)	(2.602)
observations	103,607	59,887	38,567	5,153
R^2	0.386	0.457	0.365	0.175

Notes: Class size refers to the average number of students per class. Column (1), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of event study regressions that use schools' data from three years before the enactment of the 2008 SEP reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007. We report the estimated coefficients on the interaction between the dummy for the year and the intensity of treatment variable. Panel A shows the pre-reform period, and Panel B does so for the post-reform period. Clustered standard errors are in parentheses. *** denotes statistical significance at 1%, ** denotes statistical significance at 5%, and * denotes statistical significance at 10%.

Table 16: Pupil-Teacher Ratio - Event Study.

	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)
A. Pre-reform				
year × intensity				
2004	-0.048	-0.565	-0.802	-0.779
	(0.670)	(1.220)	(0.829)	(2.516)
2005	0.665**	0.096	0.053	-1.263
	(0.328)	(0.643)	(0.736)	(1.563)
2006	0.108	-0.427	-0.404	0.980
	(0.219)	(0.462)	(0.620)	(1.276)
B. Post-reform				
year × intensity				
2008	-0.607**	-0.320	-1.333***	1.497
	(0.236)	(0.387)	(0.362)	(1.148)
2009	-2.443***	-3.320*	-0.703	-0.074
	(0.801)	(1.807)	(1.081)	(1.731)
2010	-1.577***	-1.500	-1.384**	-0.476
	(0.517)	(0.993)	(0.681)	(1.624)
2011	-1.068	0.933	-1.179*	-9.949
	(0.751)	(0.739)	(0.601)	(12.481)
2012	-1.215**	1.679***	-3.239***	7.271*
	(0.485)	(0.640)	(0.862)	(3.647)
2013	-0.458	2.106***	-2.035***	5.076*
	(0.459)	(0.609)	(0.720)	(2.758)
2014	-0.331	3.031***	-2.479***	14.692
	(0.469)	(0.604)	(0.688)	(10.650)
2015	-3.628***	3.687***	-2.795***	-13.467
	(1.271)	(0.622)	(0.755)	(17.955)
observations	103,534	59,842	38,552	5,140
R^2	0.163	0.203	0.191	0.055

Notes: The pupil-teacher ratio is obtain by dividing the count of students with the count of teachers. Column (1), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of event study regressions that use schools' data from three years before the enactment of the 2008 SEP reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007. We report the estimated coefficients on the interaction between the dummy for the year and the intensity of treatment variable. Panel A shows the pre-reform period, and Panel B does so for the post-reform period. Clustered standard errors are in parentheses. *** denotes statistical significance at 1%, ** denotes statistical significance at 5%, and * denotes statistical significance at 10%.

Table 17: Share of Specialized Teachers - Difference in Differences.

	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)
post × intensity	-0.030***	-0.069***	-0.040***	0.005
	(0.011)	(0.015)	(0.014)	(0.056)
observations	103,577	59,869	38,558	5,150
R^2	0.475	0.507	0.466	0.335

Notes: The share of specialized teachers is the share of teachers with a degree in education. Column (1), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of diff-in-diff regressions that use schools' data from four years before the reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007, one year before the introduction of targeted vouchers. We report the estimated coefficient on the interaction between the dummy for the periods after the introduction of the program and the intensity of treatment variable. Clustered standard errors are in parentheses. *** denotes statistical significance at the 1%, ** denotes statistical significance at the 5%, and * denotes statistical significance at the 10% level.

Table 18: Share of Female Teachers - Difference in Differences.

	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)
post × intensity	0.057***	0.042**	0.053***	-0.042
	(0.012)	(0.017)	(0.016)	(0.034)
observations	103,618	59,890	38,574	5,154
R^2	0.134	0.153	0.102	0.107

Notes: Share of teachers in the school which are female. Column (1), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of diff-in-diff regressions that use schools' data from four years before the reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007, one year before the introduction of targeted vouchers. We report the estimated coefficient on the interaction between the dummy for the periods after the introduction of the program and the intensity of treatment variable. Clustered standard errors are in parentheses. *** denotes statistical significance at the 1%, ** denotes statistical significance at the 5%, and * denotes statistical significance at the 10% level.

Table 19: Teachers' Experience - Difference in Differences.

	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)
post × intensity	0.195	3.077***	1.627***	1.57
	(0.723)	(0.913)	(0.605)	(1.049)
observations	103,618	59,890	38,574	5,154
R^2	0.168	0.229	0.181	0.184

Notes: Teachers' experience refers to the mean teacher's experience measured in years at school level. Column (1), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of diff-in-diff regressions that use schools' data from four years before the reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007, one year before the introduction of targeted vouchers. We report the estimated coefficient on the interaction between the dummy for the periods after the introduction of the program and the intensity of treatment variable. Clustered standard errors are in parentheses. *** denotes statistical significance at the 1%, ** denotes statistical significance at the 5%, and * denotes statistical significance at the 10% level.

Table 20: Share of Multigrade Classes - Difference in Differences.

	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)
post × intensity	-0.224***	-0.165***	-0.277***	-0.086**
	(0.019)	(0.025)	(0.022)	(0.033)
observations	103,607	59,887	38,567	5,153
R^2	0.371	0.305	0.516	0.146

Notes: A class is considered multigrade if it shares the room with a different class. Column (1), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of diff-in-diff regressions that use schools' data from four years before the reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007, one year before the introduction of targeted vouchers. We report the estimated coefficient on the interaction between the dummy for the periods after the introduction of the program and the intensity of treatment variable. Clustered standard errors are in parentheses. *** denotes statistical significance at the 1%, ** denotes statistical significance at the 5%, and * denotes statistical significance at the 10% level.

Table 21: Share of Specialized Teachers - Event Study.

	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)
A. Pre-reform				
year × intensity				
2004	0.006	0.004	0.011	-0.193***
	(0.006)	(0.007)	(0.014)	(0.062)
2005	-0.001	0.001	0.002	-0.073
	(0.006)	(0.007)	(0.013)	(0.053)
2006	-0.003	-0.002	-0.001	-0.066**
	(0.004)	(0.004)	(0.008)	(0.030)
B. Post-reform				
year × intensity				
2008	-0.007	-0.005	-0.012*	-0.003
	(0.005)	(0.007)	(0.007)	(0.033)
2009	-0.014**	0.000	-0.038***	-0.017
	(0.007)	(0.010)	(0.009)	(0.047)
2010	-0.024***	-0.006	-0.044***	0.019
	(0.008)	(0.011)	(0.009)	(0.062)
2011	-0.073***	-0.129***	-0.048**	-0.157
	(0.014)	(0.019)	(0.019)	(0.107)
2012	-0.083***	-0.137***	-0.070***	-0.109
	(0.014)	(0.019)	(0.020)	(0.074)
2013	-0.028	-0.107***	-0.047	-0.101
	(0.023)	(0.029)	(0.033)	(0.097)
2014	-0.021	-0.108***	-0.030	-0.150
	(0.022)	(0.028)	(0.035)	(0.113)
2015	0.011	-0.071**	-0.009	-0.154
	(0.024)	(0.030)	(0.038)	(0.114)
observations	103,577	59,869	38,558	5,150
R^2	0.476	0.509	0.467	0.336

Notes: The share of specialized teachers is the share of teachers with a degree in education. Column (1), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of event study regressions that use schools' data from three years before the enactment of the 2008 SEP reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007. We report the estimated coefficients on the interaction between the dummy for the year and the intensity of treatment variable. Panel A shows the pre-reform period, and Panel B does so for the post-reform period. Clustered standard errors are in parentheses. *** denotes statistical significance at 1%, ** denotes statistical significance at 5%, and * denotes statistical significance at 10%.

Table 22: Share of Female Teachers - Event Study.

	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)
A. Pre-reform				
year × intensity				
2004	-0.007	-0.002	0.004	0.053
	(0.011)	(0.016)	(0.017)	(0.053)
2005	-0.001	0.002	-0.004	0.046
	(0.009)	(0.014)	(0.013)	(0.046)
2006	0.001	0.012	-0.009	0.013
	(0.007)	(0.010)	(0.011)	(0.026)
B. Post-reform				
year × intensity				
2008	0.007	0.009	0.017	0.031
	(0.008)	(0.011)	(0.010)	(0.034)
2009	0.026***	0.030**	0.033**	0.049
	(0.009)	(0.013)	(0.015)	(0.033)
2010	0.039***	0.043***	0.036**	0.014
	(0.011)	(0.016)	(0.018)	(0.041)
2011	0.053***	0.039**	0.056***	-0.147**
	(0.013)	(0.019)	(0.018)	(0.072)
2012	0.062***	0.049**	0.056**	-0.038
	(0.015)	(0.020)	(0.023)	(0.085)
2013	0.075***	0.062**	0.063***	-0.038
	(0.018)	(0.026)	(0.022)	(0.067)
2014	0.085***	0.067**	0.070***	-0.024
	(0.018)	(0.026)	(0.021)	(0.066)
2015	0.097***	0.071***	0.079***	0.018
	(0.017)	(0.025)	(0.020)	(0.065)
observations	103,618	59,890	38,574	5,154
R^2	0.134	0.153	0.103	0.108

Notes: Share of teachers in the school which are female. Column (1), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of event study regressions that use schools' data from three years before the enactment of the 2008 SEP reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007. We report the estimated coefficients on the interaction between the dummy for the year and the intensity of treatment variable. Panel A shows the pre-reform period, and Panel B does so for the post-reform period. Clustered standard errors are in parentheses. *** denotes statistical significance at 1%, ** denotes statistical significance at 5%, and * denotes statistical significance at 10%.

Table 23: Teachers' Experience - Event Study.

	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)
A. Pre-reform				
year × intensity				
2004	-2.114***	-0.523	-2.641***	-3.404
	(0.383)	(0.535)	(0.779)	(2.090)
2005	-1.069***	-0.193	-0.886	-0.985
	(0.335)	(0.443)	(0.559)	(1.054)
2006	-0.807***	-0.293	-0.861*	0.269
	(0.203)	(0.232)	(0.466)	(0.884)
B. Post-reform				
year × intensity				
2008	-0.282	1.204**	0.009	1.701
	(0.385)	(0.530)	(0.337)	(1.143)
2009	-0.418	1.751**	-0.267	0.607
	(0.511)	(0.695)	(0.596)	(1.454)
2010	-0.322	1.827**	0.248	-0.579
	(0.597)	(0.827)	(0.677)	(1.731)
2011	0.322	3.930***	0.074	-1.630
	(0.709)	(0.942)	(0.857)	(2.057)
2012	-0.416	3.379***	0.523	0.296
	(0.775)	(1.053)	(0.763)	(1.712)
2013	-1.676*	3.311***	1.256	0.820
	(0.984)	(1.240)	(0.855)	(1.793)
2014	-1.839*	3.882***	1.125	0.470
	(1.046)	(1.269)	(0.794)	(2.075)
2015	-1.925*	3.604***	1.619**	1.647
	(1.095)	(1.279)	(0.730)	(2.114)
observations	103,618	59,890	38,574	5,154
R^2	0.168	0.229	0.182	0.184

Notes: Teachers' experience refers to the mean teacher's experience measured in years at school level. Column (1), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of event study regressions that use schools' data from three years before the enactment of the 2008 SEP reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007. We report the estimated coefficients on the interaction between the dummy for the year and the intensity of treatment variable. Panel A shows the pre-reform period, and Panel B does so for the post-reform period. Clustered standard errors are in parentheses. *** denotes statistical significance at 1%, ** denotes statistical significance at 5%, and * denotes statistical significance at 10%.

Table 24: Share of Multigrade Class - Event Study.

	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)
A. Pre-reform				
year × intensity				
2004	-0.010	-0.014	-0.003	0.027
	(0.023)	(0.033)	(0.032)	(0.058)
2005	-0.023	-0.030	-0.016	-0.029
	(0.024)	(0.037)	(0.021)	(0.034)
2006	0.001	0.000	0.006	0.027
	(0.019)	(0.029)	(0.012)	(0.063)
B. Post-reform				
year × intensity				
2008	0.005	0.004	0.014	-0.063*
	(0.009)	(0.012)	(0.012)	(0.035)
2009	0.005	0.018	-0.017	-0.089**
	(0.014)	(0.021)	(0.026)	(0.041)
2010	-0.056**	-0.045	-0.039	-0.096**
	(0.023)	(0.033)	(0.030)	(0.047)
2011	-0.258***	-0.192***	-0.292***	-0.106*
	(0.030)	(0.041)	(0.040)	(0.054)
2012	-0.194***	-0.111***	-0.297***	-0.067
	(0.028)	(0.039)	(0.036)	(0.062)
2013	-0.482***	-0.359***	-0.607***	-0.088*
	(0.041)	(0.058)	(0.044)	(0.047)
2014	-0.489***	-0.402***	-0.558***	-0.070
	(0.037)	(0.053)	(0.040)	(0.049)
2015	-0.434***	-0.370***	-0.477***	-0.057
	(0.038)	(0.054)	(0.040)	(0.047)
observations	103,607	59,887	38,567	5,153
R^2	0.378	0.309	0.527	0.146

Notes: A class is considered multigrade if it shares the room with a different class. Column (1), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of event study regressions that use schools' data from three years before the enactment of the 2008 SEP reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007. We report the estimated coefficients on the interaction between the dummy for the year and the intensity of treatment variable. Panel A shows the pre-reform period, and Panel B does so for the post-reform period. Clustered standard errors are in parentheses. *** denotes statistical significance at 1%, ** denotes statistical significance at 5%, and * denotes statistical significance at 10%.

Table 25: Teaching Hours per Teacher - Difference in Differences.

	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)
post × intensity	-1.926***	-1.216*	-3.206***	-2.747*
	(0.485)	(0.718)	(0.572)	(1.616)
observations	103,534	59,842	38,552	5,140
R^2	0.290	0.307	0.295	0.166

Notes: Teaching hours per teacher adds the weekly in-class hours and divides them by the count of teachers. Column (1), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of diff-in-diff regressions that use schools' data from four years before the reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007, one year before the introduction of targeted vouchers. We report the estimated coefficient on the interaction between the dummy for the periods after the introduction of the program and the intensity of treatment variable. Clustered standard errors are in parentheses. *** denotes statistical significance at the 1%, ** denotes statistical significance at the 5%, and * denotes statistical significance at the 10% level.

Table 26: Share of Teachers with an Indefinite Contract - Difference in Differences.

	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)
post × intensity	-0.077***	0.015	0.020	-0.119**
	(0.022)	(0.026)	(0.022)	(0.055)
observations	103,618	59,890	38,574	5,154
R^2	0.213	0.326	0.158	0.170

Notes: An indefinite contract is a labor contract that does not require periodical renewal and evaluation of the teacher. Column (1), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of diff-in-diff regressions that use schools' data from four years before the reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007, one year before the introduction of targeted vouchers. We report the estimated coefficient on the interaction between the dummy for the periods after the introduction of the program and the intensity of treatment variable. Clustered standard errors are in parentheses. *** denotes statistical significance at the 1%, ** denotes statistical significance at the 5%, and * denotes statistical significance at the 10% level.

Table 27: Teaching Hours per Teacher - Event Study.

	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)
A. Pre-reform				
year × intensity				
2004	0.616	1.471**	-0.451	3.385
	(0.461)	(0.682)	(0.484)	(2.521)
2005	0.353	0.775*	-0.163	1.931
	(0.344)	(0.463)	(0.481)	(1.815)
2006	-0.203	-0.167	-0.741	1.918
	(0.231)	(0.292)	(0.519)	(1.243)
B. Post-reform				
year × intensity				
2008	0.315	0.715	-0.774*	0.139
	(0.402)	(0.630)	(0.409)	(0.945)
2009	0.532	0.752	-0.653	-1.399
	(0.413)	(0.653)	(0.545)	(1.640)
2010	0.898*	1.774**	-1.451**	-1.977
	(0.509)	(0.772)	(0.598)	(1.796)
2011	-1.708**	0.520	-4.146***	0.640
	(0.695)	(1.026)	(0.813)	(3.294)
2012	-2.309***	-0.341	-4.656***	0.441
	(0.666)	(0.999)	(0.805)	(2.791)
2013	-3.034***	-1.828	-4.715***	-1.436
	(0.722)	(1.107)	(0.823)	(2.849)
2014	-4.243***	-3.455***	-5.858***	-2.065
	(0.730)	(1.100)	(0.896)	(2.730)
2015	-4.791***	-4.121***	-6.417***	-1.285
	(0.826)	(1.248)	(0.952)	(3.481)
observations	103,534	59,842	38,552	5,140
R^2	0.292	0.310	0.298	0.167

Notes: Teaching hours per teacher adds the weekly in-class hours and divides them by the count of teachers. Column (1), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of event study regressions that use schools' data from three years before the enactment of the 2008 SEP reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007. We report the estimated coefficients on the interaction between the dummy for the year and the intensity of treatment variable. Panel A shows the pre-reform period, and Panel B does so for the post-reform period. Clustered standard errors are in parentheses. *** denotes statistical significance at 1%, ** denotes statistical significance at 5%, and * denotes statistical significance at 10%.

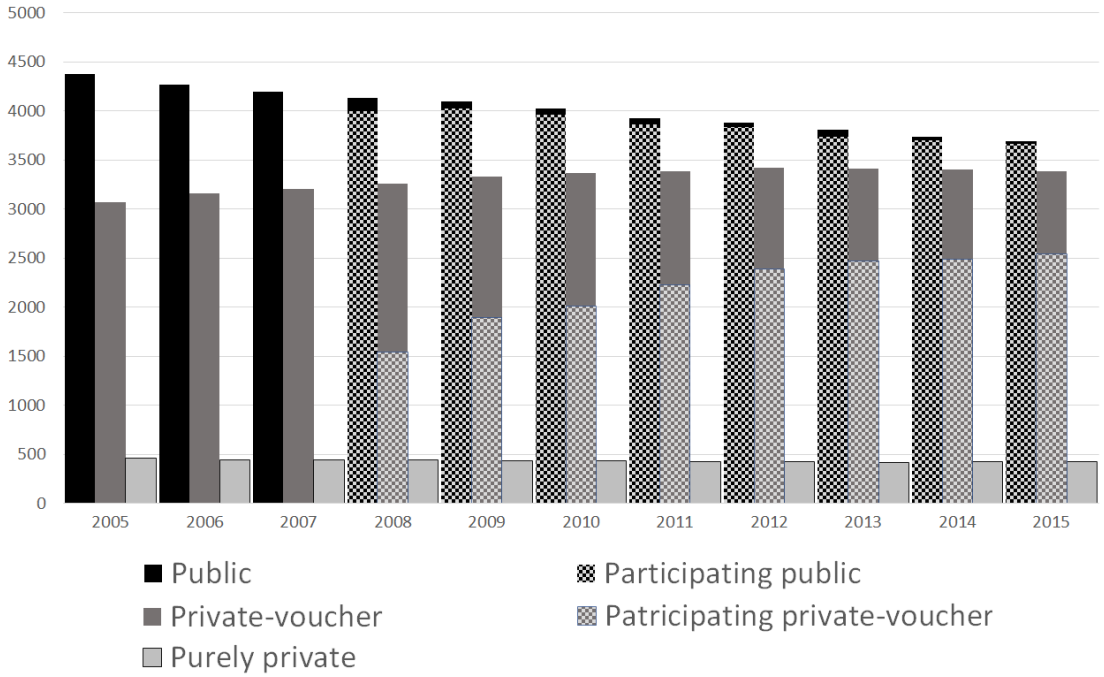
Table 28: Share of Teachers with an Indefinite Contract - Event Study.

	all	public	private-voucher	purely private
	(1)	(2)	(3)	(4)
A. Pre-reform				
year × intensity				
2004	-0.024	0.018	-0.061**	0.039
	(0.016)	(0.024)	(0.029)	(0.103)
2005	0.003	0.026*	-0.008	0.120*
	(0.011)	(0.015)	(0.019)	(0.072)
2006	-0.020**	-0.009	-0.027	0.071
	(0.008)	(0.010)	(0.017)	(0.062)
B. Post-reform				
year × intensity				
2008	-0.022*	0.020	-0.010	-0.080
	(0.012)	(0.017)	(0.016)	(0.081)
2009	-0.052***	-0.006	-0.011	-0.056
	(0.017)	(0.024)	(0.023)	(0.091)
2010	-0.068***	-0.011	-0.021	-0.115
	(0.019)	(0.027)	(0.021)	(0.096)
2011	-0.090***	0.045	-0.032	0.022
	(0.026)	(0.035)	(0.025)	(0.098)
2012	-0.098***	0.035	0.003	-0.073
	(0.027)	(0.035)	(0.027)	(0.114)
2013	-0.123***	0.036	0.027	-0.055
	(0.035)	(0.039)	(0.037)	(0.113)
2014	-0.127***	0.055	0.004	-0.098
	(0.035)	(0.040)	(0.039)	(0.106)
2015	-0.122***	0.027	0.015	-0.024
	(0.036)	(0.041)	(0.041)	(0.109)
observations	103,618	59,890	38,574	5,154
R^2	0.213	0.327	0.158	0.170

Notes: An indefinite contract is a labor contract that does not require periodical renewal and evaluation of the teacher. Column (1), "all" refers to public, private-voucher, and purely private schools. All results come from the estimation of event study regressions that use schools' data from three years before the enactment of the 2008 SEP reform and from the following eight years. The intensity of treatment variable is the municipality's share of disadvantaged students in 2007. We report the estimated coefficients on the interaction between the dummy for the year and the intensity of treatment variable. Panel A shows the pre-reform period, and Panel B does so for the post-reform period. Clustered standard errors are in parentheses. *** denotes statistical significance at 1%, ** denotes statistical significance at 5%, and * denotes statistical significance at 10%.

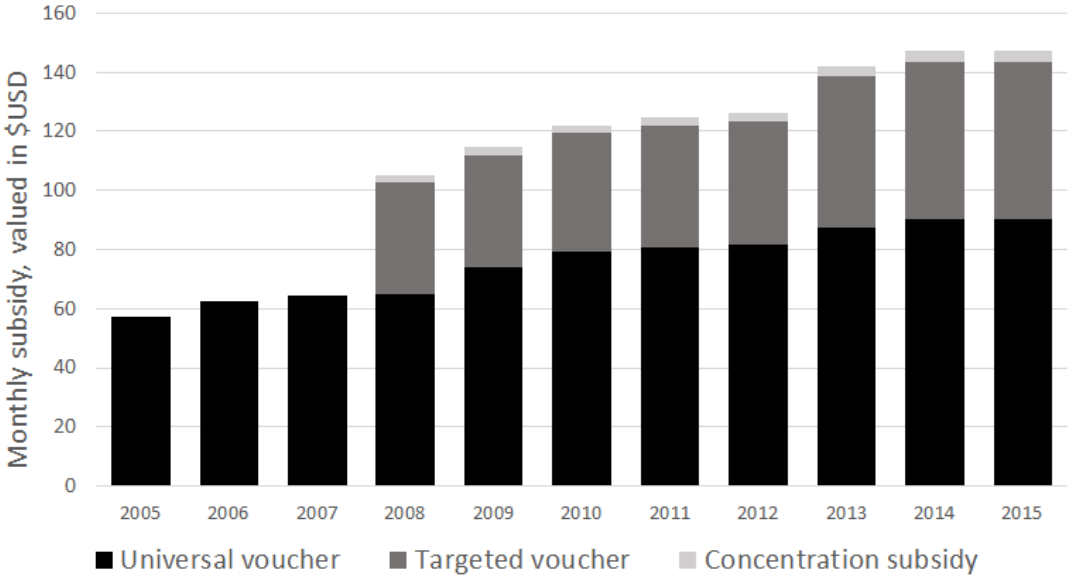
A.3 Figures

Figure 1: Yearly basic school market by type and participation status.



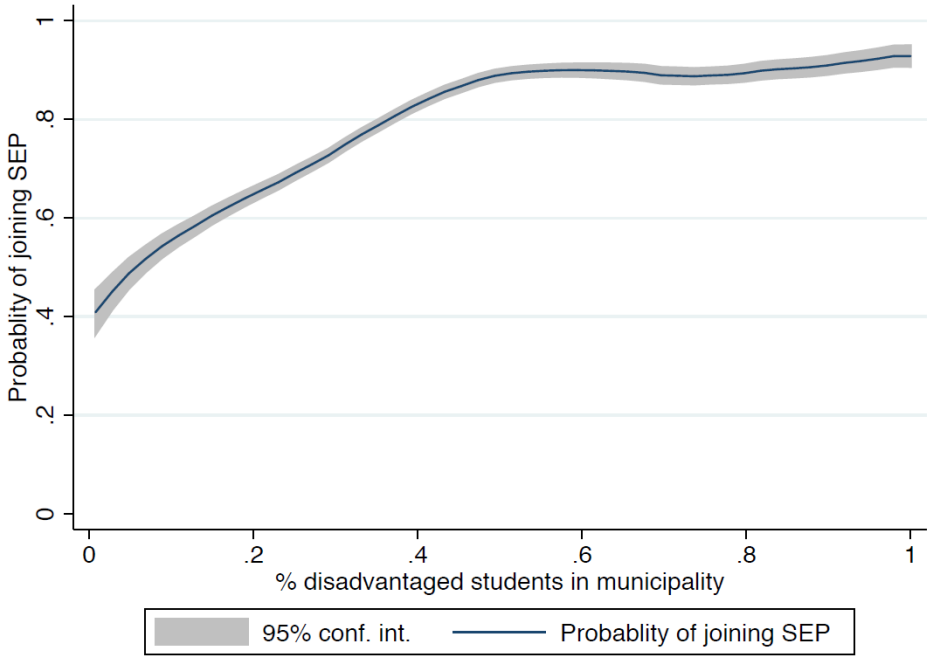
Notes: Public schools are publicly run and funded by vouchers, private-voucher schools are privately run and funded by vouchers and fees, the purely private schools are privately run, funded by fees and usually reserved for the richest portion of the population. Participation is defined as having at least one beneficiary of the targeted voucher program. The targeted voucher program was established in 2008 as part of the *Ley de Subvención Escolar*, or SEP law.

Figure 2: Size of the Vouchers for Students in 1st-4th Grades, by Category and Year



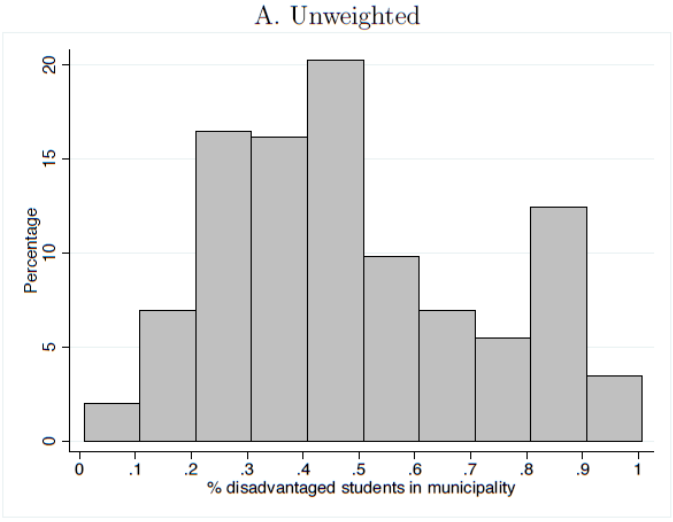
Notes: The universal voucher refers to the education subsidy program that started in 1980 and that is available to every Chilean student. The targeted voucher refers to the education subsidy program that started with the enactment of the 2008 *Ley de Subvención Escolar Preferencial*, or SEP, and that is available only to the economically disadvantaged students. The concentration subsidy, which also started with the enactment of the SEP law, is a per-student subsidy given to schools that depends on the percentage of their students that are beneficiaries of the targeted voucher program, starting at 15% and increasing in magnitude at the 30, 45, and 60% mark. All values are real using 2011 as base year, and converted to USD using May 16 2016's exchange rate of $686.52 CLP per USD. The universal voucher's values correspond to those used for students at schools with full school shifts. The concentration subsidy values correspond to those given to schools with 15–30% of their students as beneficiaries of the program.

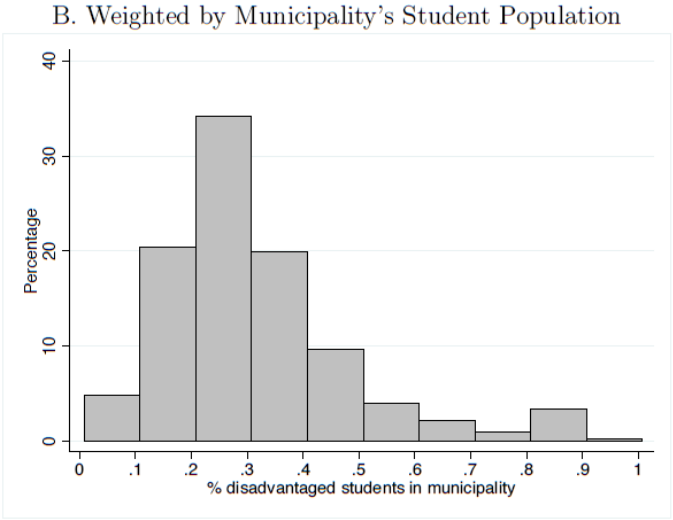
Figure 3: Probability that a School Joins the Targeted Voucher Program, by Municipality's Share of Disadvantaged Students



Notes: This figure displays a nonparametric estimation of the probability that a school joins the targeted voucher reform (SEP) in the first year of its implementation (2008), with respect to the percentage of disadvantaged students in the municipality one year before the introduction of the targeted voucher reform (2007).

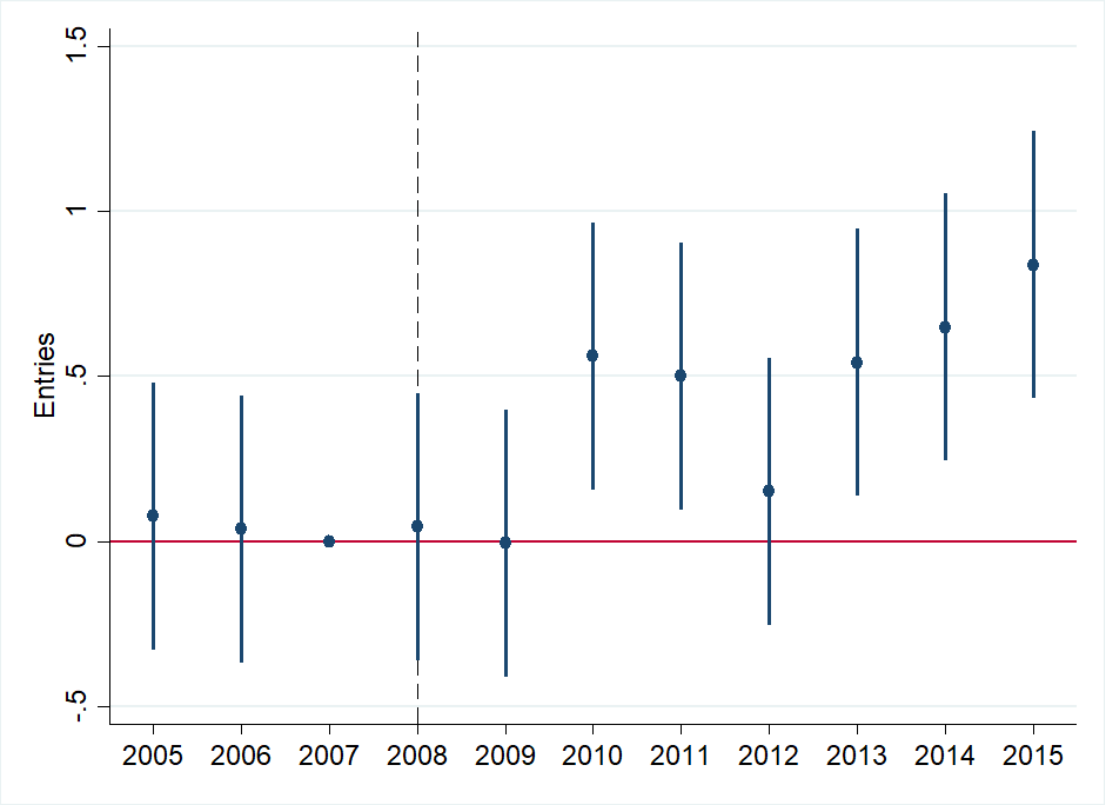
Figure 4: Distribution of Municipalities According to their Share of Disadvantaged Students Before the Reform





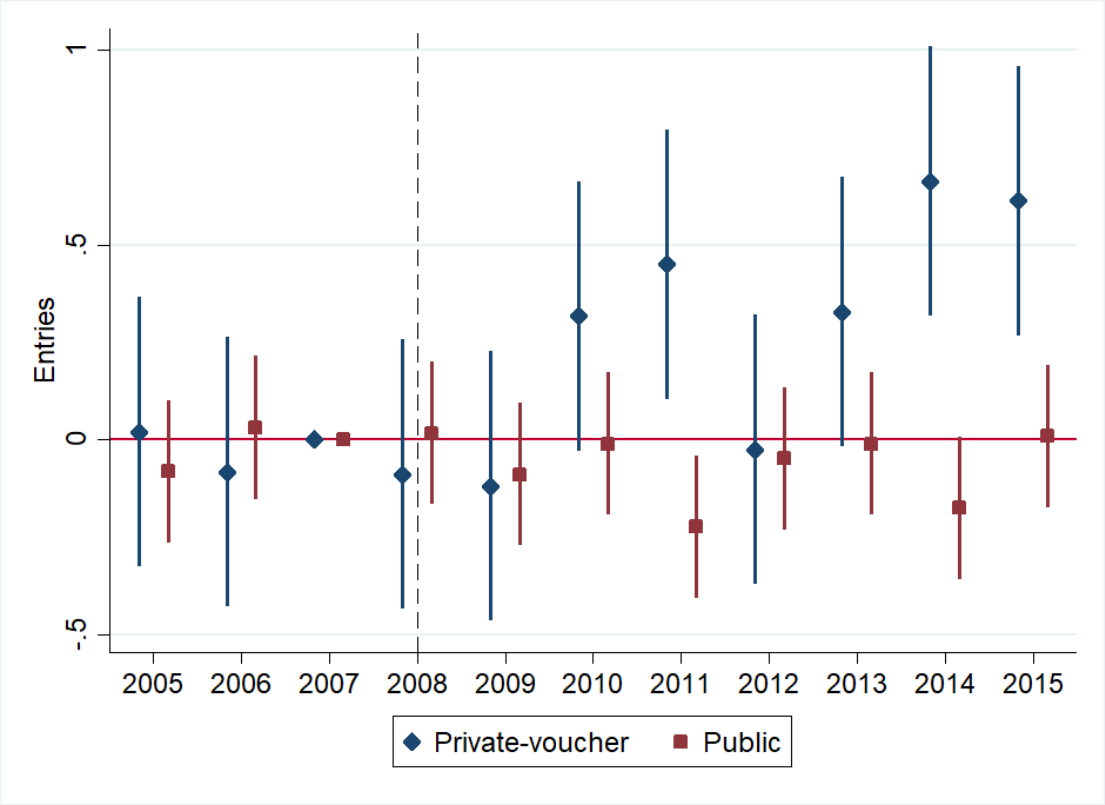
Notes: Panels A and B display histograms for the distribution of municipalities according to their share of disadvantaged students one year before the introduction of the targeted voucher reform (2007). Panel A displays the distribution at the municipality level, and Panel B presents the distribution weighted by each municipality's population of 4th grade students in the first year of the program (2008).

Figure 5: Entry to the education market. All schools.



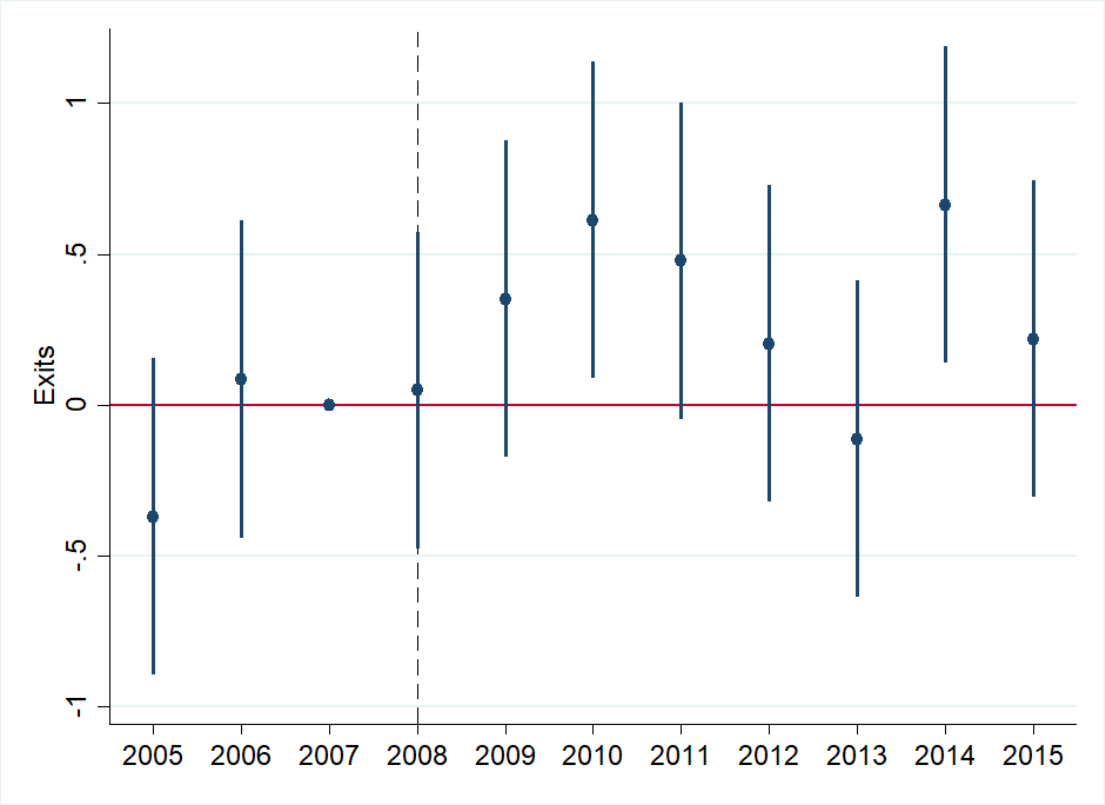
Notes: A school enters the market in year t if it didn't exist in year $t-1$. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 6: Entry to the education market. Private-voucher and public schools.



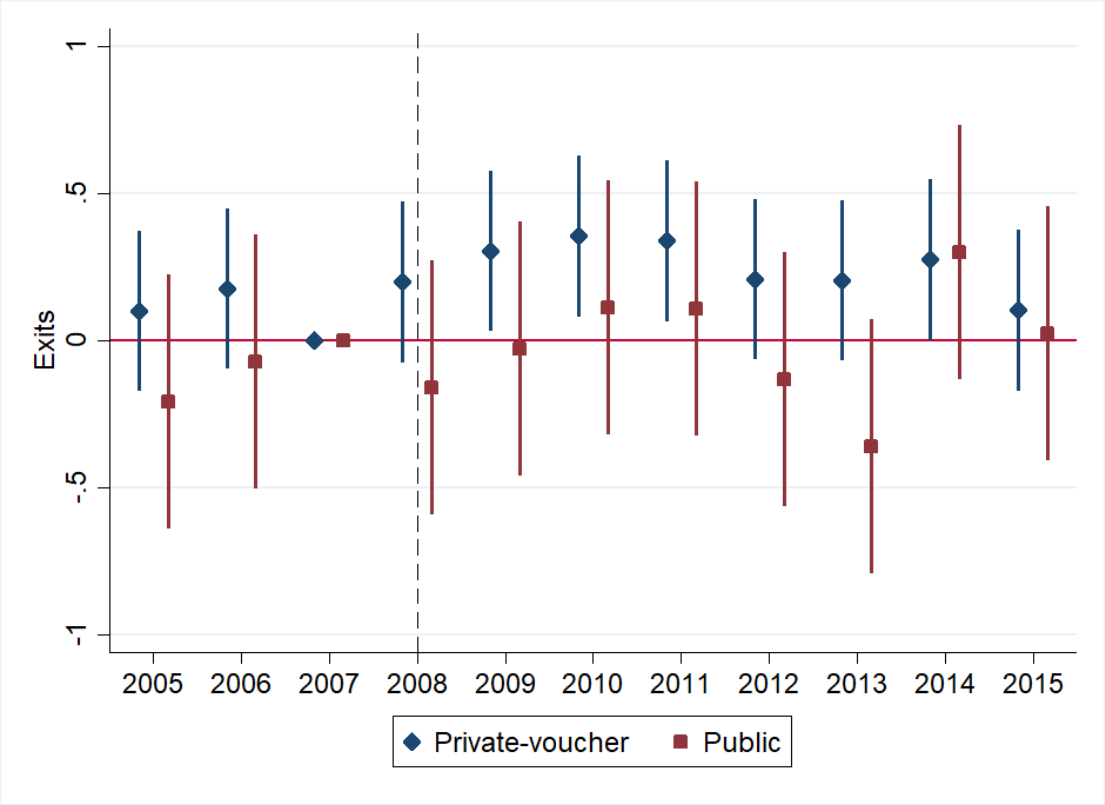
Notes: A school enters the market in year t if it didn't exist in year $t-1$. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 7: Exit from the education market. All schools.



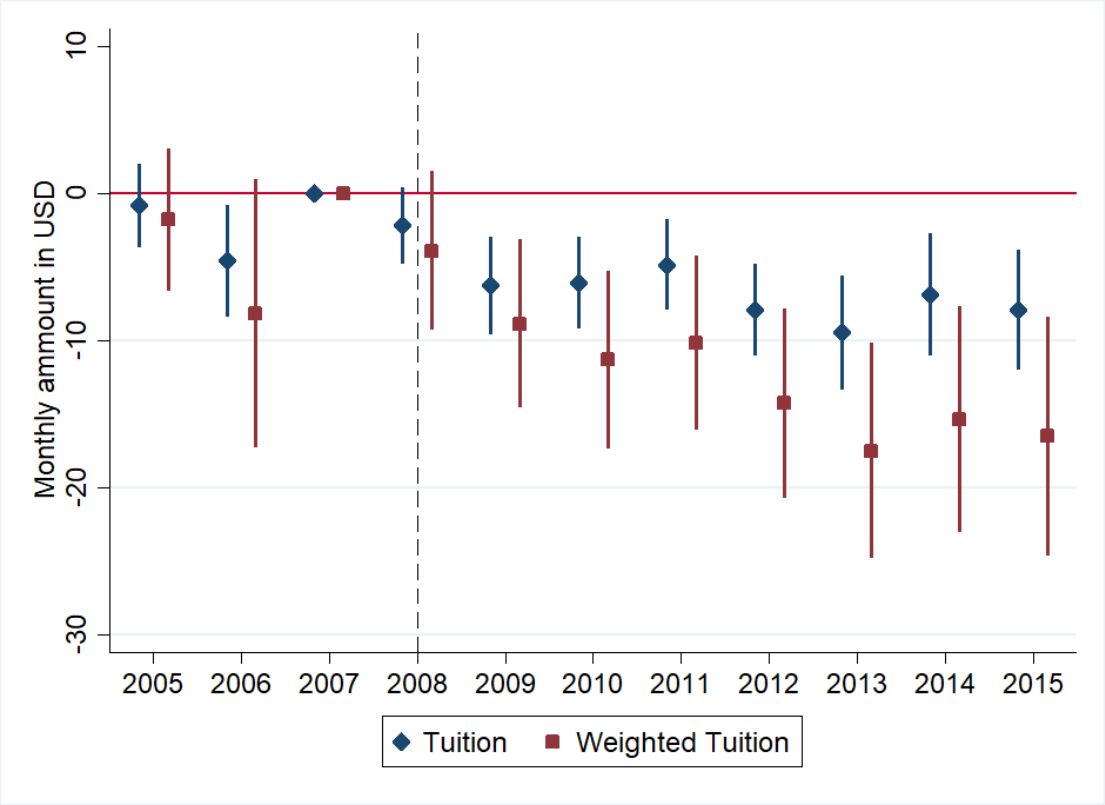
Notes: A school exits the market in year t if it existed in year $t-1$, but not in t. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 8: Exit from the education market. Private-voucher and public schools.



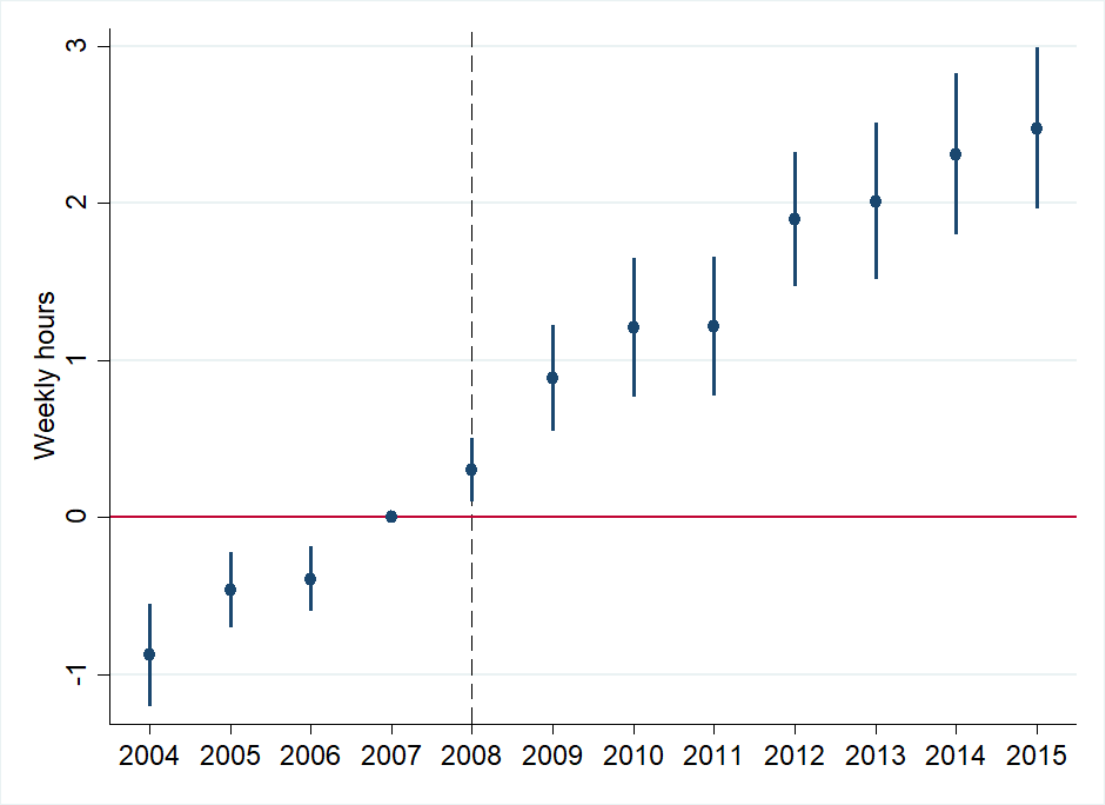
Notes: A school exits the market in year t if it existed in year $t-1$, but not in t. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 9: Tuition. Private-voucher schools.



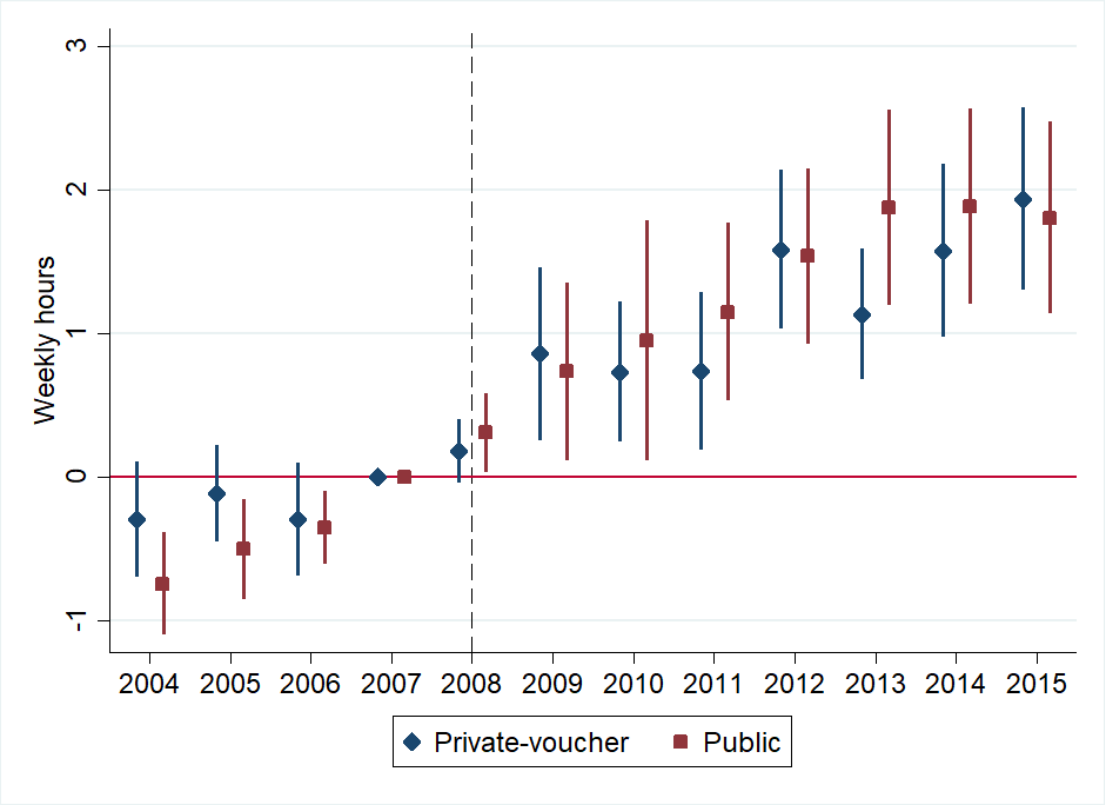
Notes: Tuition refers to the monthly payment that private-voucher schools charge non-beneficiaries of the targeted voucher program on top of the universal voucher. Tuitions are valued at 2015 Chilean pesos and converted to US dollars using May 16 2016's exchange rate of $686.52 CLP per USD. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 10: Weekly teaching hours per student. All schools.



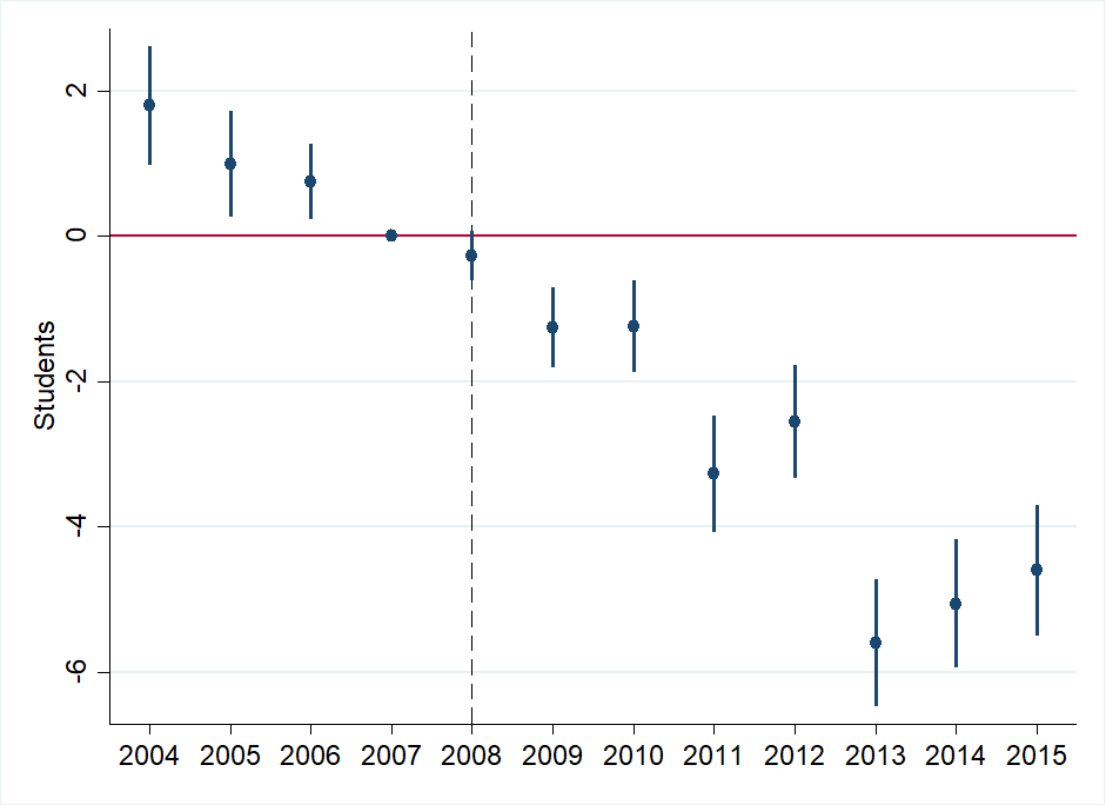
Notes: Teaching hours per student adds the weekly class hours and divides them by the amount of students. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 11: Weekly teaching hours per student. Private-voucher and public schools.



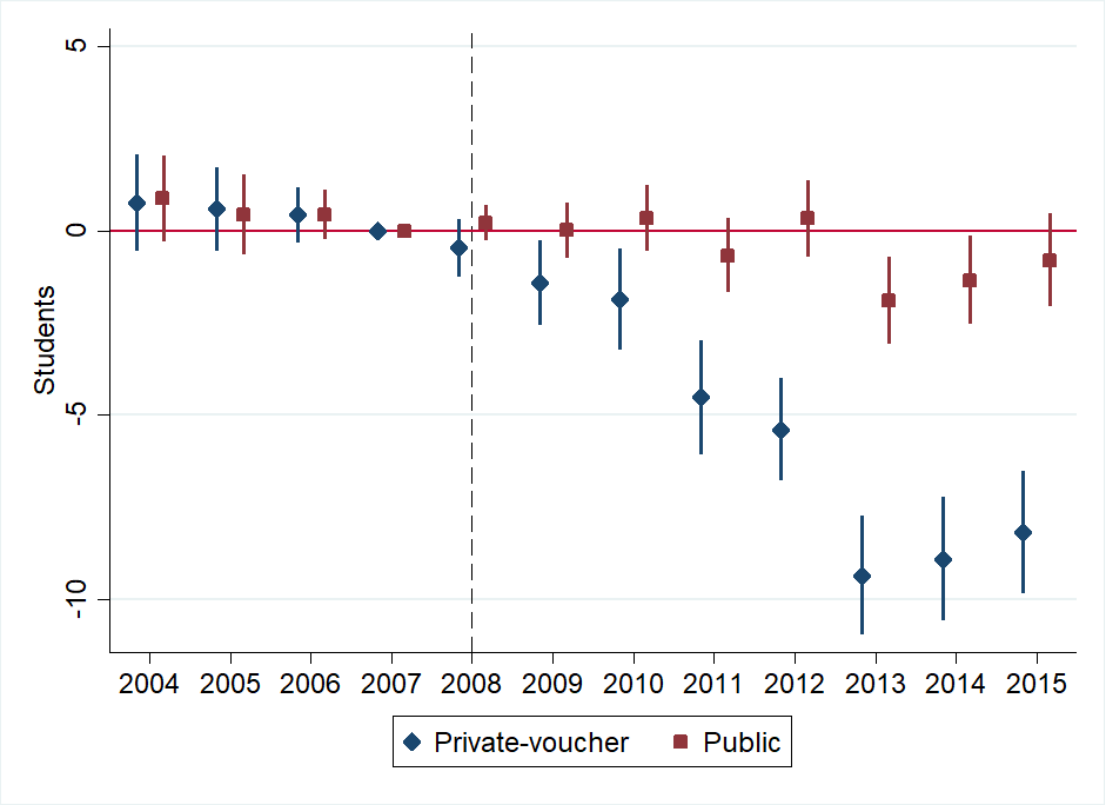
Notes: Teaching hours per student adds the weekly class hours and divides them by the amount of students. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 12: Class size. All schools.



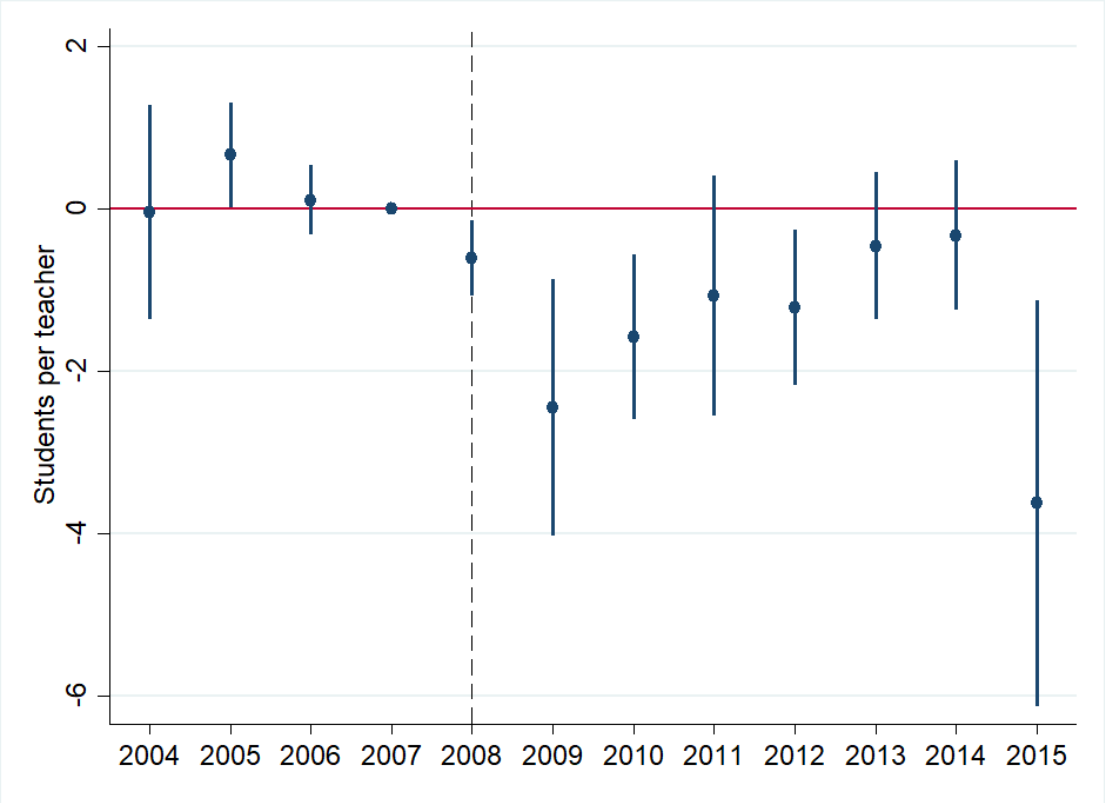
Notes: Class size refers to the average number of students per class. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 13: Class size. Private-voucher and public schools.



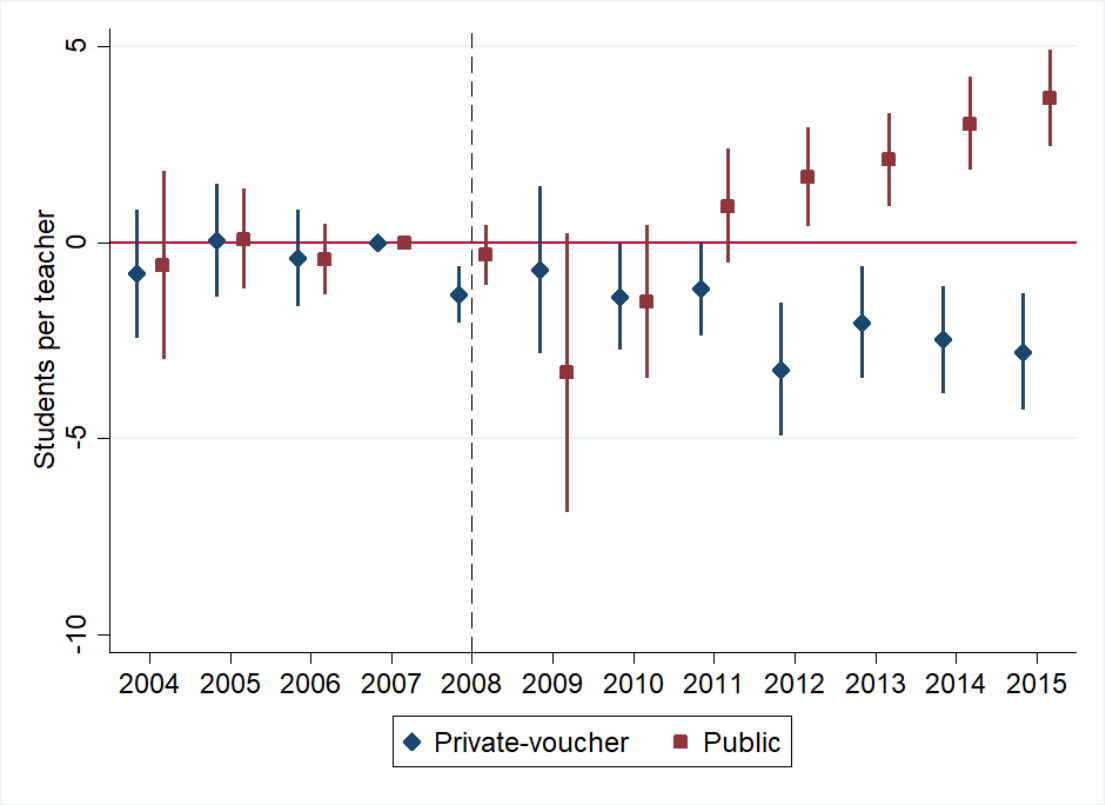
Notes: Class size refers to the average number of students per class. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 14: Pupil-teacher ratio. All schools.



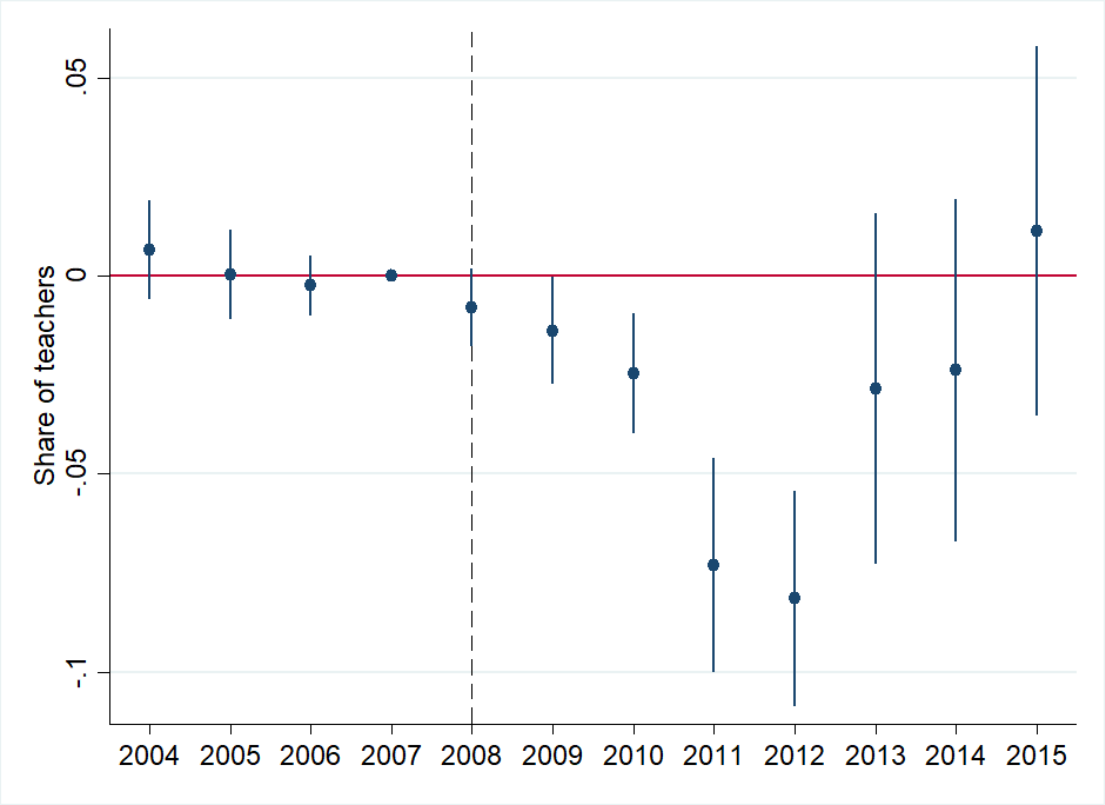
Notes: The pupil-teacher ratio is obtain by dividing the count of students with the count of teachers. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 15: Pupil-teacher ratio. Private-voucher and public schools.



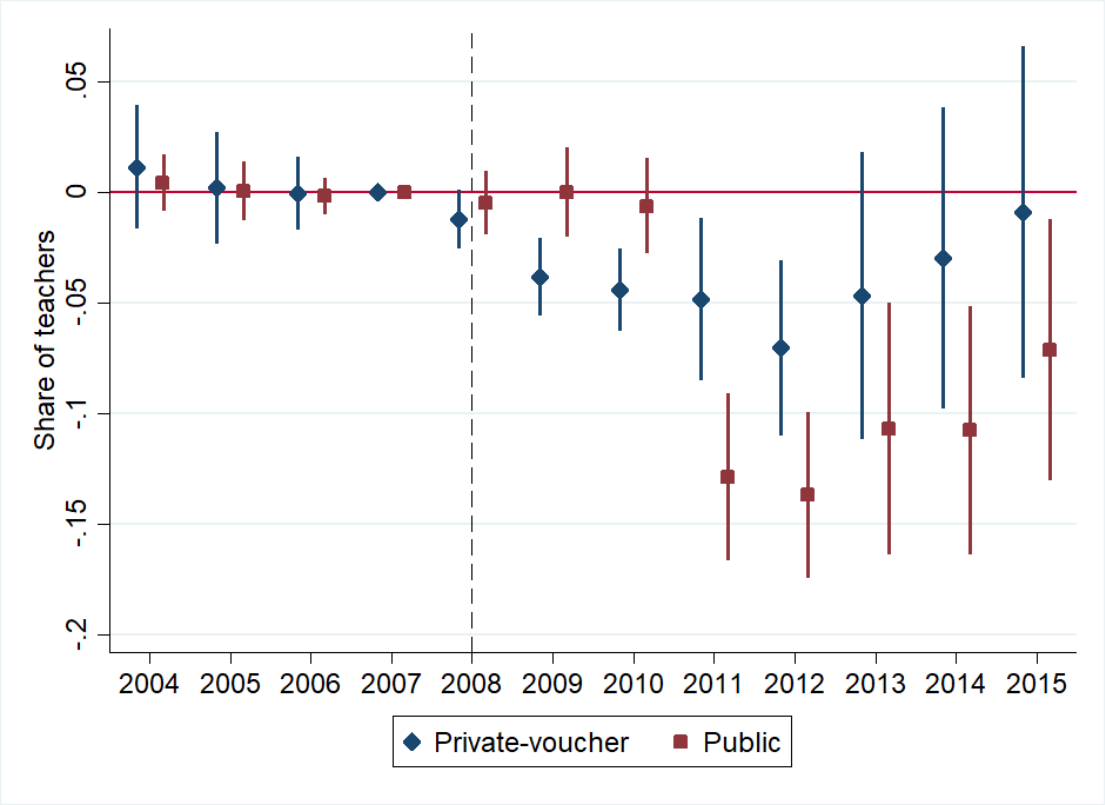
Notes: The pupil-teacher ratio is obtain by dividing the count of students with the count of teachers. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 16: Share of specialized teachers. All schools.



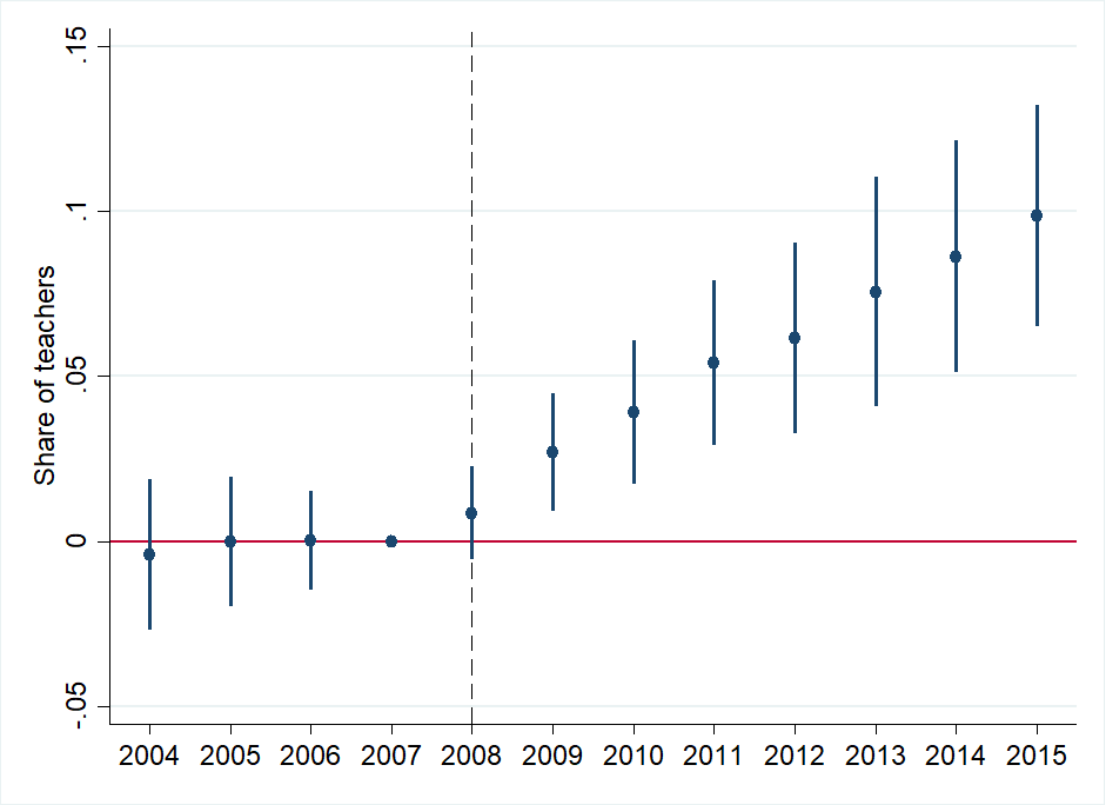
Notes: The share of specialized teachers is the share of teachers with a degree in education. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 17: Share of specialized teachers. Private-voucher and public schools.



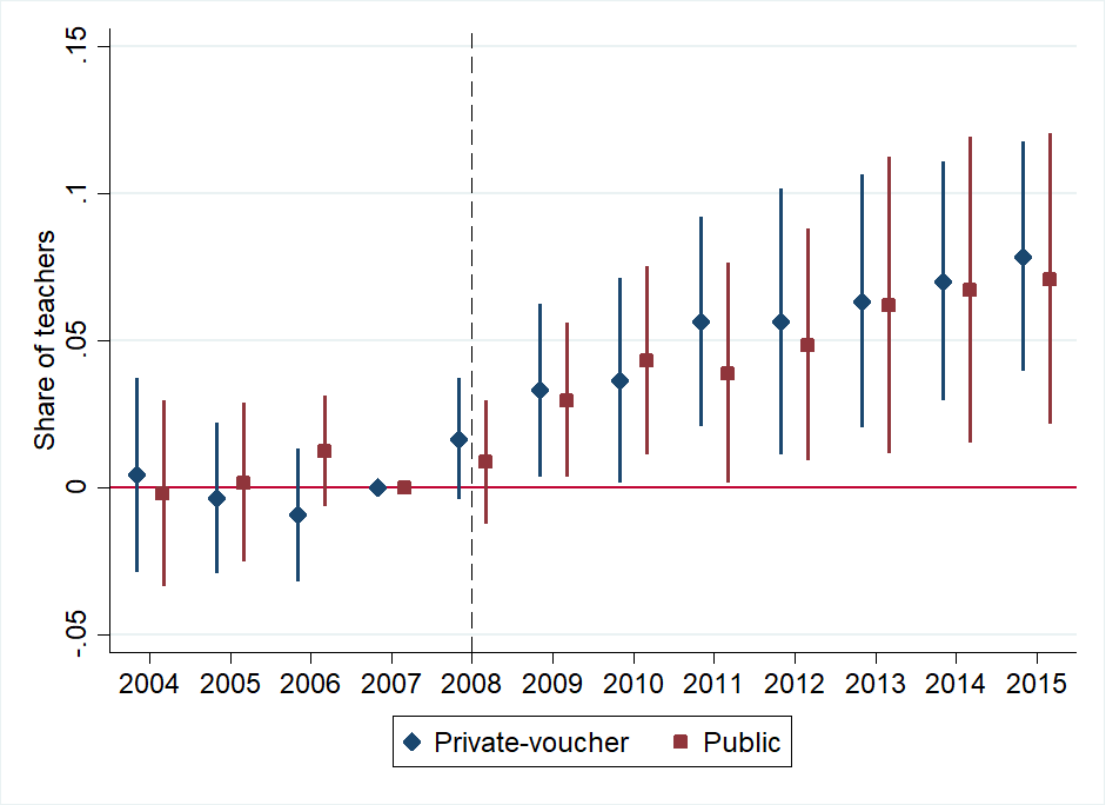
Notes: The share of specialized teachers is the share of teachers with a degree in education. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 18: Share of female teachers. All schools.



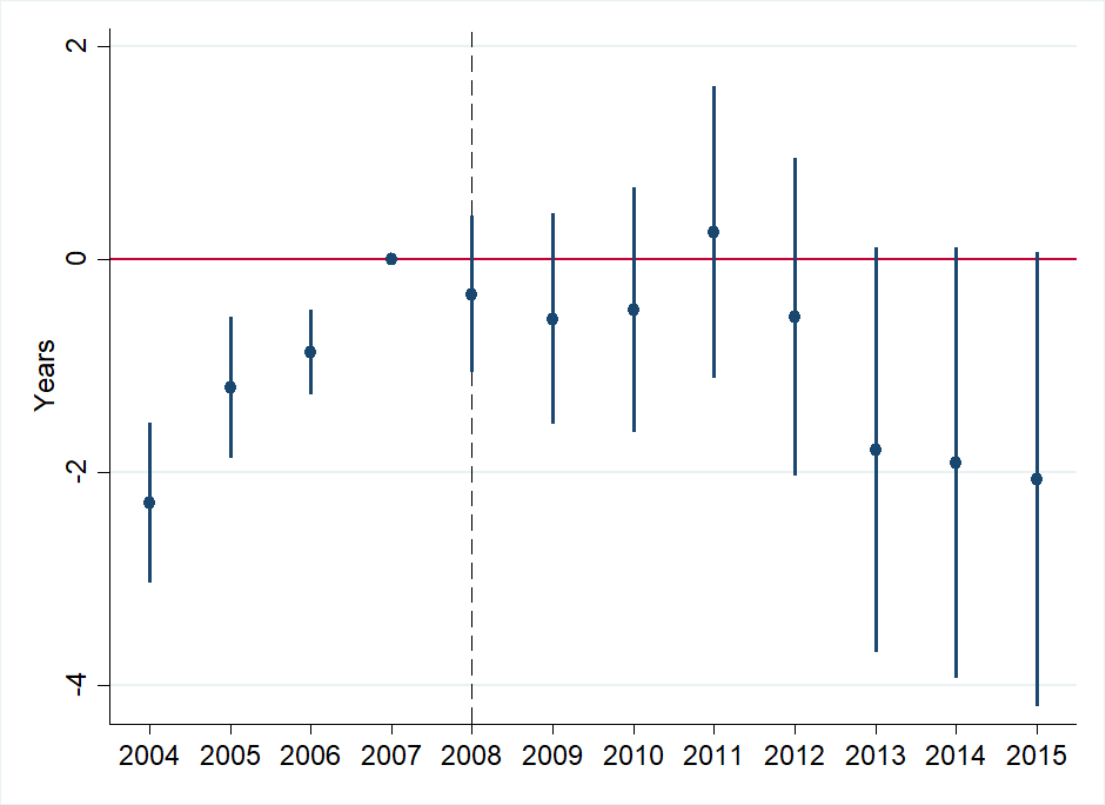
Notes: Share of teachers in the school which are female. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 19: Share of female teachers. Private-voucher and public schools.



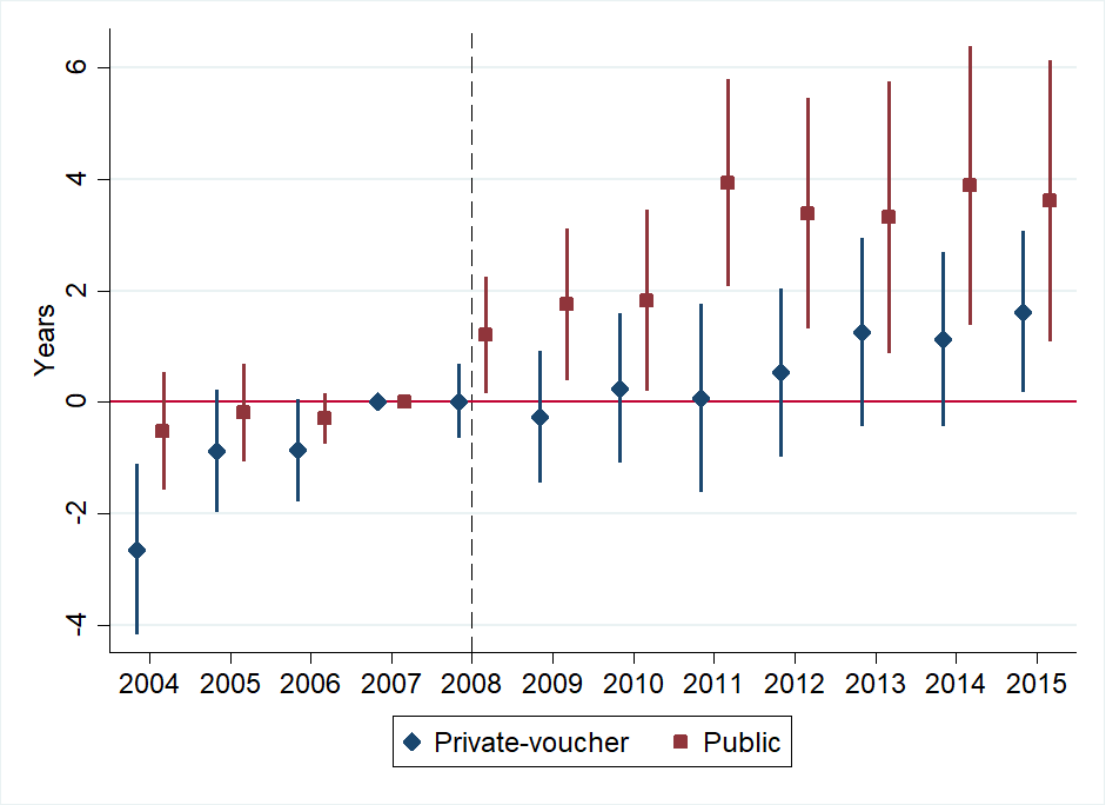
Notes: Share of teachers in the school which are female. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 20: Teachers' mean experience. All schools.



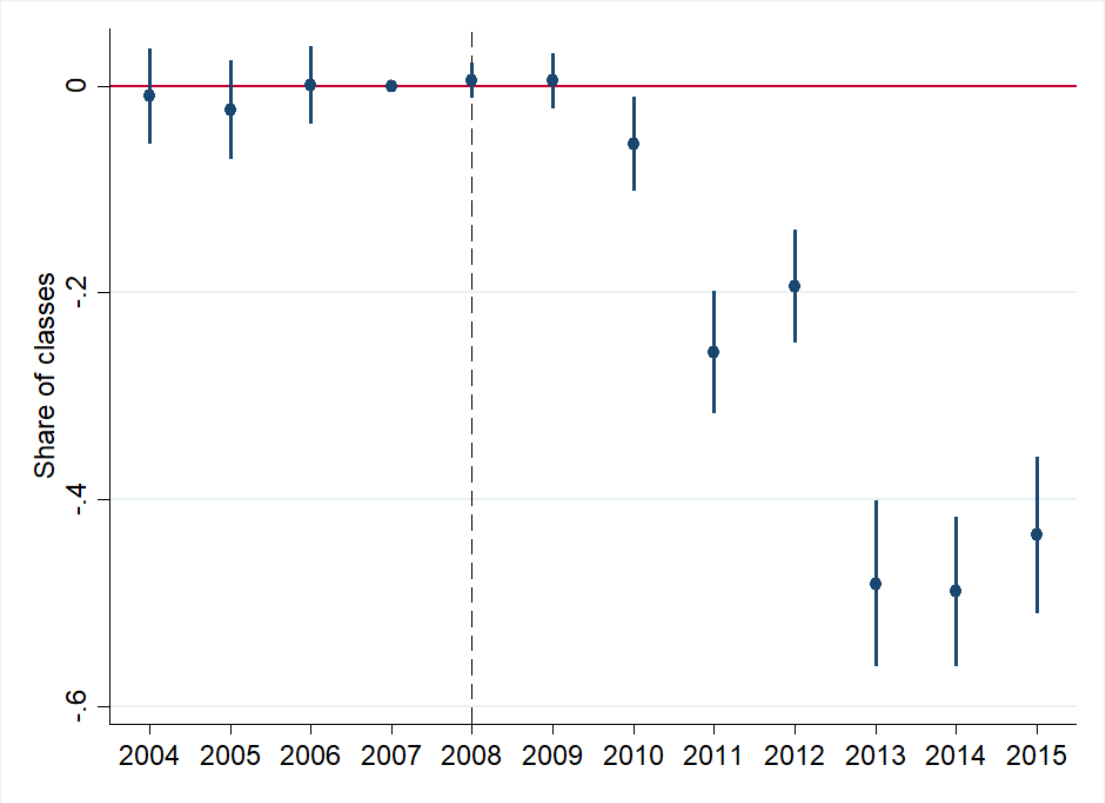
Notes: Teachers' experience refers to the mean teacher's experience measured in years at school level. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 21: Teachers' mean experience. Private-voucher and public schools.



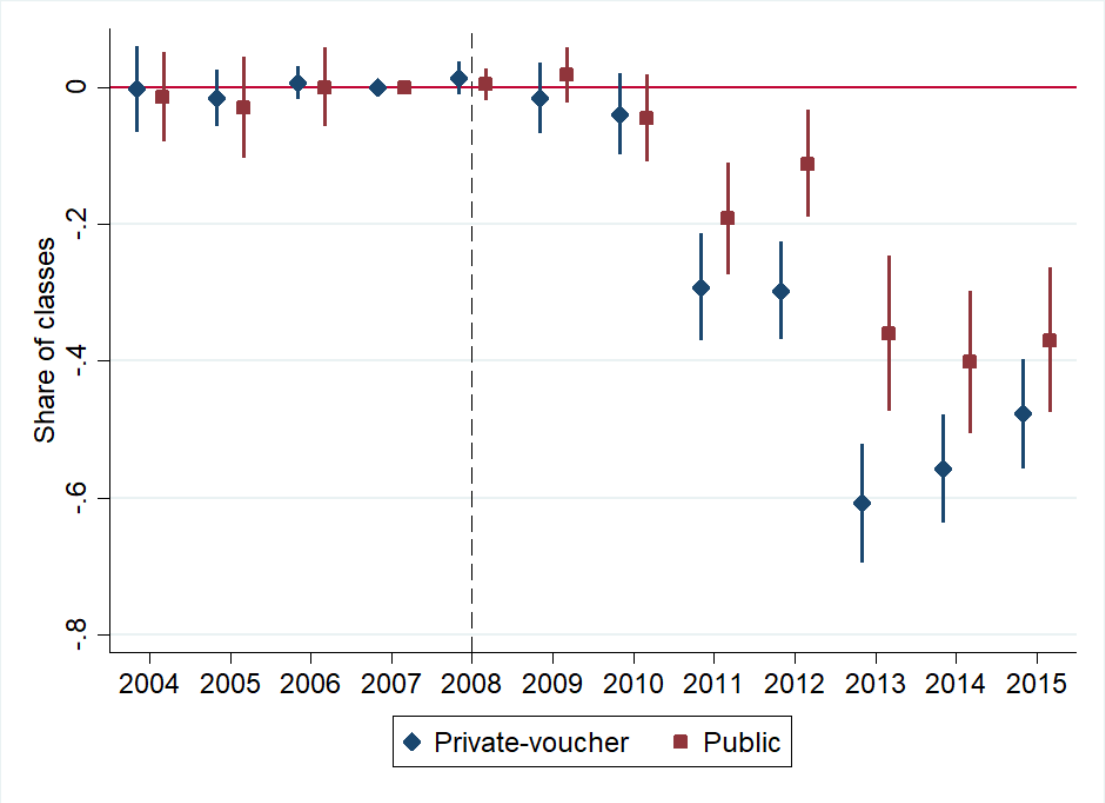
Notes: Teachers' experience refers to the mean teacher's experience measured in years at school level. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 22: Share for multigrade classes. All schools.



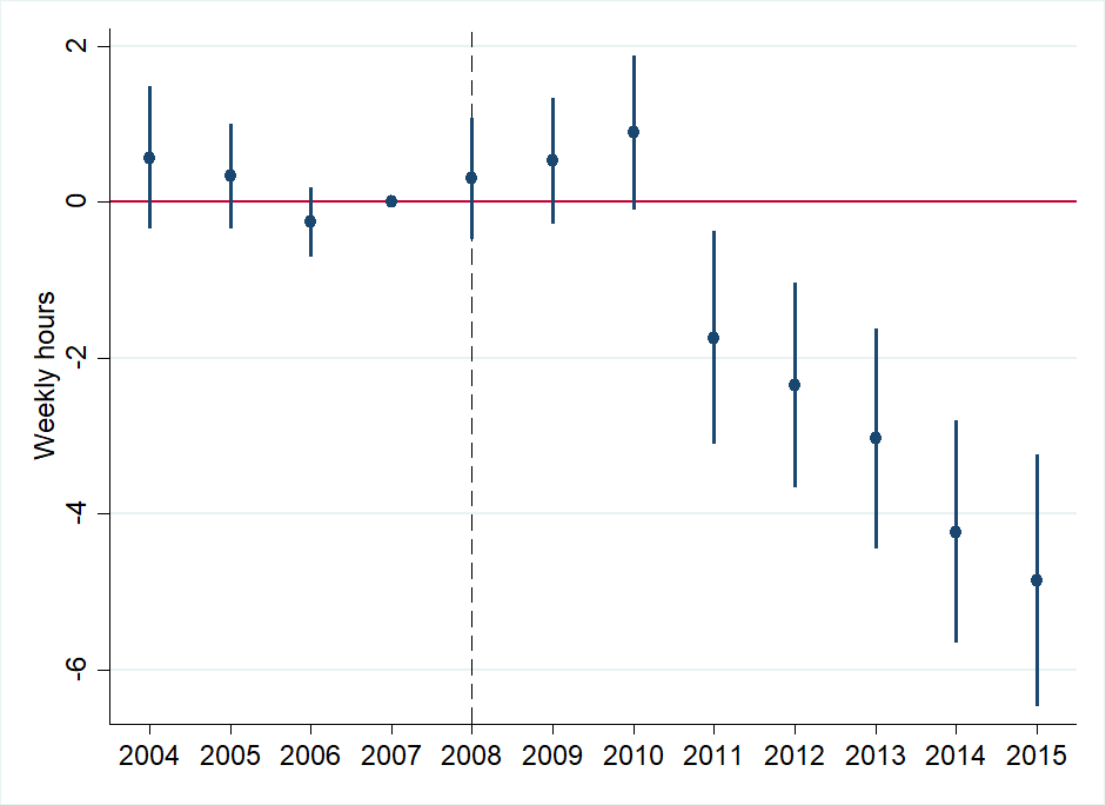
Notes: A class is considered multigrade if it shares the room with a different class. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 23: Share of multigrade classes. Private-voucher and public schools.



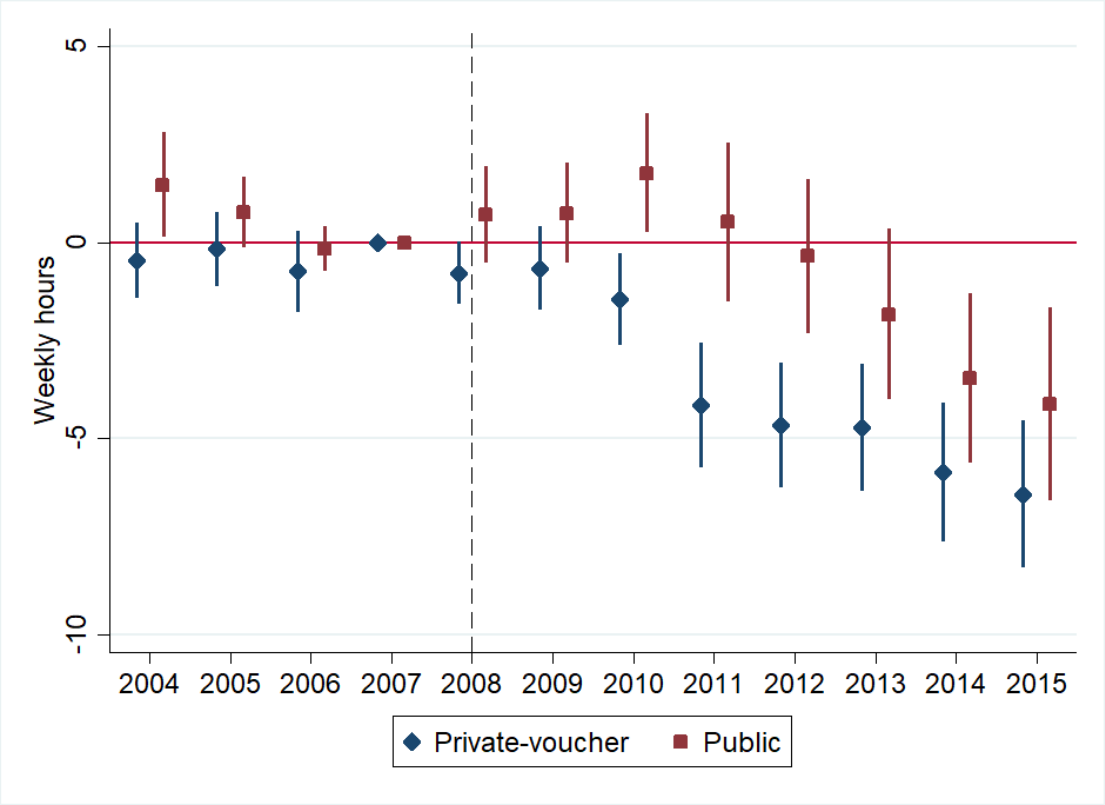
Notes: A class is considered multigrade if it shares the room with a different class. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 24: Weekly teaching hours per teacher. All schools.



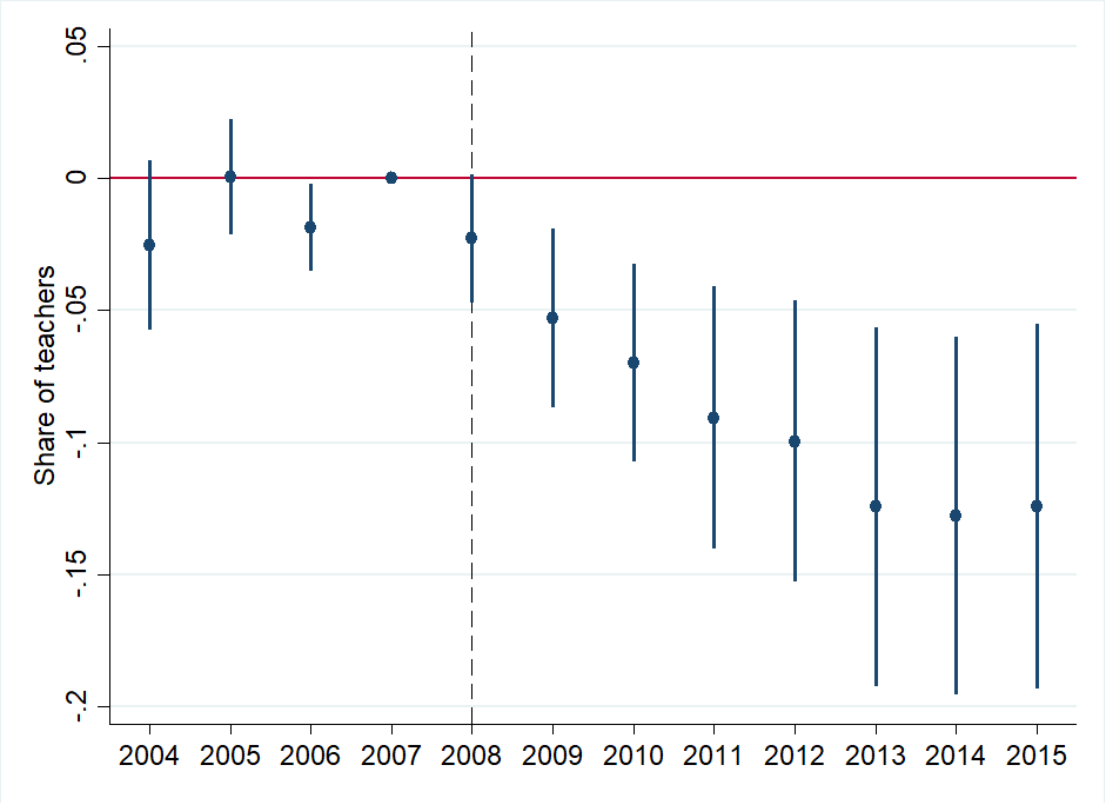
Notes: Teaching hours per teacher adds the weekly in-class hours and divides them by the count of teachers. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 25: Weekly teaching hours per teacher. Private-voucher and public schools.



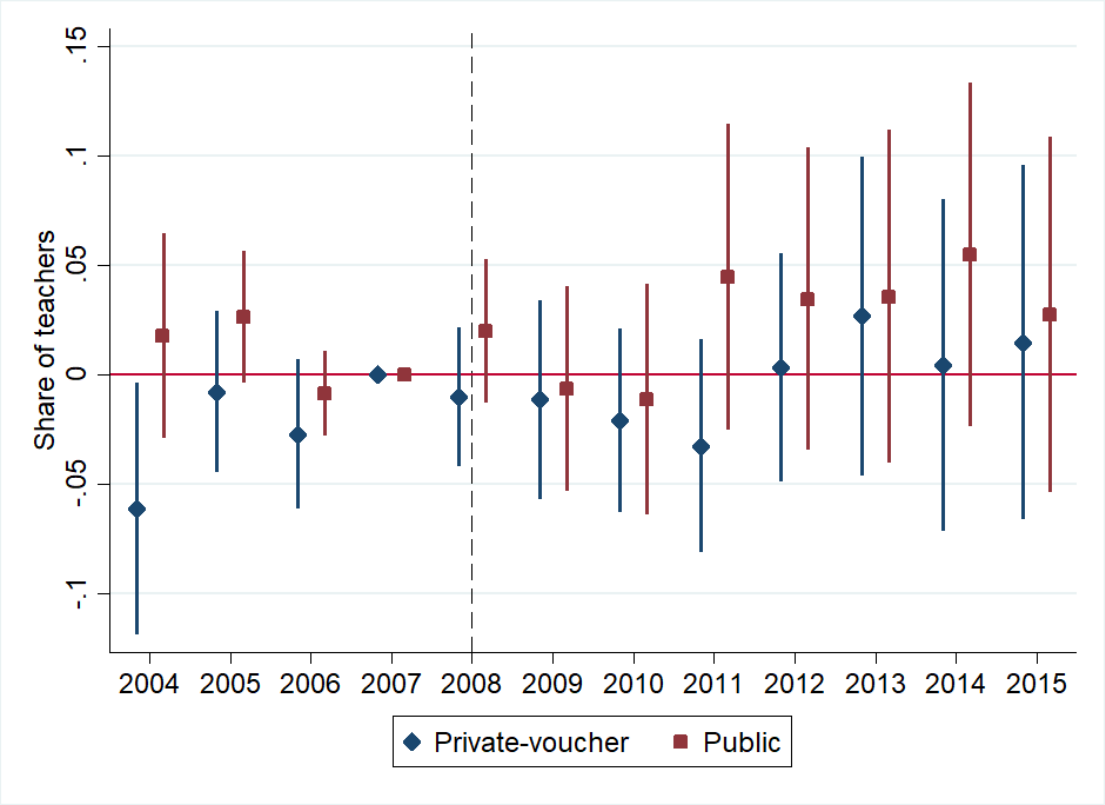
Notes: Teaching hours per teacher adds the weekly in-class hours and divides them by the count of teachers. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 26: Share of indefinite contracts. All schools.



Notes: An indefinite contract is a labor contract that does not require periodical renewal and evaluation of the teacher. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.

Figure 27: Share of indefinite contracts. Private-voucher and public schools.



Notes: An indefinite contract is a labor contract that does not require periodical renewal and evaluation of the teacher. This figure shows the estimated coefficients that resulted from an event study regression, on the interaction between the dummy for the year and the intensity of treatment variable. The intensity of treatment is the share of disadvantaged students in the studied municipalities one year before the 2008 Chilean educational reform. We use a 95% confidence interval.